Creating knowledge locations in cities: innovation and integration challenges

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Preface

Despite wide differences, cities across Europe have one ambition in common: the desire to be successful in the knowledge economy. In this study, we focus on one increasingly popular policy instrument: the creation of knowledge locations, i.e. specific area-based developments for knowledge-intensive activity. Despite the fact that many cities invest substantially in the development of such locations, there are hardly any international comparative studies on this topic. With this study, we hope to fill this gap and draw a number of policy lessons.

For this inquiry, we visited six cities, five in Europe and one in Asia. Thousands of air miles, and countless interviews with CEOs, policymakers, and other experts later, we are proud to present an analysis of the dynamics of knowledge locations in Dublin, Eindhoven, Helsinki, Incheon, Munich and San Sebastian.

Many people have contributed to this study, and we are deeply grateful for their help. First, we are highly indebted our contact persons in the case cities, who helped us to arrange the interviews. Without them, it would not have been possible to have in-depth discussions with key informants from companies, knowledge institutes, and city administration. We thank all of them for their support during the study.

Moreover, we are grateful for the administrative support of Ankimon Vernède, in helping to organise the meetings and to finish this book.

Finally, we want to thank the City of Dublin for its trust and willingness to co-organise an international conference on this theme, together with Euricur.

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The authors
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Part I: Introduction and theory
1 Introduction

1.1 CITIES IN THE KNOWLEDGE ECONOMY

Many cities and regions have the ambition to promote their ‘knowledge economy’: it is generally recognized that knowledge has become the prime source of wealth in advanced economies. The now widely used term ‘knowledge economy’ refers to the increased economic significance of knowledge production, distribution and use. The OECD defines knowledge economies as ‘economies which are directly based on the production, distribution and the use of knowledge information’ (OECD 2006, 1996). Moreover, knowledge and creativity are considered as engines for long-term economic growth (Romer 1986), and therefore, human capital and R&D have obtained a more central place in economic theory and policy. Powell and Snellman (2004) also stress the increased speed of technological change. They define the knowledge economy as ‘production and services based on knowledge-intensive activities that contribute to an accelerated pace of technological and scientific advance as well as equally rapid obsolescence’ (p. 201).

There are signs that the emerging knowledge economy has reinforced the role of cities. First, the diversity of people, firms and cultures in cities constitute a fertile ground for new ideas and innovations (Jacobs 1969). Second, the diffusion of new knowledge and technology is faster in urban areas, thanks to the density and physical concentration of large numbers of knowledge workers and knowledge-based firms (Audretsch & Feldman 1996) and rich ecologies of face-to-face contacts (Storper and Venables, 2004). Third, big cities have large and specialized labour markets. This makes them attractive for knowledge-based firms (that need specialized skilled staff) and for knowledge workers, who can more easily find the job they want, and have better career opportunities in the longer run (Polèse 2005). Fourth, due to rising incomes, consumers spend more on luxury goods, and large cities are relatively specialized in this type of goods. The ‘consumption value’ of cities has gone up, especially for well-paid knowledge workers (Glaeser et al. 2001). Finally, large cities are traditionally specialized in sectors that show high rates of growth in the knowledge economy: the creative industries and knowledge-intensive services. In sum, agglomeration economies have become more significant in the knowledge economy.

The urban revival is not visible everywhere, however. Some cities (national capitals, global cities, international service hubs, academic centres) have grown very fast, acting as a magnet for talent and investments, but others (small cities in rural areas, cities with an outdated economic specialization) have lost out in relative terms: They have severe difficulties in retaining knowledge workers and knowledge-intensive companies. Van Winden et al. (2007) discuss the differences between city types concerning their role in the knowledge economy. ‘Winning’ cities have particular characteristics that make them benefit from and re-enforce their position in the shift towards a knowledge economy: a strong knowledge infrastructure, dense knowledge resources, large numbers of knowledge workers, a diversified economic base, an international airport, and attractive amenities that help to lure knowledge workers.

1.2 POLICIES FOR PROMOTING KNOWLEDGE-BASED DEVELOPMENT

Despite wide differences in endowments, opportunities and context, cities across Europe have one ambition in common: the desire to be successful in the knowledge economy. In policy documents produced by cities of any type, knowledge has obtained a central place (Knight 1995, was one of the first to apply the term ‘knowledge-based development’ to cities, and elaborate policy implications). Urban policy initiatives are increasingly aimed at attracting higher educated people, promoting entrepreneurship, developing clusters of knowledge-based industries and ‘creative’ industries. Van Winden (2010) discusses this ‘knowledge turn’ in urban policy across Europe, and identifies four manifestations: (1) widespread and intense efforts to lure knowledge workers and the creative class; (2) a growing role for knowledge institutes in urban development and planning; (3) an explicit ‘knowledge-based’ approach to planning and the design of public space, and (4) efforts to underline the identity of the ‘knowledge city’ using marketing and branding techniques.

Cutting across those policy manifestations, this study focuses on one particular instrument used to promote the urban knowledge economy: the creation of knowledge locations. We use this term to include...
a wide variety of area-based policies aimed to agglomerate knowledge-intensive activity in a designated area or city district. Thus, there must be an element of planning or deliberate policy aimed at agglomerating knowledge-based activity.

The term knowledge locations, as we use it, includes include concepts like science parks, technology parks, open innovation campuses, creative districts, media hubs etc. It excludes wider territorial concepts like regional clusters, in which activities are spread over a larger territorial area, although we recognize and explicitly address the role of the wider regional economic context in analyzing knowledge locations. Some knowledge locations focus on one specific branch or technology (i.e. bio science parks), others are more diversified.

In general, agglomerating knowledge-intensive activity in a particular location is believed to have a number of advantages. Knowledge hubs provide opportunities for facility sharing (i.e. the joint use of expensive facilities such as clean rooms or laboratorial facilities); they would enhance networking and face-to-face interaction, and promote unexpected interaction between persons or companies, with positive impacts on innovation. They are believed to offer a set of economic benefits, by fostering links between industry and the local knowledge institutes and providing a favourable environment for start-ups. Moreover, as city marketing and branding takes up an increasingly important role in urban management, knowledge parks can help to foster the identity of a city as progressive knowledge-based city: they give the local knowledge economy a face and an ‘address’. Finally, knowledge hubs are increasingly seen as a powerful tool for urban regeneration. Many cities seek to transform derelict urban areas into ‘creative districts’ (Evans, 2009).

1.3 RESEARCH QUESTIONS

In this study we want to improve our understanding on the functioning of knowledge locations in the urban economy, and add to the existing body of scientific knowledge (reviewed in the next chapters) on the dynamics of this form of urban developments. Moreover, explicitly, the study is intended to help policymakers make better informed choices and better understand the role of a knowledge location in the wider evolution of the regional and global economy. Developing successful locations which stimulate growth in the knowledge-based economy is a complex challenge because it involves many aspects, many actors and requires an innovative approach. As each location has its unique context and needs to distinguish itself from competing locations, no blueprints or rules-of-thumb can be provided. However, greater insight in the relationship with the environment, and a better understanding of the dynamics on a location and in-dept study of contextual and content criteria for success, enables policy makers to ask the right question for their particular development.

This research addresses a number of questions:

- What kind of benefits do knowledge locations offer, in theory and in practice?
- How important are ‘local’ networks (between actors at the location) vis-à-vis networks at a wider geographical scales (regional, national, international), and to which extend this is sensitive to different modes of knowledge creation?
- How do knowledge locations emerge and evolve over time, and which factors influence these processes?
- Relations with the city: How to integrate ‘knowledge locations’ in the urban fabric?
- Stakeholder involvement: how are different stakeholders involved in the development, formally and informally? What are their perspectives, ambitions, expectations? How to manage the different interests?
- Organization and management issues: How to frame the cooperation between the various actors (i.e. project developers, banks, local government, universities, ‘end users’) at the various stages of development (design, implementation, maintenance/park management)
- How to measure and assess the ‘success’ of such locations?

1.4 ORGANIZATION OF THE BOOK

This book is organized as follows. The first part (chapter 2-5) discusses relevant literature and builds a theoretical frame. Within this first part, chapter 2 puts the development of knowledge locations into perspective. It elaborates on the variety of concepts, and sketches a brief historic overview of their development. Also, this chapter signals a recent trend of ‘re-urbanisation’ of knowledge, manifested in
the growth of inner-city knowledge hubs. In chapter 3, we review the literature on knowledge locations, focusing on evaluation studies of science parks and creative quarters. We identify some gaps that we intend to fill with this study. Chapter 4 proposes a conceptual framework to analyze the development of knowledge locations in their context, based on a recombination of insights from various literature strands. Chapter 5 elaborates on the methodology applied in the cases/essays and outlines the global research design.

The chapters 6-11, which jointly form the second part of the book, contain the cases/essays on knowledge locations in various cities:

6. Dublin (Ireland): the Digital Hub, an inner-city flagship IT hub with important regeneration ambitions;
7. Eindhoven (The Netherlands): Strijp-S, a planned mixed-use creative district at a former Philips premise;
8. Helsinki (Finland): The Arabianranta area, a former industrial area transformed into a highly successful multi-functional city quarter with design as a central theme;
9. Incheon (South Korea): Songdo, a new knowledge city;
10. Munich (Germany): Maxvorstadt, an inner-city quarter with a high concentration of knowledge institutes and cultural facilities;
11. San Sebastian (Spain): PIA, a new nexus for the multimedia industry.

Chapter 12 forms the third part of the book and contains a synthesis. It reflects on the different components of the framework, compares evidence and suggests success factors illustrated with examples from the various case studies. On the theoretical level, it analyses constructs, relations and mechanisms of an integrative framework to understand the development of knowledge locations. Also, it provides recommendations for policymakers, as well as suggestions for further research.
2 History and trends in knowledge locations: an urban turn?

Science parks and other types of knowledge hubs have been—and are being—developed for a number of reasons: To nurture the growth of (technology firms), to facilitate knowledge transfer between universities and companies, to act as a seedbed for start-ups, to stimulate innovation, to regenerate derelict urban eras, to lift a region or city into the knowledge economy, to attract foreign investment, to sustain local political discourses or to make money on real estate inflation.

Classical science parks are the best-known and most ‘visible’ locations of the knowledge economy. In recent years, new generation knowledge hubs have emerged worldwide, focusing on the so-called creative industries (Evans, 2009).

2.1 SCIENCE PARKS

Science parks, also called technopoles (Castells and Hall, 1994), are the best-known and best-documented type of ‘knowledge locations’. They are often located outside the city, built around a university of scientific institution. They contain a mix of premises for businesses, start-ups and research institutes. Typically, there is no housing or leisure function. Often, science parks are managed by public or semi-public companies, with most shares in the hands of the (local) government or the state.

Science parks can be defined as property-based initiatives that have formal and operational links with a university or other HEIs or major centres of research (Zhang, 2005, referenced in Tamasy, 2007). Science parks come in several disguises and have different initiators and business models. Just like incubators—which they often include—science parks have ‘identifiable administrative centres, focused on the mission of business acceleration through knowledge agglomeration and resource sharing’ (Phan et al, 2005, p.166, our emphasis). Some focus on particular technologies, economic sectors, or science fields; others are more generic. Table 2.1 lists the main goals of the various stakeholders in science parks.

<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>Main goals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Universities, research institutes</td>
<td>Science Parks serve to strengthen knowledge transfer (interaction) between university research and industry, particularly to derive funding for future research. It also includes commercialization of research results, eventually through academic spin-off firms and utilization of idle land of the university. In the knowledge economy: meeting targets from government policy.</td>
</tr>
<tr>
<td>National and local (regional) government and (public) business support organizations</td>
<td>Science Parks support the restructuring of the local (regional) economy. They generate new firms, high-technology jobs, income and tax. Also, they serve to improve the image of the city (region), particularly international recognition.</td>
</tr>
<tr>
<td>Real estate and financial institutions</td>
<td>Science Parks are seen as business opportunity. They serve as real estate investment projects to raise profits. In addition, the firms that settle may serve as investment projects.</td>
</tr>
<tr>
<td>Firms on Science Parks</td>
<td>Science Parks are seen as favourable environments, in terms of supply of facilities, the positive image associated with it and network opportunities with the university and other park tenants.</td>
</tr>
</tbody>
</table>

Source: Van Geenhuizen and Soetanto, 2008, p94

The first known initiative to develop a science park (though not in a formal way), was taken by Stanford University’s Dean Frederik Terman in 1951, who developed and leased University’s land for start-ups. This would turn into the well known Stanford Research Park, the cornerstone of Silicon Valley. Latter on in Europe, Cambridge Science Park (CSP) was formally established in 1970 and can be considered as the mother of all science parks. It is the UK’s oldest and most prestigious science park. Its development was led by Trinity College, which limited the admission to technology and research firms. Currently, it is home to over 90 high tech companies and 5,000 personnel, but its start was slow: 2 years after its official opening, it had only 7 tenants, and only 20% of the designated area as developed (Koh et al., 2005). CSP
focuses on basic research, and many of the companies are led by researchers and scientists rather than typical entrepreneurs. In the 1980s (Monck et al. 1988), the science park concept became widespread not, and currently it is a fully fledged reality throughout the world (see figure 2.1).

Figure 2.1 Number of Science parks enrolled at the International Association of Science parks (IASP)

By locating on a science park, firms gain access to structural elements provided by the science park, e.g. infrastructure and supporting facilities, and therefore there are opportunities for synergy between and among high-tech firms (Maillat, 1995, and Phillimore, 1999). Chan and Lau (2005) make a distinction between two types of support: basic structural support (shared office services, business assistance, rental breaks, business networking, access to capital, legal and accounting aid, advice on management practices), or technology-related structural support (labs and workshop facilities, R&D activities, technology transfer programmes, and advice on intellectual property).

Science parks are created to promote economic development and increase the economic impact of scientific research. Their emergence reflects the notion that science not only valuable in its own right, but also a catalyst to economic growth: it would contribute to innovation and the development of high tech firms. In the 1980s and 1990s, this belief was fuelled by the rapid growth of high tech sectors like ICT. Also, the development of science parks reflects a changing perception of the role of science in society. The view that society provides funding for science without any further claims was increasingly challenged. Society increasingly articulated expectations of science regarding how resources are spent (Guston, 2000, ref in Hansson et al, 2005) and became more aware of the economic potential of science and technology. At the same time, universities discovered commercialization as a new source of income, and increasingly considered science parks as effective instruments to tap on them.

There are several types of science parks. Some focus primarily on basic research, and have strict admission criteria (the Cambridge example is illustrative). Others are more oriented towards applied research, and also allow manufacturing at the premises. Some science parks have a thematic or technology focus (like the Bioscience park in Leiden, The Netherlands), others are more generic. Typical tenants of science parks are university departments, start-ups, technology companies, but also public research institutions and private research labs. Some science parks focus on production oriented technology, and have close links with manufacturing firms. A good example is Taiwan’s Hsinchu Science District. It has developed as a brain centre for the manufacturing of semiconductors and other electronic
components, and top-level manufacturers are located at the site.

Over the last decade, many Asian countries invested in science parks with a view to attracting knowledge-intensive foreign investment and enhance competitiveness. The establishment of Singapore Science Park (SSP) in the 1980s became an example for many other Asian countries. It was created to provide an infrastructure to host MNCs and other businesses that need proximity to higher educational institutes. SSP was to become the R&D hub of the city state, and was meant to signal the country’s ambitions to become a leader in the knowledge economy (Koh et al., 2005).

This signaling motive has been important in many science park developments across the world. A major example includes Beijing’s Zhongguancun high-tech park. This site around Tsinghua University and Peking University - known as ‘China’s Silicon Valley’ - has attracted many western top technology firms (like Microsoft, IBM, Google) as well as large state owned companies such as China Mobile (e.g. Zhou and Xin, 2003; Zhou et al, 2009). Throughout Europe, mainly in its industrial peripheries, science parks have ambitions to signal processes of economic diversification. They develop prime conditions to attract new knowledge intensive FDI, and often host the “crown jewels” of regional economic diversification, i.e. leading companies and internationalized knowledge institutes (Carvalho, 2009).

The development of most science parks is initiated by the public sector, the university, or, in some cases, a property developer. But there are also science parks set up by large companies. One eye-catching example is the High Tech Campus in Eindhoven, The Netherlands (see box 2.1). It is being developed by Philips, but open to others as well. There are also private real estate companies that specialise in the development and exploitation of science parks. In Tampere for instance, a specialised private company (Technopolis) manages the three parks in the city.

**Box 2.1: High Tech Campus Eindhoven**

The High Tech Campus in Eindhoven is a private development, initiated by Royal Philips Electronics as the owner of the property. The Philips Research division is one of the mayor tenants (1,800 employees and 125,000 m2 floorspace) and the ‘launching customer’. Philips Research has much influence on the development and plays an active role as ‘enabler’ for open innovation. Other anchor tenants are welcome, as long as they are a relevant partner for Philips in its innovation process. An important goal of the High Tech Campus is creating an environment for open innovation. Facilities on the campus connect to the quest for boundaries of knowledge, within the framework of commercial use. Collaboration, seen as formal innovation networks and informal value chains, is integrally connected to these goals, as well as healthy competition and mutual trust. In open innovation, stimulating knowledge transfer is essential. Seeking for synergy between people involved in research and development is an important asset to shorten the ‘time to market’. The concept of the High Tech Campus can be characterized as an area based campus development where a network of meeting places on different levels is created. Open, transparent buildings as well as centralized amenities are organized as pavilions in a continuous landscape with many opportunities for social activities, sports and recreation.

2.2 BEYOND SCIENCE AND TECHNOLOGY: THE EMERGENCE OF NEW TYPES OF KNOWLEDGE HUBS

Science parks typically focus on ‘beta’ sciences and technology, ranging from basic science to applied science to product development and sometimes even manufacturing. Most science parks are actually a specialised, knowledge-intensive type of Business Park, typically mono-functional, located at a suburban location.

In the last decade, new types of ‘knowledge hubs’ are being developed around emerging thematic fields beyond science and technology, reflecting the growing recognition that the knowledge economy is not restricted to the technological realm. Notably during the last decade and a half, the ‘creative industries’ have been discovered as a promising growth sector with a strong urban orientation and symbolic content (Scott, 2000); consequently, many cities have developed a wide variety of territorial concepts to facilitate these industries, e.g. through creative city plans (e.g. Laundry, 2000). In the 1990s, Manchester was early to develop a ‘creative quarter’ (van den Berg et al, 2001), but there are many other examples, particularly in Europe. A prominent frontrunner, elaborated in this book, is the Art&Design city in Helsinki, Finland (see also e.g. Ilmonen and Kunzmann (2007). This is a former industrial area being redeveloped with a strong thematic focus on design. Another well-known case the Barcelona’s @22 district, in which two hundred hectares of industrial land of Poblenou are transformed into an “innovative district” involving a
public investment of €180m in infrastructure. Contrarily to the typical science park model, these new hubs have usually a strong aesthetic and visual drive encompassing cultural facilities, museums, architecture quality, heritage preservation, public art and trendy streetscapes, with housing and living possibilities and tourism development (Evans, 2009). However, the multi-functional character of creative districts may also result in conflict in traditional and new functions. For instance, traditional jewellery firms Birmingham’s Jewellery Quarter have difficulties in making the transition form a historical urban Marshallian industrial district into a creative district to live, eat and drink (De Propis and Ping Wei, 2007). In another case of Birmingham, new housing schemes in Birmingham’s East-side project conflict with traditional music scenes which are threatened with closure, while they are considered as “the kind of cultural seed that might be expected to form the basis of a cultural quarter” (Porter and Barber, 2007, 1339).

A number of cities have developed comparable concepts for creative industries generally or more specific branches like media, audiovisual, music, design, fashion etc. Also in Asia, this tendency is visible. especially in China, where creative industries were officially put on the agenda in the Fifth Five year plan in 2005 (Rossiter, 2008), and the number of ‘creative clusters’ has grown rapidly in major cities. For instance, Shanghai started with 14 creative sites in 2005 which already increased to about 70 in 2007. In Beijing, some major examples include: Zhongguancun Creative Industries Pioneer Base, the Songzhuang Art and Cartoon Zone, the Huairou Film and TV Base, and the Beijing Cyber-recreation District in Shijingshan (Keane, 2009). Another important example is the famous Beijing’s 798 district, a former state owned electronics plant. This large site has transferred quickly from an uncontrolled ‘artist based creative district’ (which houses an art community that produces and trades art) towards a planned ‘commercial creative district’, a site consisting of galleries and exhibitions showing cheap art for tourists (Van der Borg et al, 2010).

Although the thematic focus is different, there are similarities between these new knowledge hubs and the more ‘traditional’ science parks described above. The economic development motives for investing in creative quarters are similar: Local governments invest in this type of concepts in the hope to create new jobs, to gain a reputation as ‘creative city’ and to attract the “creative class”, a concept popularized by Richard Florida (2002). Typically, universities and other knowledge institutes are involved in the development, and hope to commercialize their research; also, many have incubation facilities, start-up support, and seek to develop local networking as a means to promote innovation.

From an urban development perspective, there are differences. Unlike science parks, the creative hubs don’t look like mono-functional business parks. Many can be found in city centres and/or regenerated industrial areas, and have a more urban and lively ambience that fits the needs of the type of people who work there (or is expected to be lured to the area). The tenants - design firms, architect agencies, media companies, etc. – are assumed to prefer environments with a distinct and urban identity (Florida, 2008). People working in the creative industries share a culture of work that is far away from the 9-17 mentality. Work and life are mixed up in time and space. People in these industries think more in terms of projects rather than employers (Grabher, 2002); there are many freelancers working temporary together, and they use public facilities as meeting places. They are often deeply involved in cultural production and consumption, and thrive in a lively and diverse urban environment, often associated with inner city atmospheres (Pratt, 2000; Hutton, 2004). “Buzzing” cities are important places for knowledge transmission and innovation in these industries, favouring easier access to strategic rumours, gossip and know-who (Asheim et al, 2007).

Given this distinctly ‘urban’ orientation (see also Asheim and Hansen, 2009), policymakers have come to embrace the creative industries not only as growth sector, but also as a catalyst for the regeneration of urban areas (Evans, 2009). All over Europe and the US, worn-out industrial sites have been transformed into lively creative factories, often with substantial public sector support, targeting the regeneration of many cities and districts. Some authors even speak about a “new orthodoxy” of urban planning and regeneration (Miles and Paddison, 2005). It is not only about physical regeneration: in some cases, urban knowledge hubs were developed with explicit social regeneration objectives in mind. An example elaborated in this book is Dublin’s Digital Hub, where a derelict brewery area is being transformed into a hub for digital media firms. One element of the scheme is a training programme for local residents, and there are strategic links with primary schools in the adjacent neighbourhood.
2.3 AN URBAN TURN?

Thus, in recent years, mono-functional knowledge concepts – like the traditional science parks - are giving way to more mixed and integrated approaches. Knowledge hubs are increasingly being developed as part of the urban fabric rather than isolated sites outside town, and they tend become more mixed in term of functions. Interestingly, this is not only true for the ‘new generation’ knowledge hubs based on creative industries as described above, but also recent developments of science & technology based hubs are becoming more ‘urban’. A good example of the latter is the science park Sophia-Antipolis in France (see Box 2.2).

**Box 2.2: Sophia-Antipolis - a classic science park atmosphere**

During the ’70s and ’80s, the desired atmosphere for a science park was seen almost in opposition with the rather polluted and congested urban centres by the time. In the early ’70s, the vision to develop Sophia-Antipolis science park (in a Greenfield location close to Nice, in the French Riviera), one of the most famous European science parks, was based on developing a Quartier Latin in the countryside (Laffitte, 1991). The founding father of the park - Pierre Laffitte –, by the time a researcher of the École des Mines in Paris, had the vision to achieve “the best of two worlds”, i.e. a science location without the problems of the modern metropolis but with the “convivial creativity” associated with the most vibrant Parisian districts. The park encompasses nowadays a very large estate with over 1300 companies and 30,000 jobs in 2300 hectares, mainly in bio-research and ICT, but never had an urban and “convivial creativity” felling. Office space and company’s premises have traditionally been rather independent from each other, with separated parking lots and the like. Most of the patented innovations developed by companies in the park from 1978 till 2002 have been developed in-house (Ter Wal, 2008). Recent efforts from the park’s management are to bring urban atmospheres to the place and a more diverse functional mix, with more student housing, cultural facilities, expositions, and other amenities.

In this section, we describe some recent examples of knowledge based quarters that explicitly link scientific and business development with urbanity, i.e. housing, leisure and other urban functions. These new concepts try to combine the assumed advantages of science parks (as mentioned in the last section) with urban assets and a more open attitude towards the surrounding environment. Some good examples can be found in the cities of Dortmund and Newcastle, as is described in Box 2.3 and 2.4.

**Box 2.3: Knowledge locations in Dortmund**

Dortmund (Germany) is a city with a rich industrial heritage, but it faced massive decline since the 1970s. Since then, knowledge based development has been the cornerstone of local economic policy. In the 1980s and 1990s, the city developed its science park (though in Dortmund it is called ‘technology park’), around the Technical University. Its development has been considered a success: currently, it counts 225 high-tech firms and employs 8,500 people. It is now one of the largest in its kind in Germany. It is a ‘traditional’ technology park, in the sense that it is physically separated from the city, and business-only (no residential function). Currently, the city is developing a second, ‘new generation’ hotspot on the Phoenix site, a former industrial site at which one of the largest steel plants in Europe was located. In 2001, the factory was demolished and shipped to China. Now, the area (just 5 Km from the city center) is being redeveloped into an integrated area for knowledge-based development. One part of the area is destined for high-tech business related to micro-systems and nano-technology. Young firms find excellent conditions in the “MST factory”, a building with a number of technical facilities that those firms need. Other sites are available for other types of firms. The area contains some industrial heritage, as a link to the past, and these old structures will be reused. To the east of this business site, a lake is being created, with a harbour and promenades. The area is planned as a class residential area. In between the business park and the lake district, there is still a ‘blue collar’ town quarter where steelworkers lived. This quarter is planned to be gentrified due to the development of the Phoenix site. The Phoenix project is strongly supported by the State of Nordrhein Westfalen, the city of Dortmund, the federal government and the EU.

**Box 2.4: Newcastle- a science quarter at a former brewery site**

Over the last years, the city of Newcastle-upon-Tyne has successfully transformed its industrial image, through heavy investments in culture and flagship architecture. The city’s next ambition is to become a significant ‘city of knowledge’ in the UK. Among other things, Newcastle intends developing a large ‘science quarter’ at a former brewery site in the city centre. To realise this ambition, the City Council works together with the University of Newcastle and ONE Northeast, the regional development company for the Northeast of England. The partners have the intention to transform the brewery site into a new mixed-used central district, focused on attracting and developing world-class knowledge and business in science and technology.

The shift from the isolated campus model to integrated approaches has brought knowledge-based development to the heart of Europe’s cities. How can we interpret this ‘urban turn’? Partly, it reflects the fact that policymakers, influenced by convincing and ready-to-use recipes (Peck, 2005) consider
knowledge hubs are a means to regenerate urban districts, and are willing to invest considerably. But this is not the full story. It also reflects changed ideas on the knowledge creation process and the conditions in which innovation and creativity can flourish (Asheim et al, 2007; Van Winden et al, 2007).

In the recent years, the idea that innovations emerge out of unplanned encounters in vibrant places like bars has become probably the most famous myths of the economic geography of innovation (Martin and Moodysson, 2010). However, the idea of an isolated scientist discovering new things in his ivory tower is also far from reality. Rather, innovation, knowledge creation and learning occur in interactive, often planned processes, in which actors combine different types of complementary knowledge and competences. Technological development has become very fast, and progress is many times realized when researchers work together in (often international) teams. Also in commercial companies, the innovation process has become much more interactive. Leading firms have set up multi-disciplinary teams of engineers, designers and marketers that work together from the early development stage of a new product, to speed up the innovation process, and to ensure that research efforts will ultimately lead to a ‘marketable’ product that will yield profits for the company.

Moreover, there is a trend towards ‘open innovation’, in which companies work together and combine their unique competences to create new products or services rather than developing all knowledge in-house (Chesbrough, 2003). Furthermore, companies realize that the success of their innovation is higher when the end users (citizens/consumers) are involved in the innovation process as well: after all, they are the ones to buy and use the products. Progressive companies create all kinds of interactions with end-users. The knowledge economy has become an international network economy. Research and development takes place in project teams of people from different nationalities. This networked way of working asks for an environment that facilitates meetings and interaction, not only during office hours but also after.

Notwithstanding sectoral differences in innovation modes (Asheim et al, 2007), the shift from the ‘ivory tower’ to an interactive and iterative process of knowledge creation has implications for the planning and organization of science parks or other knowledge locations. The provision of offices and lab space is not enough: knowledge locations more and more cater for networking and interaction, through meeting venues, restaurants, leisure facilities, network events and a wide array of other means. One feature of this project-oriented knowledge economy is the increasing number of temporary ‘expat’ professionals who work on a project for a couple of months, at a certain location. Generally speaking, during that time, they prefer to stay in a more lively and diverse environment rather than on a dull campus without life after 5 o’clock.

The ‘urban turn’ in the development of knowledge hubs is also a manifestation of a more general appreciation of lively cities among the higher educated. Knowledge workers increasingly prefer to work in a nice and lively working environment that offers amenities and facilities beyond just office and lab space, and where consumption opportunities are more widely available (Florida, 2002; Glaeser et al, 2001; Asheim and Hansen, 2009, for a more nuanced view). There is pressure on firms and research institutes to meet these demands: high quality knowledge workers have become a scarce commodity, and there is severe competition to lure them. One of the ways to do it is to offer a very attractive working environment that includes facilities for leisure and shopping, although higher-level amenities can also be found in the location’s catchment area and not necessarily within the location (Carvalho, 2009).

A related point is the shifting of work-life balance (Florida, 2008). Especially for younger people, work and life have increasing become mingled, and social interaction with colleagues is important. This lifestyle is facilitated well in a lively environment that offers adequate amenities and facilities.
3 Empirics: what do we know about the success of knowledge locations?

What do we know about the ‘success’ or ‘performance’ of knowledge hubs? Clearly, the appraisal depends on the objectives of different stakeholders (Monck et al., 1988, in Lindelof and Lofsten, 2003). We have seen that there is a large variety of them. Universities may be interested in knowledge diffusion and incubation, or to generate licence income through spin-out companies; banks and real estate developers are driven by profit and want high occupancy rates and rising property values. City administrations are interested in the number of jobs created at the site, image effects, foreign investment, or the success of regeneration efforts. Tenants may look for specific facilities, network opportunities, or image effects. However, the impacts of science parks as instruments of regional competitiveness are still far from consensual and there is a way to go to define more encompassing success concepts and measures (Monck and Peters, 2009).

Having said that, it is interesting to look at the literature on the performance of knowledge locations. There is a large literature on the performance and impacts of science parks and other locations, to be reviewed in this chapter. By the end, we identify current gaps in the literature and make clear how our study contributes to the existing body of knowledge.

3.1 SCIENCE PARKS

3.1.1 Shared facilities

One assumed advantaged of a knowledge location is the opportunity for facility sharing (i.e. the joint use of expensive facilities such as cleanrooms or any other equipment). This helps to cut costs, and allows for more investment, which keeps facilities up to the state-of-the-art. Moreover, sharing facilities may spark serendipitous encounters between researchers which may result in spill-over effects or cross-innovation. This latter claim is not verified in the literature, but the other benefits of facility sharing are generally acknowledged and confirmed. Feldman (1994) identified that especially small firms benefit from shared use of facilities. This is the case, e.g. in biotechnology, where small start-ups can hardly afford state-of-the-art equipments and rely on shared labs in universities and science parks (Vale and Carvalho, 2009). Larger companies are more likely, and able, to internalize such facilities. Garnsey and Hefferman (2005) find that firms on science parks are relatively heavy users of university facilities. Van der Klundert and van Winden (2008) find that facility sharing is considered an important benefit for firms located in the Eindhoven High-tech cluster.

3.1.2 Do science parks favour employment or sales growth?

Monck et al (1988) made a comparison between the performance of firms on science park and a comparable sample of firms that are located elsewhere. Remarkably, they found that the firms located on science parks generated fewer jobs than comparable firms ‘off’ science parks. Why? Are science parks actually hindering business development? Lindelof and Lofsten (2003) suggest an alternative explanation: a large proportion of the science park entrepreneurs are academics and ex-academics, and they are less likely/inclined to be entrepreneurial and grow a large business. In a more recent study, Siegel et. al (2003) also compared the performance of firms ‘on’ and ‘off’ science parks. They found that the returns to being located on a science park are negligible. They found no significant difference between employment growth rates of firms located on science parks and those located off science parks.

A Swedish study had a different outcome. It compared the development and performance of young technology firms on parks and off parks (period 1994-1996). Firms on park performed better: they had higher sales growth, employment growth, and profitability (Lofsten and Lindelof, 2001), suggesting that park milieu has a positive impact on firm performance. Lofsten and Lindelof, (2002) suggest that science parks attract more ‘motivated’ firms. They are also more involved in co-operations with the university, and science park managers play a positive role here. Firms on parks also proved to be more internationally oriented.

Westhead and Storey (1994) suggest that many firms locate on a science park for the image and prestige
of the site, rather than to benefit from local facilities or network opportunities with other firms on the park. Wright et al. (2008) on the contrary, note that for firms, locating on a science park has drawbacks in terms of image. It may reduce a firms’ commercial credibility, ‘sending a signal to the market that its activities involve academic research rather than a commercial focus’. The university context may bring greater bureaucracy and make it less easy to identify decision makers; The university context lacks sufficient practical, business commercialization experience, and provides for relatively weaker network ties with financiers and industry partners. University science parks may also provide less access to commercially oriented expertise and contacts than a non university-affiliated park.

Huggins et al (2008) note that many parks do not survive; mortality rates are high, and many survivors fail to meet their target objectives. (Luget/Goldstein, 1991, ref in Huggins et al, 2008). In some cases, expansion ambitions undermine the thematic focus on a park. Etzkovitz (2006, ref in Huggins et al, 2008)) mentions the Penn State Innovation Park, where the real estate potential undermined its capacity to create an innovative climate. The original idea of the science park often gets lost. Science parks can easily become ‘glorified’ business parks attracting firms mainly because they offer ‘real estate prestige’ (Massey et al, 1992).

3.1.3 Do science parks promote local networking?

The promotion of local networking and clustering dynamics (Porter, 1990), namely knowledge and information exchange between organizations, have been core arguments justifying the social added value of science parks fostering “collective efficiency”. However, despite a few positive indications that firms within science parks have stronger relations with Universities than other firms (e.g. Detwiller et al, 2006; Chan and Lau, 2005) there is no strong evidence that firms on science parks are more likely to collaborate or exchange information with local universities or neighbouring firms on-site.

Bakouros et al. (2001) study formal and informal linkages between firms and university on Greek science parks, and found very modest synergy impacts. Similar results were found in a study to university-industry linkages on science parks in the UK (Quintas et al,1992). Lindelof and Lofsten (2003) found, for Sweden, that on-site firms even collaborate less with local partners. Fukugawa (2006) found a relatively high propensity of firms on science parks to engage in joint research projects with knowledge institutes, but the linkages were not local. In the high-tech cluster of Cambridge, UK, many actors claim that global links are more important than local ones (Garnsey and Hefferman, 2005) The rise of global partnerships between universities and companies illustrates this tendency. Firms in science parks are not better informed about research that is conducted in local universities (although they appear to be relatively heavy users of university facilities like computers and libraries). Among the most significant interactions with universities are the searches for new graduates (e.g. Verdovello, 1997).

The links between university and firms at the science park depend on the ‘absorptive capacity’ of the firms, i.e. they ability to identify, interpret and use knowledge (Rothaermel and Thursby (2005b, ref in Tamasy 2007). Concerning interferms networks, Sternberg (1999) found that contact to other firms is especially important for young firms. The later in their lifetime, the more important become networks outside the park. There might also be sectoral nuances. Knowledge networks in biotechnology seem to be particularly structured and unplanned meetings within a park are definitely not the way biotech companies search technical knowledge and innovate (e.g. Moodysson, 2008); however, this interaction might play a role in accessing market-related knowledge and sensing future cooperation opportunities (e.g. Vale and Carvalho, 2010). Within Sophia-Antipolis, Ter Wal (2008) found that high-level knowledge networks (leading to patents) between firms were denser in ICT than in Biotech, though often associated with labour mobility and spin-offs and not with knowledge spillovers.

Thus, science parks are not the ‘local innovation network catalysts’ they often pretend to be. This is in line with a growing consensus in the economic geography literature not to overrate the importance of local knowledge networks (e.g. Giuliani, 2007; Malmberg and Maskell, 2006). Many innovative firms do not acquire knowledge from geographically nearby partners, but rather source internationally (Davenport, 2005, ref in Huggins et al., 2008). This is especially true for firms with high levels of absorptive capacity (Drejer and Lund Vinding, 2007, ref in idem).

3.1.4 Do science parks favour start-ups and the commercialization of research?

Before addressing the contribution of science parks to research commercialization, it is important to note
that the extend of commercialization of academic research is structurally very low in Europe, and somewhat higher in the US. License incomes are small, overall. The average US University earns a modest $6.6m from licensing (which is 2.8% of their total research budget); In the UK, it is only £365,000 (1.1%) (HEBI, 2004 and NSF 2006b, in Huggins et al, 2008). The number of spinout companies from universities is also low. Leading US universities annually spin out 2.8 new companies per institution. Only four US universities spin off more than 10 companies annually. In the UK, the average for all universities is a bleak 1.3 spin-out per institution per year.

This being said, business incubation –nurturing young firms- is a key objective of science parks and knowledge hubs. What are the results of science parks in this respect?

Sternberg (1999) investigated the success of business incubation programmes in Germany. Success was defined as the degree to which the incubators reached their objectives, most commonly the support of start-ups, the creation of high skilled jobs, and the increase of knowledge transfer. Their results play down the significance of incubators.  The study found low levels of start-up activity and potential, and many of the start-ups were in low-level service activities rather than high tech, science based businesses. 19% of the firms were not really start ups, but had existed for 2 years when they entered the incubator, and only 3% would have not have started the firms without the existence of incubators. A study on US incubators (Luger and Goldstein, 1991, in Tamasy, 2007) yields similar results. In addition, they found that older incubators perform better than newer ones. Similarly, McAdam and McAdam (2008) show that older incubators are more successful in using incubator facilities in science parks at the stage in the firm’s life cycle when it searches for independence and autonomy.

Hansson et al. (2005) are not surprised about the poor record of science parks as engines for commercialization, arguing that science parks are often based on outdated ideas of linear innovation models. The road from basic science to marketable products is not a straight one; new academic knowledge may or may not end up in new products. Successful product innovation is a highly interactive process of mixing and recombining existing knowledge. Not only technological knowledge but also skills in marketing, management logistics etc. are needed. It requires entrepreneurial skills.

Koh et al. (2005) look at performance of knowledge hubs in a more dynamic way. They ask the question whether a science park is able to renew itself, i.e. develop new specializations and adapt to new emerging technologies over time. They praise Silicon Valley (not exactly a science park) for its great regenerative capacity: the region manages to constantly re-invent itself, and is a frontrunner in subsequent waves of new technology (Kenney and Patton, 2006). Many science parks have tried to arrive at a similar adaptive capacity by establishing incubators at the park, or invite venture capital firms to locate the park to promote an entrepreneurial attitude.

3.2 CREATIVE QUARTERS AND NEW URBAN KNOWLEDGE SPACES

Despite the relative novelty of the concept, many studies have already looked at the performance of creative quarters. Contrarily to science parks, the success of creative quarters is usually evaluated through its impacts on urban regeneration (economic, social and physical dimensions). However, whether creative quarters improve networking among creative companies and spur joint innovations has been rather neglected evaluation issue.

The study of Brown et al (2000) suggests that when “creative” dynamics are not in motion before, the planning of creative quarters may be disappointing. They compare the organic development of Manchester’s Northern Quarter with the planned Sheffield’s Creative Industries Quarter, both with a focus on the music industry. Sheffield’s City invested heavily in infrastructures, facilities and marketing, expecting companies to follow and turn the area into a “buzzy” hotspot. However, no significant new cluster was developed and the creative companies in place remain heavily public subsidized. Planned anchor organizations moved into the area, like the National Centre for Popular Music, but closed within one year; the area didn’t become a lively public space, contrarily to other Sheffield’s districts and to Manchester’s “hands-off” experience.

In a recent study about the planning of a cultural quarter in Birmingham’s East Side, Porter and Barber (2007) review “stylized facts” and lessons about the development of creative quarters in Western cities:

- Together with the development of creative quarters, property prices are likely to rise, displacin
activities and inhabitants planned to attract in the first place. Thus, these gentrification processes might reduce the desired diversity of the area and attention should be put on the nature of local property and real estate markets in advance;

- Policies exclusively focused on the production side of creative quarters often overlook the quality of public space and thus may not generate the desired urban liveliness in the area; hence, creative quarters should combine creative production, consumption and fruition of the public space in an holistic way;

- *Flagship projects* like arts centres, museums and landmark buildings tend to benefit mainly the “aesthetic desires” and world visions of political and cultural elites. Moreover, its eventual positive impacts are hard to measure. In order to “root” the quarter, there is a strong need to recognize and empower local talent; creative quarters must work with the existing urban fabric and be committed to lever local talent, designers, architects and capital;

- Public debate and *local participative democracy* help aligning the quarter with the desires of local populations, building on the distinctiveness of the place and making local communities benefit from it.

Looking beyond the Western context, urban researchers at the Massachusetts Institute of Technology (Seitinger, 2004) revisited the classic study of Castells and Hall (1994) and explored the early development of new 21st century urban “spaces of innovation”, with cases from Kuala Lumpur, Singapore and Seoul. First insights (these developments are still in an early stage) reveal a massive investment scale (mainly public) vis-à-vis Western Europe, focusing on creating entire cities within highly planned functionally mixed districts, planned to cater for demographic, social and physical diversity. Inspired by the “Dubai model”, those cities fiercely compete with each other for international exposure, to become English-friendly spots, to attract FDI, international business, expat talent and so on, New high-quality knowledge locations are central pawns in those strategies.

However, Seitinger (2004) doubts whether all this planned diversity will ever come to existence, and, in case it does, how will it relate with innovation. The visions of public officials stress the role of “knowledge accidents”, very much the “meeting-in-a-bar” myth previously identified by Martin and Moodysson (2010). In these projects, planned order and control is somehow at odds with the urban messiness that characterized urban development and atmospheres the large world cities these projects are inspired on. However, one common feature in these new spaces is their role as experimentation arenas and live test-beds for new technologies and visionary ways of interacting in urban life, e.g. based on ICT. This trend deserves further attention and is explored in one of our case studies: the development of ubiquitous city concepts and sensor technologies in Songdo, South Korea.

### 3.3 OVERALL ASSESSMENT

Overall, the empirical evidence on the success of knowledge locations like science parks and creative quarters is not very encouraging. Despite heavy investments, often financed with public resources, many of the objectives and ambitions are not met. In many respects, the performance of firms located on science parks is not better than that of firms off parks; creative quarters may also result in urban regeneration failures, and both types of locations seem to provide minor stimulus for creating businesses. With this in mind, Tamasy (2007) pleads to stop pouring public money in incubators and science parks, while Porter and Barber (2007) call for more innovative and ambitious plans for cultural quarters.

Van Geenhuizen and Soetano (2008) note that the bleak record of science parks has not stopped policymakers from being enthusiastic initiators and supporters of parks. Policymakers continue to believe that science parks are effective instruments to enhance knowledge-based growth (Van Geenhuizen et al., 2004); on the side of creative quarters, Miles and Paddison (2005) even speak about a rise on the new “Creative Quarter Urban Orthodoxy” in planning for the knowledge economy.

For many policymakers, enhancing the local knowledge economy is a key objective, but a very complex one. There are many interrelated factors that influence a region’s innovative performance, many actors are involved, and results of policies are not immediate but take time to materialise. Moreover, the relation between cause and effect of policies is often ambiguous. In this complex situation, policymakers typically exhibit a strong preference for policy tools that produce tangible results, and science parks belong to that category (Van Geenhuizen and Soetano, 2008). Science parks “often play the role of a symbol and physical proof that unites policymakers in the city” (ibid p. 103). Moreover, investments like creative quarters legitimize simultaneous local investments in the fields of business, education, culture and
infrastructures, typical arenas of local political action. Under the “creative city banner”, creative quarter investments are perceived as contributing to economic development and direct real estate revenues rather than to extra costs, which are increasingly difficult to justify under tight national and municipal budgets (Hansen and Niedomysl, 2009).

3.4 ADDED VALUE OF THIS BOOK

A lot of research has been done to analyse knowledge locations like science parks and creative quarters. What is our study going to add?

For one thing, more firmly than most studies, we put the development of knowledge hubs in their spatial-economic and political-institutional context. The context in which a knowledge location is being developed is a significant factor to look at. For example, in the US, Luger and Goldstein (1991) find structural advantages for science parks located in large agglomerations with strong technology bases, high tech activities, universities, good infrastructure, business services and forward looking leaders in business and academia, but do not stress what are the decisive factors for success, and how correlated those factors are. Even though most of the “successful” science parks and knowledge hubs prosper in dynamic and large urban areas in developed and/or fast-growing economies (Tamasy, 2007; Sternberg, 1997), there are experiences of successful knowledge hubs in regions with limited urban scale and declining industries, but with good universities (e.g. Vale and Carvalho, 2009), calling for more in-depth research on the socio-spatial conditions for “success.” Moreover, policy and governance structures leading to “success” also deserve more careful attention: the planning structures and leaderships involved in the development of knowledge locations are likely to vary widely, say, between Scandinavia and North-Eastern Asia.

Unlike many studies, and in line with Bigliardi et al (2006), we take an evolutionary approach in analyzing knowledge hubs. There is a need to look at these knowledge hubs overtime, longitudinally, in order to better reveal cause-effect relationships. Rather then end-goals, we will consider them as part of long-term, path dependent process of regional-economic development (Martin and Sunley, 2006; Storper and Scott, 2009). They (co-) evolve in a constantly changing economic and policy context, and their goals and objectives are subject to change overtime (Bigliardi et al, 2006, Hommen et al, 2006). New insights and policy fashions influence the perception on the role of any knowledge hub, and have an impact on investment decisions and the formulation of goals and objectives. Unexpected events or opportunities –an economic crisis, the investment or withdrawal of a large company, the rapid development of a new technology field - all have an impact. Also, the performance or perception of individual people (a rising star professor, a very successful entrepreneur) typically plays a role.

Moreover, our essays pay special attention to the specific modes of knowledge creation (Asheim et al, 2007) present in different knowledge locations (e.g. in bio-medical activities, ICT and creative industries), and its implications for the firm’s networking needs, relevant geographical scales of interaction and policies. By doing this, we also answer the call of Evans (2009) towards a better understanding of how and to what extend creative industries get intertwined with other activities (ICT, manufacturing, tourism), how these processes unfold and how relevant they are for the design of knowledge locations.

In our study, we move away from the traditional ‘ex-post- evaluation’ assessing efficiency and effectiveness knowledge locations in reaching clear pre-set goals. The complexity of the context and the time dimension render this type of evaluation problematic (Teisman, 2008). In our essays, we adopt assessment methods that do more justice to this complexity, looking beyond simple snapshots. Rather than only evaluating whether goals have been reached, we will analyze the processes that lead (or fail to lead) to a set of goals (in line with Corvers (2001) and Landabaso and Mouton (2005) ref in Geernuizen 2008).

Also, we will analyze the dynamic policy making process beyond static governance approaches (Hommen et al, 2006). What is the involvement of the various stakeholders in the various stages of development: what are their claims, concerns, ambitions, and expectations of the knowledge locations, how are the power relations established? This is in line with the recommendation of Van Geenhuizen and Soetano (2008) to analyze science parks in coherence with a broader set of shifting networks and connected project initiatives. Although the literature in the field of urban development have continuously highlighted the need for public private partnerships, policy networks and “N-helices” in economic development initiatives - like the development of knowledge locations - the fact is that the functioning
and dynamics of those networks and governance processes remains very much a black box (Link and Scott, 2003, Phan, 2005).

Despite the recent growth of the literature on creative quarters, much of the literature on knowledge locations focuses on science parks. There is much less attention for the assessment of newer knowledge-oriented locational concepts like creative districts, design quarters, media hubs etc, and namely when both concepts start to get intertwined in hybrid models (Phan, 2005). This book hopes to contribute to fill this gap and add to our understanding of these new-generation types of knowledge hubs.

Importantly, the current literature largely neglects the urban development and planning aspects of science parks and knowledge hubs. It is predominantly concerned with ‘greenfield’ science parks, and does not interrogate impacts on the urban fabric. This is becoming more problematic, as a growing number of knowledge hubs are being developed as integrated and ‘mixed’ projects, including housing and leisure functions, and often fully integrated in the urban fabric. This further increases the complexity of assessment: new stakeholders are added in the process (housing corporations, neighbourhood councils), gentrification issues emerge, and often, new ‘social’ objectives are added to the traditional one of economic development and new firm creation.

In order to tackle these challenges, in the next chapter we unfold the building blocks of a conceptual framework to study the development of knowledge locations.
4 Building blocks of an integrative framework

In order to answer our research questions and guide our case studies/essays on the development of knowledge locations, we firstly in-depth conceptualize some theoretical building blocks and hypothesize on a few simple relations between them; more elaborated propositions will be defined latter on in chapter 7, grounded on the evidence of our analysis.

Our aim is to start by clarifying constructs often mixed up in the analysis of different types of knowledge locations. To do so, we combine otherwise disperse constructs from economic geography, urban studies, political science and public management studies, conceptualizing cities and regions as ensembles of political, economic and spatial systems that shape (and are also dynamically shaped by) the development of knowledge locations. The framework is flexible enough to cope with diverse types of knowledge locations, ranging from the development of science parks and incubators to the regeneration of old quarters into creative districts.

4.1 SPATIAL-ECONOMIC CONTEXT

First of all, we expect knowledge locations emerge and unfold within a specific spatial-economic context. We conceptualize this context as composed by two central but different systems, each of them encompassing a number of co-evolving actors/agents and structures/institutions:

- production and innovation system and
- policy and local planning system.

These systems are highly localized in space, and, by now, for the sake of simplification, we analyze these systems at the urban/regional level.

4.1.1 Production and innovation system

This system groups a set of economic activities, industries and competences developed over time in a specific place, as well as the associated institutional infrastructure. It shows path dependent features as human action (e.g. entrepreneurs, academic researchers), organized structures (e.g. firm and its routines, industries, universities and their curricula) and surrounding environments (e.g. established social relations, industrial policies and supportive industrial organizations) interact and co-evolve with each other (Boschma and Lambooy, 1999; Maskell and Malmberg, 2007). Van Winden et al (2007) approximated this system as resulting from the interaction of a region’s economic and knowledge base: its characteristics are shown to set the degrees of freedom for the progress of different types of cities and regions in the knowledge economy, by continuously producing (positive or negative) external economies of scale and scope.

A consequence from the previous is that the system is not likely to change dramatically, at least in the short run, but to evolve towards related activities that make use of former regionally accumulated competences (Boschma and Frenken, 2009) and institutional settings (Martin, 2010).

The textbook example has been the continuous reinvention of Silicon Valley since the 50’s from military industries to semiconductors, computers, peripherals, computer networking, software and recently web 2.0 applications, supported by large entrenched competences and attraction of new talent, but also by the powerful institutions associated with venture capital industry and the Valley’s entrepreneurial culture (Kenney and Patton, 2006). Other examples are the development of industrial design and high-tech machinery in former textile and steel regions (van Winden et al, 2010); the sustained evolution of audiovisual and movie technologies in the proximity of Hollywood, as well as the related development of fashion design, furniture and jewelry activities in Los Angeles (Scott, 1996).

This system is thus path dependent in the sense that its current state at a moment in time, i.e. its composition of activities, industries and institutions, is explained by what it has been before (Dosi, 1997; Martin and Sunley, 2006). However, it is not deterministic, meaning that there is room for human and organizational agency to make new activities emerge, changing, redirecting or diversifying the course of events, eventually leading to new paths (Martin, 2010; Gertler, 2010).
On the one hand, system change can happen from within, e.g. when a firm or industry responds to new market needs, through new entrepreneurial activities or, e.g. when influential and motivated individuals (entrepreneurs, academics) mobilize other actors and eventually shape the development of policy networks to tackle external opportunities (e.g. the development of a new knowledge location). On the other hand, change can also be set in motion from certain events, external to the system (“sparkles”), or from the development of linkages with other systems, in other regions - in the evolutionist literature, the access to “variety”. One preeminent example is the development of the semiconductor and venture capital industry in Taiwan with the support of Taiwanese transnational entrepreneurs from Silicon Valley in the 90’s (Saxenian, 2007). More recently, Vale and Carvalho (2010) report the emergence of biotechnology activities in a Portuguese industrial low tech region through the action of several PhD returnees, networks of global contacts and the role of a tenured professor who lead the institutional adaptation needed for local universities to start commercializing research results.

We expect the structures and dynamics of this system to influence the development of new knowledge locations. The system’s structural features limit the degrees of freedom for the emergence and development of new activities in a certain urban region, and thus the type of activities that may agglomerate in a certain knowledge location. But at the same time, organizations and individuals within the system may act as institutional entrepreneurs (Garud et al, 2007) and shape the direction of events by proposing, initiating or endorsing the creation of a knowledge location. They may do so, e.g. by exercising different types of power (French and Raven, 1959, ref in Sotarauta, 2009). They can, e.g. mobilize new competences and privileged information about the type of location that should be developed to cope with emerging economic and innovation challenges (expert and information power), act as charismatic supporters and attract other parties to the project (referent power) or, on the contrary, exert resistance to the project (coercive power). For example, industrial lobbies and leader firms may exert power to defend their vested interests; or a specific research group within a university may steer the development of a new location to commercialize an emergent set of new technologies. Some actors may even play dual roles in-and-out of the system’s structures. For example, tenured professors may play within the University’s rigid structures and simultaneously support the emergence of new commercialization platforms of academic results, e.g. through the development and take-off of science parks. More recently in Rotterdam, large lead firms like Shell play locally in different policy arenas: one to defend “business as usual” chemical vested interests, and other to simultaneously develop new experimentation platforms and locations for exploration of new green technologies.

4.1.2 Policy and planning systems

Knowledge locations are not solely dependent on economic dynamics. Unlike regular firms and organizations, the emergence and development of knowledge locations are highly embedded in political discourse, bargaining and influence (Clarysse et al, 2005; Wong and Bunnell, 2006). Despite some exceptions, and due to its perceived character of “public good” not efficiently supplied by market forces, the development of knowledge locations is usually under the responsibility of sub-national government tiers, namely local governments, articulated or not with regional and metropolitan authorities. Policy and local planning systems have important resources for the development of knowledge locations: not only land and financial resources but also legitimacy and legal power to intervene in urban and regional spatial and strategic planning issues.

Like the former production and innovation system, also the policy and local planning system is composed by agents and structures, the latter being less prone to change in the short run. It encompasses i) a set of policymakers and related agents (e.g. mayor, alderman, elected politicians, directors, advisors, consultants, local and regional development officers), as well as other players like real-estate developers and citizens ii) formal organizational and administration systems, or what Carlsson (2000) calls the “formal political and administrative skeleton” (e.g. local and regional parliaments, municipal departments and companies, development agencies, community associations) and iii) specific formal and informal institutions. Examples of the latter are local administrative procedures and planning regulations; procurement methods; municipal laws, but also informal networks with other organizations within and outside the public administration system (e.g. other municipalities, regional and national governments, civil society organizations, developers); routines of cooperation between different municipal departments; openness to ideas from outside the formal administrative system and capacity to plan and organize large development projects (van den Berg et al, 1997).
Note that while some of the formal institutional features stem from national policy and administration systems (e.g. national land and planning regulations, public enforcement power), others are specific of local policy and local planning systems, and vary within one country. For example, within The Netherlands the city of Eindhoven has developed strong networks and discussion platforms overtime with the local industry and is used to actively lobby with national and supra-national governments (van Winden et al, 2010). The same happens e.g. in Gothenburg, Sweden, where the city has close relations with industrialists who have for a long time been involved in city planning and strategic urban policy decisions (Carvalho et al, 2010) and in Helsinki, Finland, where knowledge institutes, different municipalities and firms jointly set up a powerful regional development agency (e.g. Van der Borg and Van Tuijl, 2010). In Spain, some autonomous regions and cities (e.g. Barcelona, Bilbao) developed rather distinctive strategic planning routines (van den Berg et al, 1997) over time, as a response to external threats and specific opportunities. In Brazil, where urban planning is known for being reactive and left to the private initiative, over the last 40 years the city of Curitiba managed to develop a highly integrated and proactive urban planning system, with strong planning departments and inter-department cooperation routines, set in motion since the 70’s by the charismatic mayor Jaime Lerner (Mingardo et al, 2009).

Likewise, this system is also path dependent to the extent that past structure and history determines its present features. Structural features change slowly overtime and condition policy agents’ behavior, though co-evolving with it in the medium and long run. Also in this system, individual actors and organizations have some freedom to operate and break the structures. Literature has many examples of the typical “entrepreneurial mayor” or the “visionary planning director” who provoked tension in the system, established new networks, changed procedures and established new structures, in a process of de-institutionalization and re-institutionalization (Amin, 2001). But more agents in the system are in the position to act in-and-out simultaneously. For example, regional development officers are part of administrative systems but simultaneously mobilize networks and informal contacts, “seducing” policy makers towards certain policy decisions and new innovative projects (Sotarauta, 2009).

A new knowledge location may thus emerge from the action of agents and organizations within the policy and local planning system. It can happen in isolation, e.g. when municipalities independently develop land and infrastructure to be leased to new activities, contracting it out to other parties and managing it centrally. However, more and more the resources for the planning and development are not solely confined to actors within the system, reason why other actors from other systems (e.g. production and innovation players) are involved in shared efforts to bring a new knowledge location into existence (Phan et al, 2005), leading actors from different systems entailing in joint policy arenas, governance processes collective action.

4.2 COLLECTIVE ACTION AND GOVERNANCE ARENAS

In the previous section we suggested that new knowledge locations emerge and unfold under place-specific contexts, framed by the structures and dynamics of two systems; those systems contain most of the actors and organizations responsible to envisage and develop a knowledge location, in isolation or through collective efforts. This section is about conceptualizing the dynamics of collective action and governance arenas established out of the interplay between those actors in the process of developing a knowledge location.

In a context of rising complexity, the policy and local planning system lacks the resources (information, skills, money, legitimacy) to organize large development projects by itself, a reason why “partnerships” and “governance” are now part of the lexicon in public administration spheres. The development of knowledge locations is a good example. There are often complex power relations between various actors - like government authorities, universities, business associations, developers and local communities - giving rise to complex and dynamic governance arenas, i.e. networks of interdependent actors involved in a common venture.

But how do these governance arenas come to life? We suggest two broad sets of catalysts “sparkles”, which often happen in combination:

- **Catalysts from within the system(s)**: those refer to actions and responses motivated by specific internal dynamics of the two systems described above (Martin, 2010). Examples are the perception of policymakers and other players of local and regional economic decline, or, alternatively, growth pressures and opportunities to lever the development of emerging sectors and new activities. Other
examples include the pressure to regenerate old districts and develop empty spots left by de-
dindustrialization, develop new growth areas, “green the city” or attract clean and high added value
activities.

- **Catalysts from outside the system**: these refer to incentives or pressures from outside the localized
  systems (e.g. national government framework, law or funding incentives to develop a science park
  or creative districts, subsidies to establish university technology transfer centers, macro-economic
development or the announcement of the establishment of a large leading firm or international
  research institute), but also, more generally, to respond to global fundamental trends in living
lifestyles, working and innovating (see section 4.2). Examples include: i) the acknowledgment of
innovation as a social process dependent on interaction and proximity; ii) changing preferences of
workers regarding the quality their work environment and the blending of life and work; iii)
relevance of open innovation and temporary projects, with implications for the need of fast
accessibility, connectivity and new office space ergonomics, including advanced costly video
conference rooms. Moreover, influences from other successes and “best practice” locations where
“it worked” can legitimize the process and act as a catalyst.

### 4.3 ACTOR’S INTERESTS: CONVERGING, COMPATIBLE OR MUTUALLY
ADJUSTED?

Since these catalysts are often diverse and manifest themselves in several different possible combinations,
also the actors involved in the planning of the location are likely to be diverse, representing diverse
interests and have different knowledge and resources to bring to the process. Thus, partnerships and
governance processes towards the planning and development of knowledge locations - the “focal
problem” (Carlsson, 2000) - represent exemplary policy arenas for collective action, where actors struggle
to align a set of interests, common or divergent, into a single compatible denominator, allowing for
formal and informal coordination.

The level of involvement and object of cooperation may however vary substantially, overtime. On the two
extremes, there might be situations of effective joint cooperation and resource sharing – e.g. in the case of
“triple helix” schemes (Etzkowitz and Leydesdorff, 2000) with strongly committed partners from public
administration, industry and university^3^, or, instead, simply one sided “self referential organizational
decisions” (Teisman and Klijn, 2002). Whether one or other sides of the gradient prevail is likely to
impact the physical and organizational shape of the new knowledge location.

Some examples illustrate emerging tensions in this type of policy arena. For example, while the central
interest of private developers might be to develop land at the lowest possible cost and maximize the rents
from new tenant firms, municipal governments may be interested in assuring a certain functional mix and
diversity in the area, at the expense of the number of office space square meters; while universities might
prefer to establish technology transfer centers and incubators close to their far-from-the-city campuses,
city administrations might want to ensure some decentralizing of functions to the inner city; while some
policy makers might want to develop a broad and more “open” entry criteria in the knowledge location,
some industrialists and knowledge institutes might claim for a more specialized location to guarantee
cognitive proximity between tenants and better possibilities of interaction; while mayors and cultural
elites might prefer to embed the new location with trendy streetscapes, landscape architecture, cultural
facilities and lofts, the local community might be interested in avoiding gentrification, social polarization
and find suitable jobs (e.g. Ponzini and Rossi, 2010). Even within the municipal administration tensions
might arise, e.g. between the economic development and land planning department, for alternative uses
for a certain plot of land, or the infrastructures it should encompass.

An important conclusion from the previous is that the interests of the actors with the resources needed to
effective plan and develop the knowledge location will hardly be really convergent, even if they look like
at the first glance. Different actors, namely public and private, have fundamental different interests, and
nothing guarantee that an effective partnership will emerge, and that it will be once and for all. It is
however a fact that some different interests might become compatible and mutually adjustable after a
number of negotiation rounds, but, in this case, the evolution of these arenas should better be seen as a
series of punctuated equilibriums rather then fixed governance schemes (Teisman and Klijn, 2008).
External and internal changes in context might require new governance arrangements (e.g. opportunity to
access to a new subsidy, entrance or exit of an actor, change of political agenda); moreover, the very own
evolution of the location might require the change of involved players in its development.
Hence, for the purpose of assessing the governance arenas involved in the development of knowledge locations, we consider a broader conceptualization that accounts for the complexity and dynamics involved in this process, way beyond a linear sequence of activities and decisions (Kelly and Palumbo, 1992) likely to change overtime. Thus, in line with Teisman and Klijn, (2008) we will start by looking at governance processes and arenas from a more open lens, as “timelines of interrelated actions developed by a variety of action systems (managers and organizations) leading to complex and dynamic changes in landscape, content and action” (p. 295).

4.4 OUTCOMES OF A KNOWLEDGE LOCATION

From the previous sections, we suggest that the emergence of a knowledge location results from a dynamic governance processes in which actors from two distinct and localized systems strategically engage. The governance dynamics are motivated by the need to anticipate or respond to changes or challenges that can be both external and internal to the localized sub-systems. The result of those dynamics will determine the physical and organizational design of a knowledge location, i.e. what it looks like, what it is targeted for, and, eventually, its “success” in the specific spatial-economic context.

In this section, without making further propositions by now, we put forward and disentangle primary types of expected outcomes resulting from the development of a knowledge location (see also section 4.3). Those represent the “societal added value” of a knowledge location.

4.4.1 Agglomeration and clustering

This is probably the most acclaimed effect expected out of the development of a knowledge location: based on examples of successful clusters and locations, it is often expected that the co-location of companies will generate a number of positive external economies of agglomeration to be appropriate by the tenants and to the general benefit of the local and regional economy. Driving mechanisms of these effects may be, e.g. specialized resource and equipment sharing, knowledge spillovers and a number of formal and informal cooperative links. It is expected that proximity will facilitate face-to-face contacts, and that location will become a locus for the development of “new combinations” and a cradle of innovation (e.g. development of new complex equipments linking engineering and medical science, or innovations linking “art, design and science”).

This bundle of effects depends first of all on the capacity of the location to attract a number of companies and organizations from the region and outside it, but also from the capacity of the location to make new start-ups and spin-offs grow e.g. in incubation facilities. Often anchor tenants like large R&D institutes, arts centres, multinational subsidiaries, etc, are considered essential to steer clustering dynamics, however, much seem to depend on its embeddedness within the knowledge location and the region itself. Moreover, physical proximity between companies might not be enough to steer cluster, agglomeration dynamics and the benefits of face-to-face contacts – much has to do with whether there is cognitive proximity between them and whether they can understand and benefit from each other’s knowledge and resource sharing (Nootbooom, 2000), or, in other words, when they are related enough (Boschma and Frenken, 2009). When agglomeration and clustering dynamics fail to emerge, knowledge locations are sometimes dubbed as a “firms’ hotel” or “glorified business parks” (Massey et al, 1992).

4.4.2 Image

Independently on whether agglomeration and clustering dynamics take off, it is expected that a new knowledge location generates images and perceptions for inside and outside the region, becoming intertwined with a city and/or with a particular sector or cluster of activities (e.g. the biotech park, the media quarter). Often knowledge locations become the “face of the new economy” in the regions that host then, and this may attract tenants, although, this does not necessary imply the emergence of clustering and agglomeration economies in the way we define it.

Image impacts have may have other dimensions. The image of a location may become associated with its proximity to elite institutions like universities and lead firms. This may reduce search costs and uncertainty for companies like multinational subsidiaries, looking for a place to settle operations (e.g. R&D) in a certain city – the “safe-choice” effect. Moreover, knowledge locations become unique selling
points for certain activities, signalling vibrant atmospheres, buzz and places for the acquisition of the necessary knowledge resources - the “place-to-be” effect. Also for home-grown talent and new entrepreneurs, images of knowledge location often signal a high-quality working environment with the right support and facilities. However, there might be flip-sides. We can imagine situations where images may hamper the location decisions of tenants: for example, when a knowledge location has a very low occupation rate, or when it becomes associated with an “old friends club”, supportive of elite interests fed by public money. Moreover, many cities show copy cat behaviour and want to produce the same ‘creative locations’ or ‘valleys’. This makes it harder to distinguish locations from competitors and reduces the chance for success.

4.4.3 Urban-spatial integration

Beyond cluster and agglomeration dynamics, another lens to analyse the outcomes of a knowledge location has to do with its fit within urban regeneration and area based development strategies. This outcome captures the integration and role of the location within its immediate spatial environment, physical, social and economic.

From a physical lens, knowledge locations may have contribute to the cleaning-up of a former derelict area and improving the environmental quality of the place; they may also steer the renaissance of urban deprived urban districts into more lively places. Issues to look at are e.g. the accessibility of the location and its role in fostering a more polycentric and balanced urban development, or the way in which the location is architecturally “gated” or opened, favouring a better fruition of the public space. These projects may also contribute to make the area safer and foster its diversity. New locations may support the inclusion of residents e.g. by creating new job opportunities, services and education facilities. However, the opposite may also happen. A new location may also become a detached urban “enclave”, dominated by urban elites, a gentrified area without human scale of sense of identity.

Seen through a functional lens, knowledge locations can complement or compete with other knowledge locations. In the first case, the new location contributes to diversity and new value added has been created. There is also potential to create new combinations between the locations. In the second case, the new location may increase the total critical mass for a certain function and generate new value added. However, it may also result relocation of tenants between various locations, decreasing the value added of other locations, with the risk of various locations which do not develop in a successful way.

Knowledge locations may become rather diverse and vibrant urban areas. In this sense, they become excellent test-beds and experimentation laboratories of new urban living concepts and associated technologies. Players located there can gain first-mover advantages. Examples are starting to proliferate in Europe and elsewhere. In our cases we explore in detail how and why some new knowledge locations are providing fertile ground for the development of new innovative concepts that make use of the integrated economic, social and physical fabric of knowledge locations.

4.4.4 Organizational learning

The development of a knowledge location is a complex project that requires a large number of resources, skills and organizing capacity (van den Berg and Braun, 1999). They involve many people within the public administration sphere, requiring new routines and organization models, eventually more flexible to cope with the project requirements. Thus, we suggest that the development of knowledge locations generates organizational learning effects in the organization(s) responsible for its development, namely within organizational structures of local governments.

These learning effects, by definition, are dynamic and turn into new competences. Not only technical staff needs to cope with complex demands, but they also need to work in a flexible fashion with other departments within the (bureaucratic and rigid) administration. The acquired skills and competences (e.g. how to develop and integrated knowledge location) can be used for the development of similar or related projects. Learning also takes place in case of failure, if the reasons are evaluated and understood by the location’s promoters. Moreover, new social capital is developed between the administration and other stakeholders involved, increasing mutual understanding between different players.
4.5 HIGHER ORDER INSTITUTIONS

Finally, we propose that the whole process of development of a knowledge location evolves within a set of higher order institutions - or “rules of the game” (North, 1990) - specific of national or supranational spaces: different varieties of capitalism (Hall and Soskice, 2001), and planning systems (e.g. Newman and Thornley, 1996). Differences in these contexts exist across countries and larger regional spaces (e.g. Scandinavia, Southern Europe, Asia) and make the planning and development of knowledge locations evolve in rather different fashions in different places. We suggest that these differences make “best-practice” transfer difficult to achieve and, again, call for careful attention to place specificities when developing knowledge locations.

4.5.1 Varieties of capitalism

The Varieties of Capitalism literature suggests that the functioning of markets and regulatory institutions differs across capitalist economies, and that this has deep implications in the way economic agents and actors structure and organise their actions and behaviour. This literature broadly separates between liberal market economies (like the US and Canada, and to a certain extent the UK) and coordinated market economies (like in continental Europe or Japan), although there are claims to get a more nuanced picture including, e.g. differences within Europe and a better assessment of the Asian context (Peck and Theodore, 2007).

There might be important implications for the development of knowledge locations. First, Asheim (2009) recently observed that liberal market economies are more competitive in industries relying on radical innovations while coordinated market economies excel in incremental innovations. Moreover, interactive learning (very much the type expected with the development of certain types of knowledge locations) dominates in coordinated market economies like Scandinavia (though not necessarily within the physical scale of a knowledge location) – interactive learning tends to require stability and trust that is found often within the company and with long established relationships.

Secondly, varieties of capitalism are likely to affect the mobility choices of people in choosing cities and knowledge locations to “live, work and play” – the central mechanism under the US-based creative class theory of Florida (2002) and the ambition of many knowledge locations. Compared e.g. with Europe, the US economy has a much larger and integrated labour market, with a single language and institutional setting. The higher education system favors mobility. Lower social security, unemployment benefits, parental supports and female labour market participation vis-à-vis Europe steer much higher mobility and inter-city migrations. It is also not surprising that entrepreneurship – another expected outcome of developing knowledge locations -, in the context of easier mobility and lower unemployment benefits, is much higher in the US than in Europe (see also chapter 3).

4.5.2 Planning systems

Formal and informal land planning systems and governance mechanisms vary considerably across countries (Newman and Thornley, 1996). Thus, they create variety in the ways stakeholders (developers, city authorities, etc) play their roles and exercise power in different contexts and systems. It results that in some places it might be easier than in others to develop an integrated knowledge locations, or, at least, the process is likely to evolve in a rather different way.

In some places, e.g. in Asia, land development and urban policy is rather top-down, while in continental Europe bottom-up and long participatory processes are usual. Even within Europe there are considerable differences across countries on what refers to property rights and land ownership (public versus private).

Some examples illustrate our point. Nordic European countries, e.g. Sweden or Finland, have sound planning and building regulations, where local governments play a central and powerful role throughout the process. The local government has a planning monopoly and develops legally binding, comprehensive and detailed plans, with strict building permits. The city tends to be the largest land owner, and long lease contracts are a usual mechanism to steer land development in a planned long-term fashion (e.g. ensuring social and economic mixes in certain areas). In Southern Europe, for example, and despite the existence of barely the same planning instruments, private ownership is dominant in many places, making it more difficult to design and implement integrated knowledge locations in a reasonable period of time. Collaborative approaches are usually more difficult, and there are clearer distinctions between public
owned knowledge locations and private-led developments. Another manifestation of these differences concerns the technical and market knowledge within local Government and public managers. While in Scandinavia this knowledge is highly concentrated within the (high-paying) public sector, in The Netherlands, private developers and high-paid consultants have strong technical skills and power influencing the development, in this case, of knowledge locations.

Differences in planning systems and regulations have thus implications for the management and “ownership” of knowledge locations. Speaking about science parks, Quéré (2007) calls the attention to the fact that “…while in Anglo – Saxon countries the governance is usually dominated by universities or private structures, in countries like Germany, France or Italy the ownership in often almost 100% public or managed by public-private partnerships” (p.49).

4.6 SUMMING UP

In this section, based on a number of literatures, we unfolded some conceptual building blocks to understand the emergence and development of knowledge locations:

- Spatial economic context, namely the localized systems of production and innovation and policy and local planning;
- Collective action and Governance arenas, including catalysts/"sparkles" of these processes;
- Outcomes of a knowledge location, namely “clustering and agglomeration”, “image”, “urban-spatial integration” and “organizational learning” and;
- Higher order institutions influencing the development of knowledge locations in different places.

Although we conceptualized these blocks / constructs with considerable detail, by now we hypothesized rather simple relations between them. Our framework suggests that the emergence and development of knowledge locations results of a dynamic governance processes in which actors from two distinct and localized systems strategically engage: i) spatial systems of production and innovation and ii) constellations of political and public administration systems. The governance dynamics are motivated by the need to anticipate or respond to changes or challenges that can be both external and internal to the localized sub-systems. Subsequently, the framework conceptualizes four potential impacts associated with the new knowledge location. The unfolding of these processes is strongly influenced by higher-level political economy institutions which shape the actors’ behaviour in different supra-regional spatial contexts. Figure 4.1 illustrates this framework.

*Figure 4.1: Building blocks of a theoretical framework*
In our cases, we look into these issues in order to better understand the relations between the constructs and answer our research questions. For example:

- in order to understand the localized spatial systems or production and innovation and policy and local planning, in every case we take a good look to the spatial - economic context of the city and the location;
- in order to assess the collective action and governance arenas, we paid attention to the processes leading to emergence of the location and to its management dimensions;
- in order to evaluate the outcomes, and the spatial scales of its manifestation, we looked in our case studies at the knowledge location from different angles (e.g. location X as an “R&D location”, as a “test bed”, as a “place to live, work and play”, etc)

In the next chapter we explain how we proceeded methodologically and detail our research design.
5 Methodology and research design

To conduct this research we followed a multiple case study design; each of the cases – “processes of development of a knowledge location” - was treated as a separated experiment (Yin, 1984) confirming or disconfirming inferences derived from the others (George and Bennett, 2005). After reviewing existing literature and combining it towards the building blocks of an integrative framework (see chapter 4), we explored the mechanisms and processes linking those constructs through grounded theory methodologies (Glaser and Strauss, 1967, Eisenhardt, 1989), with recursive feedbacks and re-alignments between data collection, data analysis and theorization. By exposing the constructs of the framework to empirical assessment, our aim was to come up with grounded propositions on the processes of emergence and development of knowledge locations.

Our cases (see table 5.1 and figure 5.1) were selected through a theoretical sampling method, in this case with the aim of getting a large diversity of experiences allowing us to i) produce rich and detailed narratives of a diversified set of “new-generation” experiences and, simultaneously ii) identify generalizable propositions and common features along the cases. The cases differ in stage of development, governance regimes, sectoral focus and urban integration. Remarkably, the locations under study are located in countries facing rather different political economy institutions and land planning systems (South Europe, Scandinavia, Central Europe, North-Western Europe, and Eastern Asia), allowing us to look with particular attention at the effects of this diversity in the planning process and development of the knowledge location.

Table 5.1: Case studies: locations, cities, location’s focus

<table>
<thead>
<tr>
<th>City</th>
<th>Knowledge Location</th>
<th>Country</th>
<th>Sectoral focus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dublin</td>
<td>Digital Hub</td>
<td>Ireland</td>
<td>ICT and digital media</td>
</tr>
<tr>
<td>Eindhoven</td>
<td>StrijpwS</td>
<td>The Netherlands</td>
<td>Creative industries</td>
</tr>
<tr>
<td>Helsinki</td>
<td>Arabianranta</td>
<td>Finland</td>
<td>Design</td>
</tr>
<tr>
<td>Incheon</td>
<td>Songdo district</td>
<td>South Korea</td>
<td>Biotech, ICT and Nanotech</td>
</tr>
<tr>
<td>Munich</td>
<td>Maxvorstadt</td>
<td>Germany</td>
<td>Science and art</td>
</tr>
<tr>
<td>San Sebastian</td>
<td>PIA</td>
<td>Spain</td>
<td>Audiovisual</td>
</tr>
</tbody>
</table>

Source: own elaboration

For each of the cases, a detailed case study report/essay was elaborated, allowing for a rich within-case analysis, looking at multiple scales of analysis, namely the knowledge location, the networks of its tenants and the urban region. In each of the cases we looked into our advanced constructs (see chapter 4) and analyzed the causal relationships between them, as well as the underlying processes. Moreover, we crossed the evidence of the six cases and identified common patterns, allowing us to pursue some generalization and identify critical success factors.

The field work and case studies were developed in the period from May 2008 to July 2010, in the cities and knowledge locations under analysis. In each city we focused on a particular knowledge location and its players, although taking in consideration the larger urban-spatial setting. For each case study we triangulated a diverse array of quantitative and qualitative secondary data (e.g. location’s associated reports, statistical sources, previous studies, press releases, etc) with primary qualitative data collected through in-depth and semi-structured interviews with key stakeholders in the development of the knowledge location under analysis.

The number of interviewees per location/city varied between 10 and 25 (see table 5.2). For each of the interviews, we used a semi structured questionnaire, focusing on the different issues under analysis in our research framework, allowing for comparability and cross case analysis. Some interviews were rather ethnographic in nature (Spradley, 1979), where we in-depth explored the nature of daily-life operations and routines of our interviews. In total we held 103 interviews with several key players in the development of knowledge locations (see Table 5.2), namely science parks and location’s managing company directors, firms, R&D institutes, cultural institutes, real estate developers, government authorities and intermediate organizations and a diverse array of experts, community associations and
event directors in each city.

Each interview took between 60-120 minutes and detailed interview reports were produced afterwards. Following the procedures of Merton and Kendall (1946) and Kincaid and Bright (1957), the interviews were conducted simultaneously by at least two of the authors, in order to reduce interpretation bias and systematically explore new emerging issues and relations. After discussed and commented by all the authors, a preliminary case study report was sent to all the interviewees in each region for comments, in order to enhance the validity of the information and relations conveyed.

Figure 5.1: Geography of the cases


Table 5.2: Interview distribution

<table>
<thead>
<tr>
<th>City - Location</th>
<th>Management</th>
<th>Firm</th>
<th>Gov.</th>
<th>HEI/R&amp;D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dublin - Digital Hub</td>
<td>2</td>
<td>4</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>Eindhoven - Strijp-S</td>
<td>2</td>
<td>2</td>
<td>6</td>
<td>-</td>
</tr>
<tr>
<td>Helsinki - Arabianranta</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Incheon - Songdo</td>
<td>4</td>
<td>6</td>
<td>7</td>
<td>3</td>
</tr>
<tr>
<td>Munich - Maxvorstadt</td>
<td>-</td>
<td>1</td>
<td>11</td>
<td>8</td>
</tr>
<tr>
<td>San Sebastian - PIA</td>
<td>1</td>
<td>7</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>10</td>
<td>22</td>
<td>36</td>
<td>15</td>
</tr>
</tbody>
</table>

Source: own elaboration

Notes: Gov. = Government institutions (local, metropolitan, regional); HEI = High education institutions; Div = Diverse, including experts, intermediate associations, community associations, event directors, museum directors, representatives of real estate developers, etc.
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Part II: Knowledge locations in practice
6 Dublin: Digital Hub

6.1 INTRODUCTION
This section is organized as follows, the next parts will describe the socio-economic and political conditions, and thus provides the context in which The Digital Hub is developing. Section 6.3 will describe the developments at The Digital Hub from an historic perspective. Subsequently this section will set forth the ‘grand design’ for The Digital Hub, which will be confronted with reality. The last section will provide concluding remarks on the developments at The Digital Hub and the challenges that still remain. Consequently, recommendations are made on how to face these challenges.

6.2 CITY AND ECONOMY
Starting from 2001 The Digital Hub, a digital media project has been developed in Dublin, Ireland. This section provides an overview of the city of Dublin, its structure, context and economic performance, in order to offer the reader a clear picture of the issues that the city of Dublin currently faces and how this led to the choice for digital media enterprise as Ireland’s next growth sector.

With an estimated population of 1.2 million inhabitants in the city region, Dublin - the capital of Ireland - is by far Ireland’s largest city, and a middle sized city in a European Union context. Over the last ten years Dublin’s population has steadily grown (annually by 0.9%), therefore Dublin can be characterised as not only a large city, but also as a growing city. Moreover, Dublin has recently turned into a diverse city. From 1996 to 2006 diversity increased substantially, e.g. the number of non-native inhabitants living in Dublin that are not from an English speaking country has increased by a remarkable 500% during this ten year period (see figure 6.1.). At present 19% of people residing in Dublin were not born in Ireland. This diversity not does seem to lead to social tensions.

Figure 6.1: Percentage of non-native inhabitants originating from a country where English is not a native language.

![Figure 6.1: Percentage of non-native inhabitants originating from a country where English is not a native language.](source: www.cso.ie/px)

6.2.1 Economic context
In the last 15 years Ireland was among the strongest growing economies in Europe. The so called ‘Celtic Tiger’ was often studied as a best practice in terms of economic development. The Irish economy experienced rapid growth both in terms of employment and in national income (Bayliss, 2007). During the ICT boom of the late 1990s Ireland was able to profit substantially from a growing world economy. Strong GDP growth led to a second boom, this time in construction in the early 2000s. Ireland was quite successful in capitalising on a growing world market during this period, because it traditionally has a very open economy. This openness has a historical background. In the past, emigration flows have been substantial during some periods, which have resulted in a large number of Irish communities in other countries. This in turn led to a wide business network, which enables substantial export and import flows.
of goods; services and ideas. Strong growth in the trade balance has been a driving factor in the Irish economy over the years. The robust linkages with world markets make the Irish economy very vulnerable to fluctuations in the world trade. The sensibility of the Irish economy to these fluctuations manifested itself after the global dot-com bust, economic decline set in and Ireland needed to identify a new driver for growth. This was accompanied by the realisation that a new growth sector should contribute to the development of a more sustainable knowledge economy (Bayliss, 2007). With conventional industries moving to places where production is cheaper, knowledge intensive industries and especially digital technology proved an interesting opportunity. The digital media sector was chosen by national government as one of the focal points for development for Ireland as a whole (NDP, 2007), with the development of The Digital Hub in Dublin playing an essential part in this policy. Creating, managing and distributing digital media content was identified as an important potential growth sector which may improve Ireland’s competitive advantage (Bayliss, 2007).

Some challenge the ability of Ireland (and its largest commercial centre, Dublin) to compete head on in the market for digital media with economic giants such as London. Others point to opportunities in niche markets. The market for digital media is considered one of these niche markets. The proponents of this strategy point out that for Dublin to capture only a small percentage of this multi-billion market would be a huge feat in itself. The market for digital media is by nature a globalised market; resources and products are sourced and sold on a global scale.

Digital media provides many interesting opportunities, not only for software, web and technology developers, but also for many companies that did not categorise themselves as working in the digital media sector until recently. While telephone services, TV broadcasting, radio and other established media are traditionally not high-tech in their nature and use existing proven technologies, the boundaries between these different types of media are fading. Integrated devices offering telecommunications services, email, mobile television and streaming audio have emerged and are spreading rapidly, integrating the market for digital media and setting higher standards for compatibility, broadband and support services.

Ireland taking an early lead in digital media development may enable a bottom up approach whereby new indigenous growth based on entrepreneurship may create sustainable growth in a knowledge related sector of the economy. However, recently successful Irish firms were taken over by large foreign multinationals, raising the question whether such growth can be captured locally and thus contribute sustainably to Ireland’s national economy.

The economic downturn which has set in during the last quarter of 2008 has affected the Irish economy substantially. Ireland is among the hit hardest countries in Europe. Furthermore the high value of the Euro in comparison to both the pound-sterling and the US-dollar negatively affects export potential, further adding to the economic challenge Ireland faces. In the last three months of 2008, Ireland’s economy contracted by 7.5%.

Furthermore a collapsed market for Real Estate led to a decline in construction output of 24%. While in 2006 over 90,000 houses were built; projections for 2009 go no further than 20,000 new properties.

Additionally, Ireland’s budget deficit is expected to reach a peak of 9.5% in 2009, which is substantially above the EU prescribed 3%. Moreover, unemployment has more than doubled since January 2008 and is now somewhat above 10%. Summarising, Ireland faces a tremendous challenge to cope with the effects of a global economic downturn. It is in this difficult context that The Digital Hub is developing.

6.2.2 Skill base and human resources

The ambition to develop digital media as a new growth industry can only be realised if a number of contextual conditions are met. One key condition is the availability of a diverse and skilled labour pool.

Ireland has a rich tradition in education. With free secondary schooling since 1966 (IIEA, 2008), the educational level of the Irish population has developed well, and the percentage of workers with tertiary education grew fast. However, Dublin faces a structural shortage in digital media graduates, which manifests itself during times of economic growth. Irish digital media firms have trouble attracting suitable graduates for a number of reasons. Firstly, there is a mismatch: most graduates are in the fields of business and financial services. Secondly, foreign companies seem to be able to pay better salaries,
further diminishing the knowledge base for indigenous companies. Thirdly, internships are limited, making it hard for graduates starting out to acquire work experience. Fresh graduates and interns are seen by some companies as too expensive in terms of training. This has resulted in some Irish companies attracting graduates with some experience from abroad. At present the economic crisis offers temporary relief.

Education is one of the primary policy instruments used by the government of Ireland to enable a shift towards the digital media sector. Educational efforts on digital media should take place on all levels. The ultimate aim of this focus on general and thorough education in digital media is what is dubbed “Total Commerce” by IIEA (2008). It represents a state ‘in which every citizen can be engaged through a laptop’.

Ireland’s current educational policy focuses on the creation of a generation with ‘Digital Instincts’ (IIEA, 2008, p. 11). By investing early on in education in digital media, children are expected to get a head start in digital media skills, allowing Ireland to take a leading position in the new digitally based knowledge economy. To realise this IIEA (2008) suggests a number of educational reforms which have, aside from the above mentioned advantage in the long run, three other important advantages. Firstly, it allows for a larger skilled labour pool in the medium run, which is needed because international and Irish firms need skilled graduates. Secondly, it allows for a closure of what is dubbed the ‘digital divide’ where there is a substantial difference between rich and poor in terms of digital skills, limiting the opportunities in the labour market of the poorer parts of the population. Thirdly, it allows for the creation of world class universities that are considered prerequisites for performance in the knowledge economy. As Lawton Smith (2007, p. 98) states ‘universities as sources and repositories of knowledge have assumed a central role in the delivery of policies designed to drive economic development.’

6.2.3 Political and administrative structure

A transition to an economy focussed on digital media industries requires adequate policy on various levels of government. To enable a clear understanding of the policy implications for each level a short overview of Ireland’s governmental structure is provided.

The government of Ireland is organised as a parliamentary democracy. Parliament, headed by the president, is the only authority able to make state laws. Governance cycles take a maximum of five years5. In 2003 the Irish government decided to decentralise substantial parts of policy making to a lower spatial level. This policy was instigated because it was believed that Ireland would benefit as a whole from a more balanced regional development. Up until this moment much of the economic development focused on the city of Dublin5. New policy prioritises economic development in other areas besides Dublin. There is a concern among various stakeholders that this type of policy could negatively affect the economic development of Dublin, especially in the short term. This policy does influence the marketing efforts of state organisations. On the website of the Industrial Development Agency, tasked with attracting FDI into Ireland, the Digital Hub is not mentioned as a strategic site or business and technology park. It is mentioned briefly as an ‘emerging location’ under the heading ‘East Ireland’, subheading ‘Dublin’.

On a lower spatial level policy is made by Dublin City Council, which is the democratically elected government for the city of Dublin. As all local government bodies in Ireland, it is elected at least once every five years. The city council, headed by a Lord Mayor, aside from making, amending and revoking local laws and budget decisions, formulates the Dublin City Development Plan. This plan lays out the major strategy for Dublin for the years to come. Although policy frameworks are determined by Dublin City Council, actual day to day management of the city is carried out by a City Manager and his staff (Gannon, 2008). As local governance cycles are short in relation to the realisation time for strategic plans, continuity in governance is needed to ensure continued progress. This continuity can be ensured by separating strategic planning and execution from political decision making. This requirement introduced the need for another important local body: the Dublin City Development Board; which has been established as part of a nationwide initiative to improve the integration of local government and development. The Dublin City Development Board aims to maximise the benefits of all bodies and interests that affect the economic social and cultural development of Dublin and its people. Furthermore it is responsible for the formulation of a strategy for that development and for ensuring that the actions of all associated bodies are in line with that strategy. In general, the aim of the development board is to constantly promote a better cross-sector coordination to ensure an optimal use of resources7.
The membership of the City Development Board includes, among others, Local Government representatives, such as the Lord Mayor and City Manager; local development representatives, e.g. managers of community partnerships; state agencies operating locally, such as the Industrial Development Agency, Enterprise Ireland and Dublin Tourism; and social partners, such as community and voluntary organisations, trade unions, employer and business organisations, agriculture and farming organisations. At city level Dublin is divided over five separate administrative areas. These areas are appropriately called Local Areas and are used to provide services to local communities. These areas include: Central Area, North Central Area, North West area, South Central Area and South East Area. Detailed local area plans are formulated and executed for each of these areas.

Dublin City Council’s Economic Development Unit is currently working on an economic strategy for the city. To ensure that this strategy is something the city council is able to deliver and which truly reflects the city’s boundaries (its functional region and not the administrative boundaries). The recently established Creative Dublin Alliance is in this respect the perfect vehicle for the delivery of the strategy. The Creative Dublin Alliance is a group of stakeholders formed by the Dublin City Council, with the aim of a “creative/sustainable city with a rich quality of life and a vibe that is difficult to replicate elsewhere – distinctly Dublin” (Smeaton et al., 2009) Stakeholders include: local authorities, the higher education sector in the city, the business sector and the private sector. University development is considered essential in the framework of the Creative Dublin Alliance. According to City Management, Dublin universities have to develop themselves further to reach higher positions on international rankings, in order to attract talented students from across the globe. This will stimulate further development in the city and may contribute to a vibrant environment in the city.

6.3 DIGITAL HUB

Digital Hub is located in the Liberties area, on lands formerly owned by the Guinness breweries. The Liberties are located just outside the city centre and the historic core of the city (see figure 6.2). The name Liberties derives from its location just outside the city walls during the middle ages. The area is one of the less well-off parts of Dublin.

This section will briefly cover The Digital Hub’s development and the vision and strategy for the Digital Hub set forth by Dublin City Council (DCC) and the Digital Hub Development Agency (DHDA). Subsequently this ‘grand design’ is compared to what the DHDA, in co-operation with the other stakeholders, has been able to achieve.

Figure 6.2: Location of The Digital Hub in Dublin, Ireland

Source: maps.google.com/

6.3.1 History

Initial planning for the establishment of The Digital Hub started in 2000. One of the catalysts in the process was the establishment of MIT’s Media Lab Europe (MLE) in July 2000. MLE was a research
institute in digital media where staff, researchers, students and companies could collaborate on digital media innovation\textsuperscript{16}. MLE would later serve as anchor tenant for The Digital Hub (Bayliss, 2007). In April 2001 the Irish government founded Digital Media Development; this constituted the official launch of The Digital Hub project (DHDA, 2003). With an act of national government in 2003 it was established that The Digital Hub would be delivered by a separate state body. This resulted in the creation of The Digital Hub Development Agency (DHDA). The DHDA was set up to deliver The Digital Hub in a commercial partnership arrangement with private project developers. The Dublin Office of Public Works (OPW) transferred the required six acres of land to the DHDA (DHDA, 2007a).

In 2003 a three-and-a-half kilometre broadband ring was established (DHDA, 2003); this ring should ensure high speed internet access throughout The Digital Hub. The ring allows for speeds of up to 4Gbps, offers VoIP services throughout The Digital Hub and enables the use of state of the art video-conferencing equipment, which is placed at the disposal of companies in The Digital Hub (DHDA, 2004). At present, five companies are offering telecommunications services to the companies in The Digital Hub. The DHDA has relatively little influence on the offer of broadband services, due to state-aid regulation it can not operate as a Telco or service provider. However, the DHDA does buy some broadband packages and offers them to small companies for a reduced price.

In January 2005 MLE announced its closure due to a lack of funding. Many stakeholders also mention that output was lacking as MLE’s research was too ‘blue-sky’ to lead to practical applications. As Bayliss (2007) concludes, MLE’s closure was a severe blow to the developments at The Digital Hub. However, the DHDA has managed to recover from this setback and was able to get developments back on track.

In November 2005 a new development phase for Digital Hub was initiated, which was intended as the start of actual real estate development. A tender was issued to identify private developers that could develop the lands owned by the DHDA. A number of developers, among which are the current contractors Manor Park Homebuilders Ltd. and P. Elliot and Co. Ltd, showed significant interest in developing locations in The Digital Hub. Both filed for planning permission at the Dublin City Council in 2007 (DHDA, 2007). Their plans include a mixed use development of over one million square feet and include enterprise, retail, residential, community and learning space (DHDA, 2006).

In 2006 the National Digital Research Centre (NDRC) was founded to bridge the gap between academic research and the creation of market capital. The mission and raison d’être of the NDRC is to create market value by developing and commercializing viable digital media technologies and content through collaborative translational research. Market capital is a value creation objective, and manifests itself in the form of partnership formation, increased follow-on investment, and job creation. Translational research is a gap-bridging, innovation activity between industry and academia, which leverages the knowledge, skill sets and assets of both parties. In order to achieve this mission, the NDRC invests in and proactively facilitates value creation from applied digital technology research, effectively bridging the gap between innovative research and impact in the marketplace. This investment is made in joint venture projects between industry and academia undertaking late stage commercially focused research and innovation. Typically, those projects seek to leverage upwards the generation of value from previous research expenditure. The NDRC currently comprises 14 projects, in which approximately 100 researchers are involved.

At present, some stakeholders are critical with regard to the role played by the NDRC. They state that the NDRC has not been able to fill the gap left by MLE’s closure. It should be noted, however, that the NDRC is a very different type of research entity to MLE, and was not set up replace the MLE. Moreover, the role of NDRC is not always clear: several interviewees were not aware of the nature and scope of its projects, or had not seen any results so far. This suggests that there is room for improvement in the marketing of its activities.

In 2006, a development plan for The Digital Hub was agreed on (DHDA, 2007a). This plan was a direct result of the Community-Public-Private-Partnership (CPPP) process (see 6.3.2.). As such it represented an agreement between the local community, public and private sector partners. The Development Plan identifies no less than 28 key principles which will have to be taken into account in the further development of The Digital Hub.

Under the contract both Manor Park Homebuilders Ltd. and P. Elliot and Co. Ltd. had to have planning permission in order by May 2008. Their contract allowed for an extension until February 2009 (DHDA,
2007). At the time of writing, the planning permission was not yet in order. Continuation of this part of the project is therefore still uncertain; stakeholders mention a role for national government to ensure continuation of the project.

6.3.2 Digital Hub: The concept

The Digital Hub is, in theory, expected to be the spot for Digital Media development in Ireland and abroad. In the words of a Digital Hub executive, ‘The Digital Hub is expected to be the place where the next big Digital Media development takes place’. This paragraph will consecutively cover the vision and strategy for Digital Hub and the business model employed by DHDA.

Vision and strategy: The grand design

The Digital Hub is considered much more than just an economic development project by local policy makers; it aims to combine enterprise development with urban area based redevelopment. According to Bayliss, ‘Dublin’s Digital Hub project is an attempt to link digital media enterprise and entrepreneurship with R&D and educational sectors’ (2007, p. 1261). By developing a geographic cluster of strongly related companies The Digital Hub serves a number of functions: first, it is the spot for Digital Media companies in Ireland and abroad; second, it functions as an incubator space for start-ups in digital media; third, it serves as a flagship brand on digital media efforts in Dublin; fourth, it functions as a catalyst for development of a vibrant city area with high quality amenities; fifth, it provides a basis for digital media education; and; sixth, it serves as an anchor in the city, taking over the role that Guinness has fulfilled over the last centuries. These various functions can be elaborated on as follows:

As The Digital Hub is intended to be the spot for Digital Media companies in Ireland and abroad, it is intended to be ‘the place’ for digital media developments, not only in Ireland but also in a European context. The Digital Hub should, according to its management, be the location where the next big digital media development takes place. To realize this, a cluster of digital media companies is formed by offering suitable space and faculties for these types of companies.

The Digital Hub offers incubation space for start-ups in Digital Media. Based on mainstream agglomeration economies theory (e.g. Rosenthal & Strange, 2004; Cooke, 2001; Porter, 1998), The Digital Hub is expected to offer companies potential: to collaborate; share tacit and explicit knowledge and to create spill-over effects, based on a network of related firms. The digital media climate created by an agglomeration of established companies creates potential for spin-outs and start-up firms, providing them with easy access to supply and demand markets, information and support systems.

The Digital Hub in this sense serves as a flagship for the entire digital media industry in Ireland. DHDA aims to reach a situation where companies view The Digital Hub as ‘the right place for digital media development’, this concept of ‘being in the right place’ is related to Capello’s (2009) notion of synergies. These synergies refer to a social cultural dimension, which includes trust and a sense of belonging. This view for Dublin as the place for digital media industry creates a strong brand, The Digital Hub in this sense should serve as the prime example of digital media development in Ireland.

The Digital Hub is expected to function as a catalyst for the development of a vibrant city area with high quality amenities. Aside from its function as an ‘exciting industry of the future’ (Bayliss, 2007, p.1261), The Digital Hub is intended to be a ‘digital district boasting … an entire district of apartments, retail units and leisure areas’. The Digital Hub development was intended to create a vibrant city quarter, spreading ‘prosperity in one of Dublin’s most disadvantaged areas’ (Bayliss 2007, p. 1267) through employment creation, education and economic regeneration. This will be elaborated on in 6.3.2.

Closely related to the above is The Digital Hub’s role as a basis for digital media education. Societal remit plays an important role in the work of the DHDA as it aims to provide lifelong learning and the creation of more accessible pathways to learning and employment (DHDA, 2006).

The Digital Hub is expected to serve as an anchor in the city11. For two and a half centuries the Guinness breweries have been an essential part of Dublin, providing employment to its citizens. However, currently the breweries are moving outside the city, leading to an ‘identity’ gap in Dublin. As Guinness has been the identity of Dublin for the last centuries, digital media may be part of Dublin’s identity for the 21st century.
Business model and stakeholder involvement

The Digital Hub project is organized in an innovative way. A separate legal entity is created which is publicly owned, but which operates like a private development corporation. This entity, the DHDA, was set up by an act of national government. Wholly owned by the Minister of Finance, this state agency reports directly to the Irish Department of Communications, Marine and Natural Resources, allowing for and requiring a much broader policy agenda then if it would have answered to the Department for Economic Development. As the DHDA is a separate legal entity it operates with its own assets and separate budget. As such it has to secure its own funding. Part of the funding is secured through rental income, another part from sponsorships and grants. The DHDA is required to develop The Digital Hub in strategic partnership with private sector developers. As such, the DHDA is acting as a private sector developer, which is uncommon for a public body.

Two developers have been awarded the contracts for actual development of the lands of The Digital Hub Development Agency. These developers have to provide two things in return: First, a cash sum (72.4 million euro) and second, after completion, a small amount of office space is to be returned to the DHDA (which represents a value of 45.7 million euro) (DCENR, 2008). All other areas can be used by the developers at their discretion, within the boundaries set by Dublin City Council. Potentially this will lead to a mix of functions around The Digital Hub, creating a vibrant area with high quality amenities and heterogeneous residential space. This business model makes the model for the development of Digital Hub a risky one. Some state that the business model now manifests itself in a stalling of the project.

Community involvement is secured through a Community-Public-Private-Partnership (CPPP). The CPPP includes a process of extensive consultation which started with 12 representatives of key stakeholders and slowly evolved over time to comprehensively include all relevant stakeholders (DHDA, 2004; DHDA, 2003). Divided over five interest areas, this process of consultation resulted in 28 principles that have guided and will continue to guide development in The Digital Hub. In consultation with the various stakeholders, developments so far have been shaped and a plan for future development has been formulated. The CPPP process involves a number of stakeholders, such as the Dublin City Council, the Department of Communications, Marine and Natural Resources, the Industrial Development Agency, Enterprise Ireland, local community representatives and local enterprise (DHDA, 2007a). The CPPP resulted in The Digital Hub Development Plan (DHDA, 2007a); the two private developers that were eventually chosen have the obligation to abide by the development plan and to consult with the community through a continuation of the CPPP.

Integration with the urban fabric

The establishment of The Digital Hub and its development corporation by an act of national government required a form of community involvement. Formally stated, the act requires the DHDA to: 'consult with local community interests in or adjacent to The Digital Hub as part of the implementation of the development plan'\textsuperscript{12}. The act does not specify the nature or form of such an involvement. Community involvement is expected to allow The Digital Hub to cast the net as wide as possible, not to create popular support, but to identify and retain talent, which in turn fosters more research and production. The DHDA aims to involve the community primarily through consultation and education. Through a process which they call Community-Public-Private-Partnership (CPPP) the general public is involved in the developments in The Digital Hub. By promoting lifelong learning and creating accessible pathways to learning and working in digital media, economic integration is stimulated.

From a policy perspective The Digital Hub is integrated with its environment in a number of ways.

First, the Dublin City Development Plan (DCC, 2005) incorporates The Digital Hub as a Framework Development Area. Framework Development Areas can be understood as areas that receive special attention during the time the plan covers. These areas are considered key in the development of the city of Dublin. The development of these areas will result in spatial clusters of economic, commercial and cultural specialism which are vital to the future growth and success of the city. Each of these areas will be promoted to achieve its optimum development potential (DCC, 2005, p. 1:5).

Second, The Digital Hub Development Plan (DHDA, 2007a) states a clear need for integration with the Liberties Integrated Area Plan. The other way around, the Liberties Integrated Area Plan thoroughly integrates The Digital Hub development plan in the wider context of urban development in the (deprived) Liberties area.

Third, The Digital Hub’s development fits the strategy for the Dublin City Development Plan on
knowledge creation. The Digital Hub, together with a proposal for the creation of Grangegorman DIT campus, is identified as part of a new north–south “knowledge” axis facilitated by the release of redundant industrial and institutional lands (DCC, 2008a, p. 25).

Fourth, presently hopes are placed on the enrichment of The Digital Hub concept with input from already existing creative industries in the area. The National College of Arts and Design is located very close to The Digital Hub development site. The DHDA and DCC expect synergies may be created by combining creative industries and digital media enterprises, resulting in a competitive advantage for The Digital Hub over other digital media locations. The aim of this policy is to combine the economic benefits of agglomeration with the creative milieu associated with art and design. Creativity and digital media should prove an interesting combination. The creative class is attracted by rundown areas where there is sufficient (cheap) room for creative expression and the Liberties currently fit this profile. A combination of innovation in the digital media sector and creative ideas could lead to interesting new products and new applications for existing products. Attracting the creative class may contribute to the growth of Digital Hub, both in a qualitative and quantitative sense. On the one hand additional, creative residents may improve the liveliness of the area, creating scope for more and higher quality amenities. On the other hand interaction between creative minds and digital media engineers may lead to new interesting digital media applications. Furthermore, cross-breeding between these different kinds of knowledge may improve the skill base for digital media companies.

6.3.3 Digital Hub: Results so far

In theory The Digital Hub clearly has potential to be a successful development. How this works out in practice is, however, currently unfolding and in some areas still unclear. This paragraph contains some preliminary results.

Vision vs. reality

As mentioned in section 6.3.2 the strategy and vision for The Digital Hub a number of elements and goals. This section will evaluate point-for-point whether these goals are being or will be met in the near future.

Is The Digital Hub a hot-spot for digital media development?

At 84 companies The Digital Hub can be considered successful in attracting and creating a substantial agglomeration of digital media companies (see figure 6.3). The companies in The Digital Hub include very few large corporations and mostly include (79%) SMEs or single employee organisations (DHDA, 2007c). Companies attracted to The Digital Hub need to apply to DHDA in order to be allowed to locate in one of the offices rented out in The Digital Hub. The DHDA then decides whether the companies fit the desired characteristics of a digital media company. As such, the DHDA actively manages the concept of The Digital Hub going as far as to manage the mix of companies and their potential for interaction. This seems to work quite well, at present 84 companies are located in The Digital Hub, of which 78 can be regarded as digital media companies and the remaining 6 provide a local community service. Therefore it can be stated that the concept is maintained very strictly, allowing for optimal levels of cognitive distance between the different companies.

There does not seem to be a lack of demand for office space at The Digital Hub, which does indicate that the area has potential. Although occupancy rates of buildings in The Digital Hub are unavailable, DHDA representatives state that The Digital Hub needs more space on a structural basis. As real estate development is delayed, Digital Hub is investing in temporary space in the surrounding area (DHDA, 2007), implying substantial demand for office space in The Digital Hub.

Gross rent levels at The Digital Hub are more or less similar to other areas in the city. Since The Digital Hub is located in one of the most deprived areas in the city (where real estate prices are generally low); companies locating there clearly see a benefit, as they are willing to pay normal prices for a run down area. Moreover, real estate prices in the rest of the city are dropping, while the Digital Hub is maintaining its price level. The fact that this does not lead to companies massively leaving The Digital Hub suggests that the effect mentioned above is robust. The above mentioned observations imply that companies are willing to pay a premium rent to locate in The Digital Hub. This may be explained by the number of services included. According to Digital Hub companies the overall package offered by The Digital Hub is not expensive. Rents not only include the use of buildings but also an internet connection, 24 hour access and a secure facility. If these services are included, net rent levels in The Digital Hub are actually lower.
then the amount paid by tenants\textsuperscript{14}.

Figure 6.3: Number of companies present in Digital Hub between 2003 and 2008

Source: DHDA annual reports 2003-2007; list of companies 2008

Based on interviews, various factors explain the success of the DHDA in creating a digital media cluster. As stated above, rent levels in The Digital Hub are competitive if the entire package of services is included. As such, price is an important attraction factor for many companies. However, some are critical about the infrastructure provided at The Digital Hub. They state: ‘Digital Hub should be competitive on the entire package.’\textsuperscript{15} At present some companies in The Digital Hub do not consider the quality of the package to be much better than most other places. They state that if The Digital Hub wishes to radiate an image of a location on the forefront of digital media enterprise it should offer a standard above and beyond average levels of service. Standard broadband speeds at The Digital Hub are quite low (below 5Mbps), which is lower than speeds which can be obtained in residential property. Additional bandwidth can be purchased at a surcharge, but this is not the point being stressed. According to Digital Hub companies, a cluster on the forefront of digital media should also take the lead from a technological perspective. Additionally, price is an issue. However, as stated before the DHDA has relatively little influence here as it depends on offers from commercial parties.

An unknown number of Digital Media companies in Dublin are not located in The Digital Hub. These companies locate outside The Digital Hub for a number of reasons: First, they are not let in (concept); second, they do not have an office and work from home; third, they choose not to be in the Hub because they believe it is not in their interest (this happened especially shortly after the MLE failure); and fourth, they want to differentiate themselves from other digital media companies based on their location.

The DHDA is successful in distinguishing The Digital Hub as an incubation space where knowledge is shared and spill-over effects occur. The DHDA actively manages the mix of companies, enforcing a strict mix of companies which have the potential to interact. The DHDA offers different types of locations at different prices to accommodate the different types of organizations. Additionally, tailor made solutions are provided to house larger digital media companies. Amazon and France Telecom are for instance located in individual buildings in The Digital Hub. Start-ups and spin-outs are offered space in the Digital Depot, an incubator space where flexible space and services are offered. Some companies have already been able to grow in such a way that they were able to move from the incubation space, the Digital Depot, to other locations in The Digital Hub (DHDA, 2006). Collaboration is important in this respect. The ability to share experiences and general business know-how prove very valuable to some entrepreneurs.

Digital Hub and Dublin City Council aim to make Dublin and The Digital Hub more attractive for companies by offering various forms of business support. An inventory of the agencies and organisations that offer some type of business support to Irish companies resulted in a list of 23 separate, but related actors (Pinkowski, 2009). These actors range from city and state agencies to business networks. Companies indicate that the range of options makes it difficult for them to find the right type of support in
an efficient way. The fragmented nature of business support systems negatively affects the perception companies have of The Digital Hub and Dublin in general.

Potentially The Digital Hub may serve as a flagship brand on digital media efforts in Ireland. It is unclear whether this is the case in practice. Companies located in The Digital Hub feel they are in the right place, which is another attraction factor of The Digital Hub. The sense of ‘being in the right place’ is however not a hard factor which can be measured. ‘Synergy [occurring because of the sense of belonging] takes the form of network relationships among economic agents, allowing outsourcing and flexibility in production, and is therefore an important efficiency source’ (Capello, 2009, p. 149). Interviews suggest it is an important factor which relates very much to image. The image of being in the right place can be important to potential clients as well as to employees. The Digital Hub was intended to be the "brand umbrella" for digital media in Ireland. The digital media sector and its talent pool is too small to support multiple locations in Ireland. The Digital Hub is at present the only digital media location that can credibly compete internationally.

The Digital Hub is envisaged as a catalyst for development of a vibrant city cluster, with high quality amenities. As the current economic downturn has Dublin hard, and for most quite suddenly, The Digital Hub's prospects for the future remain uncertain. As identified by The Digital Hub Development Agency (DHDA, 2007a; DHDA, 2007b) the success of attracting Digital media companies needs to be followed up by the next phase of development, which includes the commercial redevelopment of the surrounding area. While actual real estate development should already have started, it has not for a number of reasons: First, the current economic downturn makes it very difficult for the private developers to fulfil their obligations. Second, planning permission has not been granted for the plans proposed by the developers. These two reasons are interdependent. Because of the financial crisis, developers require a higher return, forcing them to build higher, which from a planning perspective is undesirable. According to representatives from the private and public sector and the DHDA, the above will require action from the public side (possibly on a national level) to ensure a continuation of the process. In the meantime the location of The Digital Hub in the Liberties is not considered as positive by all companies; some complaints voice insecurity (especially at night and for female workers) and a lack of amenities.

To ensure community involvement in The Digital Hub, the DHDA chose to set up a community-public-private partnership (CPPP). The CPPP was set up in 2003 to ensure a proper consultation with community, public and private stakeholders (DHDA, 2003).

As part of its societal remit, education in digital media is an essential part of the work of the DHDA. In principle, the DHDA aims to fulfil this goal by creating more accessible pathways to learning. Children from kindergarten and upwards are put in contact with digital media to inspire them to learn and stay in school. When they become older this will make it easier for them to start their own digital media business. Digital Hub cooperates with 16 schools to bring new ideas into the classroom. The Digital Hub learning program seems to show some promising results. Children in the South West inner city of Dublin are among the most proficient in Ireland in the application of digital media technology (DHDA, 2006). However, skilled graduates are still insufficient in number. 55% of companies in the Digital Hub experience problems attracting staff (DHDA, 2007c).

The question of whether The Digital Hub will start to function as a new anchor in the city will have to be answered in time. For now, the potential for The Digital Hub to fulfil this function can be identified.

**Interaction and networks**

Interaction in The Digital Hub is considered a key attraction factor, this shows both in the promotional material of DHDA (e.g. DHDA, 2007a; DHDA, 2007b) and in interviews with companies located in The Digital Hub. Two different forms of interaction are distinguished here: Internal interaction and external interaction.

Internal interaction: Traditionally Irish firms are not known for their collaborative behaviour, according to various interview partners. However, one of the key selling points for The Digital Hub project is the potential for collaboration. The possibility to connect with like-minded individuals seems to play an important role in attracting companies to The Digital Hub. This notion is very much related to the sense of being in the right place. Related to the issue of synergy, functioning in a group where cognitive distance is limited, but not infinitely small, allows for knowledge spill-over effects and innovation.
Although most companies value the possibility to collaborate, actual levels of collaboration between companies in The Digital Hub differs among them. Some co-operate on product development while others collaborate only on a very general level. 80% of companies however state that they cooperate with other companies in one form or another (DHDA, 2007c). Companies in The Digital Hub were last surveyed in 2008; this survey showed companies primarily collaborate on an ad-hoc basis, where information is exchanged, not only on digital media innovations, but also on general business matters, especially among the smaller entrepreneurs (see figure 6.4.). Extensive collaboration in joint ventures and strategic partnerships (10%) and collaboration on research and development (4%) is still very limited. Interestingly, companies expected to co-operate more in 2008 (DHDA, 2007c).

**Figure 6.4: Level of Collaboration with Other Hub Companies in 2007**

- 32% Ad-hoc co-operation on business strategy development issue
- 20% Ad-hoc co-operation on sales/marketing
- 20% None
- 4% R&D
- 10% Strategic partners
- 10% Joint-venture
- 4% Licensing/distribution arrangement

*Source: DHDA, 2007c.*

At The Digital Hub, no management regime exists to manage innovation between companies. However, an organization known as the National Digital Research Centre (NDRC) has been established to stimulate collaborative research on a national basis between companies and academic researchers, in the digital and digital media technology spaces. The NDRC aims to bring together different actors working on mutually beneficial innovation. The partnerships orchestrated by NDRC typically involve at least one company and a research institute. If multiple companies in The Digital Hub work together and can involve a research institute, they are eligible for NDRC support (see also the next section on external interaction). At present NDRC is however not specifically tasked with stimulating and managing collaboration between The Digital Hub companies.

Shared space in The Digital Hub is limited. Companies mention that catering facilities are lacking in quantity as well as quality. Two on-site restaurants are available; however these seem insufficient in quality to receive customers. While company employees may meet each other in these facilities, the nature and scope of these meetings, as well as their results, are unclear. Some companies state that they do benefit from interaction between their employees and those of the other companies in Digital Hub. In The Digital Hub, collaboration occurs not only through face-to-face interaction but also through virtual contact online. There are some indications that geographic proximity offline may lead to virtual connections online. At The Digital Hub an intranet exists where news is shared. Furthermore, Digital Hub sends out a newsletter. Much of the interaction at The Digital Hub may take place outside geographic space through virtual connections. Many of the companies at The Digital Hub are very open to the Web 2.0 concept. Web 2.0 can play an important role in the development of The Digital Hub and interaction among companies located there. Recently Microsoft held a large conference on the future of digital media, which was held entirely on Twitter. Additionally, groups on various online business networks such as LinkedIn.com exist, where leads can be shared and referrals can be made. These developments represent a change in the way business is conducted. This shows the first real emergence of Web 2.0 in Dublin.

External interaction: The entire South-West central area of Dublin is characterised by a large percentage of social housing. According to a well-being survey commissioned by DCC (2008b) some of the areas in the Liberties comprise in excess of 80% of local authority rented accommodation (social housing). Only one third of the families in the Liberties owns their own property; compared to a national average of over
three quarters this is very low. This environment does not match with the high-end activities conducted at The Digital Hub. There is an ambition to integrate The Digital Hub further with its urban environment in a number of ways, namely socially, economically, physically and historically. While much of this integration is not realized yet, some preliminary results are promising.

Social integration of the local community is ensured by involving them in the development of Digital Hub under the Community-Public-Private Partnership (CPPP) program (see 6.3.2). Furthermore, the development plan for Digital Hub is an important, integrated part of the Local Area Plan for the Liberties area (see 6.3.2) which at the time of writing is on display at The Digital Exchange (one of the buildings of The Digital Hub).

Economic integration is mainly ensured through a program called the Diageo Liberties Learning Initiative (DLLI) the DHDA aims to play an important role in digital learning in the Liberties area, which should ensure economic spill-over effects from The Digital Hub to the surrounding area. This educational remit is delivered with a substantial sponsorship from Diageo, the current owner of the Guinness breweries. The expected benefits of this program are twofold. On the one hand this program enables the local community to develop the skills needed to ‘survive’ in the digital age, on the other hand it (albeit slowly) creates a skilled labour pool for digital media companies in The Digital Hub to source from. The DLLI consists of a communities program, a schools program, enterprise learning program and a showcasing program (DHDA, 2005).

Physical integration of The Digital Hub and its environment is ensured through simultaneous real estate development for Digital Hub and the surrounding area. This simultaneous development employs a method of implicit cross-financing. Therefore physical integration with the surrounding area will be ensured through the market, leading to unplanned heterogeneous development. As private developers acquire the right to develop part of the area, they have to provide office space in The Digital Hub and a cash sum in return, which can be used to support other aims of the development. This model ensures that private developers will have to see to it themselves that they make a net profit. This mechanism implies a cross financing between profitable commercial development and the required development, which is part of the agreement. As such, this model makes optimal use of the market knowledge of private parties. However, it may lead to gentrification effects, as private developers may be forced (by budget constraints) to aim at a higher segment.

As stated before, the measure of historic integration of Digital Hub in the city of Dublin will have to stand the test of time. At present, prospects are positive.

Critics mention that the redevelopment agenda of Digital Hub may complicate matters (Bayliss, 2007). Only the buildings owned by the DHDA will be managed, and therefore only tenants in these buildings will go through a selection process. Buildings that are developed commercially by the private developers will be rented out to all types of companies. In principle this may lead to a physical dilution of The Digital Hub’s concept, as companies from all sectors locate very close to small clusters of Digital Media Companies. However, according to a representative of the DHDA, this physical dilution of The Digital Hub concept by development is not considered counterproductive. As the goal of the project is to create a new city quarter, where digital media will function as a catalyst for development, redevelopment of the surrounding areas will take the shape of an organic process. This is desirable since by definition there is no recipe for creativity. Mixing functions and companies from different business sectors may actually benefit the economic performance of The Digital Hub.

Local policy makers aim to keep the mix of social and rental housing vs. private house ownership more or less constant. At the same time the intention to lift the area with the development of The Digital Hub may require a different mix.

At the time of the last enterprise survey in 2007, collaboration with third level educational institutions (universities) was still very low at 18%, although more companies recognize the potential for cooperation (DHDA, 2007c).

As stated in the section above on internal interaction, the NDRC, or National Digital Research Centre, aims to create value from applied digital technology research, by bridging the gap between innovative research and actual applications which can be sold in the market place. Projects supported by NDRC do not fall into the category of product development, but aim to stimulate the process just before the development of actual products. The establishment of NDRC followed the closure of Media Lab Europe
(MLE), the European branch of MIT’s Media Lab. NDRC is the result of a competitive tender issued by the Department of Communications, Energy and Natural Resources of the Irish Government, which was won by a consortium of Dublin City University (DCU), Trinity College Dublin (TCD), University College Dublin (UCD), Dun Laoghaire Institute of Art, Design and Technology (IADT) and the National College of Art and Design (NCAD). NDRC aims to put three actors into contact with each other to develop joint projects, these actors are: academic institutions; private companies (digital media companies) and; financiers (venture capitalists, bankers). In 2008 NDRC was appointed a budget of 25 million euro to fund research projects over the next five years (DCENR, 2008); however at present the funds are greater than the opportunities to be funded, requiring NDRC to refund part of the grant.

The question of whether NDRC has been able to fulfil its mission as anchor tenant is controversial. While some stakeholders believe NDRC is trying to perform well, they perceive actual results up to now as limited. NDRC, on the other hand, states that it exceeded its agreed targets for 2008, and by April 2009 (time of report), NDRC had completed agreements with 14 collaborative translational research projects involving 16 different partners, representing an investment of close to €10m. At that time just short of 100 research personnel are collaborating on NDRC research projects. Due to the innovative nature of the NDRC, a significant exercise of process development and expectation alignment between stakeholders was pursued before project engagements took off, which led to a somewhat slow start. Some of the initial supporters of the NDRC are now criticizing its functioning (though partly this may be due to conflicting business interests). Many stakeholders expected that much of their own research would be funded through NDRC, which is not the case.

While NDRC’s progress may not be characterized as perfect, it would be unfair to label it as unsuccessful. However, NDRC’s exposure among Digital Hub companies and even local government is limited. The NDRC potentially fits the model of the triple-helix approach, where (semi)government, companies and educational institutions work together to reinforce innovative capacity in the region. However, there are clear misconceptions about the NDRC’s mission, its program and capabilities, requiring a conscious and well balanced marketing effort.

Recently, a quadruple helix approach has been introduced among others by Reichert (2007) which involves the public as fourth pillar for innovation. A quadruple helix approach could possibly benefit the development of The Digital Hub. However, the deprived nature of the surrounding area could be problematic in this context. Broadband availability in the Liberties is very limited and dependent on the perceived market opportunities by commercial parties.

### 6.4 CONCLUSIONS AND RECOMMENDATIONS

This section will provide conclusions on the development of The Digital Hub. These are based on interviews with key stakeholders and review of relevant policy documents. Subsequently, some recommendations for the future are provided.

#### 6.4.1 Conclusion

The Digital Hub has come a long way in its development. The DHDA has been very successful in attracting digital media companies to the area. Although some major setbacks had to be overcome, such as the closure of MLE, at present The Digital Hub can be considered successful in creating a digital media cluster. These are, however, troubled times where economic decline hits all sectors of the economy, not least real estate development. Unfortunately the occurrence of the economic downturn coincides with the start of a planned large-scale urban redevelopment scheme which is part of The Digital Hub project. At present the public-private-partnership between the two private developers and the DHDA is under considerable strain. The project has been shaped in a very innovative way; this however also conveys significant risks. As real estate prices are dropping and project financing becomes more difficult, urban redevelopment is stalled. The current PPP agreement between the DHDA and the two project developers will have to undergo dramatic changes or a considerable risk exists that the PPP cannot be continued.

The Digital Hub project is in part justified by its expected impact on the local economy and even the national economy. Since real estate development has not yet started it remains uncertain whether the project will be successful in its entirety. The DHDA and the city of Dublin not only aim to realize a vibrant digital media based cluster in the inner-city of Dublin, but also to create spill-over effects between The Digital Hub and its environment. The aim has become to create actual urban regeneration effects,
thus uplifting the entire area.

Perhaps ambitions for the area have been set too high, and perhaps as some say The Digital Hubs redevelopment agenda complicates its mission. However, it can also be argued that the city of Dublin (directly and through the DHDA) take their public responsibility seriously and are now confronted with a case of bad luck where an economic downturn coincides with a critical turning point in the development project.

Whichever of the viewpoints mentioned above is right is beyond what should be evaluated in this paper, although it can be noted that the gain, if the project can be successful, is substantial, especially from a societal point of view.

It is unclear what the current economic downturn will mean for the concept of The Digital Hub. At present the concept is quite strict, restricting the types of companies that can settle in the buildings of The Digital Hub. It remains unsure whether such a strong focus can be maintained. A relaxation of requirements for prospective companies may offer some relief, but is also very dangerous as one of the strong points (also according to the tenants) of The Digital Hub is its focused concept. Alternatively, there may be some room to lift planning restrictions for the area to enable alternative, commercially more attractive use of the other spaces, enabling an even more substantial cross-financing of the project. This may enable private actors to come up with creative solutions. Of course an obvious option would be a government initiated development of the area, involving substantial contributions of local and national government. This however, is more complicated than it seems due to EU-regulations for state support and the already substantial budget deficit of the Irish government.

It is clear that The Digital Hub project is at present swimming against a strong current, however some hope is on the horizon. The DHDA’s strong focus on education and the idea to join the forces of creativity and digital media together, through the Dublin Creative Alliance, shows potential competitive advantages for the future. It can therefore be expected that The Digital Hub will weather this storm; however the current strategy will not suffice to fulfill its ambitions due to a highly adverse market. In the near future the DHDA will have to face this challenge with an adapted, short term strategy based on its long term vision. Although this report will not claim to offer all solutions, some recommendations that are expected to be beneficial to the continued development of The Digital Hub are provided in the next section (see 6.4.2).

Furthermore, a number of additional conclusions can be drawn:

- Standard broadband speeds are too low at The Digital Hub. Nearly all interview partners recognized that the speed of the standard package was not much better, or even worse, than elsewhere. Although maybe not strictly necessary from a technical point of view at present, the available standard broadband speed also determines the image entrepreneurs have of the Digital Hub. Companies at The Digital Hub require a technical standard that is above and beyond what is offered elsewhere, simply because they are located in The Digital Hub. At present there are no indications that a company has left The Digital Hub because of a lack of bandwidth. However, if a company in The Digital Hub starts to use HD streaming on an extensive basis, capacity may become a problem. The DHDA has limited influence on this issue.

- The skills shortage in digital media graduates in Ireland, and Dublin in particular proves a long term risk for the success of the digital media sector in Dublin, and thus also for The Digital Hub project.

- Business support to companies is highly fragmented in Dublin. Digital media companies can apply at 23 separate (but often related) institutions for business support. Companies state that they are unable to efficiently identify suitable opportunities for support.

- Cooperation between third level institutions and companies at The Digital Hub is weak. The NDRC has succeeded in stimulating the process of knowledge exchange between companies and university researchers through its activities to date, but further endeavours in this area are certainly necessary. While the NDRC more or less approaches the idea of a triple-helix approach, The Digital Hub is by its nature (linking economic development with regeneration) especially suited for a Quadruple helix approach. By involving the public and linking up residential property in the surrounding area to the fibre-optics network that has been established, residents can be involved in testing new digital media products. However, additional investments at national level may be
needed secure digital accessibility in the surrounding liberties area. Wireless broadband technology may provide a solution here.

- The Digital Hub makes extensive use of marketing and branding techniques, ensuring its visibility both nationally as well as for international companies locating in Dublin. There is however one important shortcoming in the marketing efforts for Digital Hub. Due to Ireland’s regional balancing strategy, organizations like the Industrial Development Agency do not specifically promote Dublin, or the Digital Hub. From a marketing perspective, it is inefficient to not promote a star product\textsuperscript{18}.

6.4.2 Recommendations

*Improve broadband capability in order to reflect a ‘true’ Digital Hub*

At present standard broadband speeds for tenants at The Digital Hub are considered too low. Increasing available speeds will have benefits both as an attraction factor to The Digital Hub and as an import factor determining the image of The Digital Hub. In this respect, inspiration can be drawn from the city of Stockholm, which managed to roll out a city-wide fibre-optic network years ago. The City of Amsterdam is currently doing the same\textsuperscript{19}. State-aid regulation is a complicating factor and the influence of the DHDA on Telco’s is limited. Thus, the DHDA can only play a stimulating and facilitating role. The issue is a city-wide, or perhaps even nationwide problem, where national government may play a role. There is a need to future proof the broadband offer in The Digital Hub to remain competitive as new technologies and usage patterns emerge. City-government can take the lead here to mobilize national resources.

*Improve skill base, to ensure sufficient graduates*

The current economic downturn relieves the pressure on the labour market for digital media graduates. It is however still wise to invest in education in these fields. When the economic prospects start to improve it may enable Dublin, and Ireland to make a rapid renewed path to economic prosperity. This is the right time to convince young people to study digital media related subjects rather than finance or management.

*Introduce an internship grant*

Many companies at The Digital Hub complain that they are not able to attract a sufficient number of new employees with enough work experience during times of economic success. At the same time, however, very few companies hire recent graduates, and therefore these graduates do not gain any work experience. Clearly this creates a circular issue, which needs to be broken to benefit graduates as well as companies. A sufficiently large internship grant may cover the costs of employers when they hire an intern. This will benefit the company, as it gains productive capacity and the graduate, as he gains work experience. Such a grant can for example be an extension of the Dublin City Enterprise Boards’ employment grant.

In general, increasing the number of internships would require more formal links in the form of strategic partnerships with universities where internships are included as supplement to or integral part of current (master) degrees. A more formal cooperation with the national training provider may be even more effective, but this is only possible in the long term as it takes significant time to set up a new program.

*Improve interaction with the knowledge base*

Although Digital Hub prides itself its collaborative environment, companies sometimes perceive this differently. Possibilities for collaboration with academia are perceived as very limited. The NDRC is well on its way to fulfilling its mission through a comprehensive initial phase of investments in collaborative translational research. Notwithstanding the fact that the nature of its activities takes time to achieve impact, the NDRC’s activities have already resulted in 14 collaborative translational research projects entailing 16 partners engaged on NDRC projects (9 industry partners + 7 academic partners). However, its perception among The Digital Hub stakeholders is poor, which will require a significant marketing and communications effort. Furthermore, although NDRC is located in The Digital Hub, both the DHDA and NDRC have trouble identifying in which areas they can benefit from each other. As such, a more sound integration between the efforts of both DHDA and NDRC may be beneficial.

Interviews show, however, that some potential for collaboration between innovative companies and academia does exist. A university ‘knowledge-valorisation’ or liaison office at The Digital Hub, which proactively approaches both companies and researchers, may prove beneficial. Potentially, NDRC can play an active role here. Combining an actual presence with a virtual presence, for example an online forum, where researchers post their activities, projects and results and where companies can debate
practical questions may make this university liaison office more efficient and increase its exposure.

Subsequently, a quadruple helix approach, combining innovative capacity of government, universities, companies and the public may be especially feasible in The Digital Hub. By enabling residents to act as a test bed for new development, they can be more involved in the activities of the Digital Hub. However, this remains a difficult issue as the surrounding Liberties area is disadvantaged and has very limited broadband accessibility. National government subsidies (to end users) may provide an opportunity here. Although not an option right now, this could be one of the goals for the near-future. As such, it may significantly contribute to The Digital Hubs competitive position. Additionally, educational institutions can be used for this purpose (as they are usually well connected in terms of broadband). Students can be triggered to critically evaluate new products and to provide suggestions on improvements. New institutional arrangements would be helpful to improve the fit between the digital media sector and Dublin’s knowledge base. Inspiring international examples are the Brainport organisation in Eindhoven (see www.brainport.nl), or Culminatum in Helsinki (see http://www.culminatum.fi/en/).

**Improve and streamline the innovation and business support systems to make it more efficient.**

There is a large support network for local companies, however it lacks coordination. Although the stimulation of collaboration among companies and the support of small indigenous start up firms is one of the key items on the policy agenda in Dublin large challenges still remain. A number of companies claim there is very little in the way of support, and what little there is available is very hard to gain access to.

Creating one single office that offers support to companies in Digital Hub will prove beneficial. This office does not even have to offer the (financial) support itself, but can provide much more efficient access for the different companies to various grants and other support schemes. This should include a carefully considered marketing effort in order to communicate this new integrated option, so as to make companies in Digital Hub more aware of their options.

**Provide business, legal, administrative and marketing services at competitive or subsidized rates**

Digital Hub companies state that they would benefit from the provision of accounting, legal and other services at a competitive price. Some of the smaller entrepreneurs, especially in the Digital Depot state that being able to outsource part of their administration may make them more competitive because it enables them to focus on their core business. However, as one CEO’s states the danger of outsourcing the company’s administration is that management of the company becomes more difficult as it becomes harder to keep track of what is going on in the company.

A good start would be supporting the commercialization of new products, which according to companies is especially welcome. Companies are now able to develop new innovative products, which they are able to sell to innovators. They are however not always able to get past this stage and sell their product to a larger majority in the market where substantial profits can be made. The need to provide more services is also recognized by IIEA (2009), who advocate a structure similar to the Dublin Financial Services Centre. These measures have substantial potential benefits as 55% to 70% of the companies in the Digital Hub report that they are currently unable to generate sufficient income to spend on new R&D (DHDA, 2007c).

**A shift towards government initiated development may give a boost to the development process**

At present many of the goals of the DHDA will not be reached until real estate development takes off. The current economic downturn will not allow private developers to start developments on their own and maintain a desired spatial quality at the same time. Clearly this requires an increased role for government, be it local or national. If this does not occur The Digital Hub may be able to maintain its current success, but in this case it will not be likely that more ambitious goals, such as a regeneration of the Liberties and Coombe, will be reached.
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7 Eindhoven: Strijp-S

7.1 INTRODUCTION
Eindhoven city of light has transformed quickly from an industrial city towards one of the leading high-tech hubs of Europe. A key role in the development of the city has been played by the leader firm Philips that was, and still is, a major employer of the region and invested in housing and other social and cultural facilities. However, the mutual dependency of the city and electronic giant has declined strongly, as the company reduced the importance of its birth place in its global network (i.e. it transferred its headquarters from Eindhoven to Amsterdam), while the city has diversified its economic structure with high-tech systems and materials, food; automotive; ‘lifetec’ and design as key sectors. Many former Philips buildings and places have become available for other functions, like the Witte Dame - a former production plant which nowadays houses the Design Academy, the public library, Philips Design, a bar and shops and other functions – and the Admirant (the former headquarters, which is now available for commercial functions).

More recently, and on a much larger scale is the redevelopment of the Strijp-S complex. This 27 ha area was labelled as the ‘Forbidden City’ because it was a closed Philips community with key facilities, including the NatLab; the physics laboratory, where major inventions were done. As Philips has restructured its assets and will move out of Strijp-S, the site has become available for other functions. The city, in cooperation with a private developer, wants to transform the area into a multifunctional area labelled as ‘Creative City’. The plan is to make Strijp-S ‘the best practice of an historical important industrial complex into a dynamic post-industrial city district, in which culture and technology play a key role’ (KuiperCompagnons, 2007, p85). The idea is to create an urban sub centre which combines living, working, cultural and recreational facilities. Moreover, there are plans to use the area as test bed for new light technologies and during the transformation process an innovative new technology have been used to clean the soil. The transformation process is complex, among others due to due to the size of the area, the overlap between old and new users, strict (and sometimes conflicting) regulations, and involvement of various stakeholders with each own interests. In this complex redevelopment process, cultural events and SMEs that temporary rent office space have been used to promote the area in order to promote the area, increase vibrancy and to stimulate business.

This chapter analyses the redevelopment process of Strijp-S in more detail. More specific, we shed light on the following questions, which are also relevant in the general comparative study:

- How has Strijp-S been managed?
- What are the drivers and barriers in the redevelopment process?
- To what extend is Strijp-S integrated in the region?

The remainder of this chapter is structured as follows. Section 7.2 introduces Strijp-S in more detail by describing its urban-economic and historical context. We also analyse the concept and the management of the area, just like strategies to promote the area and to connect it with other areas in the region. Section 7.3 analyses the following functions of the former Philips site: as a cultural site; as a business and R&D location; and as a test bed for innovation. Specific themes in this chapter include the role of events and other cultural initiatives; the role of pioneers - SMEs that rent temporary business space with the aim to increase vibrancy -; the position of Strijp-S in knowledge networks and as a test bed for new lightening projects and the Synergy project (that deals with a new soil cleaning technique). The last chapter (4) concludes and provides policy recommendations that may help to redevelop Strijp-S further.

7.2 STRIJP-S: CONTEXT, HISTORY, PLANNING AND MANAGEMENT
Locations, planned or unplanned, can not be seen as separate islands and should be analysed in their regional economic and historical context. Therefore, in this section we briefly describe the urban-economic context of the Eindhoven region and the history of Strijp-S. The section also describes the plan and the management of the area and the tools to promote the area and to connect it with other parts of the city.
7.2.1 Urban-economic context

Since the 1990’s, Eindhoven has transformed from an industrial town to a leading technological hub with a strong interaction between the knowledge infrastructure and high-tech production. Or as expressed by Lagendijk and Boekema (2008, p925): “it has become a ‘cradle of innovation’ with a key position in the wider ‘knowledge-based’ economy.” The concept of open innovation (Chesborough, 2003) was put into practice in already an early stage after Philips initiated the High Tech Campus Eindhoven (HTC/e) in 1999 and invited other companies to open research centres at the campus. Other important locations in the region’s knowledge infrastructure include the campus of Technical University Eindhoven (TU/e), the automotive campus in Helmond, the Dutch Polymer Institute (DPI), the Intelligent Lightening Institute (ILI) and the Embedded Systems Institute (ESI) (see figure 7.1). In later sections, we will analyse how and to what extent Strijp-S can complement these other knowledge nodes in Eindhoven’s knowledge network.

Eindhoven scores high on several knowledge indicators, and there is a strong cooperation between TU/e and the regional industry. In a study dealing with research cooperation between universities and firms among 350 universities worldwide, TU/e has the strongest cooperation with the industry. 10.5% of its scientific publications is based on industrial cooperation (Tijssen et al., 2009; from Maldonado and Romein, 2009). The success becomes also clear from the fact that the city has been awarded as the best Micro European City of the Future 2010/11. It ranks first in this league, before cities as Cambridge and Grenoble (FDI, 2010).

Various studies provide explanations for Eindhoven’s success story: i) strong triple helix cooperation with short and informal lines between the actors; ii) a clear vision and strategy by the regional development organization Brainport; iii) key strategies of policy makers on regional as well as higher spatial scales; iv) presence of several large industrial firms, and a strategic position in firm’s global production network; v) facilities to support incubators; vi) a strong (technological) knowledge infrastructure that is connected well with the industry (Van Winden et al, 2007; 2010; Lagendijk and Boekema, 2008; Maldonado and Romein, 2009).

Despite its relatively peripheral location in Holland, accessibility has improved considerably during the last years. The ring road system has been upgraded considerably and congestion is expected to reduce. The regional airport has grown rapidly from 288,055 passengers in 1998 to 1,7 million in 2009 (Eindhoven Airport, 2009). More growth can be expected as a study has advised the national state to increase the number of flights to and from the airport with a maximum of 25,000 in 2020 (Brainport, 22-07-2010).

In spite of the success, there are also some points of attention which may hinder healthy economic development. One is sensibility for international dynamics and economic cycles (Lagendijk and Boekema, 2008; Van Winden et al, 2010). Another one is that design is still strongly focused on technology, while service design - design as a tool to improve the living conditions of consumers and citizens – is limited, despite strong ambitions of policy makers (Van der Borg and Van Tuijl, 2010). Finally, due to its small scale, Eindhoven misses a real urban surrounding which is supposed to be crucial to attracted certain knowledge workers and artists (Van Winden et al, 2007). The city is aware of the latter, and therefore, it has target Strijp-S as an urban sub centre, as it is explicitly put forward in the spatial plan of the area:

“The area Strijp-S has been considered as the location in which Eindhoven can fulfil its needs to create its missing metropolitan environment. Therefore, it is a key element in the Brainport strategy to make the city attractive for international oriented knowledge workers and artists. Strijp-S has to create the living, work and stay conditions to tie this target group to Eindhoven” (KuiperCompagnons, 2008, p.25).
7.2.2 History of the Forbidden City

Strijp-S is one of the largest redevelopment projects in the Netherlands. Before discussing the concept and vision in detail, it is worth understanding the history of the area. Strijp-S was developed by Philips in the early 20th century as it needed extra space for its fast growth. Strijp-S was part of the Philips Strijp complex which used to be on large industrial area, consisting of the ‘T’ and ‘R’ sites as well. Strijp-S was considered as an industrial city of Philips with a complete own infrastructure. During the peak it provided work for 15,000 to 20,000 workers. It was known as the ‘Forbidden City’ due to the strict accessibility policy in order to protect technological development and inventions. Many inventions were done in the famous NatLab, the physics laboratory that was opened in 1914. To stimulate innovation, the NatLab combined technology with creativity and it worked with artists, including Le Corbusier. Another best practice might be the famous employee Dick Raaijmakers, who made music under the artist name ‘Kid BalTan’ (BalTan is NatLab written in the opposite order). BalTan was an engineer and an artist and he produced the first electronic disk. The lab was visited by Einstein and in 1927 the Dutch Queen Wilhelmina spook to the Dutch in Indonesia via an experimental radio connection of Philips.

A turning point occurred in the early 1990’s, when Philips lost ground to new competitors from Asia as well as traditional competitors from the west. This forced Philips to start a large scale restructuring programme in which it cut costs returned to its core business. Many production units were either closed or relocated to low cost countries (Van den Berg et al, 1997). Within the Eindhoven region, the company focuses on a few strategic locations- like the HTC/e, Philips Business Park Eindhoven (Vredenoord), and Philips Lightening in the city centre – while other locations have been closed. Strijp-S is a part of the Philips network which will be closed. Therefore, in 2002 the company, the city and real estate company Volker Wessels signed a contract that the company will transfer the site to the city. The city invested €140 M in the site, of which €20 M has been reserved to clean the soil and to reconstruct the buildings. Philips leaves the site in stages (as many activities have been transferred to the HTC/e), with the final stage in 2012 (City of Eindhoven, 2002a; Harms, 2007). The city and Volker Wessels can use the site to develop the Forbidden City into the Creative City.
7.2.3 The plan and management

Large scale urban redevelopment projects require a clear vision, strategy, political and societal support as well as strategic partnerships between public and private actors (Van den Berg et al, 1997). For the development of Strijp-S a clear vision has been set up. The idea is to make Strijp-S ‘the best practice of an historical important industrial complex into a dynamic post-industrial city district, in which culture and technology play a key role’ (KuiperCompagnons, 2007, p85). The idea is to create a multi-functional urban sub centre which combines living, working, cultural and recreational facilities (see table 7.1). This urban surrounding should attract international knowledge workers and artists to the city. The plan gives room for flexibility as there is the possibility to shift the m2 between functions as long as fits into the regulations set. The site will be developed in four development stages as it is depicted in table 7.2 and figure 7.2. The site consists of a mixture of new buildings and monuments that will be adapted for other functions (see table 7.3 in Appendix B).

**Table 7.1: Goals for Strijp-S**

<table>
<thead>
<tr>
<th></th>
<th>Minimum (in m²)</th>
<th>Maximum (in m²)</th>
<th>Planned (in m²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Housing</td>
<td>220,000</td>
<td>350,000</td>
<td>284,500</td>
</tr>
<tr>
<td>Offices</td>
<td>62,000</td>
<td>122,000</td>
<td>91,500</td>
</tr>
<tr>
<td>Commercial</td>
<td>10,000</td>
<td>40,000</td>
<td>20,800</td>
</tr>
<tr>
<td>Cultural facilities</td>
<td>10,000</td>
<td>40,000</td>
<td>10,000</td>
</tr>
<tr>
<td>Optional</td>
<td>0</td>
<td>60,000</td>
<td>31,500</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>438,300</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Source: Own elaboration, data from KuiperCompagnons (2007)*

**Table 7.2: Development stages of Strijp-S**

<table>
<thead>
<tr>
<th>Stage</th>
<th>Planning</th>
<th>Current status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2006-2010</td>
<td>Housing construction started in July 2010</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reconstruction NatLab in progress</td>
</tr>
</tbody>
</table>

*Source: Own elaboration*
The concept is to keep the historical identity of the area. As put forward in the interviews: “We want to keep the historical DNA of the area. Philips did major inventions in the area and Einstein was a visitor of the NatLab… This DNA is covered in the buildings, but also in the inhabitants of Eindhoven as many inhabitants worked at Strijp-S.” Therefore, the master plan includes three central themes – technology, design and culture (including urban sports) – of which especially the first aims to give the area its historical identity. Moreover, many buildings are monuments that allow only slight adaptations, which contribute to the historical identity as well. Note that there are doubts about the extent this is possible, as natural decay and decay of memories generate an architectural conflict (Curilli, 2007). In addition, the three chosen themes are not exactly defined as we observed differences among interview partners. One spoke about ‘technology, design and sport’, a second about ‘technology, design and culture’, and a third about ‘technology, design and innovation’.

For the development of Strijp-S a special management company, Park Strijp Beheer (‘Park Strijp Management’) was set up in 2002, with the municipality of Eindhoven and the real estate company Volker Wessels as the two shareholders. The City of Eindhoven selected Volker Wessels as partner via a tender. A master plan for the area was developed in 2001 by Riek Bakker and her architecture firm BVR, while Adriaan Geuze and his architecture firm West 8 developed the development plan of the area in 2002. Implementation of the plan has been done by Park Strijp Management and two housing corporations - Trudo and Woonbedrijf - which act as subcontractors for Volker Wessels. Volker Wessels subcontracted its task in order to reduce risk. This was perceived positively by Park Strijp Beheer, as housing cooperations are in general more focused on the long run than commercial real estate companies (Harms, 2007). Moreover, the housing cooperations have a better knowledge and understanding of the regional context as they are regionally oriented in contrast to Volker Wessels which acts mainly on a national basis. Woonbedrijf and Trudo, differ as the first focuses mainly on the housing function (its ‘traditional’ function), while the other is more innovative and interested in commercial and cultural functions. The key actors meet each other on a regular basis (every 6 to 8 weeks) to discuss what everybody is doing and to make concrete action points. West 8 (Adriaan Geuze) is the supervisor of the area and safeguards the quality and announces major messages to the public.

The redevelopment process of Strijp-S is complex for a number of reasons. Firstly, there are many strict
and sometimes conflicting regulations. One example is the monument status of many buildings, which allows only limited physical adaptation to buildings. This hinders transformation of the buildings for other functions, which requires other facilities such as windows, lighting and heating systems. Another example is the area directly next to the train track. Due to safety regulations this space is not suited as location for houses and apartments due to the risk of accidents with trains that transport dangerous goods. Many functions are in a gray area and there is discussion whether functions are allowed or not. Recently, there was discussion whether a school was allowed next to the track. Furthermore, buildings need to have a good accessibility for fire trucks. The strict safety and heritage regulations lead to additional costs, increase complexity and may delay the process.

Secondly, like in many development projects, there are many actors involved who have different interest which do not always match. This leads to additional discussion and adaptations of the plans. For instance, the development plan has a higher building density than the master plan as this was a major wish of Volker Wessels. Also new in the development plan is a large boulevard, the Torenallee. This boulevard - inspired by boulevards in large cities, like the Champs Elysees in Paris - is added to the plan to give the area a more urban character. There are also differences between the development plan and detail plans. For example the Driehoek area, was adapted in such a way that original pipelines have been conserved and a number of separate building blocks have been selected at the cost of a closed living community. The difference in interests has also led to conflicts between the actors. For instance, the City of Eindhoven and Volker Wessels did not agree about the way of indexation, as the city wanted fixed prices, while the real estate company opted for flexible prices. As a consequence of this conflict, the board of Park Beheer changed in 2006.

Another example is the status of the Natlab. Originally, the City and Volker Wessels wanted to tear it down, but after protests of inhabitants and the municipal monument commission stressing the large symbolic value of the lab, it was decided to reconstruct it and to use it for other functions (Harms, 2007). Finally, in our interviews it was argued that Volker Wessels has too much power to the City of Eindhoven and the two housing agencies. It was mentioned that various contracts are too strict, leading to financial problems for the city and the housing agencies, while the financial risk for Volker Wessels is only limited.

A third complexity is the size of the area and the long time period of redevelopment. There is overlap between past, present and future functions. For instance, Philips leaves the area in stages. As it was expressed by the project manager in an earlier interview: “Philips still has business here, so we need to make good arrangements about when they leave. Only when that has happened, we can redevelop the site. … After that, we can really start with the construction work. This is needed. Up to now, we have hardly concretely shown to the city what we mean with the transformation of Strijp-S” (Harms, 2007, p43). Currently (2010), Philips is still the largest tenant of the area as it waits to leave when it has more financial possibilities. It is also unknown to what extent contemporary functions (such as an events) match with future functions (such as housing). In addition, in the long development process there are many external factors that cannot be controlled. In this sense, the process is seriously hit by the financial crisis and many investors have limited resources and postpone investment decisions. In order to control for such dynamics, flexibility in the planning has been used. For instance, the redevelopment of the Driehoek area started earlier than planned, while other parts start later. Another example is that focus on the housing is on rent now and promotion of the houses for sale will be done in a later stage. Another tool used to fight the crisis is the use of temporary tenants in the building. Many buildings are rented out completely and generate some income for the owners. Despite this flexibility, the process is delayed. For instance, the first stage of housing construction, planned to start in 2006 and to finish in 2010, started only in June 2010. These first houses are expected to be finished in 2012. The total plan was scheduled to be ready in 2020. This deadline has been postponed to 2024.

A fourth, and related complexity, is the integration of the area with other areas in the region. On the one hand, the area is part of the vision that has set up for the key project Westcorridor. This key project concerns a large spatial development strategy for the area between the airport and the Central Station Eindhoven. This area consists of various ‘hotspots’ which each have an own identity and function. The idea is to distinguish Strijp-S from other areas via the three core themes. Moreover, regarding the leisure function, the ambition for Strijp-S is to create an urban surrounding, with bars and restaurants, that adds extra value to the city centre. In addition, for the total Strijp complex, the three individual parts are planned to have each own functions: Strijp-S will be a multi-functional urban surroundings, Strijp-R will be transformed to a housing area, while Strijp-T remains an industrial zone (see figure 7.3) (KuiperCompagnons, 2007). One the other hand, due to the long time period and differences in ownership of individual locations, there is overlap in function and competition between different locations. As
expressed in the interviews: “Despite that the plan of Strijp-S fit with the plan for the redevelopment of the stadium quarter, I am happy this plan is delayed... This is at the favour of Strijp-S.” A major concern in this respect is an oversupply of office space in the Eindhoven region. Despite flexibility in the plan of Strijp-S, a part of the area is only suited as office space due to safety and other regulations.

Despite the management structure (a public-private partnership), and short lines between the key actors, and due to the complexity of the redevelopment process, interviews indicate that the management can be improved. Despite its equal position in Park Strijp Management, the role of the city seems to be less than it might be expected due to financial constraints (e.g., due to the crisis large cuts in the municipal budget are required) and political instability. In the interviews, it was mentioned that there is a gap between the interests of the city council and civil officials and also civil officials and municipal workers do not always share the same ideas. In addition, decision making by the key actors in Strijp-S takes a lot of time and implementation power is sometimes low. Moreover, despite the cooperation and regular meetings between the key actors, the actors do not always share the same vision. Especially at the points of marketing and acquisition there is room for improvement. In the interviews it was expressed that there is a lack of a joint marketing strategy and the marketing of the area is too much focused on renting out office space instead of selling a concept of a creative city. All actors agree about the need for an internal leader who can reduce discussion time and take decisions fast. The supervision of an external actor helps to control the master plan, but not to implement it and to guide the redevelopment process. Finally, in the interviews it was expressed that communication with tenants and other stakeholders of the area can be improved, especially regarding issues such as safety, rental contracts, parking, and signposting during construction works. In some cases, there are also tensions between tenants and the management. For instance, currently, there are complaints among tenants about the amount of the monthly parking fee (€50,-). In order to raise the voice of tenants in discussions with the management, various tenants have joined forces. It is crucial to involve this and other stakeholders in decision making in order to obtain and keep societal support.

Figure 7.3: Plan for entire Strijp complex (R, S, and T)

Source: Own elaboration; map from map.google.com

7.2.4 Opening the Forbidden City

There are various strategies to develop and to promote the area. First, physical transport links are used to connect Strijp-S with other parts of the region. Therefore, it was decided to connect Strijp-S with other
parts via a Phileas line (a high-grade public transport system that combines the advantages of a bus and tram) that runs from the airport and the central station. This transport connection makes the area better accessible for visitors, tenants and their customers. In addition, as the area is on the route from the central station to suburbs and the airport, many inhabitants and visitors pass the area and can see the development. This increases the awareness of the redevelopment of the former closed city. As put forward in an interview: “It is a sightseeing tour by accident”. Another idea to improve accessibility of the area is to upgrade the train station Beukelaan that is located next to Strijp-S. In this idea, the station will be upgraded to a major station that is linked with other major cities via inter-city trains and public space between the station and Strijp-S will be improved as well. This plan is still in the concept stage. Regarding car transport, and in contrast to many other projects that aim to reduce car traffic, the area will be car friendly and the plan contains various parking facilities. Strijp-S does not have traffic and space problems that many other (inner) cities face nowadays. Finally, in order to connect Strijp-S with the city centre, the Mathildelaan will act as a major boulevard. This road runs from the city centre via the stadium quarter to Strijp-S (City of Eindhoven, 2002b). It should be noted that for the stadium quarter also large redevelopment plans have been made. Although Strijp-S and the redevelopment of the stadium quarter are both part of a larger city vision, as mentioned before, we have indications that the areas compete with each other instead of having a complementing role. This could delay the individual projects.

Another way to promote the area is via the organisation of excursions, which happens in formal as well as informal ways. Formally, there are guided tours for visitors organised by the tourist office. Informally, tenants of the area and policy makers bring clients and friends to area to show them around. One illustrative example is the cultural organisation BALTAN Laboratories that organised an excursion for artists who visited the Cultural Capital event in Essen. The Natlab organised a one day bus tour from Essen to Eindhoven with the Natlab and Strijp-S as attractions.

In line with this, Park Strijp Management hopes to increase awareness of the area via mouth-to-mouth marketing, media coverage and via networks of tenants. As expressed by a policy maker: “We want to use inhabitants as promotion tool via word of mouth marketing.” Similarly, a director of a cultural organisation put forward: “we hope to promote the area via mouth-to-mouth promotion and pictures which are taken by visitors.” Crucial are also own initiatives of tenants. In one case, a small multi-media company created a Twitter account for Strijp-S. However, it is not clear to what extent this really contributes to the promotion of the area or whether it only functions as an internal discussion forum. Moreover, a drawback in the communication is the lack of a common website that informs current users and visitors about activities. As it was expressed by a tenant on the former Philips site: ‘People do not know what is going on. I live here, but I do not even know it by myself’. Various interview partners criticise current websites dealing with Strijp-S that there is too much focus on the programme and possibilities to rent office space, while information what currently is going on in the area is lacking. Another point of attention raised in the interviews is safety. As the area is still remote from the rest of the city, the public lightening is still underdeveloped and there are no functions during the night yet, the site is an easy target for burglary. In the first seven months of 2010, the police reported seven cases of burglary in Strijp-S. Therefore, Trudo considers introducing to use gatekeepers in the building who also work during the night (ED, 2010a; 2010b). Other ways to develop and to promote the locations include the use of temporary tenants (so called pioneers) and several cultural initiatives. We discuss these two tools in more detail in the next section where we analyse Strijp-S as a location for business, culture and innovation.

7.3 STRIJP-S AS LOCATION FOR CULTURE, BUSINESS AND INNOVATION

In contrast to other mono functional parts of the Strijp-complex, the S part will be redeveloped into a multi-functional urban surroundings. In this section we analyse the potential of various functions in more detail, with a focus how the functions have been implemented and to what extend they fit in the concept of the area. We successively investigate the role of culture and events, business, R&D and innovation functions in Strijp-S. We do not analyse the housing function as in its current development stage, there are no houses on the site.

7.3.1 The creative city: the role of culture and events

Inspired by key authors like Charles Laundry (e.g. 2000), Allan Scott (e.g. 2000) and Florida (e.g. 2003), many cities invest in creativity and culture. As noted by Landry (2006, p 1): “Creativity is like a rash.
Everybody is now in the creativity game”. Or as expressed by Waitt (2008, p. 517) “…urban festivals, along with ‘festival market-places’, ‘cultural industries’, ‘creative quarters’, ‘creative clusters’ and the ‘creative class’ have since become buzzwords in planning- and policy-related reports.” Advantages of investments in creativity and culture include the attraction of knowledge workers (Florida, 2003), development of consumer cities (Gleaser et al., 2001), development of tourism (e.g. Judd and Faustein, 1999), revitalisation of old neighbourhoods via mega events (‘the Barcelona effect’) or flagship projects (‘the Bilbao effect’), development of creative industries – which are often linked with other industries, and potential for knowledge spillovers and innovation. However, there are also downsides including homogenization, or ‘Disneyfication’, of city centres, gentrification (e.g. Zukin, 1989; Evans, 2003), low wages in cultural industries (Kloosterman, 2010) and there several critics about the creative class (e.g. Peck, 2005).

Also Strijp-S has been labelled as the ‘Creative City’ with the aim to attract knowledge workers. Culture, one of the central themes of the project- and creativity play key roles in the development of the area. This happens in two major ways: i) Stimulation of several cultural initiatives and, ii) use of SMEs of the creative industries (‘pioneers’).

In order to support cultural initiatives, in 2008, a special cultural fund was set up by the City of Eindhoven, Volker Wessels, Trudo, Woonbedrijf, Spoorzone BV and SRE. This cultural fund has an annual budget of €600,000. A project leader culture, a seconded municipal worker, coordinates the budget. Already many cultural initiatives have been taken and there are many ideas as it is shown in table 7.4 in appendix B. Here a number of observations can be made. Firstly, nearly all events fit in the central themes of the area and aim to bring back the historical DNA. The latter is especially true for BALATON laboratories, that directly aims to bring the Natlab alive in the theme and function. Another example includes the music studio Room 306 that focuses on electronic music, as expressed by one of the initiative takers: “…In the nineteen fifties, for the first time in the world history, music different from acoustic was played. And that happened here, in the Natlab! Produced by Dick Raaijmakers, the man who latter named Kid ‘Baltan’, which is an anagram of ‘Natlab’. He carried out his ground-breaking work in room 306” (citation from Van Gool, 2010, p30). However, it should be noted that the section of the Natlab which contained Room 306 has recently been demolished to make place for a new part of the building.

Secondly, the initiatives differ in aim and in the degree the are linked to Strijp-S. Various initiatives focus on Strijp-S and aim to promote the area (such as Flux-S), and to increase vibrancy (‘construction of a consumer city’). Other initiatives are wider than Strijp-S and are targeted to stimulate innovation, create networks among different actors or to promote and strengthen business networks. Related to this is that the spatial scale of the functions differ, from local (e.g. Room 306) to international. The best example of the latter is the Dutch Design Week (DDW), that attracts several international visitors. Various parts of this event are organised in cooperation with partners in Helsinki.

Thirdly, a large number of art festivals are organised on the former Philips site. Literature has shown that events, just like other cultural initiatives, may have advantages - like attraction of investment capital, development of tourism, revitalisation of old neighbourhoods, creation of jobs and skills – as well as drawbacks, like too much focus on certain target groups and there are questions about the added value for cities (e.g. Getz, 2008; Waitt, 2008; Paiola, 2008; Gibson et al, 2010). Many events are organised at Strijp-S. Some events are especially organised to promote this area, like Flux S. Many other events are attracted to the area for the characteristics of the site it selves. The old buildings offer large spaces which are suited to organise large exhibitions. This is especially the case of the ground floors of the Klokgebouw and the buildings of De Hoge Rug. Festivals are also attracted to the site due to its history: “Strijp-S was the only logical choice <for festival X>; it show history and the future of technology” (interview). In addition, the rough style of the buildings and the unfinished character of the area give a special atmosphere which makes it attractive for the organisation of art events. Besides, as there a no inhabitants at the site yet, there is less risk of complaints (e.g. about noise).

Further development may make the area less attractive for events, and there is a risk that events will disappear. As put forward by a director of an event: “Strijp-S offers roughness. There is also a possibility to party. Further development kills the unique atmosphere which makes it less attractive for our event”. There are also doubts about the success of events which differ per case. The DDW attracted 115,000 visitors in 2009, and many of them visited the activities organised on Strijp-S. So, it is very likely that this contribute to the increasing awareness of the area. For other festivals, like Flux-S, which attracted 9,000 visitors to the area in 2009, the future is uncertain due to financial reasons. It should be noted that the
success of events should be wider than only economic goals and that the success of events for urban regeneration is depend on the management model used. Events can be beneficial in case a bottom-up model has been used as it fits in the need creating the event of a shared product (Paiola, 2008). In the case of Strijp-S, many events are locally organised with support of private as well as public actors. The existence of the cultural fund indicates the ambition to make culture (including events) as a shared product and all key actors agree about the importance of culture for redevelopment.

Fourthly, as a common characteristic of many cultural activities, many initiatives on Strijp-S depend on subsidies and sponsoring and continuity is far from guaranteed. This is especially the case in times of economic downturn, where policy makers often cut cultural budgets and firms reduce sponsoring. As it was mentioned by a director of a cultural initiative: “Cultural initiatives are always sensitive for economic cycles. We want to stay, but it depends on policy makers whether we can continue.” It was also mentioned in many interviews that there is a need for an investment in a flagship facility to really give an image to the area as a cultural site. Such a facility should act as a magnet for visitors which may also visit other facilities on the site. In addition, such an investment may attract further investments. The idea of the establishment of the Instituut van Beeld en Geluid (Dutch Institute of Image and Sound) is the most realistic example of this. This institute has signed an intention agreement, but further studies are needed before the decision will be taken to open such an institute at Strijp-S. Another, more idealistic, idea is to build a landmark by a famous architect and to create a Bilbao effect. However, this is less realistic as there is a shortage of financial incentives for such mega project. In addition, a landmark by a ‘starchitect’ is not always a guarantee for a successful revitalisation.

7.3.2 From Philips village to Bosch and pioneers: Strijp-S as a business location

Although the explicit use of art in urban development strategies is only recent, the use artists as agents for urban regeneration is not new (Currid, 2009). Following Jacobs (1961) and Zukin (1989), many studies have shown the ‘SOHO effect’ in which artists transform old industrial areas into vibrant bohemian centres, attracting investors which drive up real estate prices and push out the artists. Eindhoven uses this idea explicitly for the transformation of the former Philips site. Therefore, a part of the (monumental) buildings have been rented out to SMEs, so-called ‘pioneers’, who can use low-cost working spaces. The rental contracts of these buildings differs per building. For instance, for the SWA building (or ‘Glasgebouw’) offers relatively small spaces of minimum 100 m² at a price of €65,-/m². The rental period is maximum five years and the contracts concern flexible month contracts which can be stopped every month by the tenant as well as the agency. The SFJ building has been rented out for periods of five to seven years against a price of €95,-/m². This building is only rented out to tenants who are active in design, technology or innovation, and thus fit in the concept of the project.

Also many tenants of other buildings fit in the desired profile of the management and many pioneers concern companies from the creative sector. These companies are seen as the agents who can increase the vibrancy of the area and fit in the theme of the project. Of all 191 tenants, 37.2% of the companies are active in the creative industries26 (see appendix A for an overview of all tenants). As depicted in figure 7.4, in two buildings (SK and Klokggebouw) this share is even higher than 40%. The figure also shows large shares in the categories art and culture (16.8%), consultancy (13.6%) and other business services (16.2%). Remarkably might be the low share of the category R&D and technology (2.6%), but these concern often larger companies (e.g. a remaining part of Philips falls in this category, just like Bosch Security Systems), whereas the other categories are dominated by SMEs. If employment data would be used, the share of the R&D and technology category would be much higher.27 Concerning the category ‘art and culture’, it should be noted that there are concentrations in some of the buildings in the area which are completely filled with tenants of this category: SBX (including a climbing hall and a film platform); SBU (a skate hall) and SBP (two art and antiques designers and two museums) (not expressed in figure 7.4). Focussing on the creative industries, we see a high concentration of architectural firms and graphic designers, counting for nearly half of all creative industries (see figure 7.5). All other categories within the creative industries are smaller, ranging from three to eleven tenants per category. Thus, many tenants fit in the broad themes of the area (culture, design and technology), which jointly count for 56.6% of all tenants. This share might even be higher if we take into account the niches of firms categorised in other industries. For instance, the firm Keukenconfessies – categorised in ‘other industries’ - offers catering services in a creative way. By using food designers, the firm offers meals and concepts in an alternative way by ‘playing’ with colours, kitchen utilities and themes.
There are various reasons why the tenants have opted for Strijp-S as business location. A first reason is the combination of relatively low rent prices with suited working spaces for start-ups and SMEs, especially in the creative industries. As expressed by a craft designer at Strijp-S: “A workspace like this was our objective from the very outset. First of all, to control the costs, but also to carry out all sort of things, as much as we want to.” (Van Gool, 2010, p60). Similarly, starter of an ICT firm told us: “I went to Strijp-S as it is possible to rent this small office space for a low price”. The possibility to rent space on a temporary basis is not perceived as a problem, as it was put forward by a designer: “We can stay here until 2013. Five years is a nice length of time to plan ahead for. What we will do then, we will see when we get there. For time being, we are fine here” (Van Gool, 2010, p60). Another location factor, especially important for companies in the creative sector is the roughness of the area: “We aren’t architects for nothing! This is such an inspiring location… who knows, perhaps there will be a nice project for us too” (Interview architect, from Van Gool, 2008, p8). The latter also indicates a third location factor, the presence of other firms as (business) partners. This argument was also put forward by an interior designer: “The great thing about a space such as this is that you regard each other as potential cooperative partners. You stimulate each other … The architecrucentrum is next to us. All we have to do is join them for
drinks and we immediately meet ten architects. It is fun and convenient that we can boost our networks enormously, from inside our own building” (Van Gool, 2010, p. 66).

Physical clustering is also used to increase cooperation between various cultural initiatives. Therefore, one floor in the SWA building is let to five cultural initiatives. This is perceived positively, according to a director of a cultural initiative: “It is very convenient to drop in the office of my neighbours and to meet each other. It is important that we can speak the same language with our neighbours.”

In some cases, companies benefit from business provided by the management of Strijp-S or the housing corporations. One example is a multimedia company that develops a website for Park Strijp Management. Moreover, the management organisation leases an interactive information desk from this multimedia company and uses it in the information centre of the area. Another example is a food design company that is doing various projects for a housing agency. For instance, it provides catering services in a canteen in the Klokgebouw that is provided by the housing agency.

Hence, the location factors for the tenants include: low rents, presence of suited work space, the roughness of the area and physical proximity of (potential) business partners.

The strategy of the supply of temporary office space seems to be successful at the first glance. Many of the buildings are completely or largely rented out. This prevents decay of the buildings, generates income – especially important during the financial crisis – and it may increase vibrancy and stimulate local business networks. Moreover, an advantage for Strijp-S is the presence of Strijp-T and Strijp-R as new spaces for the temporary tenants as soon as Strijp-S will further develop, lose its ‘roughness’ and real estate prices will rise. Although, the complementary function of the two parts of the entire Strijp complex is not documented, several interview partners raised awareness of this benefit. For instance, it was expressed that “The presence of Strijp-T is ideal … Now the pioneers can move. Pioneers are mobile.” However, in the interviews also some interview partners raised their concerns that Strijp-T will be developed too early, already before finalisation of Strijp-S, as already some studies have been done dealing with development potential of the area. In case Strijp-T will partly be developed with the S part of the complex, the opportunity to use Strijp-T as an alternative location for the pioneers- including office space for firms and a festival site- is limited due to higher prices and a lack of attractive working spaces.

Another issue raised in the interviews is a limited supply of meeting places, such as hotels, bars and restaurants. According to a fashion designer: “It is a shame that we do not know many people beyond our own building. …. A central meeting place in the building would be great” (Van Gool, 2010, p66). Another tenant stresses in a regional newspaper: “Strijp-S is and remains a dull and impersonal working environment. In order to create a creative community, there is a need for a ‘hangout’” (Le Blanc, 2010). Various meeting facilities are planned, but due to financial crisis and the early development stage of the area, investments in facilities like restaurants and bars are low or plans fail due to financial problems. One illustrative example is the Veemgebouw, which is planned to be transferred to ‘one large design attraction’, including a design hotel, a large market for fresh food, an exclusive department store and restaurants. The planning of the developer was to get licenses for the construction works in 2009 and to build it in 2010 and 2011 (ED, 2008). However, more recently it was announced that the plan to transform the Veemgebouw will be postponed for an uncertain period28. At the moment of writing (July 2010), the area counts only one restaurant, PopEi. This restaurant belongs to a cultural stage that offers practice rooms to music bands and theatres. This restaurant has recently made a restart and in the interviews there were some doubts whether it will be a success due to the small target group. Another bar which is likely to be opened on the short run a seats2meet bar, for which an intention contract was signed in April 2010. Another example includes the Machinekamer, a restaurant in the former steam energy plant of the complex. This restaurant closed in the winter of 2009 as there were not sufficient heating facilities in this building. It is uncertain whether and when this facility will be reopened.

The ideas about the limited supply of meeting places are mixed. Many agree about the importance of such facilities to meet other people and to create vibrancy in the area. On the other hand, in the interviews it was also mentioned that there are enough meeting places in other parts of Eindhoven which can be reached easily. This limits the need for facilities at Strijp-S. As expressed in an interview: “It is nice to have meeting facilities at Strijp-S, but we do not need them per se, as we can simply receive business partners at other places”. It should also be mentioned that there are informal initiatives to meet each other on a small scale. For instance, in some cases, drinks are organised by tenants who invite other tenants who rent a work space on the same floor of a certain building.
Besides SMEs, and still some parts of Philips, Strijp-S is also home of a subsidiary of a large multinational, Bosch. It ‘arrived at’ Strijp-S via a take over of a former Philips division. Currently, Bosch is even extending its activities on the former Philips site, as a consequence of a closure of a subsidiary in Breda, which will be closed down for cost reasons. Production facilities will be transferred to China and the remaining activities in Holland will be transferred to Eindhoven. Bosch has evaluated various locations in the Eindhoven region for these remaining activities. Ultimately, Strijp-S was selected for a number of reasons. First, and from a practical view, Bosch is already located at the former Philips site. This makes internal communication more efficient. A second advantage of the Strijp-S location is the presence of space for extension. Due to the movement of Philips, space and offices have become available for other companies. Currently, Bosch is in negotiation with Park Strijp Management whether to rent an old Philips building or to build a new one. It should be noted that the credit crunch favours Bosch in this negotiation process as it is more difficult for Park Strijp Management to rent out space. A third reason are relatively low rental cost as Strijp-S, which are lower than other good locations such as the HTC/e. A final advantage of Strijp-S is a good accessibility by train and car. This is important for the commuters who live in the Breda region.

7.3.3 Strijp-S as an R&D location

Strijp-S, especially the NatLab, formed the heart of Philips research network. It is a major aim to keep this tradition alive via the central themes of technology, design and culture. But how is its current role in as knowledge location? This section discusses the relation of Strijp-S and other knowledge locations in the Eindhoven area and its position in knowledge networks. In addition, in the next section, we discuss the potency of the area as a test bed and the role of innovation.

Knowledge and educational facilities are crucial assets for the competitive position of cities. As mentioned earlier, the Eindhoven region has various locations with concentrations of research facilities (see figure 7.1) with a different focus. The HTC/e is an open campus with research centres of companies, the automotive campus in Helmond includes various public and private research institutes focussing on automotive technologies, while the TU/e campus includes a technical university, the intelligent lightening institute, and the embedded systems institute.

In contrast to the other locations, Strijp-S has hardly any educational and knowledge facilities. The major exception forms BALTAN Labatories, which started in the SWA building as a pilot study for a future art and science lab that will be established in the reconstructed NatLab building in a later stage. BALTAN’s main goal is to keep the historical tradition of the NatLab alive by linking art with technology. It functions include the creation of networks, stimulation of research projects, organisation of workshops, lectures and school projects. For (research) projects, and to function as a ‘real lab’, BALTAN has a working space where artists and researchers can do experiments. Artists can express creativity by using of modern (ICT) technology - available in the lab- and their own inspiration. Crucial is its network function as it aims to link various disciplines (art and technology) and the local with the global dimension. The latter happens via the invitation of international artists who work temporary in the working space of the lab. The artists stay in Eindhoven for some months. Somewhat remarkable might be that the ‘visiting artists’ do not live at Stripe-S, despite the ambitions to create a Creative City and the possible attractive character of the area (e.g. possible low rents and the roughness of the site). It was argued that other areas in the city provide sufficient suited accommodations for the international artists. To stimulate networks, the lab has established relations with various actors. It cooperates with different educational institutes, including the Design Academy, TU/e, and Fontys University of Applied Sciences. For instance, the lab is involved in a minor of Fontys in which ICT students are asked to work on art projects in which they combine their ICT skills with creativity. The project has been developed with support of the four artistic advisors of the lab. These artistic advisors are artists who played a major role in the establishment of the lab. Moreover, students can do internships at the lab. The lab has also relations with the private sector. For instance, from a management perspective, a representative of Philips Research has a seat in the board of Baltan.

The role of Strijp-S in the region’s educational infrastructure might increase due to the attraction of educational facilities. Currently, there are plans to attract parts of the Eindhoven School and Sint Lucas College (both vocational level). The idea is to establish creative parts of these schools on Strijp-S (such as a design school) in order to give more content to the theme design. It should be noted that the location does not play a role as place to live for students.
Next to public research and educational facilities, private actors can also invest in R&D facilities. Strijp-S has some small high-tech companies, a remaining part of Philips Applied Technologies, and Bosch has its research centre in the area. The R&D centre of Philips on Strijp-S focuses on new product introduction services and packaging solutions. This centre will move to HTC/e in the near future. The research centre of Bosch, as part of Bosch Security Systems, focuses on research and development of new security systems. Just like many other western technology firms, Bosch has changed its focus from hardware to software and IP technology. In Eindhoven, R&D concentrates mainly on the software of cameras. In the past, Bosch was involved in development of hardware (chips etc), but this has increasingly been standardised and can be done by a rising number of competitors. Via the focus on software, Bosch hopes to stay ahead of competitors.

Especially the regional scale, complemented with global relations, is important for the research activities of Bosch, while the local scale (Strijp-S) plays a minor role. The company is based in Eindhoven as Bosch wants to benefit form the advantages of technology cluster of the region, among which a specialised labour pool, the presence of suppliers and research partners and the presence of competitors that keeps the firm alert. It makes use of some specific niches that belong to the specialisation of the technology cluster, including design, ICT and embedded systems.

Due to focuses on security systems, it is logical that the R&D activities are strongly internal in order to reduce the risk of knowledge leakage. Nevertheless, there are also relations with external parties. From a historical perspective, there are relations with Philips. Many employees still have personal contacts with their former colleagues. In addition, and in a formal way, Bosch works on joint projects with the Dutch multinational. The company also cooperates with other regional research partners since it outsources parts of the development process; thirty percent of its R&D activities has been done by external parties. Especially design has been sourced out. The majority of the R&D partners comes from the Eindhoven region. Bosch mainly uses R&D partners from their own R&D network as Bosch knows these partners and they can guarantee the required quality. R&D partners are mainly involved in development (and not in basic research), which can be done entirely by the R&D partners or in cooperation with Bosch. Besides regional partners, Bosch uses its global company network for research and research projects have been done with other Bosch subsidiaries abroad. In these projects, the actors involved and the geographical scale of cooperation differs per case. Especially in initial stages of new projects face-to-face contact is crucial. Therefore, 'temporary proximity' is created in which researchers stay at other Bosch locations. Besides this, and in later project stages, communication via video conferences takes place.

Bosch also tries to get in touch with regional knowledge institutes, like TU/e and Fontys. The major aim to establish linkages with these institutes is to promote the company among students. This happens via open days and interim ships. Therefore, the company provides 10 to 20 interim ships on an annual basis.

The example of Bosch illustrates that the local dimension is less relevant, and that Strijp-S is complementary to other knowledge locations in the region (and the world). Currently, discussions take place to strengthen the linkages between Strijp-S and HTC/e and TU/e. A major topic of discussion is to find out the specific function of Strijp-S and how it can precisely complement these other locations. One possible way in which the former Philips site can complement the other locations is via its role of test bed of new technologies, as we discuss in more detail in the remainder of this section.

### 7.3.4 Strijp-S as a test bed

Due to improved IC technologies, firms are able to directly communicate with consumers and consumers are increasingly involved in innovation in order to adapt and develop products according their desires. This has led to an increasing use of new concepts such as ‘user-driven innovation’ (Von Hippel, 2005) and ‘co-creation’ (Prahalad and Ramaswamy, 2004). More recently, and due to various trends in society such as an aging population and increasing privatisation of public services, cities also get interested in the implementation of such concepts. Therefore, cities increasingly provide physical city quarters as playground, test bed or living lab to test new concepts. Especially new city quarters or major transformation areas are suited for such experiments as the infrastructure development is still in an early stage and it is possible to involve users in innovation from the beginning.

Strijp-S is also planned as a major test bed in two respects. First, the Sanergy concept, which combines groundwater remediation with groundwater energy, is used to clean the soil of Strijp-S. The area is heavily polluted as a consequence of industrial activities for decades. Philips, who takes the responsibility
to clean the soil, took the initiative of Sanergy in 2004. In 2009, the concept was implemented - for the first time in Holland – with support of Park Strijp Management, Philips and the consultant firms Arcadis and DEC. The sustainable idea of the concept is to combine the soil cleaning process with a groundwater energy system. This is done, by using groundwater circulation and bacteria, nutrients and contaminants. In this way, it works like a giant ‘biowashing machine’. Strijp-S is a key location to implement the new concept, not only for the pollution, but also because of high requirements for a sustainable redevelopment and the presence of monuments which make alternative cleaning solutions difficult and expensive. As the project is still in an early stage, results are still unknown. Arcadis is involved in a second project where the concept is used in the inner city of Utrecht that started in 2010 (Slenders et al, 2010). It is not clear to what extent experiences from Strijp-S have been used in Utrecht or vice versa.

Second, the area has been selected as a test area for new public lightening concepts. Therefore, Park Strijp Management asked Philips Design, in 2008, to develop a light vision for the area. Although, Philips leaves the area, it is aware of its potential as test bed for revolutionary lightening, as expressed by the director of Philips Design: “Strijp-S is going to be a dynamic and vibrant area. Different types of activities will take place in the area during the day, in the evening and at night - and lighting can help change the identity of the area to reflect these changes. It can also be used to emphasize seasonal changes and special occasions…. Lighting is the perfect tool for this because it offers more flexibility than physical structures” (Philips, 2009, p1). Based on the vision, a flexible lightening plan has been set up. As Strijp-S will be developed in stages, various prototypes will be introduced during different stages of the transformation process. Currently, two projects are implemented. One concerns an animated pedestrian crossing of the Phileas line, in which lights change from green to red when the Phileas passes and it is not safe to cross the street. The second project, also related with Phileas lines, is an animated line along the route of the area by integration of LED points in lamp post and in the pavements. Depending on the location of the bus, the colour and intensity of the LEDs change. This increases the visibility of the vehicle and reduces light pollution in case the vehicle has passed (Philips, 2009).

Besides these projects, the area has been used as a showroom for new technologies via various festivals in the area. One example includes the STRP festival which organised a pilot of a Licht Café (‘light café’) an exhibition that shows new light technologies to the public. Philips aims to set up such a facility on a permanent basis in a later stage, but used the festival to test the concept in a ten day pilot. It is worth noting that the festival organisation is also involved in the lightening plan, just like TU/e, Philips, Park Strijp Management and some smaller local companies.

In addition to lightening, the area might be a test bed for other technologies as well, including electronic vehicles and safety systems. As put forward in an interview: “Strijp-S has the potency to be one large test bed”.

Nevertheless, there are also limitations in the test bed function. A major barrier includes regulations. Therefore, there is an idea to create an area with less relations and to work with contracts that users (e.g. inhabitants) are aware that they in a test lab and can not complain when there are some drawback as a consequence of the trials (e.g. when the electricity shuts down). However, this plan is still in a concept stage, and further implementation is highly uncertain. In addition, despite the initiative of Park Strijp Management and willingness of Philips Design and other local organisations to participate, there is not a permanent organisation to initiate, promote and stimulate concrete projects and to create networks. Finally, Strijp-S the test bed and showroom function does not lead to permanent investments in the area; i.e. most actors involved in tests are not based at Strijp-S. In this sense, it is worth mentioning that the recently opened (July 2010) Intelligent Lightening Institute (ILI) is opened at the campus of TU/e and not at Strijp-S. ILI is an open innovation network dealing with new lightening technologies. The network includes six faculties of TU/e, and is initiated by various firms including NXP, Philips and Luxlab. Of these actors, only the latter, Luxlab, a company focussing on light design, is based as Strijp-S. However, various tests of the research programmes of the new institutes- including intelligent street lightening; natural light sources in urban areas; effects of light on wellbeing and health; new ways of interaction between people and light, and other new light concepts - might be implemented at the former Philips site.

7.4 CONCLUSIONS AND RECOMMENDATIONS

Many cities face the challenge of the transformation of brownfields into new city quarters. Old industrial sites have been transformed to new knowledge locations with various fancy themes like creativity, culture, technology, design and R&D. A major challenge is to change locations in various dimensions, not
only in a functional and physical way, but it also requires a change in perception taking into account the future as well as the history of the area. In this chapter, we have dealt with the transformation process of Strijp-S, a closed Philips community close to the city centre of Eindhoven. The site, including the NatLab, the former physics laboratory of the Dutch electronic giant, knows a glorious past in terms of technology, innovation and creativity, since many inventions were done on this site. A major vision of the redevelopment of the location - after Philips decided to restructure its business and to leave Strijp-S – is to keep this glorious history alive by creating the ‘Creative City’. The aim is to develop a multi-functional urban surrounding, which is lacking in the region, in order to attract international knowledge workers to the city.

In the remainder of this section, following the two pillars from our theoretical frame, we first draw conclusions on how the transformation process has been managed and success factors and barriers in this process. Second, we conclude about clustering, networks and the integration of the site in the larger urban region. We end the chapter with policy recommendations that may help to redevelop the area further.

7.4.1 Management, success factors and barriers

The vision to ‘keep the history alive’ has been ‘translated’ translated into three core themes: technology, design and culture. There are various strategies to give content to these themes and to keep the historical DNA of the area. First, the site has a number of monuments, which allow only small adaptations, so the historical image remains concrete.

A second strategy is the use of culture. There are many cultural initiatives in the area (see table 7.4). The success of this large number of cultural initiatives can partly be explained by the existence of a joint cultural fund. All key players contribute to this fund and agree about the importance of culture for the redevelopment process and as a future theme in the area. Especially festivals are seen as success formula to promote the area. Nevertheless, there are also some points of attention regarding the cultural initiatives. One is the sensibility of culture for economic cycles as both public and private actors can easily cut in cultural budgets, with as a consequence that the future of many initiatives is far from guaranteed. A second, and related point of attention, is that many initiatives are still in the concept stage and realisation is uncertain. Especially important is the need for a permanent ‘flagship attraction’ that gives a face to the area as a cultural site. This attraction should attract visitors to the site on a daily basis, promote the site on higher spatial scales (national international) and can stimulate further investments. Realised current initiatives are either small scale attractions, or temporary attractions in the form of events. These initiatives help to (temporary) increase vibrancy and to increase awareness of the site on a regional scale, but may not attract visitors and workers from higher spatial scales (national and national). So, it might be questionable whether the current initiatives help to attract international knowledge workers as is one of the main objectives of the plan.

A third strategy, regarding the theme technology is the use of the site as a (potential) test bed for the synergy project, new public lightening concepts and maybe for other technologies. Despite the potency of the area for this function (e.g. the early stage of development), willingness of key actors to join, many ideas and some first test, there are various barriers to develop this function, including regulations and the lack of permanent organisation to stimulate, organise and guide projects.

A fourth strategy is the use of the pioneers. This seems to be a success, witnessing the large number of tenants in general, and the large share of them which fit in the key themes of the area. It should be noted that chosen themes are relatively broad, so it might be easy to fit into these themes. The tenants are attracted to the area due to: low rents, presence of suited work space, the roughness of the area, and physical proximity of (potential) business partners. However, it might be questionable to have success on the long run since it is uncertain which part of the pioneers remains in the area when the prices raise, the site loses its roughness and there is a risk on possible conflicts with other functions. The same is true for the festivals in the area. So, a major point of attention is how and to what extent can the themes be fulfilled on the long run?

The transformation process is complex for a number of reasons: the presence of many, sometimes conflicting, regulations and requirements (e.g. monument requirements of buildings versus the need to adapt them for other functions); the size and long development time of the site; the integration of the area in the region; sensibility for external factors that cannot be controlled, despite flexibility in the concepts (e.g. the transformation process is seriously delayed due to the financial crisis); and the presence of many
stakeholders with different interests. The area seems to be managed well via a public private partnership with regular meetings, willingness to cooperate, a shared concept, successful joint ideas and products (such as the cultural fund) and an external supervisor that guarantees the architectural quality. However, the management of the area have not always been without conflict, and there is room for improvement in the management, especially regarding the marketing strategy and the speed of decision making and the implementation time of concepts.

7.4.2 Clustering, networks and integration with other areas

As mentioned, Strijp-S has attracted several SMEs from the creative sector. Many of these firms benefit from the direct proximity of the other firms as potential business partners and to do projects together. The companies find each other due to informal networks and via ‘corridor meetings’ as many similar firms rent space in the same building. A drawback, however, is a limited supply of meeting places, which can be explained by the early development stage of the area, the financial crisis and a small market with high risks. The involvement of the SMEs in knowledge networks and the spatial scales of these networks are unclear from our data and this topic deserves further research. In general, knowledge networks on the site seem to be limited, due to low number of public R&D and educational facilities (a major exception forms BALTAN as a platform organisation and a major experimental lab) on the site. More educational facilities are planned, but these concern mainly lower level educational facilities. A key private R&D institute concerns a research lab of Bosch Security systems. This lab is relatively closed due to the characteristics of the business, and concerning the external relations much cooperation takes place on the regional and global level, while the local scale (on Strijp-S) is limited. The example of Bosch is illustrative for Strijp-S as a potential complementary location to other knowledge locations such as HTC/e (focus private R&D), TU/e (including ILI and ESI), automotive Campus Helmond and DPI. The best chances for Strijp-S in this way seem to be its role as a showroom for innovation (expressed in museums and during events), and as a test bed for innovation.

Besides the functional connection of Strijp-S with other knowledge locations, the site also needs to be connected with the rest of the region. The ‘opening of the Forbidden City’ happens in various ways: opening of a physical public transport link by a Phileas connection with the city centre; promotion of the area via events; mouth-to-mouth promotion; and via own initiatives of tenants. Points of attention include the lack of a common marketing strategy and we have indications that promotion is too much focused on renting out space instead of selling the concept of a creative city. Promising for the transformation process of Strijp-S is the planned complementary functions of Strijp-R (residential) and Strijp-T (industrial). Especially important is the role of Strijp-T as potential location to house the pioneers and events as soon as Strijp-S is in a further development stage. Therefore, and to prevent competition between the sites, it is crucial that the transformation of Strijp-R takes place after realisation of Strijp-S. In this sense it is also worth mentioning the oversupply of office space in the region and competition between several sites to attract business.

In conclusion, it is difficult to judge whether the redevelopment of Strijp-S is a success and whether the aim of the development of a Creative City that attracts (international) knowledge workers can be realised on the long term. On the one hand, the area successfully attracts pioneers and is suitable as an event location and has the potential to complement other locations in Eindhoven’s knowledge infrastructure. Moreover, several attempts have been done to connect the site with the rest of the city. On the other hand, there are also development barriers, like management problems, the financial crisis, competition with other sites, difficulties to increase vibrancy (e.g. the development of meeting places, burglaries, delay in the housing construction) and to attract (cultural) flagships. These development barriers have caused a delay of the process and there is a risk of loosing political and societal support which are crucial for a successful redevelopment.

7.4.3 Challenges and recommendations

In the previous sections we have given drivers and barriers for the redevelopment of Strijp-S. In this final part, we end with some concrete recommendations that may help to develop Strijp-S further.

Firstly, “Ships can not be steered from the shore; there is a need for a captain on the boat” i.e., the supervision of an external architect may help to guarantee the architectural quality of the concept, but it is not sufficient to guide the process, up decision making and implementation of projects and develop joint strategies. A first major task includes the development of a joint marketing strategy. In this strategy,
internal communication should not be forgotten. There is a lot information available dealing with the future plans of the area, as well as possibilities to rent space, but we have indications that information dealing what is currently going on the location is limited. A good marketing strategy is also crucial to keep political and societal support, because due to the delay of the project people may lose trust.

Secondly, and related to the first, other improvements in the management can be made. For instance, in order to create a better balance in power between the different actors, the city and the two housing agencies can cooperate more intensively in order to have a larger voice against the most powerful player Volker Wessels. In addition, the city could increase effort in the project and integrate it with more projects and other policies. In the interviews it was suggested that only a few persons from the city are dealing with the project. If more persons are involved, political support may increase just as the speed of decision making and implementation. This is especially true if more person with decision power support the project. Therefore, one interview partner even suggested getting more support and involvement of the mayor. Another suggestion regarding improving the management is to set-up a specific centre to communicate with tenants. This special ‘one-shop’ centre should deal with practical questions of tenants, advice them, and increase their role in discussions regarding the development of the area. This centre should be complementary to the current information centre (‘Portiersloge’) which mainly serves general visitors and tourists.

Thirdly, in order to prevent unnecessary competition between different sites (e.g. the stadium quarter, and other parts of the Strijp complex), the city should not work on too many projects on the same time. Instead, major projects should be done after each other, so overlap between the functions of the different sites can be reduced and the sites do not compete for the same resources at the same time.

Fourthly, ‘Make use of the test bed potential: Do not sleep on it, but organise it in a proper way and play on it’. The site has potential to complement other knowledge locations in the region as a test bed. As mentioned before, the area is still in early development stage. In addition, key actors are aware of the potential of the test bed function and are willing to join initiatives. Nevertheless, a permanent organisation that initiates, promotes and stimulates projects and create networks may help to develop the test bed function further. A suited actor to initiate such an organisation might be Strijp-S management as it has relations with all other actors. Besides, it has directly or indirectly access to tenants and future inhabitants, required to create a database of potential participants of various experiments. In this sense, much can be learned from the Living Lab in Arabiaranta, as described in the chapter of Helsinki.

Finally, ‘Do not wait until the wind changes direction to attract flagships, but use tug boats to get them.’ Both a cultural flagship as well as a flagship firm is needed to give a face to the site as a cultural location respectively as a business location. This requires more (joint) acquisition work, especially the role of governments might increase in this respect as it was indicated in the interviews. A suggestion given in the interviews is to develop a joint acquisition plan that can be implemented by a special, and independent acquisition manager with an own budget to travel and meet potential tenants of the area. It might also help if a powerful organisation such as Brainport helps to attract business to Strijp-S. It should be noted, that despite Philips leaves the area, Bosch is still there. Although, this flagship is relatively closed due to its business, it might be used to promote the area and to strengthen (knowledge) networks with the area.
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8 Helsinki: Arabianranta

8.1 INTRODUCTION

The Arabianranta area in Helsinki has captured the attention of many urban planners worldwide as a success story of creative urban regeneration (Ilmonen and Kunzmann, 2007). In a nutshell, Arabianranta is a regenerated former wasteland area in the north-eastern part of Helsinki which combines, in an open urban district; living, working, studying and leisure functions in a virtuous fashion, centred on a holistic theme – ‘design, art and creativity’. As one of the first large scale public-private partnerships for area based redevelopment in Finland, it is known as a best practice combining knowledge and innovation activity with urban regeneration projects.

Development of Arabianranta started in the early 1990’s and is planned to take place until roughly 2010. Construction is at present in an advanced stage. As per the plan, the area hosts many national and international design, media and ICT oriented firms in diversified types of premises, a set of renowned higher education institutions (HEI, e.g. the school of applied sciences and the University of Art and Design Helsinki), quality residential areas for diverse social groups, as well as leisure and cultural facilities such as shops, restaurants and museums. Arabianranta’s is to become the leading centre of Art and Design in the Baltic area (City of Helsinki, 2007), as envisioned by the venture partners – City, HEIs, key companies and residents’ association - in a quadruple helix fashion (Carayannis and Campbell, 2009).

Aside from the success of the physical integration of the district in Helsinki’s urban fabric and its ability to capture a concentration of knowledge intensive activities, distinctive organisational and technological novelties lie at the core of the interest in Arabianranta as a ‘knowledge location’. The area pioneered in ‘last-mile’ broadband optical fibre infrastructure across the entire district, making on-line connectivity a commodity not unlike water, electricity or gas. The last part of the network connecting the different houses among each other and to the internet is owned by the (collective) of residents, enabling to offer a broadband connection at much lower and stable prices. Moreover, it pioneered in promoting the development of a number of integrated virtual platforms organised around a network of so-called “e-moderators”, building a strong sense of community in a rather open and diverse area. This “social infrastructure” supported the first successful application of user-driven innovation processes through ‘Living Labs’ methodologies (Eriksson et al, 2005). These achievements led some commentators to dub Arabianranta as a ‘Social Silicon Valley’.

In this chapter, we try to inductively make sense of the causal relations and underlying factors behind the success of Arabianranta as a ‘planned knowledge location’. We are interested in shedding light on the following questions, which are also at the core of our global comparative study:

- Which are the necessary conditions behind the development of Arabianranta as a knowledge location?
- Which factors facilitated and accelerated (or moderated) the development and success of Arabianranta?
- Which effects is Arabianranta generating at relevant spatial levels (metropolitan, urban and local)?

We base the analysis of these relations informed on literature in urban studies and economic geographies of innovation. Combined, these research strands enable an integrative understanding of the emergence and functioning of “urban knowledge locations”.

On one hand, recent studies on the geography and spatial foundations of innovation have been providing more nuanced insights on the role of proximity, face-to-face contacts and buzz in innovation (e.g. Boschma, 2005; Asheim et al, 2007) which are not yet incorporated in the ‘taken for granted’ notions of: Jacobian urban diversity (Jacobs, 1969); localized innovation networks (Camagni, 1991) and; buzz and the creative class (Florida, 2002; Laundry, 2000). These notions implicitly lie at the roots of the development of many culture and knowledge led ‘agglomeration promotion’ large scale urban developments. On the other hand, by taking an integrative approach, urban (governance) studies provide often ignored insights on the role and functioning of urban based policies and area developments in the sustainability and dynamics of cities as complex ecosystems of activities in need for urban management (e.g. Van Winden et al, 2007; Van den Berg and Braun; 1999; Malecki, 2002; Scott, 2006).
Integrating these literature strands, we argue, is important for the purpose of allowing an integrative understanding of what “knowledge locations” are and how they work. On one hand, it is unlikely that agglomeration externalities and knowledge spill-overs will take place by concentrating firms and organizations into a single planned and bonded location, as suggested by many commentators. On the other hand, the development of knowledge locations cannot be seen only as the most effective and efficient solution for ‘bringing people together to innovate and learn’, but also as an instrument to pursue other urban development objectives such as image building, mobility management, environmental and energetic efficiency, institutional and organizing capacity. Bringing the two literature branches together (and illuminating the constructs and mechanisms involved) allows a clearer assessment of the causal relations steering the systemic development and evolution of a planned knowledge location.

Cross fertilization among these different insights is of particular relevance to policy making. Potentially, every city government in the world would like to have an ‘Arabianranta’ or other forms of knowledge districts, ‘brain parks’ or ‘intelligent hubs’ depicted in earlier studies (e.g. Da Cunha and Selada, 2009). These kinds of flagship projects are more and more seen as part of the ‘holy grail’ of local economic development by combining the knowledge “hype” with other more traditional local policies centred on education, culture, land development and planning. The success-stories are increasingly well documented; yet, understanding of the causes and mechanisms behind these successes is often lacking. This is partly due to a weak incorporation of the time dimension in the analysis of clusters development, where stories tend to sketch a static picture. In these descriptions, cluster success often coincides with well developed infrastructure such as knowledge parks, making it difficult to identify the causal relationship (what led to what? X to Y or the other way around or maybe both?). More then often this analyses provides misleading insights for policy making, or what Wolfe and Gertler call ‘the perils of reading off causal relations from spatial associations in ex-post analysis of successful clusters’ (2006, p. 257). By introducing a time dimension in the analysis, the process of locations and cluster’s genesis (e.g. Braunerhjelm and Feldman, 2006) becomes clear, shedding light on the question: ‘what leads to what, and through which mechanisms?’. Moreover, a better understanding of the system of interaction and an analysis not only based on isolated parcels may help policy makers to deploy what Malecki (2007) calls ‘intelligent benchmarking’ to support more informed investment plans with potentially higher returns for local and regional economies.

The remainder of this chapter is structured as follows. Section 2 describes the urban-economic context of Finland and Helsinki; the historical development of Arabianranta and the management of the area. Next, we analyse Arabianranta as a business and knowledge location (section 3) and as a place to live (section 4). Section 5 concludes and provides policy recommendations that may contribute to further development of Arabianranta.

8.2 ARABIANRANTA: CONTEXT, HISTORY AND MANAGEMENT

The Arabianranta area plays a key role in Helsinki’s history. It is the location where Helsinki was originally founded in the 16th century and it is the ‘birthplace’ of the factory of Arabia, once one of the biggest porcelain companies in Europe. After the plant was restructured in the 1980’s, space and buildings became available for other functions. This has led to one of the largest urban redevelopment projects in the Helsinki region. In order to understand the drivers of development in Arabianranta, this section describes the urban-economic context of Helsinki, the history of the area, as well as the goals set, the realized development so far, and the management of the area.

8.2.1 Urban-economic context

Locations, planned or unplanned, do not develop in isolation. Therefore, we proceed to briefly describe the urban-economic context of the Helsinki region. Helsinki is referred as a strong knowledge city (Van Winden et al., 2007), with a highly educated workforce and with ICT as the major growth sector. It scores well on various wealth, knowledge and innovation indicators. For instance, it ranks second on the European Innovation Scoreboard in 2003 (the first position is held by Stockholm), and with over 100 patents per active worker, it ranks fifth after Eindhoven, Oberbayern, Karlsruhe and Stockholm (Commissie Sistermans, 2006).

The Finnish Economy was dependent on sectors like wood, pulp and mechanical engineering - for instance, associated with machinery and shipbuilding - in the early twentieth century. The country’s economy was from mid 1940’s until the late 1980’s closely intertwined with that of the Soviet-Union...
After the fall of the Soviet regime and a painful economic recession that followed during the 1990s, Finland became a well-known case of a successful transition from a production-based economy towards a knowledge economy, namely through an economic diversification process led by ICTs, spearheaded by firms like Nokia and many others in associated fields.

Previous research provides advanced explanations for the Finnish success story: i) high educational levels compared with any international benchmarks, Helsinki and Finland as a whole hosts high standard universities and R&D centres, and thus, a large supply of high skilled workers in the fields of technology and engineering, but also in arts, humanities and sciences; ii) a very proactive technological and innovation policy, linked with innovative and ‘spatial sensitive’ policies like the establishment of competitiveness poles and innovation platforms across sectors, supported by bridging governmental agencies like TEKES, iii) contingent factors like a specific regulation system in the telecommunication’s sector which led to the need to jointly innovate towards new technologies, reinforcing the partnership behaviour and institutionalized cooperation culture rooted in the Finnish society, and iv) internationalization of capital markets and an open attitude of local policy makers towards all forms of mobile communications (Boschma and Sotarauta, 2007; Sotarauta and Kautonen, 2007; Roper and Grimes, 2005).

Aside from more technologically oriented sectors like ICT, Finland has a long tradition in the furniture and appliances, an industry intensive in art and design. Although the production and manufacturing plants of Finnish companies are scattered over Finland and elsewhere, headquarters and design operations (the ‘brains’) tend to be located in Helsinki. Metropolitan Helsinki (economic, population and political centre of Finland) is composed of the city of Helsinki and the surrounding cities of Vantaa, Espoo and Kauniainen. These surrounding cities are more than just commuter residences. Vantaa is an important logistical hub and Espoo, hosting the campus of Helsinki University of Technology and many headquarters, an important R&D location. Despite cooperation and joint planning for strategic objectives, cities in Finland are strongly decentralized, giving them substantial (fiscal) power, leading to competition among each other for the attraction of public and private investments.

In spite of the strength of the Finnish economy, there are also some drawbacks in its economic structure. One is the (too) strong dependency on the ICT sector (e.g. Van den Berg et al., 2005). Within the ICT sector, there is a strong dominance (and potential dependence) of key player Nokia (Roper and Grimes, 2005). This may be a drawback as Nokia increasingly sources its knowledge (R&D and design) from various strategic hotspots in the world, potentially weakening the ties in the home region (Van der Borg and Van Tuijl, 2008). In order to increase the competitive position and to reduce the dependency on hardware (technology), which can be ‘copied’ more easily by new entrants from upcoming countries such as India and China, the focus has been shifting to software (e.g. design) and increasingly to the combination of hard- and software. This has occurred naturally, through the market (e.g. Nokia has shifted from technology to software and design) and through changes in the institutional structure. A good example of the latter is national legislation giving rise to a merger of the universities of technology, design and economics. This merger is conducted in order to facilitate multi-disciplinary research and to train students in various crossed disciplines.

Accessibility and ‘quality of life’ indicators in Helsinki are considered moderate compared with international benchmarks. Possible explanations include the cold climate and the geographic distance from the European core. However, Helsinki is part of the dynamic corridor Stockholm-Helsinki-St. Petersburg and has an international airport with a hub character. The Finnish capital has all the relevant high level ‘amenities’ of every European Capital, although it might miss a real ‘underground culture’ of other cities such as New York and Berlin. The population of the city of Helsinki has grown from 490,872 in 1990 to 568,531 in 2008 (City of Helsinki, 2008). Qualified workers, skilled emigrants and the ‘global hub’ tend to be associated with the Helsinki ‘excellence’ in particular economic and knowledge fields, like ICT, but also, and increasingly, design. Finnish design has (still) a strong international brand and the University of Art and Design Helsinki attracts a very large number of international students. Despite these trends, the nationalities of Helsinki’s residents are not particularly diverse. Cultural features are still relatively homogeneous.

8.2.2 Story and background of Arabianranta

Arabianranta is one of the major large scale urban development projects in Helsinki. Before detailing its concept and vision, it is worth understanding the context and history of the area. The location was
considered in industrial times, at the peak of the porcelain production in the Arabia factory, as rather far from Helsinki’s city centre. During the second half of the 20th century up until the 1980’s, the area became physical and socially degraded. Industry closure led to high unemployment. By that time, the surrounding area consisted of wastelands and abandoned premises of sewage plants: polluted and hosting socially disadvantaged groups. The city had no specific plans for the area.

A turning point occurred in mid 1980’s, when the old building of the Arabia factory were rented by the University of Art and Design Helsinki (TaiK), formerly located in the city centre and looking for space to accommodate its growth. The former factory fitted TaiK’s requirements: it provided a physically suited space for classrooms and larger studios and workshops and it had the tradition and character of an old ‘design intensive’ factory linked with the history of the university itself; moreover, due to improved transport connections, it was relatively close to the city centre. It should be noted that initially TaiK was looking for temporary space, but it remained in the area up to today (2009) and forms one of the major anchors in the area (see section 8.3).

During the years 1986-88, TaiK initiated talks with the City to assess whether their new premises would be a temporary or a more stable option for growth. By the time, the City of Helsinki and its Planning Department were considering to convert Arabianranta into an urban green park, making use of its quality as a waterfront location. Before the end of the decade, the decision was made to transform the area and create a functional mix, making use of its advantages: the presence of TaiK, a waterfront location and a strong identity. In 1992 the City started to detail the area’s new master plan; soil remediation and earth cleaning takes place until late 1990’s, when housing construction began.

A key driver for the redevelopment of Arabianranta, its spatial plan and management, is the context of the period when the redevelopment started. In the late 1980’s and early 1990’s, Finland was hit hard by an economic recession with an unemployment rate around 20%. The aim for Arabianranta was closely tied with job and (tax)income creation by attracting companies. The creative industries were seen as a solution to change the tide and realise growth. The city, National Ministry of Trade and Industry, and land owners aimed to create 7,000 jobs in the area. A concrete agreement was made by various partners: Iittala Group (the owner of the Arab Factory), Varma (pension funds), the City of Helsinki, and the State. Nowadays, it is common in Finland that various stakeholders work together, but with the Arabianranta development starting over twenty years ago it might be seen as one of the first large scale public-private partnerships.

In order to guarantee success in the long run, a central and differentiating theme for the area was needed. Design was chosen as this central theme, transversal to various functions: housing, education, industry, research and innovation. The functions of the area evolved accordingly. Firstly, the area attracted more “artistic” educational institutes following TaiK. Nowadays, Arabianranta counts 5 (higher) educational institutes. Secondly, next to Iittala Group, other companies from the ‘creative industries’ (mainly art, design and media) located in the area. Companies refer to the creative atmosphere, contact with TaiK and (potential) relations with other companies as important attraction features of the area. Thirdly, design reflected in housing and architecture. The city is the biggest land owner of the area and via contracts, to be obtained via tenders, companies can lease the land. The selection of the companies is to a large degree based on architectural design and the use of art in public space. This tendering process can be seen as the biggest public art project ever done in Finland as developers were required to invest 1-2% of the total construction costs of all real estate in art projects. In addition, yards are communal (collectively owned) and are used to implement design and build identity.

8.2.3 Management, features and goals of Arabianranta

Arabianranta was planned as an extension to the city centre combining ‘an urban feeling with a natural surrounding of the lakes and forests’, and not as the suburb it later became. In 1995 a letter of intention was signed by the City of Helsinki and TaiK in order to found ADC – Art and Design City Helsinki. ADC, a public-private company, was (and still is) responsible for the coordination of development in Arabianranta. It is tasked with involving the relevant stakeholders namely landowners, private parties, universities and HEIs and inhabitants. Other players also have shares in ADC, including the Ministry of Trade and Industry, companies that meanwhile moved to the area (e.g. Strawberry Group) and other HEIs in Arabianranta, including the foundation for the Pop and Jazz Conservatory and the University of Applied Sciences. Under the umbrella of ADC, different players were involved to share and jointly develop ideas for the area. This proved especially important to overcome the rigidity and physical oriented philosophy dominant in the City Planning Department\footnote{36}, bringing innovative ideas,
communicating openly between partners and overcoming lengthy, closed and bureaucratic decision making processes. It was indeed the first time that the City of Helsinki planned a fully integrated urban area development around a holistic theme, going beyond traditional developments based on general physical infrastructure, industrial premises or isolated housing. The area was planned to host a coherent and diversified mix of functions around the topic of ‘art’, associated with distinctive quality of life, tapping in its distinctive resources.

The construction of Arabianranta started in 2000 and is to continue until 2010. Arabianranta’s shareholders have put forward the following vision: to ‘make Arabianranta the leading centre of art and design in the Baltic Area’ (City of Helsinki, 2007), a centre organized around design and art, with education, production and consumption. ADC is responsible for daily and strategically management of the area, acting as a ‘spider in the web’ linking the different parties and conciliating the player’s interests. In order to realize growth, the vision was translated in a number of concrete goals for the end of 2010. The goals have already been reached or are expected to be reached in the near future (see table 8.1). Hence, the project has been running according with the schedule and the initial concept and thematic orientation for Arabianranta has been successfully kept until today. Arabianranta is located approximately 5 km away from Helsinki’s city centre and has good accessibility by car and tram. It mixes an urban feeling with nature and water. Just as planned, it is already a very diverse area: a mix of age groups, social status, nationalities and urban functions – education, living, working and leisure. The area has attracted many firms, students and residents and there is still demand both for residential space and office space (e.g. a Finnish multinational working with industrial design related activities expressed interest to invest in the area). New constructions and developments are taking place to fill in the last plots of land and cope with the demand. In terms of types of companies, the ‘selection criterion’ has been broad from the beginning, focusing on firms in the ‘new economy’, namely media, digital content, ICT and design.

<table>
<thead>
<tr>
<th>Goal</th>
<th>Status (September 2009)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1300 students</td>
<td>Realized</td>
</tr>
<tr>
<td>7,000 jobs in creative industries</td>
<td>5,000 to 6,000</td>
</tr>
<tr>
<td>10,000 inhabitants</td>
<td>Expected to be realized in 2012</td>
</tr>
</tbody>
</table>

Source: Own elaboration, based on data obtained through interviews

The global economic downturn of 2009 did not seem to have hurt Arabianranta’s prospect, apart from the construction of two office building that has been delayed until the market recovers. The crisis did not influence prices in the area. On the contrary, as a distinctive “premium” location, the prices have been stable or even slightly on the rise, namely for the private owned real estate (according to Varma, a pension insurance company investor, confirmed by the ADC’s CEO). The global crisis did not imply a change in the strategy, and it is unlikely that it will be the case in the future. Overall, rent levels for residential property in Arabianranta are still lower than Helsinki’s city centre and higher than in other suburbs. For example, according to ADC, in controlled rent houses the price is around 8 euro m² while it rises to 25 euro m² in the city centre. For total private housing the acquisition price is around 5.500 euro m² and close to 20 euro m² for rent.

So far, ADC and its partners managed to accomplish what many other area management companies can only hope for: attraction of several companies and knowledge institutes, a socially diverse mix of inhabitants and stable prices in times of global crisis. The clear focus on art and design, managed in a triple helix partnership, steered the development of a distinctive and economically vibrant planned knowledge location where people can live, work and play. The leaflet story stops here. However, in order to better understand the causes and mechanisms that led to these achievements, and, more importantly, derive insights that can be meaningfully used in other contexts, in the next sections we dig deeper into the evolution of Arabianranta as a business and knowledge location and as an urban experimentation arena.

8.3 ARABIANRANTA AS A BUSINESS AND KNOWLEDGE LOCATION

To realize Arabianranta’s goal – to become the leading centre for art and design in the Baltic and job creation in these new industries - a strong knowledge base and the presence of key actors with strong networks are required. This section analyses the development of Arabianranta as a business and knowledge location. After an analysis of the production ecosystem of art and design in Helsinki and its
relation with Arabianranta, we briefly analyse the positioning of some firms and HEIs in Arabianranta, their reasons for ‘being in Arabianranta’ and the geography of business and knowledge networks. In this latter part, we also pay attention to the relations of Arabianranta with other locations in the larger Helsinki region.

8.3.1 The production ecosystem of art & design in Helsinki: a co-evolutionary account

In the last decades a global trend emerged where the aesthetic and symbolic components of products more and more determine their perceived value by customers, giving rise to what Allen Scott (2006) calls a Chamberlin-Robinson competition model, i.e. not based on price but increasingly on symbolism and differentiation. This global trend clearly brings design functions (e.g. industrial design) to the centre of many firm’s innovation and marketing strategies and benefits the (long established) productive structures of cities like Helsinki, with a strong tradition in industrial design activities and related knowledge and expertise.

Helsinki has for a long time been a very relevant job market of industrial and craft design jobs, and ‘produces’ a relatively large number of elite designers and craftsmen. Helsinki hosts large, Finnish, design based, multinational companies (in industries such as furniture, pottery, decoration, fashion) as well as many small-scale design offices and free lance entrepreneurs. Moreover, other industries absorb design as a key component of their branding and differentiation strategies (although with room for improvement – see Van der Borg and Van Tuijl, 2008). The city hosts for a long time international design networks, and is an important global design centre when it comes to industrial and product design, mixing tradition and innovation in an intelligent fashion.

Far before the first plans to develop Arabianranta as the knowledge location the seed for this development was sown. In the late 19th century Helsinki became a relevant centre for design. The first documented developments date from 1875, when The Finnish Society of Crafts and Design was founded by a group of leading cultural personages and industrialists who aimed to bring design into educational programmes and improve the quality of Finnish products. The Arts and Crafts School had been founded four years before, and passed through different organizational mutations until 1973 when it was dubbed the University of Art and Design Helsinki (TaiK).

In the early 1900’s, Finnish design gained international recognition. For instance, it was shown during the World Exhibition in Paris. In the 1950’s and 1960’s, Finland had become a reference in design and applied art – applied, e.g. in furniture, decoration, ceramics, pottery, glass or fashion - and Finnish brands such as Arabia (founded 1873), Artek (1935), Iittala (1881) or Marimekko (1951) played a major role in the country’s exports (Design Forum, 2004). Renowned designers from the early 1900’s like Alvar Aalto or Kaj Franck inspired and trained many other Finnish designers, giving rise to a genealogy of design talent throughout the century, localized in Helsinki. Apprentices of design masters, the former employees of large design companies, launched new spin-off ventures. New generations of graduates trained in TaiK fed the design capabilities and innovation in the region, anchoring knowledge and skills while attracting new talent from outside. Finnish ‘design intensive’ artifacts are sold at high prices in the top markets and increasingly penetrate new ones. Moreover, other sectors of the Finnish industry also procure and integrate design functions, such as machinery, ICT, furniture, medical devices. Design played a major role in the country’s export and Helsinki has built reputation as a ‘showroom of design’.

The Finnish capital benefits nowadays from the most developed supportive infrastructure and institutional setting in Finland. It hosts the Finnish Society for Crafts and Design, specific promotional organizations (like the Design Forum Finland, who organizes prizes, exhibitions, festivals and promotes Finnish design national and internationally), renowned institutes and excellent universities, like TaiK. The Finnish Innovation Agency – Tekes – recently considered design as an important innovation field to foster, after a previous focus on ‘hard’ technology. The BSc, MSc and PhD programmes provided by TaiK seem to provide a great fit for the direct needs of the more directly design based industry, focusing on (1) Applied art and design; (2) Ceramic and glass design; (3) Industrial design; (4) Spatial and furniture design; and (5) Fashion and clothing design, textile art and design.

In sum, a productive art and design system has been deeply rooted in Helsinki’s economy, and this legacy enabled the development of art and design functions presently operating in Arabianranta (and also the feasibility of this topic as a central theme in the location). In other words, it was not Arabianranta’s as a new planned knowledge location that steered the development of new art and design economic activities.
in Helsinki, but it was the long productive and knowledge legacy rooted in Helsinki (firms, universities, genealogy of designers, institutional supportive institutions, etc) that made Arabianranta possible and as successful as it is nowadays.

8.3.2 Firm and HEIs

The success of Arabianranta is partly due to the firms and organizations that located in the area. Arabianranta has become home to a significant number of Finnish and international companies (including relocations from other Finnish and Helsinki’s locations). Unlike many other business parks, there are no strict admission criteria: firms should fit the broad category of ‘creative business’ or ‘knowledge economy. As a result, the area is populated by firms with different sector profiles and sizes. It is home to many small companies with connections to design and media.

A considerable number of firms are located in a number of iconic buildings:

- The Arabia building (see figure 8.1), developed and exploited (let) by Varma, hosts showrooms and offices of some of the most important furniture and interior design firms in the area (e.g. EFC, PENTIK). It also hosts the Arabia museum, expositions, a library, shops as well as the TaiK.
- The six office buildings of Portaali Business Park concentrate a total of 4,000 jobs, spread among many companies, restaurants and joint facilities, in rented premises. Besides temporary work, HR and other general consultancy services, the space is dominated by firms in media and technology, ICT, entertainment industry and other types of design. This are usually firms who relocated or opened new offices (selling and research points of a larger network). The large majority are mature and well implemented corporations.

Other buildings in the area also host firms, usually smaller ones. The office space for this type of initiatives is considered rather expensive by some of our interview partners. As a result, sub renting models tend to emerge, e.g. many micro firms sharing one large privately owned open space.

Figure 8.1: Arabia factory in Arabianranta, Helsinki, Finland

There is an incubator managed by the HEIs in the area. Aside from TaiK, the institute of applied sciences plays an important role. New firms can stay there up to two years, at reduced prices, and can make use of joint meeting rooms and other services like accountancy or legal support. The incubators usually house firms in new media, ICT and design (broad focus, but aligned with the area). An incubator has capacity for roughly 20 new firms per year. It also provides services, such as training for entrepreneurship and mentoring.

There are various HEIs that followed TaiK to Arabianranta: the Helsinki Pop & Jazz Conservatory (since
1995), the Faculty of Culture and Services of the Helsinki Polytechnic Stadia (1996), an audiovisual educational institution (2003), Arcada, the Finland-Swedish University of Applied Science (2004), and the Prakticum vocational institute (2005). TaiK stands out because of its excellence and tradition, and it is a magnet for design talent.

8.3.3 Location factors and networks

Major location factors for the companies, according to a recent survey and our interviews, are: the “image” of the area as a location, the presence of TaiK, the creative atmosphere and accessibility. It is important to notice that many of these firms have mainly showrooms, not really production or even design, but they tend to launch antennas to “see what is going on”. As a director of a firm said ‘…this is the spot to see what is around’.

Arabianranta may be a new pole for firms with knowledge based strategies to tap and mobilize new sources of knowledge. This is important from a strategic perspective, but it does not generate per se the large number of jobs or revenues that might be expected. It potentially makes search costs to firms smaller and makes it possible to get inspiration and to find suited labour. Thus, Arabianranta can be seen as a ‘big inspirational bazaar’ (there is a mixture of firms, students, designers, business customers, inhabitants) or as ‘business showroom’. The mixture of various actors and the easy access of the location are important to see what is going on and to spot the latest trends. Hence, tapping into the area’s ‘buzz’ – here especially referring to market trends- played a major role for local business when first considering their location in Arabianranta.

The question is whether this really had a significant impact on firm’s business or innovation, and whether this “buzz” really materialized. This is much more open to debate. Some firms have well established innovation processes and search mechanisms and their innovation activities do not rely on buzz at this micro scale. Many other firms came to Arabianranta with expectations of high ‘buzz’, but were disappointed in this respect. Many of the firms in the area have few contracts and partnerships inside, although the contrary was expected by some of our interview partners before moving to Arabianranta. Occasional meetings resulting in new networks showed to be limited. Some firms even tried to create meeting platforms (e.g. ‘Fountain Fridays’) to meet people working in the same building, but that did not work out in the long run. Lunch facilities were not available in the beginning. There are buildings without a single internal business relationship in Arabianranta. For many firms, the key sources of innovation are the clients, which locate in other places (for instance Nokia in Espoo). Although firms are not directly benefited through local contacts their business is also not hampered as face-to-face contact is also possible with firms in other locations. For many of the firms in Arabianranta, innovation takes places through stable relationships, social networks and not on pure “buzz” and “rub shoulders”.

Thus, the role of buzz and proximity for a firm’s innovativeness might have been overestimated in Arabianranta at its conception. We know nowadays that physical proximity in one location does not seem to be a sufficient or necessary condition for innovation (Boschma, 2005). Firms in Arabianranta source from design firms in the area, but also from other locations. One example is Iittala Group (the largest company in Arabianranta with about 400 employees) that buys the majority of the designs from specialized design firms (it employs only 30 to 40 designers). Of these, only 3 to 7 small design firms that work for Iittala are based in Arabianranta. It works also the other way around; companies outside Arabianranta source from design firms in the location, and there is no need to open facilities next to their clients or suppliers. For instance, Nokia sources from firms in Arabianranta, like Strawberry Group that produces hinges for mobile phones. Thus, regarding design, there is no need to be directly located next to clients or suppliers. This is especially true for multinationals, such as Nokia, that source design from specialised firms all over the world and have own design centres in global hotspots around the world (in the case of Nokia in among others California and London).

As mentioned, TaiK plays a key role for Arabianranta. First, it boosts the image of Art and Design in the area and it attracts firms. It is also definitely important for the innovation efforts of firms as it produces qualified and creative designers. However, with regard to the recruitment function there does not seem to be a need for geographical proximity. As one interview partner noted: ‘It doesn’t matter where good designers are; Companies can find them anyway’.
Firms that locate in Arabianranta tend to look at TaiK for graduates, but there is no systematic cooperation. There is some joint cooperation in lecturing and ‘opening the doors for students’, but again, ‘buzz’ does not seem to be a central issue. Firms see the location here as i) a nice place to show their brand and get reputation, and ii) as a place to put antennas to check out market trends. For foreign firms, there is one extra blockage in fostering innovation: their main design centres is located abroad close to the companies international headquarters, so it is not easy to match directly local designers and the firm’s design departments - there are many ‘filters’. Moreover, these firms are not systematically looking for designers, it is not their aim as they have partners in which they trust and with whom they work on a regular basis. These firms do not pick the ‘first student’, but rely on their own network partners. Many companies have antennas and selling points in Arabianranta, but produce elsewhere in Finland and abroad.

8.3.4 Linkages with other urban locations

Locations do not evolve in isolation and interact with other locations in the city; actors have networks on different geographical scales. The major locations in Helsinki that concentrate art and design are summarized in table 8.2. Arabianranta is part of the ‘science axis’ that stretches from the University of Helsinki in the city centre (social sciences) to Viikki, where the University of Helsinki focuses on biological sciences. The city centre, which forms the cultural heart of the city with urban amenities comparable with other capitals- also includes the Design District Helsinki, a major showroom to exhibit and sell art, aimed at tourists and inhabitants.

Another major node in Helsinki’s knowledge system is the city of Espoo, which hosts the Helsinki University of Technology as well as the headquarters of large multinationals such as Kone and Nokia. Espoo is also home to the recently established Design Factory, a facility that brings together engineers and designers in the newly established Aalto University (after a merger between TaiK, Helsinki University of Technology and Helsinki School of Economics) to share ideas and to design and develop new products. It is important to note that there are plans to create a physical science axis by the construction of a metro link connecting Arabianranta with the city centre and Espoo. This would imply a connection of the campuses of three universities (TaiK, Technical University Helsinki and University Helsinki).

Arabianranta is clearly different from the other locations. Its major focus is in industrial design and marketing for business markets, whereas other locations focus on technology (Espoo), tourism and culture (city centre) and SMEs in creative industries (Ruoholahti). It functions as a showroom of design for the business market. The Cable Factory is an old Nokia plant that provides office and exhibition space for artists, gallery holders, small media designers, and museums. It is owned by the municipality and offers lower priced spaces and in that sense it might be complementary to Arabianranta, where the rents are too high for start ups. Moreover, the Cable Factory still contains the original “roughness”, which is important for certain parts of the creative industries such as artists, in contrast to the Arabian building which is already too neat and polished. However, not all interview partners agreed with the complementary roles of Arabianranta and the Cable Factory. There are more low cost locations, even in the city centre and Arabianranta: ‘If you search low-cost locations, you can find them everywhere’.

A major development that will have an impact on the integration of Arabianranta with other locations is the merger of three universities in Helsinki in the newly formed Aalto University. At the moment of writing (September 2009), the spatial strategy of the new university is not fully clear and there is also no decision taken yet which campuses of the old universities will be used. This uncertainty explains that there is no new vision for Arabianranta. A scenario of Arabianranta without TaiK (in case the board decides to focus on the Espoo campus which is much larger and closer to the major business partner) is different from the scenario in which Arabianranta keeps its design school, making immediate planning difficult. Nevertheless, all interview partners agree about the importance of TaiK for the location, even though formal networks are less strong than could be expected.
Table 8.2: Major (complementary) “art and design” locations in Helsinki

<table>
<thead>
<tr>
<th>Location</th>
<th>Major facilities</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Espoo</td>
<td>University of Technology</td>
<td>Technology and Headquarters</td>
</tr>
<tr>
<td></td>
<td>Design Factory</td>
<td>Design and development of new products, jointly innovated by designers and engineers</td>
</tr>
<tr>
<td>City centre</td>
<td>University of Helsinki: Human Sciences</td>
<td>Culture, tourism (showroom of design product for consumers) and social sciences</td>
</tr>
<tr>
<td></td>
<td>Design District Helsinki</td>
<td>Industrial design, showroom of design for business markets</td>
</tr>
<tr>
<td>Arabianranta</td>
<td>TaiK and other HEIs</td>
<td>Labour pool of designers</td>
</tr>
<tr>
<td>Ruoholahti</td>
<td>Cable factory</td>
<td>SMEs in various creative industries (artists, music, media, museums, etc).</td>
</tr>
</tbody>
</table>

Source: Own elaboration

8.4 ARABIANRANTA AS A PLACE TO LIVE, PLAY AND EXPERIMENT

Cities increasingly foster mixed environments in order to prevent ‘death’ areas after working hours. Arabianranta is such an area planned to have working, studying, recreating and living going hand in hand. This section focuses on the more spatial and urban functions of Arabianranta; we pay special attention to Arabianranta as a ‘Living Lab’ in which citizens are directly involved in the development of new product and technologies in an urban environment – an important experimentation feature associated with the area.

8.4.1 Housing and leisure

In order to attract a diverse group of inhabitants to Arabianranta, there are different land ownership schemes. Before the redevelopment of the area, a large share of the land was owned by the city, but nowadays also by private owners and corporate groups. Within the public-private partnership of the various stakeholders (e.g. the City of Helsinki, industry and other private partners), the land development models are diverse (e.g. the city owned land, long term lease to private investors or private property), resulting also in different exploration models (city regulated, fully and partially market prices, etc) but sharing common standards and regulations for the entire area. Tenders have been used to decide which companies can develop parcels that are owned by the city. The city has the legal power to set rules, but does this in cooperation with other involved stakeholders. This is a central issue in the development in the area, and has resulted in many innovative ideas for the area. Overall, around 40% of the space is price regulated (e.g. establishing maximum rents).

Another strategy to attract a variety of inhabitants has been to offer a mix of different houses (see figure 8.2): luxury private housing (fully market based prices, developed by private developers); private rental housing with controlled prices; city social housing; student housing (for Finnish and foreign students); other specific buildings for i) ‘problem’ youths, ii) elderly and iii) people with multiple sclerosis, all endowed with proper solutions for the different groups. For the latter groups, innovative architecture designs helps to keep residents moving, active and integrated. It is worth mentioning that these groups are involved in the design of the houses in order to adapt them to their needs. With the increasing number of residents, Arabianranta attracts a growing number of ‘market based’ amenities like shops, restaurants, malls, gyms, etc.

Arabianranta is located at ‘Vanhankaupunginkoski brook’ (waterfront), embedded in a natural scenery. Moreover, there were interesting novelties in the design of public space. Residential buildings share a common backyard and garden areas, with no fences, with art pieces and sculptures, facilitating socialization (which is not as common in the Finnish culture as in other European countries) (see figure 8.2). This is designed to foster community culture, monitoring, responsibility and cooperation among the
residents. Besides, developers of the area are required to invest 1-2% of total construction costs in art works (e.g. sculptures, paintings). This is done for three reasons: i) it improves the sense of a pleasant place to live; ii) it consolidates the image of the area around the core theme of art and design; iii) it fosters creativity in developing innovative housing, new techniques, experimentation and quality of architecture. Recent studies show that residents value this as one of the most valued features of the area (Kangasoja & Schulman, 2007).

Despite the focus on art and design, Arabianranta is not targeted as a tourist destination. Apart from art in public spaces and the historical renovated Arabianranta plant, there are no other potential tourist attractions. Nevertheless, the location is attractive for ‘business visitors’ who are interested in the redevelopment of the area and the living labs. The CEO of ADC receives on average two international delegation visits per week to learn about the location. It should be noted that there are differences among the visitors; Asian visitors are particularly interested in technologies used, while European and American visitors show their interest in the social aspects of the “Living Labs” (see next point).

The mixed housing schemes, the variety of the houses and the perceived high quality of life have attracted many inhabitants to the area, and demand for housing is still rising. Nevertheless, in the interviews we have also found some points of criticism. First, despite the mixed housing schemes, it was mentioned that Arabianranta might be too expensive running the risk that only higher income groups are attracted. There is no subsidy system to compensate for this. Second, although the supply of (basic) services increases, the service level is still lagging behind the demand. Moreover, there are some doubts about the vibrancy of the area due to restrictions in opening hours of major facilities and a limited number of events. For instance, the Arabianranta building, that hosts various central facilities, closes at 22.00 hrs and is closed during weekends. The coffee shops in the building close even already at 18.00 hrs. These developments are at odds with the intention to create mixed areas which remain vibrant and active through the entire day (also outside of working hours).

8.4.2 ICT infrastructure, Helsinki Virtual Village and Living Labs

Since the beginning, Arabianranta has been an experimentation arena for pioneering urban development. In the preparatory phase, before construction, the city decided (together with Helsinki Energy) to endow all the Arabianranta area with 10 Mb optical fibre broadband infrastructure. At that time companies were not interested in the fibre, and the development was largely driven by the public sector, with support of universities. Later this was seen as a first step to create a real “connected community” out of Arabianranta.

Supported by ADC, the city of Helsinki and the developers created a ‘last mile’ infrastructure (rented out
by ADC) to distribute fibre optic connections to the entire area. This led to the development of a physical and virtual community linked by an internet based local network, which is called ‘Helsinki Virtual Village’, managed by ADC. Helsinki Virtual Village works to develop a highly connected physical and virtual community of firms, residents, workers and educational institutes. It makes it possible to get the best deals with telecom operators to serve the entire area by means of a single tender for all the area.

Later, it became clear that this broadband infrastructure and the last mile model, supported by a diversified mix of ‘users’ present in Arabianranta and linked by a strong sense of community, allowed Arabianranta to be one of the world ‘Living Lab’ pioneers. Hence, it was acknowledged suitable as a ‘test bed’ for user-driven innovations involving companies, research institutes, public actors and users who directly interact with each other.

But what is a Living Lab? The concept of Living Lab was first mentioned by Prof. William Mitchell in the Massachusetts Institute of Technology (MIT). A Living Lab is defined as ‘a user-centric research method which can be used in a real life environment to identify and build prototypes, and to evaluate multiple solutions which are needed more and more in constantly changing living environments’. It is (or seems to be) inspired by the Eric von Hippel’s (2005) user driven innovation and is also in line with the concept of open innovation (Chesbrough, 2003). A major difference is that Living Labs are based on public-private partnerships and often public actors are the major investors (Almirall, 2008). This explains why Living Labs in the USA are less successful than in Europe. The concept is less interesting for companies as many tests fail. Also in the case of Arabianranta, the contribution of companies, such as Nokia, is relatively small, and the majority of the investments are made by national agencies such as TEKES.

The start of Living Labs in Arabianranta was to a certain extent coincidental. It had a very appropriate structure for it in the form of the broadband networks, although this was not the goal of the construction of this network. The concept was brought to Finland by a professor who visited MIT. Concrete projects in Arabianranta were done under the leadership of ADC since 2002. The concept reached the European political discussion in 2006 when the term was introduced by the Finnish prime minister during his term as EU president (Katzy and Klein, 2008). Later a network of European Living Labs was established. At the end of 2009, this network counted about 130 Living Lab projects and it received € 60 million of the EC (interview). Arabianranta might be seen as a best practice in the Living Lab network, although there are many types of Living Labs which are place dependent and therefore difficult to compare.

In Arabianranta, all residential building(s) (blocks) have an intranet and a ‘house ICT platform’. Each building has an e-moderator who is responsible to set discussions, filter info, organize topics, etc, and can be seen as an administrator of the building. These platforms have high rates of usage. Through these platforms people meet first virtually and in a later stage personally to discuss topics related with the house. Through these platforms it is also easy for researchers and/or firms to find people to test within Living Lab projects. There are also meetings between all the e-moderators, to launch new topics, discuss participation, common needs of the residents and practical problems. The platforms are very interactive, not only to access house documents but mainly to interact in forums with each other.

The e-moderator and the ICT platforms play a key role in Arabianranta’s success as a Living Lab. Residents have demanding and diverse needs, and this increases the chance for user-driven innovation. New mixed models and two-way modes of innovation firm-user and user-user. A simple extreme example is that a senior used a taxi to get one bottle of milk. Seniors communicate with others to go shopping together and the occupancy rate of the taxi increases and the senior meets other people (social exclusion declines). Arabianranta has good cards to realize such initiatives, since networks (ICT platforms) already exist in the area. Trust is crucial in these networks, which can be created by the moderator. He or she is one of the residents of the building which is a requirement.

Another success factor for Living Labs in Arabianranta is the mixed population (residents, students, entrepreneurs, firms, etc). Usability is a central element in Living Labs, and Arabianranta’s mixed population is suited to test new prototypes or gadgets in various target groups or to test it in a diverse population. The group represents a ‘true living life experience’. The first trials in MIT were not so successful or interesting, since it was done in a very homogenous group of only 20.000 students and academics. Arabianranta in contrast, provides different ecosystems, such as small business ecosystems, real life ecosystems, etc. Moreover, users are known by ‘membership’ of the ICT platforms, making it possible selecting the right population for individual projects.
In sum, the broadband infrastructure and the last mile model, the ICT platforms, networks, e-moderators, presence of public-private funding and a heterogeneous test group led Arabianranta to be one of the world Living Lab pioneers, stressing in Arabianranta what has been recently dubbed as a ‘Social Silicon Valley’.

However, there are also some drawbacks and limitations to the Living Lab concept in Arabianranta. Firstly, many projects are location specific, making it difficult to export successful projects to other places. Secondly, as noted before, Living Labs are largely dependent on public funding, and the involvement of private actors is limited. Thirdly, and in relation with this, there are some doubts about the value of the tests for the community. It was argued that the rewards for inhabitants are limited, and in some cases they have the feeling that they are monitored all the time which goes at the cost of privacy. Or as one interview partner argued: ‘They feel like a rabbit in a cage... and have a Big Brother feeling’. Fourthly, due to the excellent broadband connection, investments in new ICT technologies are limited. For instance, Arabianranta has a limited number of WIFI spots.

8.5 CONCLUSIONS AND PERSPECTIVES

Many cities promote themselves as “creative and vibrant”, willing to attract and retain investments and skills. The so-called creative industries – e.g. “art and design” - are often pivotal in these efforts. Therefore many cities have explicit policies to foster creative or cultural clusters. In this chapter we dealt with the case of Arabianranta, a recent large scale urban area based (re)development focused precisely on the transversal theme of art and design, for which the vision is formulated to become “the leading centre for art and design in the Baltic area”.

This new “knowledge location” has a long tradition in industrial design. It was the birth cradle of Arabia, one of Europe’s first and largest porcelain plants. However, Arabia restructured its business during the last decades, leaving land and buildings empty and potentially available for other functions. One of the first “new entrants” was TaiK (during mid 80’s), the renowned Helsinki University of Art and Design, becoming anchor and engine of a steady redevelopment process since early 90’s. During the last decade, the site has turned into a mixed use urban district, combining studying, working, learning, leisure and living (as it is actually highlighted in the area’s promotion material). Moreover, Arabianranta was one of the world’s “Living Lab” pioneers - it is particularly suited as “test bed” for user-driven innovation, involving a large number of different stakeholders, directly interacting with each other towards the development of innovative solutions is the diverse fields.

So far, Arabianranta accomplished most of its objectives, namely concerning the area’s number of students, residents and workers. It is home to many “art and design related” knowledge institutes and many students and residents have chosen Arabianranta as their place to live. There is a large variety of housing, renting and buying schemes in a surrounding that combines an urban feeling with nature. Moreover, Arabianranta is known as best practice in the origins of the European Living Lab network. An indication for this success is the large number of research visits (about two per week) hosted by the area’s public-private management company. In this case study we attempted to obtain a deep analytical understanding of the preconditions and processes behind this “success story”.

Some insights result clearly from our analysis. First of all, it was not Arabianranta that steered the development of a strong art and design productive and innovation system in Helsinki. The causality seems to be precisely the opposite. It is the rooted system of (design) activities, accumulated skills and supportive institutions co-evolving in Helsinki that explains why Arabianranta emerged as an area dedicated to art and design activities. Arabianranta as a planned knowledge location is thus better understood as part of a longer and broader co-evolutionary process sparked a long time ago (Boschma, 2004; Maskell and Malmberg, 2007), when Helsinki emerged as a National, European and International reference in design. From the early beginning, the anchors of the project are well established design organizations (lead firms, TaiK), the same who lobbied (through influential persons) to redevelop the area around the theme of art and design instead of other options open to the city in early 1990’s (e.g. to develop the land into an urban park). Moreover, if Arabianranta attracts design students and artists to study, live and work it is because Helsinki is for a long time an attractive “design” spot and hosts a poll of differentiated skills for design activities – Arabianranta become one of the “faces” of this system. It is likely that Arabianranta will play a role in supporting Helsinki further as an art and design hub (though e.g. enhanced image and informal knowledge spill-overs), but the previous existence of this “system”, in its broad sense, was a central precondition for success.
Another important precondition was the long established Finnish cooperation culture, facilitating the smoother development of complex large-scale public private partnerships around issues of joint interest. Moreover, the Finnish urban planning system and institutions (e.g. high legitimacy for coordinating area based developments, land ownership and public power over private parties) made the integration of (mixed) functions, the theme establishment and diverse housing schemes possible. This integration would be much more difficult to accomplish in the context of other planning systems, where the power of private actors is much stronger and the planning rules and institutions are looser.

8.5.1 Success factors and strategic urban management

Other factors, related with the former, facilitated and accelerated the success of the location, but were hardly sufficient conditions per se.

Firstly, there was a clear shared vision and theme selection, associated with strong urban management capacity to mobilize the right persons and networks in times of crisis (1990’s). The theme “art and design” has an historical as well as a contemporary value, and was assumed by all the parties as a long term vision. TaiK acted as a flagship, anchor and image builder of the area (as well as the Iittala Group). Secondly, the development of some distinctive features of the site was steered by the close involvement of key persons acting as “gatekeepers”, linking Helsinki and other knowledge sources worldwide. E.g. the first Living Lab experiences were supported by professors of TaiK who brought the concept from the USA (MIT) and subsequently diffused it Europe-wide. Thirdly, the establishment of a dedicated agency, representing the interests of the involved players while monitoring the implementation of the holistic concept for the area. Fourthly, a number of contingencies and right “timings” helped to steer the project in the right direction. TaiK was searching for temporary space; When the site was developing, Helsinki was growing and in need of new office and residential space. Other example was the set up of the broadband infrastructure that critically facilitated the development of Living Labs – it was not planned from the begging but was critical in the set up of the ICT platforms and the social interaction (e-moderators) allowing for the development of Arabianranta as a ‘Social Silicon Valley’.

8.5.2 Results of Arabianranta

We further looked at the results accomplished by Arabianranta from two complementary but different perspectives, which should not be confused: i) the development of clustering and agglomeration economies and ii) effects on spatial development and urban experimentation.

**Clustering and agglomeration economies**

Arabianranta attracted (Finnish and international) actors in the fields of art and design (and also multimedia), and there are some observable spatial clustering effects. Many firms state that they located in Arabianranta for image reasons, associated with the presence of TaiK. Arabianranta is considered an excellence design showroom and has good accessibility to the city centre. Moreover, due to TaiK and other firms, there is a specialized micro-labour pool making it easy to hire new designers and spot what other firms and consumers are doing - many firms hope to benefit from this ‘buzz’ in order to catch the latest market and consumer trends. Nevertheless, it is arguable whether this “buzz” is really taking place and to which extend it is really important for firms’ innovation and competitiveness. We found evidence that local networks are limited and many networks evolve on larger spatial scales, with stable partners. We have seen that many design firms supply and source “knowledge” to and from other parts of Helsinki and that systematic cooperation with TaiK concerning training students is limited. Moreover, companies are able to find good designers from various places and physical proximity to labour markets is not often required. Moreover, companies in Arabianranta have different innovation models – e.g. digital content producers rely much more on stable partners and clients in Espoo (like Nokia) than form other players in the location. Other companies don’t have any design department in Arabianranta, and use it as a simple showroom and sales office. Another remark that should be made is that Arabianranta focuses mainly on the higher/professional design market (also due to relatively high prices). The location seems to miss the vibrancy and facilities to attract other design niches. There is no underground culture to attract the artists that form the cultural humus of a city. On the contrary, the cultural supply lags behind the demand of the new inhabitants. Moreover, Arabianranta is considered as to be too expensive for entrepreneurs and small firms. In
addition, apart from an incubator centre (Arabus), support for starters and SMEs is limited. It should be pointed out that Arabianranta is only one of the locations in Helsinki in which art and design play a role. For instance, the city centre can be seen as a tourist attraction selling consumer art products and the Cable Factory offers cheap accommodation for artist and offers space for small scale cultural events. It is still to be seen whether Arabianranta will develop as a distinct city district for knowledge production as companies, HEI and residents start to create social proximity, or whether it will be just one more office and housing space hub in a larger design-relevant cluster in Helsinki as a whole.

**Spatial development and urban experimentation**

It would be highly partial to look at Arabianranta only as a place to foster knowledge production and innovation. From a more integrated urban development perspective, Arabianranta had so far important spatial and organizational effects in Helsinki, both city and city government.

First, from a physical perspective, Arabianranta developed as a new centrality in Helsinki, enhancing the quality of the urban space and constituting itself as a relevant new urban pole, an extension to the city centre without the suburb feeling. It structures nowadays an important “science” axis, also including the city centre and the Espoo area where the University of Technology locates. It is one of the “thematic activity” areas of the city, promoting a clear image (other is, e.g. Viikki, dedicated to the fields of biomedicine). It reinforced the position of the city of Helsinki in a quite polycentric metropolitan area.

Second, Arabianranta allowed for a number of urban based experiments, some of then becoming or in the way of becoming mainstream. It allowed testing new local broadband solutions, enhancing the digital connectivity of the area. By the time (late 1990’s and early 2000’s), broadband optic fibre was a novelty, and few locations in the world were endowed with this infrastructure. As we depicted before, associated with portals and digital platforms in each building, it facilitated the development of social interactions and a sense of community in each building and in the area as a whole. The emergence of “e-moderators” as brokers and gatekeepers of sociability allowed for the development of Living Lab experiments, enhancing the portfolio of activities of the area, as well as the development of constant social innovations for Arabianranta. Also socially, Arabianranta is a case of success and integrated planning – it hosts a mix of social, ethnical and age groups in different housing schemes integrated in a location of growing charisma.

Third, the process of developing Arabianranta contributed to enhance the capacity of local government to organize this type of demanding partnerships, namely by helping to institutionalize regular cooperation with other parties (e.g. developers, universities, firms) around large scale and integrated developments. Moreover, it required the establishment of regular cooperation between municipal departments around transversal issues (ex: planning, transport and economic development departments). Arabianranta also showed the need to develop communication plans and the importance of establishing dedicated entities and public-private structures to monitor the development of large projects overtime (ADC). Many of the lessons of Arabianranta are nowadays being used and considered in new thematic area based developments in other city locations.

**8.5.3 Challenges and recommendations**

As a location is never finished, there are some challenges for future development. The first and probably biggest challenge relates to the recent merger of the three Helsinki universities – the new Aalto University. The role of the individual campuses in the new organization is still unknown. The uncertainty of the future role of TaiK is a major reason for the absence of an updated vision for the area⁴, but there is consensus that there is a need to keep TaiK in Arabianranta – at least its major functions - as it is seen as the flagship of the cluster. Without TaiK, Arabianranta may lose its “face” and a major source of ‘buzz’ and attractiveness. The same goes for Iittala – besides its anchor role, it would be a huge challenge to find new tenants to take the empty space.

A second challenge is to reduce the dependency on key persons. As we have described, many knowledge and leadership is dependent on key persons who connect Arabianranta with other key places and institutes (e.g. MIT) and steer developments in the right direction. The challenges are: to keep these persons, attract successors and reduce the dependency of key persons by the establishment of more structural and institutionalized networks. Thirdly, it is important to prevent that Arabianranta becomes a prisoner of its own past. Therefore there is a need to innovate constantly and adapt to contemporary requirements. For instance, invest in energy efficiency techniques and in WiFi spots. By time of the construction, these issues were not in the agendas. This may steer further experimentation and keep Arabianranta in the edge
of experimentation. Fourthly, it is a challenge to connect Arabianranta with other locations in the region. How can Arabianranta be complementary to newer locations, such as Viikki and Ruotholoti? Furthermore, make sure that the science axis becomes a physical axis that connects Arabianranta with the city centre and Espoo, where other initiatives and incubators (like the design factory) locate.

Finally, it is important to pay attention to other issues, such as improving the cultural supply and improve livability in the area, support SMEs in the area or make sure that there are good connections with areas which are more suited for SMEs (e.g. the Cable Factory).
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9.1 INTRODUCTION: SETTING THE SCENE

Take a man-made island, roughly twice the size of Central Park. Fill it with state-of-the-art schools, hospitals, apartments, cultural amenities, and universities. Replicate architectural features from around the world, including Venice's canals and New York's parks. Make English the lingua franca and - presto - you have the world's newest city: it is Korea's answer to Shanghai and Dubai (…) Financing it with recycled real-estate profits sounds like an act of lunacy. Yet this is what is happening in South Korea, and strangest of all, it appears to be working.

(David McNeill, 2009)

Since the 70’s and together with Singapore, Taiwan and Hong Kong, South Korea had been part a rather well known group of economies dubbed as the “Asian Tigers” or first “Newly Industrialized Economies”. Those are nowadays high-income countries that experienced remarkable growth and change over the last half century. Despite the recent emergence of fast-growing global giants like China, India or Brazil, South Korea has been considered by many commentators like Goldman Sachs, McKinsey or The Economist as one of the economies with largest growth potential for the future (e.g. Florida, 2005; McKinsey and Company, 2010).

Despite the country’s astonishing success, the history of South Korea has been far from stable. Korea’s peninsula was annexed by Japan in 1910 and later occupied by the Soviet and American troops in the aftermath of World War II, time when it was divided along the 38th parallel in North (under Soviet influence) and South Korea (occupied by the United States troops). A north-South civil war followed (the first armed conflict of the Cold War), ceasing fire in 1953. By this time, basic infrastructure was destroyed and South Korea faced unemployment and poverty. To change this state of affairs, the State launched an import-substitution industrial policy, with export focus, supporting the emergence and growth of large conglomerates of industrial activities (called ‘chaebol’) like the world famous Hyundai, Kia and Samsung, parallel to sound investments in infrastructure and education. Seoul’s city and region became the face of the country’s fast change, nowadays a dynamic metropolis, centre of business and trade, with highly advanced technological infrastructure. Seoul was the first Asian city after Tokyo to host the summer Olympics back in 1988. Its fast industrialization and continuous growth, namely around Seoul (e.g. Incheon city, Gyeonggi Province) transformed South Korea into a trillion USD economy and world-class manufacturer. This success story has been widely mentioned as the Miracle on the Han River.

South Korea’s growth story has proved resilient as well (Roach and Lam, 2010). Its economy recovered fast from the recent 2008-09 financial crisis, just like it did after the 1997’s Asian debt crisis and the International Monetary Fund intervention (IMF, 2009). From this period on, market-driven and neo-liberal reforms gained strong momentum and South Korea launched policies to increase openness to foreign capital and FDI (Wang, 2007), willing to support the development of new economic activities beyond manufacturing, like services and new knowledge based industries. This was seen as a necessary step to keep the country’s progress apace with the previous decades. In early 2000’s, under this reformist turn and tapping in the country’s strategic location, the Korean Ministry of Finance and Economy (2002) published a strategic document with the vision to make South Korea the “Northeast Asia’s Business Hub”. This strategy had spatial implications. Seoul would still be the country’s main economic and knowledge centre, but new growth engines should contribute to fulfil this hub character. The metropolitan cities of Busan (large port city in the South of the country) and Incheon (only 30 km away from Seoul, with a brand-new international airport) were among the natural strategic choices. In 2002, together with local governments, the Korean Government legislated for the creation of special Free Economic Zones in different Korean cities, strategic tools of the country’s new knowledge and development strategy.

Incheon, the 3rd largest metropolitan city in South Korea (after Seoul and Busan), with 2.7 million inhabitants, early became a central prawn in the “business hub” strategy. Incheon grew significantly in the last decades as a manufacturing hub, attracting population from the countryside, even though erosion of manufacturing base has occurred in recent years due to rising land prices. In 1995 it became administratively one of the 6 metropolitan cities of South Korea, yet considered part of (Seoul’s) capital region as well. Despite its economic relevance, and due to its strategic location, Ducruet (2007) comments that in the last decades, Incheon has played the role of maritime and industrial extension of the
capital Seoul, which still concentrates the core of advanced services, knowledge and decision functions of the country. The creation of IFEZ – Incheon Free Economic Zone – the country’s first of its kind, envisaged changing this situation, endowing Incheon with a much more strategic role as international hub for logistics, business, leisure and new “high-tech” clusters. Mostly on sea-reclaimed land, IFEZ is being developed through the creation of three non-contiguous “new cities”: Songdo, Yeongjong and Cheongna. This case study focuses on one of Incheon’s “new cities” – the new Songdo district – planned to become a fully fledged international business hub and knowledge location by 2020, with 250 thousand new inhabitants, in an area of 50 Km2. Despite being a rather recent development (construction works started in 2003), Songdo already called the attention of many commentators and research disciplines. It has been the case, to name a few, of international business studies (Segel, 2006; Lee and Hobday, 2003), real estate finance (Kang, 2004), the development of environmentally friendly and sustainable cities (Whitman et al, 2008; Ekblaw et al, 2009), comparative development of free economic zones (Kim, 2007; Bang and Park, 2005), politics of place promotion (Kim, 2010) and knowledge based urban development (Lee et al, 2008; Murray and Greenes, 2007). Moreover, increasingly attention has been given by international popular press, e.g. by the New York Times (e.g. Cortese, 2007) and Songdo has been referred as a highly promising development by organizations like the OECD (2005) or the Creative Class Group of Richard Florida (Florida, 2005). Counting with strong involvement from private foreign (namely US) capital, Songdo is among the largest “polderization” real estate developments in the world. The master plan for Songdo’s international business district won an international award from the American Institute of Architects. It proposes an integral urban development project, combining a holistic portfolio of urban functions and amenities. The project is orchestrated by the Metropolitan City of Incheon with the strong commitment of the National Government. Besides tax cuts and other incentives, large sums of money are being invested in excellent transport infrastructure as well as sound funding for science, technology and firm’s innovation.

In this case study, we go beyond a snapshot description of what Songdo is today and systematically analyze its emergence and development dynamics as a ‘planned knowledge location’. By doing so, we move away from the more conventional place promotion discourse (Kim, 2010), and try to unravel critical processes and mechanisms involved in the development of Songdo. More precisely, we try to answer to the following two central questions:

- Which drivers and catalysts are behind the emergence of Songdo?
- How did Songdo developed overtime, both as a i) international business and knowledge location and as a b) functionally integrated urban area? And which factors have critically influenced this development?

We argue that Songdo can be seen as the urban “face” of a number of converging national and metropolitan strategies to create distinctive competitive advantages for South Korea, the Capital Region and Incheon, vis-à-vis other Asian competitors. At the national level, Songdo is among the first test-beds of a number of on-going political, social and economic reforms in South Korea (e.g. economic liberalization, social openness, de-regulation, and attraction of foreign capital), a protected arena to overcome vested interests, facilitate looser, more flexible regulations and the development of new knowledge intensive clusters. Moreover, it reflects the wish to overcome the neutral or unfavourable image of Korea for external investors and expatriates (Graves, 2010, Kim and Lee, 2007) towards a more open, global business and knowledge location. At the metropolitan and city level, by creating a new high stature business and knowledge hub, a visionary, functionally integrated “tomorrow city”, Incheon targets the activation of new and distinct growth engines within the capital region and Seoul.

This chapter is part of an international comparative study on the development of locations in the knowledge based economy. It has two central aims: one analytical, where we assess the state-of-the-art of Songdo’s development, the antecedents and catalysts behind its emergence and early growth, and a second one, prescriptive, where we bring forward challenges and policy recommendations. The chapter is organized as it follows. After this introduction, in section 2, we start with a broad contextualization and narrow down progressively, by i) sketching the socio-economic and institutional structures and dynamics under which Songdo emerged and unfolded; ii) analyzing the chronology of events with relevance for the development of Songdo and iii) providing a picture of the location’s most relevant physical and organizational features. In section 3 we put the focus on Songdo as an international business and knowledge location. Section 4 looks at Songdo as an integrated urban development project. In section 5 we wrap-up, pointing critical development challenges and policy recommendations.
9.2 SONGDO: CONTEXT, HISTORY AND MANAGEMENT

9.2.1 Structures and dynamics: development foundations and institutional context

Geostrategic position and the evolving role of the Developmental State
South Korea locates in what is nowadays one of the most dynamic world economic regions – Northeast Asia. In a context of an ongoing hegemonic shift from western economies towards Asia, Northeast Asia has become responsible for the lion’s share of the world’s economy and growth, namely after the economic downturn of 2008-09 (OECD, 2010).

The economic engines of this region are concentrated in a number of what Richard Florida and his collaborators (2008) called Mega-Regions, i.e. large extensions of urbanized territory defined in terms of contiguously (or very nearly contiguously) lighted areas as seen from space at night (p.463). This indicator, though simplistic, is very illustrative and highly correlated with other more conventional measures like a region’s GDP. With no surprise, it shows the highly uneven distribution of economic activity in a number of urban agglomerations in a spiky, far from flat world (see figure 9.1). South Korea has a well distinguishable place in this map - despite the differences within the country, according with Florida’s methodology a large part of South Korea’s territory forms a mega-region (roughly from Seoul to Busan), just like other Japanese and Chinese mega-regions – e.g. the famous mega agglomerations of Tokyo, Osaka-Nagoya, Shanghai, Beijing or Hong Kong – Shenzhen (see figure 9.2).

Figure 9.1 Global distribution of economic activity

South Korea’s geographical location has been recognized as challenging. It is literally “stuck in the middle” (Roach and Lam, 2010) of two economic powerhouses: the manufacturing giant China and the knowledge champion Japan. Dingli (2010) puts it very clearly:

“South Korea sits in a difficult neighbourhood. It has long competed with Japan, and compared itself to it. But Japan is richer, both in terms of money and in human resources. Now China is catching up. While Japan leads South Korea in high-tech prowess, China is narrowing its technological gap. And given that both China and Japan have many more people, it is unlikely that South Korea will ever match them in economic scale.” (p.19).

Thus, in the last few years, and namely after the 1997’s IMF stabilizing intervention, the Korean government has been pursuing structural reforms towards economic liberalization, flexible legislation, lower taxation and FDI attraction. Korea envisages developing an advanced services and “high-tech” economy to complement and diversify its (still) chaebol based industrial capacity. This “globalization” strategy implies plugging in the evolving competition between world cities to attract mobile investments in spaces of economic, financial and labour flows (e.g. Douglass, 2000; Taylor, 2000; Hill and Kim, 2000; Wall, 2009). Cities like Dubai, Hong-Kong, Shanghai/Pudong or Singapore become, ironically, references and competitors for the attraction of similar types of international business and investments.

Simultaneously, the role of the National Government slowly became more legislation oriented, as a facilitator of private investments, an evolution vis-à-vis its role during the second half of the XX century, when government’s active industrial policy and chaebol funding was famously called Developmental State (Wade, 1990; Stubbs, 2009, for a review). The rather visible hand of the State, by “putting the prices wrong” (Amsden, 1989) supported the emergence of national industrial conglomerates, too big to fail, e.g. in automotive, electronics, steel and shipbuilding. Famous examples are the chaebol Hyundai, Daewoo, Samsung and LG, nowadays world champions in their fields. Despite the State’s role during the chaebol emergence and development, since the 90’s the stature of these companies evolved with their lead of global production networks, in which they plugged through e.g. mergers and acquisitions, disembedding themselves from the direct State support and becoming fully fledged global corporations (Yeung, 2009).
However, and despite the ongoing structural reforms in South Korea, the Developmental State seems far from dead. According to Yeung (2009), it evolved towards a “new generation” Developmental State, with the supportive focus and main tenets now turned to “pick the winners” in new high-tech and immaterial industries like ICT, Nano and Bio Technologies. Moreover, with regard to the types of support from the different governments lately, it is noticeable that central government focuses on deregulation and tax incentives while municipal government tends to actively participate in numerous investment promotions which encompass ‘providing the land at low cost’ and other financial aids in order to lure in more businesses. Thus, the two governments or State levels have distinctive, though sometimes intertwined roles in the field, with municipal support more direct and central more indirect.

The above mentioned fundamental changes in South Korea – i.e. economic liberalization towards the attraction of international businesses, and the emergence of a “new generation”, high-tech focused Developmental State, are convergent and critical to understand both the emergence and developments taking place nowadays in IFEZ generally and in Songdo district in particular. A third fundamental change is related with the National Government’s economic decentralization policy from Seoul towards other metropolitan cities, while nurturing the critical potentials of the Capital Region. We will discuss this in the next point, while framing the development foundations of Incheon in the context of Seoul’s Capital Region.

Incheon and Songdo in Seoul’s capital region – development foundations and context

Incheon is South Korea’s 3rd largest metropolitan city (2.7 million inhabitants), after the capital Seoul (only 30 km away in the Han River, with 10 million inhabitants) and the southern city of Busan (3.6 million inhabitants, and among the largest seaports in the world). Incheon has always been geopolitical and economically important not only because of its port but also because of the proximity to the North Korean border and to the capital Seoul. This proximity to Seoul, however, embodies a paradox: Incheon is a large metropolitan city, but at the same time it is too close from Seoul to claim full functional independence, namely for higher-level business activities and knowledge intensive functions. Ducruet (2007) stresses that until the 1990’s Incheon enjoyed the country’s highest growth of industrial employment and rural migration. Population is ageing (in Korea generally), but Incheon is likely to keep attracting young workers from the rural areas. However, the city could not diversify its economy precisely given its proximity to Seoul, where core business and tertiary activities are concentrated. This situation poses challenges for the further development of Incheon and Songdo district. Incheon is part of the so-called capital region (see, e.g. OECD, 2005), a large urban agglomeration around the city of Seoul.

Notwithstanding this integration, and as we can see by the commuting flows between Incheon-Seoul vis-à-vis other municipalities around Seoul (Figure 9.3), Incheon has a rather independent labour market and is far from being a simple suburbanized satellite of Seoul.

The economic muscle of this urban region is nowadays among the Asian and world’s strongest. The Han river area in general and Seoul in particular concentrates the headquarters, advanced manufacturing and R&D activities of the main Korean conglomerates and large industrial companies – among the world leaders in automotive, LCD TVs, electronics, mobiles, ships, steel, appliances or memory chips. These industrial competences accumulated overtime to form a distinct set of available engineering skills, a large labour pool of very qualified technicians, adapted university and education curricula, but also industrial vested interests willing to keep the status-quo, with influence in the (industrial) policy making. Again, government support was pivotal in developing and strengthening this economic and knowledge base overtime, not only directly supporting national (export) champions, but also funding, e.g. the military and defense industry and its appliances. Korean companies are nowadays among the world leaders in these industries. Some of them merged or established joint ventures with other global corporations. Daewoo Motors was integrated in the General Motors group, but kept its operations in Incheon; it recently announced a large investment in a R&D and pilot test facility in IFEZ. Simultaneously, National and Local Government nowadays strongly support economic diversification and the development of new high-tech activities, tapping in the skills and competences of national universities and R&D centres. Even if the service sectors are underdeveloped in South Korea vis-à-vis other developed economies (OECD, 2005; Dobbs and Villinger, 2010), Seoul still concentrates the most important and advanced share in the nation.

The economy of metropolitan Incheon, if statistically analyzed without Seoul, represents approximately 4.7 % of the national economy (IDI, 2010). In the last decade, despite the relative growth of tertiary activities proper of a metropolitan city (real estate, commerce, horeca, etc), a large share of Incheon’s economy remained centred on industries like iron, steel, coke, light metals, plate-glass, textiles,
chemicals, and lumber, most of them organized in small and medium sized companies (Ducruet, 2007). Incheon’s metropolitan city government has a clear vision to diversify its economy from traditional manufacturing towards the “activities of the knowledge economy”, and, aligned with National Government, directs funding for the development of ICT, biotechnology, nanotechnology, new materials, etc.

*Figure 9.3 Commuting flows in Seoul – inbound commuting ratio*

![Commuting flows in Seoul - inbound commuting ratio](source)

*Source: OECD (2005), based on the urban planning bureau of Seoul’s metropolitan government*

The knowledge base of the capital region is also very strong. The qualification level of South Koreans is very high by any international standard (OECD, 2005; McKinsey&Company, 2010) – around 95% of Koreans attended high-school, and 98% are literate. During 2001-06, South Korea invested roughly 2.7% of its GDP in R&D, the highest percentage for countries in similar development levels. This share is higher than in Singapore, Germany or even the United States (see figure 9.4). An important part of these investments became patented innovations. Specialization sectors of South Korea (electronics, mobiles, automotive) are particularly prone to register patents as innovation output, legislation is supportive and the results are globally impressive – in 2001, South Korea ranked world second in number of registered patents, being Tokyo’s mega-region the first and Boston-Washington DC the third (Florida et al, 2008, see figure 9.5).

Seoul has the best research and knowledge infrastructure in the country, including R&D facilities of the largest industrial companies. Incheon city is also endowed with large universities and higher education institutions in Science and Technology domains. Examples are the University of Incheon, Inha University-Technical College and Gachon Medical School - all of them are developing brand-new premises and dedicated R&D centres in Songdo district. Notwithstanding this educational supply, Dobbs and Villinger (2010) note that an astonishing 30% of the deficit in the services’ trade balance of South Korea is associated with educational spending abroad. This reflects the decisions of many families to send young pupils overseas for primary, secondary and university schooling, due to the high value attached to education, and namely, to USA degrees (figure 9.6). As a result, a large share of PhD graduates working in Korea has experience working in overseas universities and companies, and a potential network of latent international contacts. Korean high qualified diaspora has also proved to be an asset before, e.g. for Samsung technology search and source in the US in late 90’s (Kuznetzov and Sabel, 2008).
Figure 9.4 South Korea: R&D spending and GDP per capita, 2001-06


Figure 9.5 Global distribution of patent activity

Incheon’s international accessibility is excellent, namely after the opening of Incheon’s international airport, already one of Asia’s largest and growing passenger and cargo hub (IDI, 2010). The former international airport of Seoul (Gimpo), close to Incheon city, still runs and focuses on domestic and Asian connections. The new airport has been a central piece in the new Songdo district’s strategy. The new Incheon Grand Bridge, the 7th world largest (21 Km) recently opened and links the new international airport with Songdo district in 15 minutes. Incheon also has a large sea port under expansion, and a new light port area is inclusively planned for Songdo; moreover, the new Gyeong-In waterway linking the River Han with Incheon (close to completion) may strengthen even further the city’s logistical capacity and connectivity with Seoul. Incheon metropolitan city is well linked within and to Seoul through road, rail and metro lines. Songdo district has many metro stops and is highly accessible by all transport modes. This connectivity is likely to improve even further as new infrastructural investments are completed (see figure 9.7).

Digital infrastructure – broadband, optical fibre – is excellent in Incheon and South Korea as a whole, often ranked as the world’s best (Florida, 2005, Kelly et al, 2003). Broadband households’ penetration is close to 100% and Korea is in the edge of world broadband leadership. This makes the country, and some large regions in particular, perfect test beds for new ICT related innovations, as it is the case of the development of u-city technologies and planning concepts in Songdo district (see sections 9.3 and 9.4).

Incheon city has ambitious plans to achieve a balanced spatial development. The city representatives are aware of the potential detachment between IFEZ’s new cities and the “old” centres and districts of Incheon. Hence, the city plans for 2020 target the development of new accessibility and revitalization plans for those city areas, in order to achieve a more equilibrated and polycentric development (see figure 9.8). These redevelopments are planned to be cross-funded with the real estate profits generated by IFEZ. Yet, simultaneously, direct accessibility from the new cities to Seoul is likely to improve even further.

On what refers to quality of life, Incheon has all the market amenities typical of a metropolitan city, naturally complemented by higher order amenities and cosmopolitan atmospheres in the city of Seoul, only 30 Km away – culture, leisure, etc. Incheon itself is not perceived as a highly vibrant city, but real estate prices are much lower. The policy and promotional discourse of Songdo and IFEZ in general – “a wonderful place where beautiful people live their interesting lives” (Songdo’s Compact-Smart City Exposition) - is explicitly linked with the ambition to create distinctive atmospheres, top cultural and leisure amenities and the vibrancy of an international business district - which didn’t materialize yet. Implicitly, Songdo targets the development of high quality living and office alternatives to a congested and expensive Seoul, to the benefit of Incheon, in a context of potential growing demands for quality housing and business space.
An important issue to look at is the people’s diversity (backgrounds, cultures, nationalities), in Incheon and Seoul in general. Jane Jacobs (1969) had long mentioned the role of diversity in urban development and innovation. More recently, Richard Florida (2005) has associated the degree of cultural diversity of a city with the levels of tolerance, openness to new ideas, creativity and innovation – evidence (from the US) shows that more socially and culturally diverse metropolises are also the ones with highest growth rates.

South Korean population is culturally very homogeneous and socially rather close. For example, according to IDI (2010), in Incheon, only 48 thousand out of 2.7 million inhabitants are foreigners (less than 2%). This condition doesn’t seem to have hampered the impressive growth and development of South Korea in the last decades, which is in line with recent arguments that the diversity-innovation link needs to be contextualized to different industries and occupations. For example, Asheim (2009) convincingly argues that activities primarily relying on engineering skills – like the ones South Korea has
excellled on - instead of a large diversity of cultures, tend to require stability, mutual understanding and even cultural and socially closed communities.

However, Florida (2005) stresses that to develop new types of industries and economic activities (e.g. ICT and media, creative industries, biotechnology) and to attract expatriate talent and investment from outside, diversity and cultural openness are important conditions, and those are still limited in South Korea. The perceptions of multinationals about South Korea as a place to invest, despite improvements in the last years, are still rather unfavourable (Kim and Lee, 2007) – the general business climate has been traditionally hostile to foreign companies, closed, as well as the brand image of the country as a good place to invest vis-à-vis other Asian competitors (Greeves, 2010). Florida (2005) comments that cities like Beijing, Shanghai, Hong-Kong or Singapore are much better endowed with, e.g. international hospitals, schools, English-language entertainment guides and English speaking communities. This might endanger further attraction of talent and investment from outside - a prime objective of South Korea. Recent initiatives taking place in Incheon and Songdo, like the “Incheon Free English” programme and the slogan “smile in English” intend to raise awareness and start changing this state of affairs.

As previous mentioned, the role of the State in economic and innovation policy has been and still is highly relevant in Korea. South Korea is a fully fledged representative democracy since late 80’s, and besides the National level, also the Local level is rather powerful and active deploying economic, innovation and spatial planning policies. Seoul has a special city status, but Incheon, since 1995, is considered a “metropolitan city”, with strong administrative and planning powers. The planning and development of IFEZ is an example of the influence and power of Incheon in the national context, but also of cooperation and policy articulation between different administrative levels. The city of Incheon has a large planning department and multi-disciplinary urban research units like the Incheon Development Institute, with a highly qualified staff (more than 30 PhDs), favouring an integrated approach to urban development and management. In the last 8 years, the Mayor of Incheon, coming from the private sector, has been generally considered as highly proactive and one of the central orchestrators behind the recent developments in Songdo. The plans for IFEZ represent the Korean values of national pride and “can do” spirit, nurtured during the last half century, and are at the core of the ambitious plans for the new Songdo district. We analyze those plans in the next point.

9.2.2 Beyond the snapshot: Story and background of IFEZ and Songdo

The roots of what are IFEZ and Songdo today started during the 80’s. However, their development evolved in a complex, nuanced and to a large extent unpredictable manner (Teisman and Klijn, 2008). Table 9.1 provides a chronology of key events, actors and changing landscapes associated with the changing strategies for Songdo, from early 80’s until 2009.

Table 9.1 IFEZ and Songdo: chronology of associated events and actors

<table>
<thead>
<tr>
<th>Period</th>
<th>Events and actors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early 80’s</td>
<td>Incheon city decides to reclaim land to the Yellow Sea to build new city areas.</td>
</tr>
<tr>
<td>1988</td>
<td>Korean government announces a massive housing construction plan in order to stabilize the housing market and real estate rising prices (democratic reforms of Roh Tae Woo’s administration; Olympics in Seoul).</td>
</tr>
<tr>
<td>1991</td>
<td>A Basic Plan for “Songdo new town” is developed by the city of Incheon.</td>
</tr>
<tr>
<td></td>
<td>President Kim Young-Sam takes office in 1993 and starts a number of neoliberal reforms. Increasing trade and relations with China.</td>
</tr>
<tr>
<td></td>
<td>The construction of the new International Airport in Incheon starts.</td>
</tr>
<tr>
<td>1995-1996</td>
<td>Initial basic plan and vision for Songdo is modified towards “knowledge, IT industries and global business”. City of Incheon promotes a “tri-port” strategy and slogan – airport, seaport and teleport.</td>
</tr>
<tr>
<td>1997-1999</td>
<td>Asian financial crisis breaks in 1997 and the IMF intervenes for sharper market, regulation and economic reforms, pioneered by new president Kim Dae-Jung; Large conglomerates restructure;</td>
</tr>
</tbody>
</table>
Government industrial policy becomes more FDI friendly.

Experts and ex-government officials first argued for the introduction of Special Economic Zones: the plan for Korea as a logistic hub in North East Asia.

National Government establishes the 1998’s Foreign Investment Promotion Act, envisaging developing Free Economic Zones (FEZ) in different country’s regions.

2000-2001

Ministry of Finance stresses the need to relax regulations hampering foreign competition in the service industry.

Investors argue that Korea cannot compete with China in manufacturing and propose the development of a financial hub.

International airport officially opens in March 2001.

Kohn Pedersen Fox Associates, world leading architecture and planning company based in New York, is hired by Gale, an American real estate developer, to start drafting the design of an International Business District in Songdo.

2002-2003

Korean government starts to draft a Free Economic Zone law, in consultation with Incheon Metropolitan City and a number of experts (January, 2002). FEZs are seen as a way to contour vested interests, regulations and mindsets that could hamper investment in new directions, like services activities (e.g. only logistics or manufacturing intensive activities).

The city of Incheon grants POSCO E&C (subsidiary of the Korean steel conglomerate POSCO) the role of leading master plan developer for the first part of reclaimed land in Songdo district, under the condition of teaming up with a foreign developer, with the majority of interest in the venture (to ensure higher construction standards, international appeal, trust, attract foreign investors and financial muscle). A joint venture between POSCO and the American real estate developer Gale Company is formed under the name “New Songdo City Development LLC – NSC”, with the support of the city of Incheon, later called NSIC – New Songdo International City. (February, 2002)

Mayor Ahn Sang-soo takes office (June, 2002).

National Government authorizes a Free Economic Zone in Incheon, composed by 3 sub-areas / new cities: Songdo, Yeongjong and Cheongna – Incheon Free Economic Zone (IFEZ). This is part of a larger National Government Plan from the Ministry of Finance and Economy called “North East Asia Business Hub Plan”.

Designation of IFEZ, the first in Korea (port cities of Busan and Gwangyang followed). It is the first time Government designates an “investment friendly” area for FDI. (October, 2003).

The development of the International Business District in Songdo starts.

2004

National Government’s industrial economists sceptical of the viability and sustainability of the business hub and FDI per se; a complementary innovation clusters’ policy and industrial high tech development is suggested for Korea.

The construction of the new Incheon Bridge directly linking Songdo and the new airport starts.

2005-2009

Progressive real estate development and settlement of the first residents, firms and organizations in Songdo.

New foreign players investment in the Int’l district’s real estate development (Morgan Stanley)

Songdo master plan receives a world award by the American Institute of Architects. The New York Times and the Urban Land Institute award Songdo with the first annual Sustainable Cities award, and is chosen as a pilot program for the U.S. Green Building Council’s LEED for Neighbour Development rating criteria (LEED: leadership in Energy & Environmental Design©).

New Korean Government takes office and champions “Green Growth”.

2009

First development stage in Songdo is concluded


From this evidence, two important observations stand out. Firstly, more than two decades ago, the initial idea for Songdo’s reclaimed land was rather different (focused on housing) and changed overtime until it reached today’s vision of a functionally integrated functional business and knowledge location. During this process the action’s context and landscape changed various times (e.g. economic liberalization, acknowledgement of the “knowledge economy”, Asian crisis, country’s administrative structure) and several actors entered and left the process, influencing its strategic course (e.g. groups of experts, Mayor,
external real estate developers and planners, ministers). Thus, the present design and vision for Songdo has very much resulted from an organic process of development, in reality not in the hands of any single leader, but of a group of actors and orchestrators whose roles changed overtime, as well as their power and influence in the project. For example, it was probably unthinkable in mid 90’s that a foreign private developer and foreign capital would have a powerful role in the design and development of the area. In 2003 the Mayor of Incheon Ahn Sang-soo took office and became an influential person orchestrating Songdo’s development process, namely in attracting sound resources from the National Government. However, the seed for Songdo’s vision was defined previously, and will probably keep changing and being adjusted in the coming times.

Secondly, and related with the first observation, the district’s development pace was rather erratic: it slowed down and accelerated for different times during this roughly 30 year’s time frame. In early 2000’s the project gained critical mass and become irreversible, as a number of actors and networks (e.g. State, Metropolitan Government, external investors, advisors) become progressively aligned, legitimated and discourse got entrenched within the main players and society as a whole (visions of “city of the future” and “Northeast Asia hub”).

9.2.3 Goals, features and management of IFEZ and Songdo

As a result of the previous, and due to the need to conciliate different actors’ visions in a single district, Songdo became a rather complex and multifaceted project, composed by different “villages” and “knowledge locations” within. It is not the aim of this chapter to be fully comprehensive and go in-depth into all its components (spread along more than 50 km2 i.e. 60% the size of Manhattan). Instead, we retain the vision and main objectives, and punctually narrow down to analyze concrete examples of distinct sub-locations within Songdo’s. We look at it at three different but interrelated scales: macro (IFEZ), meso (Songdo district) and micro level (sub-locations within Songdo: see table 9.3 and sections 9.4 and 9.5).

From a macro perspective, Songdo is one of the three “new cities” composing the Incheon Free Economic Zone (IFEZ). According with the phrasing and promotion lines of IFEZ authority (2010) and the Incheon Development Institute (2010), the aims of IFEZ are diverse and broadly refer to “Building Northeast Asia’s Centre for International Business” and “Creating Special Economic Zones to accumulate Technology, Human resources, Companies, Finance and Logistics” and “Strengthening National Competitiveness & Balanced Regional Development”.

IFEZ is a joint responsibility of the South Korean State/National Government, namely the Ministry of Knowledge Economy and the Incheon Metropolitan City. These two players are the public authorities and main orchestrators of the area’s development. Under this umbrella, the development of IFEZ’s specific areas and “sub-locations” depends on partnerships between those government tiers and their own development corporations (see table 9.2), and a number of private developers and large companies, most of them from the USA. Examples of those developers and companies, for the case of Songdo, are Gale (a real estate development company based in New York), VaxGen (shareholder of Celtrion, a large biomedical company), Cisco and IBM, developing their own facilities. Researchers and planners from the City of Incheon follow and provide recommendations on the planning processes in articulation with IFEZ authority, city planning bureau and the developers’ own planners.

IFEZ aims to become a “new-generation free economic zone”, going beyond the more conventional manufacturing and office functions. It envisages a complete functional mix in dense and compact areas, integrating housing, working and leisure functions, as well as many amenities like parks, concert halls, hospitals, international schools, etc. IFEZ is the first development of its kind in Korea. The proximity to Seoul and to the international airport makes Incheon a “natural” location for this type of development. Spatially, IFEZ aims to unfold in a polynucleated and non-contiguous new urban area (a total of 209 Km2), and hence the planning of three different and complementary “new cities”, with distinct vocations and ambitions. IFEZ business and population targets are clear, and they focus on attracting tertiary advanced functions, high-tech and science based industries and the respective white collar “knowledge workers”, namely an international expat audience. Figure 9.9 depicts the three new cities where IFEZ unfolds (see also table 9.2, for the main projects in each area). Their planned vocations are described as follows (IFEZ, 2010):

Songdo: Hub for i) international business and ii) new high tech industries (also with a new light port
area). In the IFEZ booklet (2010) we can read that Songdo is planned to become a “cutting edge knowledge industry city leading the global business community (…). It will bridge the communication between the future leaders. (…)”

Yeongjong: Location of the international airport (also built in sea-reclaimed land). Its planned vocation is for air cargo and logistics, but also for the development of leisure resorts and tourism. Indeed, in the IFEZ booklet (2010) we can read that “Yeongjong will also become the international tourist centre in Asia”.

Cheongna: Location planned to focus on international finance, sports, leisure and IT industry. In the promotion booklet (IFEZ, 2010), it can be read that “aiming to promote global finance and IT industry, Cheongna will also embrace the beauty of nature in your arms”.

Table 9.2 The new cities of IFEZ

<table>
<thead>
<tr>
<th>New cities</th>
<th>Area (Km²)</th>
<th>Planned population (2020)</th>
<th>Developers</th>
<th>Major projects (on-going and planned, examples)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Songdo</td>
<td>53.4</td>
<td>253.000</td>
<td>Incheon Metropolitan City, Songdo Tecnopark, NSIC, Incheon Urban development corporation, etc.</td>
<td>Int’l business district, knowledge and information industry complex, bio-complex, high-tech cluster, landmark city, global university campus.</td>
</tr>
<tr>
<td>Yeongjong</td>
<td>138.3</td>
<td>169.000</td>
<td>Korea land corporation, airport cooperation, Incheon Urban development corporation, etc.</td>
<td>Airport, tourism complex, leisure complex, sky city, medi-city.</td>
</tr>
<tr>
<td>Cheongna</td>
<td>17.8</td>
<td>90.000</td>
<td>Korea land corporation, Incheon Metropolitan City, Korea rural community &amp; agriculture corporation, etc.</td>
<td>Global Finance/Business and leisure, sports, R&amp;D centre, high-tech industry complex, Robot land, Floricultural complex.</td>
</tr>
</tbody>
</table>

Source: IFEZ (2010)

Figure 9.9 IFEZ: The three “new cities”

Source: IDI (2010)
To nudge further business and investment attraction, IFEZ authority (2010) provides a number of incentives:

- Tax breaks, including national and local taxes, ranging from full to 50% exceptions during periods from 3 to 15 years;
- Administrative support, like financial services, “one-stop” service and after care and ombudsman services;
- Provision of better living conditions and amenities like international schools and hospitals and
- Rent/lease fee reduction incentives, for a maximum of 50 years, in property and land owned by the national and municipal government.

IFEZ’s incentives have been planned to attract and support foreign investors, but also Korean companies can locate in the area (though not receiving the above mentioned benefits), under certain conditions, namely i) if they have strategic ties with foreign firms in IFEZ or ii) if they belong to a policy-strategic sector, like ICT or biotechnology. The Incheon Metropolitan City and the Ministry of Knowledge Economy want to extend the incentives to Korean companies as well, but there is no consensus among the Central Government Ministries as yet. Even without direct tax benefits, the strategy of “opening the doors” to Korean firms contributes to increase the vibrancy of the area, which otherwise would have been difficult in an early stage, but is likely to generate re-locations from other districts of Incheon, and eventually from Seoul, raising the question whether a “beggar the neighbour” phenomena is already taking place nowadays in Songdo in relation to other Seoul’s capital region locations.

Songdo district nowadays

Songdo district (53.4 Km2 in sea reclaimed land) is the focus of this case study. Songdo is the IFEZ frontrunner, and its International Business District is currently among, if not the largest private real estate project in the world (Ekblaw et al, 2009). As previously mentioned, the district envisages to attract global international business and “high-tech” industries in order to diversify the regional economy and ignite new growth engines for South Korea. Moreover, Songdo is planned to develop as a highly functionally mixed urban area with residential space and amenities. Figure 9.10 provides a sketch of Songdo’s planned “components” in 2020, and figure 11 is a real picture of the present development’s stage at the time of this writing (IFEZ, 2010). Table 9.3 synthesizes Songdo’s projects, partnerships and development stage.

*Figure 9.10. Songdo district*
Figure 9.11. Songdo – present stage of development

Source: IFEZ (2010)
Table 9.3. Songdo district: main pieces of a holistic puzzle

<table>
<thead>
<tr>
<th>Projects</th>
<th>Description</th>
<th>Main Developers</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incheon Grand Bridge</td>
<td>12.3 Km bridge linking Songdo and the Int’l airport</td>
<td>Incheon Bridge, CO. Lda, Korea Expressway corporation</td>
<td>Completed</td>
</tr>
<tr>
<td>Tomorrow City</td>
<td>Promotion Centre of ubiquitous technologies and Songdo’s 2020 vision</td>
<td>Incheon Urban Development Corporation</td>
<td>Completed</td>
</tr>
<tr>
<td>Songdo Central Park</td>
<td>Urban and leisure park</td>
<td>NSIC</td>
<td>Completed</td>
</tr>
<tr>
<td>International School</td>
<td>All the education levels for international population</td>
<td>NSIC</td>
<td>Completed</td>
</tr>
<tr>
<td>RFID/USN Building</td>
<td>Building for Radio-Frequency Identification / Ubiquitous Sensor Networks’ companies (u-IT cluster building)</td>
<td>Ministry of Knowledge Economy and Incheon Metropolitan City</td>
<td>Completed</td>
</tr>
<tr>
<td>Songdo Convention A</td>
<td>Convention Centre and new forum for international business</td>
<td>NSIC</td>
<td>1st phase Completed</td>
</tr>
<tr>
<td>NEAT (Northeast Asia Trade) Tower</td>
<td>Business facilities and hotel rooms</td>
<td>NSIC</td>
<td>Almost Completed</td>
</tr>
<tr>
<td>Incheon University</td>
<td>University Campus</td>
<td>Incheon Urban Development Corporation</td>
<td>Almost Completed</td>
</tr>
<tr>
<td>Techno Park Complex</td>
<td>Technological Park</td>
<td>Incheon Metropolitan City Government</td>
<td>Almost Completed</td>
</tr>
<tr>
<td>Jack Nicklaus Golf Course</td>
<td>Golf court</td>
<td>NSIC</td>
<td>Almost Completed</td>
</tr>
<tr>
<td>Yonsei University Int’l Campus</td>
<td>University Campus</td>
<td>Incheon Urban Development Corporation, Songdo Internationalization Complex Development Co., Lda.</td>
<td>On-going</td>
</tr>
<tr>
<td>Global University Campus</td>
<td>University Campus; joint initiative of foreign universities to locate in Songdo</td>
<td>Incheon Urban Development Corporation, Songdo Internationalization Complex Development Co., Lda.</td>
<td>On-going</td>
</tr>
<tr>
<td>Songdo Landmark Tower</td>
<td>151-story office space tower for global business</td>
<td>Portman consortium (Portman, Samsung Corp., Hyundai E&amp;C)</td>
<td>Starting</td>
</tr>
<tr>
<td>Incheon Art Centre</td>
<td>Cultural complex with concert hall and art schools</td>
<td>Incheon Urban Development Corporation</td>
<td>Starting</td>
</tr>
<tr>
<td>Science Village</td>
<td>Songdo Tecnopark expansion complex</td>
<td>Songdo Tecnopark</td>
<td>Starting</td>
</tr>
</tbody>
</table>

Source: adapted from IFEZ (2010), field work

We will explore some of these projects in sections 3 and 4. By now, we conclude this point by looking into the land management processes and the present real estate prices in Songdo. If we exclude public-driven investment areas (like the new Port) or amenities and equipments like green areas, theatre or golf court, there are three major land use types in Songdo: i) commercial (e.g. office space for international business), ii) industrial and R&D (e.g. technopark offices and workshops) and iii) residential. The fact that all the land in Songdo has been sea-reclaimed has important advantages. It is publicly owned and in principle there are no former laws and building restrictions (excluding technical ones); physical constrains to land redevelopment are also marginal (e.g. there is not need to clean Brownfield land); more over, there are no residents or “protesting” communities in the area – the land is physically and socially “virgin”. This particular situation makes the area’s development smoother, faster and under the control of governmental players, who can more easily mange the land prices and permits according with their strategic objectives.

As a result, the land development costs have been much cheaper vis-à-vis other previously built locations, e.g. in Seoul and even in Incheon (see table 9.4). The city of Incheon sold the reclaimed land.
to the developers (e.g. Gale, NSIC joint venture), both for residential and non-residential use, at a much lower price than the appraisal value. In return, and since the development of residential units is more profitable in the short term (in an early stage, development of office space is unprofitable due to lack of demand and agglomeration), the contractual agreement between the City of Incheon and NSIC determined that NSIC would develop office buildings from the beginning as well.

Table 9.4. Land and real estate prices in Songdo district ($/m²)

<table>
<thead>
<tr>
<th>Land use</th>
<th>Development Cost</th>
<th>Appraisal Value (a)</th>
<th>Market Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commercial</td>
<td>$413</td>
<td>$4950</td>
<td>Lower than (a)</td>
</tr>
<tr>
<td>Residential</td>
<td>$413</td>
<td>$2750</td>
<td>Higher than (a)</td>
</tr>
<tr>
<td>Industrial</td>
<td>$413</td>
<td>$1925</td>
<td>Similar to (a)</td>
</tr>
</tbody>
</table>

Source: Fieldwork in Incheon Development Institute

However, the development of residential units (e.g. apartment complexes) has been still relatively dominant so far. This has advantages for the City of Incheon, since the sale of the land for residential units is the main source of IFEZ’s direct revenue; moreover, the relocation of new inhabitants leads to the development of market amenities and creates urban critical mass. However, it is clear that it will take time until Songdo gets the vibrancy feeling, functions and effective mixed land use of a real “city”. Table 9.4 depicts Songdo’s approximate land price levels at the date of this writing. It confirms the fact that the demand for commercial premises and office space is still low (market price lower than appraisal price), while the opposite happens for residential uses, whose demand is higher.

On the side of industrial and R&D uses, IFEZ representatives believe that the low land’s development cost will definitely attract many firms since they sell the land at the development cost, which is much lower than the market price. However, as previously suggested, many of these firms might represent displacements from other locations in Incheon or even Seoul. Moreover, some experts fear the emergence of adverse selection effects – e.g. industrial manufacturing companies might move in claiming for larger than necessary areas, in order to obtain capital gains in the future. For example, it is estimated by the Incheon Development Institute (IDI) that the land prices in the nearby Namdong Industrial Complex, a traditional industrial area with many manufacturing SMEs is $1300/m² cheaper than the development cost in Songdo nowadays, but with way less quality. Simultaneously, the prices for premium office and R&D space are nowadays much cheaper in Songdo than in Seoul. IDI estimates that the land prices for office space in upscale high rises in Seoul’s Digital Industrial complex offices can vary between $4000–8000/m² (vis-à-vis 4,950 in Songdo – see table 9.4), increasing the attractiveness of Songdo as a business and knowledge location.

9.3 SONGDO AS AN (INTERNATIONAL) BUSINESS AND KNOWLEDGE LOCATION

Songdo aims to become i) an important global business hub in Northeast Asia and a ii) high-tech knowledge location, cradle for new cutting-edge technologies. In other words, it explicitly targets the clustering and agglomeration of a number of new advanced services, industries and skills, and, implicitly, the development of knowledge and innovation relationships between co-located players. In this section we analyze how far is Songdo in pursuing this objective, and how has it been taking place.

One first observation is that, at the time of this writing (post 2008-09 global economic slow down), Songdo already attracted a very significant number of foreign, but also national companies. Table 9.5 gives an overview of the key players that have negotiated a location in IFEZ in general and in Songdo in particular. The targeted clusters of “high-tech” and “bio-pharma/medical device” have attracted a substantial number of important foreign corporations, whereas other firms in the field of “digital content” and “alternative energy” also invested, or are in the process of investing in Songdo. This leads us to a second observation: the sectoral focus of FDI attraction to Songdo has been so far rather broad, since, in the end, the IFEZ authority’s bottom-line admission criteria has been rather open, requiring investors to be within a wide variety of “high-tech” and somehow “knowledge intensive” businesses; the definition of desired “clusters” in the area seem to react accordingly, as new companies show interest in investing.
<table>
<thead>
<tr>
<th>IFEZ Location</th>
<th>Selected Clusters</th>
<th>Main Partners (mainly FDI global corporative investors) at 04.2010</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>“Bio-pharma/medical device”</td>
<td>Celltrion, Crucell, i-Sens, Sartorius, Siemens, Stryker, Johnson &amp; Johnson</td>
</tr>
<tr>
<td></td>
<td>“Digital content”</td>
<td>Orix, SBS, Dongwoo animation, CN, CNN</td>
</tr>
<tr>
<td></td>
<td>“Alternative energy”</td>
<td>Yuzhnoye, NASA, Jaxa, Epoch</td>
</tr>
<tr>
<td>Yeongjong</td>
<td>“aviation cluster”</td>
<td>Boeing, Pratt &amp; Whitney, ST Aerospace</td>
</tr>
<tr>
<td>Cheongna</td>
<td>“vehicle cluster”</td>
<td>GM-Daewoo, Piolax, Saint-Gobain, Autoliv.</td>
</tr>
</tbody>
</table>

Source: IFEZ (2010)

Moreover, Songdo has managed to attract a very large number of Korean companies and R&D units: SME’s (also with some “knowledge” component), their R&D centres, as well as a number of start-up firms. These national investments in Songdo, supported by attractive land prices and other tax incentives (see section 9.2), also reflect the strong financial support of Korean Science and Technology Policy, the new high-tech face of the supportive Developmental State (Yeung, 2009). The complementary support of Incheon’s City Government (e.g. funding R&D equipments and venture capital), increased the attractiveness of Songdo further and has been steering it as the natural new “high-tech” location in Incheon, the place where the “new economy” unfolds. The strong support from the Mayor to attract the new Science Park to Songdo (see box 9.1) helped making the location an increasingly natural recipient of the hard national funding, supporting agglomeration and clustering of new activities further. Key examples of new activities agglomerated in Songdo can be found in the realms of medical and biotechnology (box 9.2) and the development of new advanced sensor technologies (box 9.3). Government officials often speak about a sort of “whole trinity” of (broad) technological fields and “clusters” to support: IT, NT and BT (Information technologies, nanotechnologies and biotechnologies).

**Box 9.1: Songdo Techno park**

The recent Songdo’s Techno park, inspired in western models, targets to host and support a diverse number of activities: electronics, biotechnology, new (nano) materials, precision instruments and mechatronics. These are in line with the priorities of the national government and metropolitan city. The park provides all the typical facilities and services of a science park – office and laboratorial space, support for technology transfer, business support services, incubation, trial and pilot tests infrastructure, education and training, market studies, brokerage, etc. It is one of the most advanced technoparks in Korea. The park plays a critical role supporting the development of the broadly envisaged clusters of ICT, biotech and auto-parts.

In 2009, the park hosted already 124 companies and 19 other organizations, representing more than 4000 jobs in the area (Songdo Tecnopark, 2010). Biotech start-ups locate in the park and attract venture capital and investments nationally and from overseas. In the last years, around 50 companies moved from Incheon city to the park; others moved from Seoul to benefit from the excellent facilities. The park provides 6 years of business support and premises for incubation. Besides, it facilitates the access to government funds, business support, programmes to expand overseas, etc.

Recently, Songdo Tecnopark founded together with Inha University a specialized R&D centre for auto parts, to support an “auto-parts cluster centre”. This centre (now with 82 researchers) will be an extension of the Inha University and their centres working with auto suppliers for commissioned projects. The decision to locate the Centre in Songdo was associated with the proximity to many other centres and research facilities, but primarily to the support of governmental and public agencies; the auto suppliers and main clients do not locate in Songdo.

The facilities of Tecnopark are presently being expanded in other Songdo’s zones – the new Songdo science village. This will take 6 years to completion. The new village is planned (see figure 9.12) to facilitate the convergence of technologies and “create a knowledge interchange market” (Songdo Tecnopark, 2010). It will have several R&D, business and recreational zones. Those include buildings focusing on specific “clusters of activities”
like IT, Biotechnology and Mechantronics, as well as the POSCO global R&D centre), but also dedicated areas for convergent research between the specialization areas of the park, pilots and other “inner city factories” where networking can also take place (Songdo Tecnopark, 2010).

Different urban functions will also converge in this new area, namely R&D, accommodation and leisure. The “inner avenue” area of the complex is planned to have joint equipments and (English friendly) amenities like housing, studios, temporary accommodation, recreational facilities, theatre, mall, bookshops and pubs, music hall, food court, restaurants, fitness and sports centre, landmark culture hub, etc. These functions are planned to be aligned and complementary with the ones of the contiguous Yonsei University and Global University Campus.

*Figure 9.12. Vision of the Songdo Science Village, or tecnopark expansion complex*

Source: Songdo Tecnopark (2010)

**Box 9.2: Songdo’s bio-complex**

Biotechnology is one of Songdo’s spearheads. Together with multinational corporations (see table 9.5) and national research facilities, the city of Incheon wants to develop a biocomplex in the area, and invests in related facilities, together with the National Government.

One of the organizations involved in this project and already fully settled is the Lee Gil Ya Cancer and Diabetes Institute. Founded by Gachon Gil Foundation (which owns Gachon University of Medicine and Science), it develops state of the art research and is endowed with cutting edge technology facilities, namely: “mouse metabolic phenotyping centre”, “animal research centre”, and “genomics-proteomics centre”. The centre started in Songdo in 2008, with 80 persons and now hosts 170 employees, including foreign graduates. It has 19 full professors, including American, Canadian and Japanese nationalities, with strong reputation and an extensive network of high-level contacts. The bulk of research funding comes from the Government, but also some from privates.

The representatives of the centre acknowledge that the land to develop the centre’s premises was much cheaper in Songdo than it would have been in, e.g. Seoul. Also the infrastructure building was cheaper, and the area is very well accessible. They expect that more facilities and biotech activities will locate soon in the area (FDI, foreign universities), creating a potent bio-complex. They put also expectations in the coming “subsidiary” of John Hopkins hospital for joint R&D (although it is unknown whether these functions will also be moved from the US to Songdo). An American biotech company from San Diego is located in the institute’s 5th floor, due to the excellence infrastructure and previous contacts with the director of the centre. Bio-pharma factories and production capacity are located in the countryside. In the institute, fundamental R&D is the core activity.

**Box 9.3: RFID/USN and MEMS technology centre**

Songdo hosts one of the world’s leading cluster of ubiquitous technologies and sensors, competing with the US, Japan and Germany. This specific Songdo’s cluster (“u-IT”) is anchored in the newly developed RFID/USN and MEMS technology centre (Radio Frequency Identification /Ubiquitous Service Discovery; Micro-Electro-Mechanical Systems). Around this centre there are fully settled 20 high-tech SMEs, with their own premises, plus 14 smaller companies inside the centre itself. Most of the firms are Korean, excluding one American and one Finnish sensor company. It attracts many users from Incheon, Seoul, Korea and even abroad, providing exclusive services and dedicated facilities for companies developing related technologies. Among those are different testing and engineering labs, pilot facilities, training rooms as well as brokerage services, participation in events and
several amenities. Moreover, the centre has a guest house for temporarily visitors: researchers, costumers and partners from abroad.

The Government wants Korea to become world leader in this set of technologies, which have linkages with other objectives, like fostering green technologies as well as other established industries like automotive, ships and electronics. This spearhead is also linked to other National Government Strategy: the development of a network of ubiquitous cities (u-cities) in the country, where many urban services and functions are linked with each other through wireless networking and RFID technologies (see section 9.4). Songdo is planned to be one of the pilot pioneers of this futuristic system, and thus, new sensor solutions are being procured to feed it. By procuring u-technologies, Government also gives the supplying firms first mover competitive advantages and a technological edge. There is a master plan developed by IFEZ/National Government and Incheon Metropolitan city to provide the best conditions for RFIS/USN and MEMS companies to agglomerate in Songdo. Cisco is opening a centre in Songdo to tap into these u-city developments and provide ubiquitous network systems.

![Figure 9.13: u-ITcluster and RFID/USN centre](image)

Source: Ministry of Knowledge Economy (2009)

The agglomeration and “knowledge” densification strategy of Songdo (and of the National Government) also includes the attraction of national and foreign universities. Large Korean universities developed and are developing new premises in Songdo. That’s the case of the renowned Yonsei University, scheduled to relocate many courses and roughly 10.000 students from the city of Seoul; also the local (large) Incheon University is relocating their facilities from Incheon city to brand-new premises in Songdo. Moreover, a number of “off shores” from USA Universities will locate in an international campus and will issue USA academic degrees, without the need, but the possibility, to study in the USA (see section 9.2). The University of North Carolina is already recruiting the first students for the new Songdo Campus and the State University of New York at Stony Brook is preparing to do so. Confident on the continuous (financial) support of the Korean government, Delaware and George Mason University intend to open next year. The international campus is still under development and plans to offer a number of shared facilities like libraries, student union buildings, sports, dorms and guest houses. IFEZ authority puts strong efforts in attracting these universities, and there is a specific team devoted to this task in the organization. In addition, both National and Incheon Government have been active lobbying internationally for the location of transnational organizations in Songdo. That’s the case of the United Nations Centre for ICT Promotion, located now in Songdo, with the mission of training Asian-Pacific policy makers in the use of ICT for better governance and policy. Incheon’s Metropolitan Government provided financial support for land and facilities. The location excels in the required international accessibility, but also in digital infrastructure – essential for the centre’s e-learning activities.

For the time being, and considering the still early stage of development of Songdo “from scratch”, it already achieved remarkable results on what concerns the agglomeration of diversified business and high-tech, cutting-edge research and knowledge activities. However, whether innovation networks and interactions between co-located players have been (and will be) achieved is more debatable. We dedicate the rest of the section to some observations about the results and potentials for knowledge networking in Songdo and clustering alignment.

At this stage it is not possible to assess or quantify the number or the strength of knowledge and innovation networks taking place in Songdo. We found evidence of interesting interactions and collaborations potentially conducive to innovations and knowledge sharing, e.g. in the shared facilities of the RFID/USN centre and in other shared biotechnology facilities and labs (see box 9.2). These facilities have been precisely developed to this effect, i.e. to facilitate collective efficiency by being co-located. On the flip side, we also find evidence of organizations located in Songdo whose main innovation interactions are outside the district; the same happens certainly for many other firms, and, naturally, there is nothing inherently wrong with that. The opposite would actually be surprising due to
the newness and “virgin” character of the location. One important question mark however is whether
the global companies attracted to Songdo will become embedded in the district in particular, and in
Seoul’s Capital Region more generally. Some local firms and knowledge institutes show expectations
that they can benefit somehow from the new global players that will co-locate in Songdo, e.g. in the
fields of ICT and biotech. However, the literature shows more cases of unsuccessful than successful
integration and knowledge spillovers. Much seems to be dependent on the types of innovation, as
well as the possibility to establish cultural and social bounds allowing for fruitful and clean
communication. The Korean “conglomerate” tradition of in-house R&D (e.g. Wang, 2007) as well as
the cultural, linguistic and working style differences vis-à-vis, e.g. western companies, may pose
challenges to this desired interaction and the creation of “relational capital”.

Recent literatures have been showing that these challenges are likely to vary according with the type of
knowledge involved (e.g. Gertler, 2008). For example, in engineering activities where relevant
knowledge is less codified (e.g. automotive or mechatronics), meanings vary and client-user interaction
is central, the challenges to cooperate and innovate across cultures are likely to be particularly high.
The same is less true for activities were knowledge is more codified, like biotechnology or fundamental
engineering, and that is probably why we see already some interactions with foreign partners in these
fields (see box 9.2 and box 9.3). Moreover, the integration of the broad diversity of “high-tech”
activities present and planned for Songdo poses extra challenges to find the common integration points,
in sectors whose types of knowledge are probably unrelated (Boschma and Frenken, 2009), and thus
immediate branching and joint innovation more difficult. In this context, the planned efforts to develop
specific areas devoted to technology convergence in the new Science Village (see box 9.1) are highly
welcome.

Similar cooperation expectations are also directed towards the role of the foreign universities in the
area. Some companies and organizations expect to cooperate with the faculty that will relocate in
Songdo, e.g. in innovation related issues. The extent to which this will happen is also a question mark.
In our contacts with IFEZ authority, we didn’t find evidence that the universities addressed by IFEZ to
locate in Songdo show research or educational complementarities with the economic activities located
in Songdo. Moreover, there is also not evidence that the relocated faculty is composed by researchers
with applied research skills or interest in cooperation with the industry. The off shoring of international
universities in Songdo may have large advantages, but there challenges ahead. The development of
curricula and the move of faculty from the US are rather expensive and previous experiences of off-
shored campuses, e.g. in Japan, have failed; in Singapore this strategy has had mixed results.
According with McNeill (2009), the first Universities established in Songdo received 1 million USD to
adapt and implement their undergraduate courses; they expect few American students, at least in the
first years. Moreover, McNeill (2009) also reports that the partial re-location agreement between
Incheon Metropolitan City and Seoul’s Yonsei University is facing sharp resistance and struggles from
the faculty’s staff and academic departments.

Before concluding, we briefly look to the alignment between the activities and clusters under
development in Songdo, the city of Seoul and the inner city of Incheon. A cluster mapping exercise in
the city of Seoul (OECD, 2005) identified 6 spearhead clusters to foster: fashion and clothing; printing
and publishing, three services clusters (financial industry, business services and IT) and one emerging
industry cluster (digital content). At the first glance there seems to be some overlap with the ambitions
of Songdo, namely on what refers to IT, business services and digital. If Songdo offer irresistible
conditions and support, some of these developing clusters may become spatially fragmented. The case
of digital and media deserves particular attention. Moreover, there is a strong risk of competition
between activities presently located in Incheon inner city and Songdo. For example, a large number of
companies in the fields of IT, video gaming and virtual reality locate in the inner city district of Nan-
gu. Although the City of Incheon is very keen on supporting these activities (e.g. supply of venture
capital) and keep them in the area, some companies already expressed the desire to move to Songdo as
well, to benefit from the excellent infrastructure and distinctive image. These issues should be taken in
consideration, namely because they have implications on the balanced and sustainable urban
development strategy pioneered by the City of Incheon. In the next section we turn our attention to the
results and potentials of Songdo as an integrated urban development project.
9.4. SONGDO AS AN INTEGRATED URBAN DEVELOPMENT PROJECT

As previously mentioned, Songdo’s master plan recently received a World Award from the American Institute of Architects (AIA), due to the excellence and integrality of its urban design. In this section we analyze its features as an integrated urban development project, and also as a test bed for new urban planning concepts - as it is the case of Songdo’s u-city vision and the use of “climate proof”, environmentally friendly architecture. Moreover, we look at the integration of Songdo in the context of larger urban systems, namely within Metropolitan Incheon and Seoul’s capital region.

The new Songdo district resembles what has been dubbed in the USA as an Edge City (Garreau, 1991). This tag refers to new cities, usually emergent from rural areas in the previous decades, in the edge of large metropolises, but close to highways and transport infrastructure (e.g. airports). Edge cities emerged firstly in the USA with the advent of the car as a generalized transportation mode; often pedestrian hostile, characteristics of these new cities are the presence of large malls, high rises and “more jobs than beds”. Many examples can be found in the USA, in the metropolis’ fringes, but also in Europe – e.g. La Defence in Paris, Canary Wharf in London or Schiphol in Amsterdam. Similar types of edge cities are rapidly emerging in China and India.

As noticed by Mortice (2008), Songdo can be seen as an “edge city to an edge city”, if we consider it within the Incheon-Seoul’s urban system. However, physically, there are important differences between the traditional American edge city and the planned Songdo district. For example, while many edge cities emerged rather spontaneously, Songdo was carefully planned by a team of architects and planners based in New York, in articulation with Incheon’s urban planners. Songdo’s design is clearly inspired by western reference models (read: American), hybridized for the Asian Korean context (Mortice, 2008) – it assimilates much of the state-of-the-art in physical urban planning. Besides, contrarily to the dominant mono-functional, office based character of edge cities, Songdo is planned to excel in multi-functionality - it combines housing, office space and plenty of leisure areas (see section 9.2). Songdo unfolds around an International Business District (figure 9.14), with strong density, high rises, compact and “smart growth”: every function should be accessible within a 5 minute drive. Landmark architecture and aesthetic “beautiful” buildings are at the core of the whole concept.

Songdo can thus be seen as a “new-generation edge city”. It displays large number of (planned) amenities like golf court, concert hall (inspired in the Opera of Sydney), urban parks (inspired, e.g. in New York’s Central Park, blended with references to Korean landscapes) and even water canals (like Venice) – see table 9.3. Some amenities like urban parks are promising as spaces of conviviality, avoiding that moving expats remain closed in their residential or office space “cocoons”. Furthermore, the steady functioning of the university campuses will certainly add to the vibrancy of the area, as students and faculty start to “live” Songdo, create new atmospheres and attract new market amenities like restaurants, shops and the like. Boutiques and department stores are also expected to accrue to the area. The area will host international schools and hospitals. This encompassing set of amenities was certainly not planned for Songdo by chance – they have been consistently referred in the urban literature as important in attracting and retaining the “creative class” and the “brains”, the pivotal asset in the knowledge economy (Florida, 2002, Glaeser et al, 2001, van Winden et al, 2007).

Economically, as the area’s occupation unfolds and new activities start to operate (see previous section), Songdo is creating new jobs both for the high skilled and for lower qualifications. Songdo’s jobs and skills seem to come mainly from Incheon, its vicinities and Capital Region. Aware of the potential detachment between the “old” and the “new” Songdo city, Incheon plans to use the real estate profits generated in Songdo to revitalize older neighbourhhoods in the city, and this way steer a more integral and balanced urban development (see section 9.2).
Socially, the impacts on integration and cohesion cannot be fully assessed yet, but there are important question marks. Evidently, gentrification is not an issue in this case, since there are no local communities or former residents. However, the extent to which Songdo will become a socially balanced city is more debatable. Residential prices (see table 9.4) so far indicate that the area is very attractive but potentially only affordable for the high-class. In the absence of other policy mechanisms like the promotion of low cost housing and rent control, social diversity in the area is likely to be limited. People from mid and lower social status will likely commute to the area during the day to support the needs of the “creative class”, but will sleep in other locations. This may create a certain discontinuity and “enclave” feeling vis-à-vis other locations in Incheon, which may be sharpened when high-class expatriates move into an area where they can access all urban functions potentially without stepping out into “old” Incheon. This might hamper the desired urban mix and create a “social island” situation, which seems to be at odds with the vision of opening the Korean society to the world (see section 9.2). The expected creation of the great cities’ cultural atmospheres, vibrancy and buzz is also an issue to be assessed further on. There are no cases in the literature where those externalities have been created ex-novo by importing amenities, though we found cases where those amenities were important to keep the area’s diversity and growth (Storper and Manville, 2006). The future dynamics of Songdo in this respect – namely cultural dynamics and community building - is a matter of further attention for IFEZ and the city of Incheon.

Environmentally, Songdo is presently the largest LEED© (Leadership in Energy and Environmental Design certification) development in the world. LEED is an international green building certification, developed by the US Green Building Council, ensuring the building’s good performance in domains like energy saving, CO2 neutrality, water efficiency, etc. Songdo has thus been considered like a prototype of an environmentally friendly, climate proof green city (Withman et al, 2009). The buildings extensively use green materials and associated innovative techniques, making Songdo a testing lab for green building technologies. The recent National Government Strategy of “Green Growth” (OECD,
2010) will likely bring novelties in this respect.

Still in the realm of “experimentation arenas”, Songdo is among the pioneer Korean cities experimenting futuristic ubiquitous-city (or simply u-city) concepts adapted to urban planning and management (Lee et al, 2008). A u-city is a city where people can be connected to a large number of digital, web services anytime and anywhere. Through e.g. video networking, Wi-Fi, radio frequency technology, sensors, telematics, other information systems and special management software, several activities in a city can be connected to and coordinated by a common network, e.g. safety and crime prevention, transportation, health care, environment, etc. These efforts have been supported by the u-Korea programme, a National level Government strategy of the Ministry of the Knowledge Economy, together with local governments, willing to give South Korea a front running position in the concept’s implementation, but also associated technological advantages. There are thus many underlying objectives in this strategy, like development of further IT technological prowess, enhancing quality of life, attracting further FDI, balanced regional development and citizen empowerment. Songdo already host nowadays a relevant u-IT cluster (see box 9.3), as well as a visitor’s centre where the new technologies can be experienced in advance (“Tomorrow City”). IFEZ authority plans to demonstrate some of the new u-services in the forthcoming 2014 Asian Games in Incheon.

The full implementation of u-technologies has deep implications in the planning and functioning of the urban space, as well as its management (Lee et al, 2008). However, recent research (Shin, 2009) is less optimistic about the society absorption of the u-city technological apparatus. Despite the huge government investments in this strategy throughout Korea (e.g. 300 million USD in the RFID centre in Songdo; 60 Billion USD in the first stage for all the Korean u-city pilots), Shin argues that infrastructure provision, technological and corporate interests have dominated the project so far. Korea developed a sound number of competitive related technologies, but with a very limited involvement of the citizens, potentially hampering the effective integration and use of these new technologies in society. Shin’s research in the recent progress of u-city strategies in Korea reveal that none of the key involved actors – Ministry of Knowledge Economy, Industry Conglomerates and Local Government – have promoted a more inclusive and “bottom-up” involvement of the citizens, focusing instead, respectively, on infrastructure development, technological capacity, cluster promotion, image and regional economic diversification.

Shin (2009) states that “…ubiquitous computing infrastructure can be connected to a city’s physical parts, such as buildings, roads, electrical infrastructure, manufacturing and residential establishments, but also, more importantly, it should be embedded into the fabric of social and cultural parts of cities.” This poses important challenges and opportunities for Songdo. So far the u-developments in Songdo have indeed been very much oriented by a “technology-push” and high-tech clustering vision; simultaneously, the social and cultural fabric of Songdo, at this stage, is still practically inexistent, so, the interaction between the technology and social system (where critical innovations may emerge) would be in any case barely impossible to attain. However, as Songdo starts to be occupied and new companies and residents move in, there are emerging opportunities to effectively test some of these new concepts. And here relies probably one of the great advantages of Songdo – it may well play the role of a protected and “virgin” experimentation arena to foster larger socio-technical transitions (Geels, 2005; Rotmans, 2005). Moreover, the types of users in the area are likely to be demanding IT users, thus constituting an important test to the potential applicability and implementation of the concept (despite the potential drawback of lack of diversity). Songdo is flexible and “new” enough to accommodate the infrastructure, although it is still to be seen whether the development of the u-city concept will clash or not with the planned urban design nowadays.

Although many of the technologies required for the u-city concept are or have been developed in the west, the Korean context of less expected privacy and safety makes it a privileged testing arena, and gives Korea the opportunity to set the standards of u-city concepts. Songdo, again, may play an important role in this strategy.
9.5 CONCLUSIONS AND PERSPECTIVES

The scale and scope of Songdo as a new knowledge location has called the attention of many commentators worldwide, rivalling with other large-span and already reference developments like Dubai. In the promotional material of Incheon’s Compact and Smart City exposition (Incheon Metropolitan City, 2010), Songdo is referred as:

“…an international city of cutting edge knowledge. (...) Comprehensively equipped with advanced business systems, Songdo functions as one of the most beautiful, environmental friendly and effective cities in the world and is emerging as a true international city. Research complexes of world-renowned companies have been constructed here and are now in operation, contributing to a superlative complex of knowledge information industries…. “

In this chapter, guided by a number of research questions, a theoretical framework and recent empirical evidence, we tried to deconstruct this promotional discourse and get deeper insight into the emergence and recent development of the district. We looked into the new Songdo’s district from an integrative and dynamic perspective in order to analyze its development and outlook as a “knowledge location”. Throughout the case study, and on the basis of the analysis, we hinted towards some policy recommendations to take Songdo’s encompassing project further – we will come back to some of them in this section.

9.5.1 Drivers and Catalysts

The development of Songdo has been guided by a number of drivers and catalysts. The vision for Songdo’s sea-reclaimed land varied overtime, but, since mid-90s, the area’s present shape has been driven by changes (and challenges) in the national and international landscape (e.g. Asian debt crisis of 1997, emergence of the knowledge economy, increased globalization) - which in turn gave rise to a number of national and local responses. The interesting phenomenon is that those responses found in Songdo a spatial (urban) face: a “virgin”, flexible and protected policy arena to explore, test, demonstrate and implement those strategies, facilitated by the FEZ legislative flexibility, international image and appeal. The result of this process is the confluence in Songdo of many different urban functions, experiments and activities - e.g. FDI investment and international business attraction, indigenous innovative clusters, universities, promotion centres, English speaking programmes, urban u-planning and technology experiments, landmark buildings and attractive amenities. All of them are contributing to create an image of a more open and investment friendly South Korea, a “Northeast Asia Business Hub”. Figure 9.15 illustrates this perspective and synthesizes the main catalysts and drivers beyond Songdo’s evolution assessed in the previous sections.

More than through the action of established industrial vested interests in Incheon and Seoul, the strategy beyond Songdo originates in a rather top-down fashion, from the action of the national and local government, following economic diversification and new business attraction objectives. The Government’s vision - and of their advisers and planners - dominates the discussion and implementation arena in the beginning. However, as Songdo’s takes shape and new organizations start to relocate and gain legitimacy (e.g. IFEZ managing authority), although the national and local government structures still have very large power, the area’s development started to be influenced by other players, like, e.g. the American developer Gale, research institutes, science park, etc.
9.5.2 Critical development factors

The development of Songdo is still in a relatively early stage. Although it is speculative to make bold considerations about its long-term success, some critical development factors are already noticeable. Some of them are highly context dependent and hard to transfer to other cities; others, however, constitute important insights to bear in mind in the development of knowledge locations, and for urban management more generally.

Starting with the former (hard-to-transfer critical development factors), three elements stand out.

First, the level of State’s commitment and (financial) involvement in the project, cutting taxes and providing the most diverse direct and indirect incentives for companies and organizations willing to relocate or start activities in Songdo. This support made agglomeration thresholds possible in a relatively short period of time; moreover, it made foreign investors and international organizations, like Universities, more “at ease” to move to the newly developed area. Again, like in the conglomerate époque, the State supported a project that seems to be too big to fail, counting with wide governmental support, image, and “killing amenities” to feed the agglomeration process further. This catalyst lies at the centre of this story, but would be barely impossible to replicate in western economies. This is the case not only due to the structural difficulties of the public sector sustaining such massive investments (whether with tax payers’ money, own resources or debt), but also because of strict competition policies in Europe, e.g. forbidding positive discrimination, “picking the winner” funds and direct firm’s support. The South Korean model of neo-liberal market organization, together with a refocused though still strong new-generation Developmental State (see section 9.2) is rather unique and cannot be found in western neo-liberal and social-market economies.

Second, and related with the previous, is the steady economic growth of Northeast Asia, more concretely in the Yellow Sea area, making this location extremely attractive for global businesses and, e.g. University offshores. China has been capturing the lion’s share of foreign investments, but the high skills and technological capacity of the Koreans make it an attractive place for many high-tech
investments as well, as legislation gets more flexible - a prime objective of IFEZ and Songdo. Excellent accessibility (a brand new international airport and a leadership in broadband) are also very helpful and distinctive attraction factors. Third, the fact that Songdo’s land was sea-reclaimed, and thus socially and physically “virgin”, clearly facilitated the development process. It made possible a smooth and fast land and real estate development (no community protests, no technical and legislative blockages), as well as an integral urban planning (e.g. besides residential, also with office space and amenities from the beginning). This situation can be compared to some extend to Greenfield developments (though to a lesser scope and scale) but not in the development of knowledge locations in previously urbanized areas. One interesting arena for further observation is the way government’s intervention will handle more complex situations that are already emerging, e.g. related with inner-city (re-)development in Incheon.

Four other critical success factors can be identified. When re-contextualized, those might have transferability potential to other cities and knowledge locations. First, Songdo benefited from the alignment between the area’s high-tech objectives (biotech, IT, etc) and the endogenous potential of skills, qualifications and knowledge production rooted in Seoul’s capital region – which is not the case, for example, in Dubai. This makes the knowledge strategy of the area more sustainable and anchored.

Second, despite government’s strong involvement, Songdo benefited from external sources of knowledge, e.g. the developer Gale, beneficial to bring new approaches to the area’s planning as well as external visibility and resources beyond public support. We found some evidence that the role of Korean expatriates and highly qualified persons with working experience abroad (new firms’ CEOs, research professors, etc) located in Songdo might have played an important role in attracting new external companies and investments, but this is an issue requiring further investigation.

Third, an important success factor so far has been the clear alignment between the different government layers involved (national, local). Moreover, also important has been the creation of a specific managing authority for the area, with power and flexibility to manage daily and strategic issues (IFEZ authority), working in close articulation with other stakeholders. Forth, the orchestrating role assumed by Mayor Ahn (now former mayor of Incheon) was relevant in the latter dynamics of the area, but should not obscure the organic development behind Songdo’s project, which dates before his administration. A certain “adaptation capacity” to changing landscapes, emerging challenges and new actor’s strategies, while keeping the project on track – i.e. keeping the grand vision - was an important success factor, and reveals the capacity to manage in complexity. We hint that this has been largely due the skills and capacity of a number of highly qualified actors involved in the process, in the technical departments of the government and city administration.

9.5.3 Songdo as an (international) business and knowledge location

So far, and despite its early development stage, Songdo has done well attracting an important critical mass of international and national companies and organizations (universities, science park, specific cluster’s infrastructures and complexes – biotech, sensors, IT). Namely for the attraction of international companies, Songdo’s image and flexibility have been paying off, and represent a social added value. Moreover, the possibility to participate in and closely monitor front running developments (e.g. u-technologies) is attractive for global IT companies like IBM or Cisco: the co-presence in Songdo, with brokerage from other organizations (e.g. IFEZ authority) may facilitate virtuous exchanges.

However, despite these particular cases, the extent to which other knowledge and innovation networks are emerging or will emerge in the future is debatable. The diversity of players and technologies accruing to area may be too high to fruitfully cooperate and learn from each other. Although everything seems to be “high-tech”, there are sound differences between the business and innovation modes, say, of biotechnology, materials and auto-pieces, or between a North-American Corporation and a Korean SME. In this context, English training and other initiatives to mitigate cultural and social barriers between foreign companies and Korean players are welcome.

To overcome or minimize some of the potential “networking” blockages, further attention should be paid to clarify the definition of cluster policies in Songdo, avoiding general banners like “high-tech”; those policies should be probably less sectoral (e.g. biotech, IT) and more “platform”-oriented (e.g. bio-sensors), in order to find the convergence points between different technologies present in the area.
The role of competent brokers (e.g. Koreans with experience in different technological fields and cultural contexts) might be particularly important here. The initiatives and physical infrastructures planned for the “science village” are promising in this respect.

The potential complementarities between these clusters and the Universities (national and international) located in Songdo should be assessed further. There is nowadays a big hype that those universities will cooperate in research with Songdo’s research institutes and companies, which might not necessarily be the case. Finally, it is important to avoid the idea of Songdo as a “knowledge island” and find ways to plug Songdo’s national and international firms with other players in Incheon and Seoul. This can be a way to avoid or at least minimize fragmentation between on-going cluster initiatives going on in different areas of the capital region.

9.5.4 Songdo as an integrated urban development project

Songdo has been planned as a highly integrated, multifunctional, physically almost perfect city. It follows international best practices in urban master planning, adapted to the Asian-Korean context. The on-going experimentation of u-city strategies and “climate proof” construction gives Songdo the “cherry-on-the-top-of-the-cake” in their smart city strategy. Moreover, the former experimentations are linked with the dynamics of Songdo as a knowledge location – e.g. many foreign corporations in Songdo are willing to participate in the “u-city development” supplying technologies. Songdo’s u-IT cluster is also aligned with the city’s u-strategies.

Furthermore, Songdo envisages an extensive number of high-quality (of life) amenities. Indeed, there are nowadays good arguments and evidence saying that amenities, quality of life, skills and urban growth go hand-in-hand (e.g. Glaeser, 2001, van Winden et al, 2007), even if they seem to be insufficient to ignite agglomeration, innovation and growth (Storper and Manville, 2006). In this context, the “creative class” thesis of Richard Florida (2005) has been challenged by many commentators of being too eager to provide off-the-shelf and amenity based policy prescriptions. However, his recent writings on an essay about South Korea suggests more moderation and a nuanced approach:

> Competitive cities and nations in the 21st century will be those that are open, dynamic, and aesthetically inspiring. Talented, mobile workers are attracted by the opportunity to be around other highly engaged and intelligent talent in arenas that are beautiful and authentically lively. They like densely populated cities where they can meet organically through street scenes filled with cafes, restaurants, bookstores, music clubs, and other unique social and commercial spaces. So smart urban development is essential; it is also difficult to do. One needs to thread a fine line between encouraging entrepreneurs to grow such places and yet not succumb to the temptation to create artificial environments. (Florida, 2010)

Agreeing with the previous, it is important to stress that Richard Florida touches upon one of the critical factors in Songdo’s future, probably the least tackled so far, but likely to generate unbalances: the potential sense of artificiality of the area. This is a flip side of the “virgin” character of Songdo’s developed land. It lacks the identity, cultural and social fabric of other places. It is not clear whether this will be a plus to attract mobile workers (it makes the potential cultural clashes less evident) or a negative feature (an artificial Las Vegas style city). In any case, this issue deserves further attention, considering that the type of “atmospheres” that make a world city lively and vibrant (e.g. a distinctive cultural scene) are not yet present in Songdo. A related issue has to do with community building and social involvement: will Songdo become an enclave for the well-off or an integrated and diverse community? The second option might require complementary investments and regulation to support low cost housing and policy controlled rents.

To conclude, we stress the need to carefully consider the integration of Songdo in its reference urban system, i.e. within Incheon and in the capital region. A risk is that Songdo becomes the “window” and entry door to Seoul, overtaking Incheon. It is thus important to avoid to the possible physical, social and economic detachment from “new” Songdo and “old” Incheon. The plans of the city of Incheon to cross fund the revitalization of “old” Incheon with profits from Songdo are a good idea, but might require additional funding sources, complementary soft measures and permanent monitoring.
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10 Munich: Maxvorstadt

10.1 INTRODUCTION

The city of Munich is one of Europe’s most renowned knowledge cities (see for example Van den Berg et al, 2005). It is home to innovative companies (e.g. BMW, Siemens and Linde AG), several higher educational institutes (HEI's) and a number of public research institutes (e.g. Fraunhofer-Gesellschaft and Max Planck Institute). Famous inventors, such as Rudolf Diesel (inventor of the diesel engine), Carl von Linde (refrigerator), Georg Simon Ohm (theory of electricity), Rudolf Hell (television & communications) and Albert Einstein spent (part of) their life in Munich. Nowadays, it is generally recognized that knowledge has become the prime source of growth in advanced economies. Knowledge development in the Munich region is increasingly strengthened (e.g. BMW still contributes significantly to innovation in the Munich area). One of Munich’s inner-city districts, Maxvorstadt, is one of the key locations in the city’s knowledge infrastructure as it includes a wide variety of cultural and educational institutions. However, various stakeholders feel that Maxvorstadt’s potential is not fully exploited, and therefore an evaluation of the area as a knowledge location takes place. The district and its unique combination of institutions have been described as a ‘gift not accepted’, or as an ‘undiscovered treasure’. Current efforts focus on bringing actors together to formulate a strategy to develop the district further, and to exploit the potential the area has. An important part of this strategy is to integrate marketing of the different museums in Maxvorstadt in order to attract more visitors to the district. Policy makers, as well as other stakeholders, such as representatives of museums and universities are aware of the need for an integrated development plan for Maxvorstadt. Therefore, the city of Munich has started a discussion (referred to as the ‘Maxvorstadt discussion’ in this report) with other key stakeholders to explore whether the integration efforts for the Maxvorstadt museums can function as a stepping stone towards an integrated development plan for Maxvorstadt. This chapter seeks to provide guidance for this discussion. Therefore, we provide insight in the potential of and barriers to further development of Maxvorstadt. Moreover, we give suggestions for management for further development of Maxvorstadt. Hence, we analyze stakeholders involved, their interests and cooperation or conflict among them.

The remainder of this chapter is organized as follows. Section 10.2 describes the urban-economic and political context of Munich. Insight in this context is needed in order to understand the dynamics of Maxvorstadt which we briefly introduce in section 10.3. Section 10.4 deals with current dynamics that influence the development of Maxvorstadt. Section 10.5 describes the actors involved in the development of Maxvorstadt and argues for the need for an integrated development or master plan. Moreover, section 10.5 gives suggestions for the management and the master plan. The last section (10.6) concludes.

10.2 MUNICH’S URBAN ECONOMIC AND POLITICAL CONTEXT

Munich, the capital of the Free State of Bavaria, is the third largest city in Germany with a total population of 1,360,867. It is only surpassed in number of inhabitants by Hamburg and Berlin. The city and its surrounding urban region, which consists of eight municipalities, have a total number of 2.5 million inhabitants (Hafner et. al, 2007). The population of Munich can be considered diverse: 22.6% percent of the population in Munich consists of people with non-German citizenship. In 2008, Munich’s population grew by 1.02%, mostly due to net migration (0.76%) - this includes regional migration.

The city of Munich is part of the ‘Europäische Metropolregion München’ (EMM) a regional cooperative alliance, which includes 24 municipalities and 5.5 million inhabitants. Although the city of Munich is growing at a slow pace, the metropolitan region is expected to grow moderately (7.3% by 2025), while the population in Germany will be decreasing by –1.95 over the same period. As it is impossible to develop a location in isolation from other areas in the region, this section briefly describes Munich’s urban economic context. We successively describe: Munich’s economic context and knowledge base (section 2.1) and the political and administrative context (3.2).
10.2.1 Urban economic context

Munich is one of the most prosperous regions in Germany. It has a dynamic labour market, a low unemployment rate, a dynamic service sector, high purchasing power and high GDP per capita (Hafner et al, 2007). Moreover, ‘Municon Valley’ is one of the leading regions in the knowledge economy with high scores on various knowledge and R&D indicators (Castells and Hall, 1994). It acts as a magnet for visitors as well as for (foreign) companies that open a business in the Bavarian capital. Moreover, it is considered as one of the most attractive cities in Europe to live and work. Munich is known as a big city and a small town at the same time. Each district, like Maxvorstadt, can be seen as a small town with its own facilities such as a church, bars and restaurants. Within the districts there are strong, informal personal relations, and a warm atmosphere. These characteristics, in combination with a rich variety of cultural assets in the city and natural assets in the region, create a distinct quality of life in Munich making it one of the most attractive cities in Europe.

Like other cities, Munich is affected by the economic downturn. The unemployment rate increased from 4.4% in August 2008 to 5.0% in the same period in 2009 (Landeshauptstadt München, 2010). However, according to our interview partners Munich’s real estate market is not yet affected by the economic downturn as real estate prices remain constant and in some cases are even still slightly rising. Rents levels for real estate (residential) are growing at a stable pace, and are with €13.-per m² the higher than in other German cities like Hamburg (€12.50) and Stuttgart (11.90) (Landeshauptstadt München, 2010). Thus, the real-estate market in Munich continues to grow, albeit at a slower pace.

Previous studies give various explanations for Munich’s success. Firstly, the city has undergone a relatively late industrialisation. Therefore, it was able to directly invest in modern sectors and it did not suffer from the decline in old heavy industries as it has happened in other industrial areas. Secondly, Munich benefited from the relocation of various companies and industries from Berlin after the Second World War. Thirdly, Munich has a highly diversified economic structure — known as the Munich Mix — with a good balance between various sectors, between large multinationals and small and medium sized companies, and between international and local firms. Finally, Munich has a strong knowledge base that is strongly linked with the business sector (Castells and Hall, 1994; Van den Berg et al, 2005; Hafner et al, 2007; Van Winden et al, 2010).

To remain competitive as a knowledge and economic centre, a strong regional knowledge base is crucial. Higher Education Institutes (HEI) and private research institutes play a key role in the development and continuity of the knowledge base. Munich has a strong knowledge base with eleven HEIs, including in the city or its immediate range, as well as other public research institutes and research departments of private firms. The HEIs differ in size (see table 10.1). It is important to note that despite the presence of overlap between the two universities, TUM and LMU, can be seen as complementary to each other. A very rough division can be made, where TUM as a technical university focuses on beta sciences, while LMU is more involved in alpha and gamma sciences. Both TUM and LMU are considered part of Germany’s finest Universities. TUM and LMU were selected in the first German Excellence Initiative as Clusters of Excellence. This national programme strengthens cutting-edge research and promotes top-level as well as young researchers.

Munich’s success also has a downside. As Van den Berg and Russo (2004) note ‘Munich is just too good’ (p301). Due to its popularity, there are problems in managing accessibility and different functions conflict with each other, while there is a risk of loosing lower income groups who can not afford to pay the high (real estate) prices. The presence of well paid knowledge workers creates specific criteria for provisions in the city such as residential space in the higher segments and high-class leisure facilities. Munich’s specific labour market has consequences for its demographic structure. Currently, over 50% of the households in Munich are single households, with a high share of highly qualified young people especially in inner city areas. The city government fears that as the demographic structure evolves (single households become dual households and dual households eventually become families), Munich may be unable to retain its knowledge intensive labour force inside the city, losing citizenship, expenditure and tax revenue. According to our discussion partners, initial effects are witnessed that families leave the city centre of Munich as they are unable to find suitable housing or the amenities they require. Moreover, lower and in some cases middle income groups can not afford living in Munich anymore, which may lead to a shortage of specific types of labour needed for essential services, such as health care, cleaning and other public services. According to our discussion partners Munich is clearly polarizing as there is an increasing difference between the highly skilled and the un(der)educated workers. In addition, the resulting high real estate prices have
implications for Maxvorstadt which becomes too expensive for students (see section 10.4).

The increased real estate prices also have consequences for Munich as a business location as in certain sectors (like the media industry), as there are signs that firms move to other locations with lower real estate prices such as Berlin. However, for other sectors, like high-tech industries, Munich remains the leading location in Germany. Finally, a recent study shows the importance for Munich to create a specific identity of Munich’s knowledge landscape required to attract and keep students and researchers to the city. This specific identity building may start from the campus locations and can be extended to the metropolitan region as whole. Maxvorstadt, which is home to various HEI campuses, seems to be a suited location top start an identity building programme.

Table 10.1: Students enrolled at Higher Education Institutes in Munich for 2007

<table>
<thead>
<tr>
<th>University</th>
<th>Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ludwig-Maximilians-Universität LMU</td>
<td>46,203</td>
</tr>
<tr>
<td>Technische Universität TUM</td>
<td>19,887</td>
</tr>
<tr>
<td>Hochschule München</td>
<td>13,037</td>
</tr>
<tr>
<td>Universität der Bundeswehr</td>
<td>2,903</td>
</tr>
<tr>
<td>Stiftungsfachhochschule München</td>
<td>1,688</td>
</tr>
<tr>
<td>Hochschule für Politik</td>
<td>936</td>
</tr>
<tr>
<td>Hochschule für Musik und Theater</td>
<td>757</td>
</tr>
<tr>
<td>Akademie der Bildenden Künste</td>
<td>689</td>
</tr>
<tr>
<td>Hochschule für Philosophie</td>
<td>447</td>
</tr>
<tr>
<td>Hochschule für Fernsehen und Film</td>
<td>386</td>
</tr>
<tr>
<td>Munich Business School</td>
<td>152</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>87,085</td>
</tr>
</tbody>
</table>

*Source: Own elaboration; data from: www.statistikdaten.bayern.de (Accessed - December 2009)*

10.2.2 Political and administrative context

The political and administrative structure of a region influences the way areas, such as Maxvorstadt, have been developed. Germany has a three-tiered administrative structure, consisting of a Federal Government (Bund), Federal (or Free) States (Länder) and Local Governments. These different levels have their own responsibilities and tasks. Government powers are divided between Federal Government and the Federal States. Each Federal State has its own constitution; administration and parliament. The Federal Government has the legislative competence for national issues such as, foreign policy, immigration, defense, criminal law and telecommunications, while Federal States are responsible for local governance issues such as municipal law, culture, education, media and spatial planning. In the area of spatial planning, Federal Government only provides a general framework which requires cooperation and agreement between the different levels of government.

Local government in Germany, which consists of municipal and district government, represent the lowest level in the three-tiered administrative structure. The districts practice self-administration within their borders. The relationship between the state and the local government districts constitutes of a complex, intertwined system. Through this system, the ability of the local government districts in terms of self administration is in fact rather restricted. In terms of financial power, the state is better endowed than lower level governments. Budgets for district councils are generally low. Although the principle of
the three-tier administrative structure allows a high degree of citizen participation, the German system allows for limited direct participation of citizens, compared to other European countries. According to our interview partners citizens have a direct voice in their (local) living area, but not at higher policy levels. Additionally, there is a clear division between legal jurisdictions of the state and city government. Although covering these divisions would go beyond the scope of this report, it is important to note that policy on (higher) education, science and art is primarily the responsibility of the state. Buildings for universities and museums are mostly owned by the state and therefore decisions on location of educational institutes and museums are taken by the state.

Traditionally, the Federal state of Bavaria is led by a conservative party, while Munich has a social-democrat, green and pink coalition since 1996, and had a strong social-democratic tradition before that. This might hamper intra-government cooperation and lead to political disagreement which might slow decision making and as a consequence urban development.

There are also a number of other reasons that may hamper intra-government cooperation. First of all, due to the division in tasks, power and resources between the state and lower governments there may be different interests and suboptimal use of resources. In addition, the state feels pressure from other municipalities to distribute resources in a more balanced way between the core city Munich and the peripheral municipalities in Bavaria. Such a distribution may come at the expense of resources needed in Munich’s districts, such as Maxvorstadt.

To conclude, Munich has a strong knowledge base and a favourable economic structure for knowledge intensive activities. However, its success also has a downside in the form of high real estate prices which influences Munich competitive position as a place to live and to do business. The political structure, with a division between the state and the city which have different ‘political colours’ may lead to hindrances for development of the city. One of the major locations for knowledge intensive activities is Maxvorstadt, which houses several HEI’s as well as a high concentration of cultural institutes. In the next section, we describe this district in more detail.

10.3 MAXVORSTADT: DISTRICT OF EDUCATION, SCIENCE AND CULTURE

Maxvorstadt is an inner-city district in the city of Munich which is directly located to the North-West of the old city centre. Figure 10.1 shows that the area is bordered to the east by the English Garden and the Königinstraße. In the North the quarter is bordered by the area of Schwabing, in the West by Neuhausen, in the South-West by the main railway station area. In size, the district is roughly comparable to the city centre (429 ha). The district is characterized by historic locations, such as the Königsplatz and the university area of the LMU. Throughout the years, the district has offered a mixture of residential, education, research and cultural functions. This chapter describes the area’s history (10.3.1), education and culture – two major functions in the district (10.3.2) and accessibility of the area and the integration with the rest of the region (10.3.3).
10.3.1 History of Maxvorstadt

Maxvorstadt was established in the early 19th century by the Bavarian king Max I. Joseph as a first expansion of the historic centre of Munich. Development in Maxvorstadt expanded after 1825 by royal decree’s of King Ludwig I, who attracted world class artists to the area. Ludwig I’s development vision for Maxvorstadt can be captured by the phrase: ‘a new Athens on the Isar river’, referring to the public life on streets and squares in ancient Athens. The patronage of this early 19th century king, and his successors, was instrumental in the development of Maxvorstadt and gave the district its current shape and ambiance. Architects Leo von Klenze and Friedrich von Gärtner were charged with these developments. Klenze and Gärtner developed the Ludwigstraße with the Bavarian state library (BSB), a university (LMU), the Victory Gate, the Königsplatz, the Glyptotek, the Basilica of St. Boniface and an art gallery. In the second half of the 19th Century development continued with the construction of more common functions such as residential and commercial buildings.

Maxvorstadt is a district with a strong history. It was home to various famous artists and scientists throughout history. In the early 20th century, the city of Munich attracted many famous writers and poets (among others Thomas Mann) (Hesserer, 2008). This group of writers created a specific atmosphere and where called the ‘Schwabing Scene’ after the district of Schwabing. In fact the most important meeting points for this scene were actually located in Maxvorstadt, and not in the neighbouring district Schwabing. Moreover, various famous engineers, like Carl von Linde, worked at the Technical University in Munich that was opened in Maxvorstadt in 1868.

During the inter-bellum, the Nazi party seized power, changing the face of Europe over the coming decade, however also greatly influencing urban development in Maxvorstadt. Substantial property in the district was acquired by the NSDAP and the prominent Königsplatz was converted into a 'celebratory square for the movement', as 22,000 granite slabs covered the lawns created by order of King Ludwig I. Additional property around the square was acquired by the NSDAP and transformed it into the seat of power for the Nazi-party. In the late stages of the Second World War (July 1944), carpet bombing by the allied forces destroyed the inner-city, including Maxvorstadt. After the war, an essential decision was made to restore the old building style. TUM professor Hans Döllgast, was responsible for the reconstruction of characteristic buildings such as the Alte Pinakothek, the Monastery and Basilica of St. Boniface and the old northern cemetery. Architect Alexander von Branca rebuilt the 'Neue Pinakothek', breaking with old tradition and standing on the brink of the post-
modernism. History and key decisions during the period of rebuilding, have shaped the district of Maxvorstadt. The tradition of art, culture and science is still very much alive in and around the buildings restored to their former grandeur. Therefore, many discussion partners characterise Maxvorstadt as the true heart of Munich.

10.3.2 Education, science and culture

Culture, education and science continue playing a major role in Maxvorstadt, as the districts still houses key cultural and educational facilities (see figure 10.2). Firstly, it is a key location in Munich’s knowledge and educational infrastructure. It houses the main campuses of the two large universities (LMU, TUM) as well as the University of Applied Sciences (HM) and two smaller universities. A large share of the total students (87,085, see table 10.1) attends classes in Maxvorstadt and the surrounding areas (50,000 estimated in interviews).

Secondly, the district is a major part of Munich’s cultural product. It houses many art and culture related institutions, such as the Alte Pinakothek, the Neue Pinakothek, the ‘Pinakothek der Moderne’, the Lenbachhaus, Siemens Forum, the ‘Grafische Sammlung’, the Glyptothek, the Museum Georgium, the Brandhorst Museum, the Academy of Fine Arts and the University of Music and Performing Arts Munich. Although this can be considered an impressive array of art and culture institutions, there is consensus among our discussion partners that, with only 100,000 visitors a month, Munich has so far been unable to realise the full potential of this area. Visitor numbers differ substantially between the different museums (see Table 2). Additionally, the district houses the Oscar von Miller Forum, a meeting place and guest house for students and visiting scientists. It is dedicated to promote a holistic image of construction engineering across multiple disciplines. Furthermore the Bavarian State Library is located in Maxvorstadt, a successful cultural amenity with over 1 M visitors in 2006. This amenity is currently successful due to longer opening hours of the main reading area (8.00 a.m. to 12 p.m. every day).

Urban centres often contain a large number of urban amenities making it attractive surroundings for knowledge workers (Gleaser et al, 2001). Moreover, downtown areas offer the right atmosphere for face-to-face contact and the spread of unintended information spill-overs (Strorper and Venables, 2004). Also Maxvorstadt can be seen as such a vibrant downtown district. Besides the educational and
cultural facilities, the area has attracted specific facilities for students and (young) knowledge workers, such as bookshops, galleries and bars, which is also expressed as the “C&C (Coffee and Copy shop) Culture”. Many specific and often unplanned happenings are organised in the district, like fashion shows, readings and music shows. As expressed in the Süddeutsche Zeitung (23-06-2010): “Nowhere in Munich happens more than in Maxvorstadt.” Another article mentioned the importance of the variety of shops and restaurants in the surroundings of the university as well: “Here [in Maxvorstadt], desires of intellectuals and other parts of the upper class are satisfied. No other quarter in Munich has so many second hand bookshops, galleries and bookshops as Maxvorstadt” (Stegent, 2003, p124). However, rising real estate prices may threat this specific atmosphere as the area may become too expensive as a place to live for students and low income knowledge workers (e.g. starting artists). We discuss this gentrification effect in more detail in section four.

Table 3: Museum visitors in Maxvorstadt

<table>
<thead>
<tr>
<th>Museums</th>
<th>Yearly visitors</th>
<th>Monthly average</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2006</td>
<td>2007</td>
</tr>
<tr>
<td>Alte Pinakothek</td>
<td>272.646</td>
<td>218.386</td>
</tr>
<tr>
<td>Neue Pinakothek</td>
<td>152.592</td>
<td>204.016</td>
</tr>
<tr>
<td>Pinakothek der Moderne</td>
<td>370.366</td>
<td>448.982</td>
</tr>
<tr>
<td>Städtische Galerie im Lenbachhaus</td>
<td>174.034</td>
<td>170.144</td>
</tr>
<tr>
<td>Staatliche Antikensammlungen</td>
<td>49.922</td>
<td>62.430</td>
</tr>
<tr>
<td>Siemens Forum</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Glyptothek</td>
<td>119.217</td>
<td>115.418</td>
</tr>
</tbody>
</table>

[i] Note that the number of visitors of the Städtische Galerie im Lenbachhaus was higher in 2008 due to a successful temporary exhibition.

Source: Statistisches Amt München, 2010

10.3.3 Accessibility of Maxvorstadt and/connection with other locations

Districts do not develop in isolation and are functionally and/or physically connected with other parts of the region and with other regions. This is especially true for an inner-city location, such as Maxvorstadt, which combines various functions that are complementary, but sometimes also overlapping, to other districts. These mixed functions generate flows of people within, but also between districts. The size of these flows makes Maxvorstadt dynamic on a day to day basis. On a daily basis almost 50,000 people visit the area to study, work or visit the museums. This number is roughly equal to the total population (47,771 in 2008) of the district. Due to the substantial visitor flow inside the district and the mobility of its inhabitants, accessibility is an important issue in Maxvorstadt (City of Munich, 2008). Although accessibility is at present adequate in Maxvorstadt, it remains an important issue. For instance, accessibility by car in Munich’s Maxvorstadt is by some interview partners characterized as inadequate, especially in locations close to the city centre. City officials state that further development of roadways is not an option due to the lack of space. Therefore, solutions for accommodating future growth are sought in the field of public transport. It is believed that the provision of high quality public transport connections will ensure continued accessibility. In 2006, a new subway (‘U-Bahn’) connection has been developed to connect the Garching University campus in the north to the inner-city (see figure 10.3) and it would be possible to extent this line (U6) to Neufahrn, a station of the regional railway S1 to the airport or to the university campus near Freising. However, there are no concrete plans to realise this at the moment. The same U6 as well as other subway connections link Maxvorstadt with other major knowledge and university locations such as the LMU Grosshadern Campus in the south-west.

Connecting districts or regions with other districts may lead to concentration or to spread of activities. There is no consensus on the possible effects of improved public transport connections on the functioning Maxvorstadt. On the one hand Maxvorstadt’s improved connectivity to the rest of the network may make the district better accessible, drawing more people to the area. On the other hand
Maxvorstadt’s improved connections may make other non-central locations more accessible, decreasing the need for a central knowledge location such as Maxvorstadt. An important development in this respect is the state decision to move substantial parts of TUM and LMU to the locations in the periphery of Munich. Without proper policy measures, this may decrease Maxvorstadt’s position in Munich’s knowledge network. Moreover, the district is not considered suitable for slow moving traffic such as pedestrians or cyclists due to substantial, fast-moving car traffic. Additionally, the connectivity between certain parts of Maxvorstadt, like the Museum quarter and the rest of the city, is a point of attention, as the entrance to the quarter is facing away from the city centre.

To conclude, Maxvorstadt is a crucial location for Munich’s cultural and scientific product. It has good public transport connections with other locations. Major remaining questions include: What is the functional link between the various functions within Maxvorstadt, and how is the functional link with other locations? We discuss these questions in the next section, placing them in the context of the major contemporary developments in Maxvorstadt.

10.4 MAXVORSTADT: CURRENT DEVELOPMENT AND DYNAMICS
Maxvorstadt is a mixed, inner-city area characterized by diversity, prosperity and a rich tradition in culture and education. These characteristics show in the physical composition of the district. Cultural and educational institutions form the heart of the district, while commercial and retail functions dominate the south-western part of the area (which is close to the city centre). Residential functions dominate in the northern parts of the district. In this section, we analyse these functions and major developments of Maxvorstadt in more detail. In section 4.1, we discuss how various functions in Maxvorstadt influence the real estate market and which initiatives are taken to cope with the high real estate prices. We discuss the potential of Maxvorstadt as a business location and its position in knowledge networks in section 4.2, followed by an analysis of the idea of linking culture with science in section 4.3. The last two sections investigate two major contemporary dynamics in Maxvorstadt: Spatial dynamics of knowledge institutes (4.4) and development of Maxvorstadt’s museum quarter (“Kunstareal”).
10.4.1 Mixed functions and real estate market
Cities increasingly develop into mixed environments, where living and consuming is combined with other functions such as leisure and business. However, space is scarce in central areas and different functions compete for this scarce space. This results in higher real estate prices making the central areas less affordable for certain target groups. This is also the case in Maxvorstadt. In this section, we analyse the competition for space in Maxvorstadt with special attention to the potential and barriers for student housing in the area.

Commercial functions have started replacing residential functions in Maxvorstadt. This effect is strongest in the parts adjacent to the city centre. The increased commercial activities in Maxvorstadt lead to rising real-estate prices and Maxvorstadt has become one of the more expensive areas of Munich. As a consequence, some inhabitants are unable to afford the high real estate prices and move to other districts. For instance, inhabitants with middle-incomes (i.e. an annual income of approximately €40,000-€50,000) can no longer afford to live in Maxvorstadt. The trend is that mainly people with a double income and no kids (‘dinky’s’) can afford living in Maxvorstadt. Many of these people leave when they have children, due to the shortage of suitable housing for families at affordable prices. For example, an apartment with three rooms costs about €1000,- per month or more, depending on its size of the flat (based on interviews). In 2009, new rents for a 80 to 100 m² flat amounted to €13.90 per m² excluding energy costs, this was the fourth-highest level out of 33 local areas for which this information was collected (Landeshauptstadt München, 2009).

Besides the fact that commercial functions move into Maxvorstadt at the cost of residential space, there are a number of other reasons for the rising real estate prices, which are all related to increasing attractiveness. Firstly, the district is developing a ‘bohemian’ culture; students, artists and other bohemians move to Maxvorstadt as they can no longer afford living in locations with even higher real estate prices, such as the Glockenbachviertel. They choose to live in Maxvorstadt because the district has an inherent spatial quality and a rich history.

Secondly, the squares and other public spaces, such as the Königsplatz and the Alte Pinakothek, are attractive meeting places in summer time. These meetings in public space contribute to a vibrant ambiance in the district. Thirdly, certain commercial functions have been developed in the areas that bring flair and vibrancy to the area. For example, various fashion boutiques are moving into the area and café-kiosk retail is expanding (Süddeutsche Zeitung, 14-07-2009).

**Student housing**
A special target group which is influenced by the high real estate prices are students. Students can contribute to the vibrancy of an area, but also have specific demands, such as low-cost residential space. A previous Euricur study has shown that the student community is not integrated in the Munich community due to the shortage of low cost housing and bureaucracy. Moreover, the study states that Munich misses a real student atmosphere (Van den Berg and Russo, 2004). This latter was confirmed in our interviews as it was argued that the share of students in the total population in Munich is only limited.

The potential of Maxvorstadt as a student district is dual. On the one hand, the district houses a large number of educational institutes. So, students are in the district to study. Moreover, the district has many student facilities, such as book shops and has a vibrant atmosphere. Students may increase this vibrant atmosphere. However, worth mentioning is that not all students are attracted by a vibrant city centre. A distinction should be made between different types of students, as beta students seem to be more interested in a campus with good research facilities and participate in small specialised networks, while alpha and gamma students tend to prefer a university in a vibrant urban surrounding with open social networks (Van den Berg and Russo, 2004). On the other hand, the city of Munich (including Maxvorstadt) has problems housing students (see also Van den Berg and Russo, 2004). As real estate prices are high students can often not afford to live in the city. Although some student housing can be found in Maxvorstadt, the district is not particularly suited for student housing. Rents are prohibitively high. Some students cope with these rents by sharing apartments, but in reality most student do not live in Maxvorstadt. Most students even live outside the city of Munich in the surrounding metropolitan (functional) region. This region is more or less delimited by the train (S-Bahn) network. It should be noted that many students and professors, especially foreigners, do not perceive Maxvorstadt as a separate location. These people come to Munich - the metropolitan region they perceive - and do not base their location choice on individual characteristics of locations such as Maxvorstadt or Garching.
With good public transport connections, they are able to travel through the region and exploit the assets of each individual region.

**Policy measures and initiatives**

In order to retain residents with lower incomes and students, the City of Munich takes various measures, among others subsidies on social and student housing. Through the so-called Munich model young families are supported in order to keep them in the city. Support for students in the form of subsidised housing is more difficult and in the interviews it was argued that it is not possible for the city to support students financially on a continued base. A solution might be to build student houses, but this is difficult due to the high land prices.

The city and state government also jointly attempt to develop affordable student housing in Maxvorstadt on a limited scale (Süddeutsche Zeitung, 27-10-2009). The city has clearly expressed its ambition to increase the available student housing, but it depends on the state which has the resources to develop the required real estate. Currently, cooperation between the state and city level in the field of student housing might be improved. A barrier for further development is that state resources are scarce and are also needed elsewhere. Some interview partners have suggested that (private) actors, such as insurance companies, or other major firms (e.g. Siemens) may contribute to investment in student housing. From the viewpoint of corporate social responsibility and marketing this may be interesting for these companies.

Other interview partners have expressed doubts whether realising student housing in the city is needed and effective. Time and resources would be better spent on ensuring cheap and effective public transport for students. Public transport for students is a point of attention. Currently available student tickets do not cover the entire public transport network of Munich (e.g. it is not possible to travel from TUM’s Maxvorstadt campus to its Garching campus, as the current ticket is not valid this far outside Munich). Sound infrastructural accessibility (primarily by public transport) seems to be a more efficient solution than investments in student housing and it may be sufficient for students to just frequent Maxvorstadt to study, consume and recreate.

**10.4.2 Knowledge networks and Maxvorstadt as a business location**

The high real estate prices of Maxvorstadt and the traditional function as a living quarter also have an influence on Maxvorstadt as a business location. Apart from consumer services and specific student services, Maxvorstadt has hardly any other business. Due to a shortage of space, Maxvorstadt is too expensive for business with low profit margins (e.g. the location is not suited for certain artists\(^6\)), while business with higher profit margins (e.g. financial institutes) prefer more central locations in proximity to other business above the mainly residential, educational and cultural function of Maxvorstadt. This does not mean that Maxvorstadt is irrelevant as location for business. Especially, the presence of the universities might be of great value for firm’s knowledge and innovation networks.

A key issue for knowledge locations is the existence of knowledge networks between knowledge institutes and industries, and the geographical dimension of these networks. I.e. to what extent does physical proximity of firms and knowledge institutes in one area matter? At a first glance, this question does not seem to be relevant for Maxvorstadt as the district is mainly a living and university area without major (industrial) companies. Furthermore, as most of the HEI locations in Maxvorstadt are used by alpha oriented faculties, less interaction with (industrial) firms may be expected. This is in big contrast with other locations, such as Garching (which f.i. attracted the European R&D centre of GE). Similarly, Siemens has a major R&D and training centre in Garching. The campus in Garching strongly benefits from the presence of TUM. Another example is INLTUM, an establishment of TUM at Audi’s main site in Ingolstadt to do joint research projects for the luxury car manufacturer (see Van Winden et al, forthcoming 2010).

In addition, for most of the HEI’s in Maxvorstadt, the geographical scale of knowledge networks is much wider than the inner-city location. LMU, TUM and Hochschule München all have relations with key firms in the Munich region (e.g. BMW, Siemens and Audi) and benefit from the diversified economic structure of the region. Furthermore, cooperation is fostered with firms in other regions in Germany (e.g. Hochschule München is doing research projects with Porsche in Stuttgart). The character of the industrial cooperation differs widely, from permanent cooperation in special foundations (e.g. BMW and TUM have jointly set up a special research foundation) to project based
cooperation based on personal contacts (such as the case in the cooperation between Hochschule München and Porsche). It should be noted that both TUM as well as LMU have special departments that deal with formal relations with industry, however personal relations between firms and professors also play a role. It is also worth noting that there are relations between the universities and other knowledge institutes. For example, throughout Germany each Fraunhofer research unit is headed up by a university professor. These university professors ensure a link between the (upcoming) labour market and the Fraunhofer-Gesellschaft.

10.4.3 Linking culture and science

Although the potential for HEI-industry interaction is limited in Maxvorstadt, there is space for interaction between HEI’s and cultural institutes. This interaction is not directly related to knowledge development, but has a number of benefits for universities, the cultural institutes and the society as whole. Firstly, the interaction can make science and innovation more visible to the general public. This shows the public what knowledge is available in Munich and what is possible with science. For instance, the department of architecture of TUM shows (student) concepts in the Pinakothek der Moderne (which hosts the Museum for Architecture of TUM). Similarly, an exhibition of the Hochschule für Film und Fernsehen has been shown in the Pinakothek der Moderne. In addition, also firms show science and innovation in their own museums, such as BMW Welt (outside Maxvorstadt) and Siemens Foundations at Siemens Forum. These initiatives on the micro-level work well. For instance, BMW Welt is a huge success. Interview partners have suggested that the potential of these individual initiatives may be improved. This could be done by linking the individual initiatives to achieve a common product such as specific tours, in which various companies are visited, combined with other tourist attraction such as museums. It should be noted that there is a limit to the extent companies are willing to show their activities, and are not likely to show basic research due to secrecy reasons, despite the trend to open innovation (Chesbrough, 2003).

Secondly, and related to the first, showing science has an important educational function and can help to make people enthusiastic to do a scientific study. This may help to prevent (future) shortages of qualified researchers in certain areas. Therefore, as an example outside Maxvorstadt, the German Museum shows a number of research projects of the Fraunhofer-Gesellschaft. These exhibitions are aimed at making children up to the age of 18 (just before these children choose their university majors) enthusiastic for natural sciences in order to prevent a (future) shortage of qualified researchers. It should be noted that this example illustrates that also university-museum cooperation is not limited to the borders of Maxvorstadt. Within Maxvorstadt, the Siemens Foundation and Siemens Forum aims at social engagement, education, research and innovations in the fields of technology, arts and culture. Third, the museums as well as the Bavarian State Library may function as important meeting spaces for students as well as other groups of society.

With some major exceptions, like the Doemer Institute (which focuses on the preservation of art) and the cooperation between TUM and the Pinakothek der Moderne, many cooperation projects between museums and HEI’s have a temporary character. From the interviews it becomes clear that there is a demand for more permanent spaces to show contemporary science. Furthermore, most museums focus on fine art, which is not always complementary to science, and therefore, an interview partner stressed the need for the opening of a museum that focuses exclusively on science. A recent initiative by the city of Munich worth mentioning in this respect is the ‘house of science’. This idea was initiated by the private sector. The plan includes the transformation of a former monastery into a place to exhibit products of all types of sciences. The building should be open for public in order to make science available to the general population. Additionally, it may stimulate transfer between different sciences. In general, the house of science is planned to serve two functions: i) as a platform for discussion; ii) a place to show science to the people. The project is still in a planning phase and, although our interview partners are generally positive about this project, the expectation is that it will not be implemented due to lack of resources. Aside from this project, there are only very few shared projects between industry, museums and universities. One other initiative is the Day of Science, where universities open their doors to the general public, but despite the fact this day is a success, it happens only one time in the year. Some interview partners suggested that universities may be more opened to the public. However, universities are not likely to function as a museum, and are tended to focus on their core business (doing research), but can have an own (separate) museum. A good example is Harvard University in the USA, which has its own museum showing science to the public via exhibitions and lecture series. Another initiative is a cultural walk (KulturGeschichtsPfad) that recently has been set up in
Maxvorstadt. This walk shows the cultural potential in Maxvorstadt via guided tours in the form of a small pocket-size book that takes you along highlights in different areas of Munich. For each highlight extensive information is provided in the book. Recently such a book has been developed for Maxvorstadt.  

10.4.4 Spatial dynamics of knowledge institutes

Universities play an important role in urban development. This role has widely been addressed in academic literature, both in terms of its role in knowledge and skill development in regional innovation systems (e.g. Coenen, 2007; Benneworth and Hospers, 2007) as well as the physical and social development of cities due to presence of university buildings and student communities (e.g. see Phelps, 1998 and Van den Berg and Russo, 2004). At the same time, universities compete with other urban functions for space and in various cases urban university campuses relocate to suburban locations (Hall, 1997). This is also the case in Munich, where certain faculties at inner-city campuses in Maxvorstadt and other central locations have been (re)opened at suburban locations.

In recent decades, Maxvorstadt has been confronted with a displacement of university functions, especially of faculties in the beta sciences. This process started with the establishment of a centre for nuclear research in the neighbouring town of Garching in 1975. For obvious reasons this centre could not be established inside the city of Munich. Further displacement has taken place since then. This was due to growth of the universities and competition for space with other urban functions that needed more space, such as museums. The displaced university functions have moved to municipalities within the metropolitan region, but outside the Munich’s administrative borders. Figure 4 provides an overview of the current (academic) university locations in the Munich region. It should be noted that more relocations may be expected, although different interviews contradict each other on the extend of further relocation. Some interviews indicate a move of up to 80% of the university hospitals to locations outside the city. Despite the fact that these clinics are not in Maxvorstadt, and plans for relocation are still unclear, the close proximity of these clinics and the discussion on relocation influence the future development of Maxvorstadt.

Although most HEI movements have been from the inner-city to regional campuses, the other way around also happens. A recent and promising development is the attraction of the Hochschule für Film und Fernsehen (HFF) to the Maxvorstadt area. At present (late 2009) a new building is constructed to house this HEI. The HFF will share the building with a museum for Egyptian art. Moving HFF to Maxvorstadt will enable students to interact with the city environment; this has a number of benefits. Firstly, the students are able to use the inner-city environment for their projects, adding to the value of their studies. Secondly, the presence of students in this part of Maxvorstadt will create liveliness. Thirdly, in cooperation with student associations the HFF may be able to organize small and larger events showing ‘local productions’. Overall, the attraction of HFF to Maxvorstadt can be viewed as highly positive and beneficial for both HFF and the district Maxvorstadt.

Opinions on the implications of the relocation of HEI’s for Maxvorstadt differ. On the one hand, the Maxvorstadt area (LMU main campus and TUM Arcisstraße) is still rich in faculties, especially in the alpha and gamma sciences (see figure 4) and university representatives have clearly stated the ambition to stay in Maxvorstadt, although more relocations can not be excluded. The interviews have also made clear that there is no need to bring faculties back to the city centre and that such an effort would be too expensive and ineffective. On the other hand, the relocation of the universities raises some concern among urban policy makers. The fear is that plots that might become vacant would be commercially developed without the proper attention to the area at large which may go at the costs at the spatial quality and urban variety required to guarantee a prospering city area.

The city has limited influence on the relocation of the universities and the resulting use of land, as university real-estate and land is owned by the state. The developments of the campus locations in the region need to be financed. As a consequence, the land position the state has in the city needs to be commercially exploited in order to contribute to the financing of the outside campus locations. This leads to different interests of policy makers on the local and on the state level. So, on the one hand there are the financial constraints under which the state operates and on the other hand the ambition of the city to ensure urban spatial quality.
Figure 4: University presence in the Munich region, overview per faculty

Source: maps.google.com, own elaboration
10.4.5 Expansion and development of the “Kunstareal”

Cultural, or art, districts (or quarters) play a key role in economic development, for instance in revitalisation of old neighbourhoods, or as a tourist attraction. However, research has shown mixed results with successful and less successful cases of cultural districts. Management of cultural districts is difficult due to the presence of various actors with own interests and there is not a ‘one size fits all’ solution (e.g. Hitters and Richards, 2002; Mommaas, 2004; Lavanga et al, 2008; Van der Borg and van Tuijl, 2010).

The management and further development of the museum district “Kunstareal” in Maxvorstadt is also a major challenge. Despite Maxvorstadt’s rich collection of museums in geographical proximity of each other, there is not a single cultural cluster yet that acts as a common (tourist) product. Most of the individual museums function as “silos” and work on their own. A major explanation for this is differences in ownership of the individual museums: 80% of museums is public owned (divided in state owned and city owned museums), and the other 20% is privately owned. Moreover, and despite physical proximity of the different museums the museums function as separate attractions instead of forming a common and larger tourist product. A single brand or ticket-office for the quarter is missing. Therefore the area is not perceived as an integrated quarter but as a collection of separate museums.

Another point of attention is that the museum district is insufficiently integrated with the inner-city. Proper signage is missing, and from an architectural perspective the orientation for the area might be improved as currently the museum quarter is facing away from the city centre. Furthermore, connections to public green areas like the Old Botanical Garden in the south / the direction main railway station and the Old Northern Cemetery in the north have to be improved.

There is awareness to join forces in order to develop a more common product, to solve practical problems (such as a shortage of storage depots) and to attract more visitors. Therefore, various initiatives are taken. A major one is the formation of the foundation (Stiftung) ‘Pinakothek der Moderne’ (PdM) which has been set up by private actors with the aim to develop and manage the ‘Pinakothek der Moderne’, a new museum developed in Munich’s Maxvorstadt. The ‘Pinakothek der Moderne’ is a building, which houses four major museums. The museums feature fine art, graphic arts, architecture and design. Aside from its permanent collection the ‘Pinakothek der Moderne’ also has various temporary exhibitions on display.

PdM has joined forces with the department for urban planning of TUM in order to develop ideas to improve the quality of and number of visitor in the museum district in Maxvorstadt. This firstly resulted in a joint strategic conference on the future of the Maxvorstadt area. Secondly, it led to the establishment of a forum on the future for the art district (‘Kunstareal’) Maxvorstadt. This forum took place in April 2009. The conference focused on a number of key issues for the art district: visibility of the collection, capacity for storage, integration of the museums with the rest of the district, and networking between universities. This resulted in an approach based on three pillars which involves a joint program for the museums, integration of public space and a general vision and strategy for the area (Stiftung Pinakothek der Moderne, 2009). One of the key issues identified during the conference is the lack of art storage space. Such storage space can take the form of (common) depots, shared by a number of museums. Additionally, lack of a common exhibition area for temporary expositions was identified. Furthermore, the forum led to a discussion revolving around the question whether the strategic cooperation and planning in the museum area could be developed further, perhaps into a strategic development plan for the entire Maxvorstadt.

In addition, a project group headed by the Bavarian Minister for Science, Research, and the Arts and the Lord Mayor of Munich was established in 2009. During 2010 and 2011 stakeholders for the Kunstareal, cooperation partners, the public and representatives of institutions in the vicinity (like the universities) will be invited to participate in a development process for the area.

Stiftung Pinakothek der Moderne (2009) and interviews give suggestions in order to exploit the potential of the museum quarter. Firstly, there is an opportunity to develop a common tourist product by promoting the area as one Museum Quarter (“Kunstareal”) Munich. This museum
quarter should have a common brand and offer the possibility to have a ticket that gives access to all museums in the quarter. Moreover, a map that depicts all museums could help visitors to move through the area. This also helps to a second degree, opening up of museums as currently, the buildings look forbidding and closed. Third, there is a potential to create a stronger link between ‘art’ and ‘science’. Cooperation projects, which are already taking place on a limited scale, could have a more permanent basis. A permanent exhibition space of student productions in museums could increase interaction between culture and science. Fourthly, the opening hours could be extended in order to attract a broader target group. Finally, engage web 2.0 development and ensure a strong presence for the entire museum area on the web. However, many suggestions are difficult to realise due to budget restrictions. Currently, various stakeholders investigate how improvement can be made with limited budget and how a shared vision supported by many stakeholders can be created.

10.5 GOVERNANCE AND POLICY: TOWARDS A MASTER PLAN
The previous sections have made clear that there are several joint initiatives and plans for the development of Maxvorstadt on a micro level (e.g. regarding one function or building). There is not a master (or development) plan yet for the development of the entire district, building on the strong knowledge infrastructure and the specific features of the Kunstareal.

Developing an integrated master plan is a complex process, that involves many stakeholders with all own interests and limited resources are available. Van ’t Verlaat (2002) shows that optimisation of development plans is dependent on three ‘variables’ which are: spatial quality (the observable quality of the build environment), market quality (demand by the end user), and available resources. Tensions occur between each of these elements. Through careful and informed policy these tensions can be managed resulting in better plans for all involved. Although theoretic in nature, this model has proven its validity in numerous cases (Van ’t Verlaat, 2002, Urlings, 2007, Van Randeraat, 2006). Other studies have shown that successful area development can only take place if public-public cooperation is in order (see for example Deloitte, 2008; Franzen & De Zeeuw, 2009).

The Maxvorstadt discussion also includes many stakeholders each with their own responsibilities and interests. This section first briefly describes these actors (10.5.1), followed by arguments for the need for a master plan, and we provide some suggestions for the management of further development of Maxvorstadt (10.5.2).

10.5.1 Actors involved and their tasks
The previous sections have made clear that many stakeholders are involved in the development. All have their own interests, as well as their own responsibilities and resources. The main actors are:

- **The City of Munich**, which primary concern is to guarantee urban and spatial quality. Major issues for the city include creating a vibrant district and the presence of the universities and students is seen as a major requirement for this. Furthermore the city aims to ensure a balanced supply of residential space for different income groups.
- **The State of Bavaria**: is a major owner of key facilities in Maxvorstadt (e.g. museums and universities) and is a major investor in the area. It also has the resources to do this. However, resources are limited due to the fact that these are also needed at other places in Munich and other parts of Bavaria.
- **The museums and HEI’s** (including students) are major users of the area and require a certain market quality. These actors can also contribute to the spatial quality and vibrancy of the area. A key actor for the development of Maxvorstadt worth mentioning is the foundation ‘Pinakothek der Moderne’ (PdM), because it was among the first actors to set an agenda for Maxvorstadt (concerning the future of the Kunstareal Maxvorstadt) and to join forces with other actors (TUM). However, PdM’s role is limited to the art district, although it may help to bring actors together. HEI’s play in this way a key role as a bridge between the city and state government, for their physical presence, local involvement in the city and connections with the city government, but have a financial dependency on the
state. Especially TUM has strong local ties and is aware of its role for the direct surroundings, but has also access to the state government. It should be noted that despite the awareness of HEI’s of the importance of local development and the willingness to contribute to this, the primary concern of universities, and increasingly polytechnics as well, is to do research. Top research is rewarded with financial incentives.

- **District Council Maxvorstadt.** Although this actor has limited power, it represents the interests of inhabitants and it has local knowledge with regard to the development of and more practical problems of inhabitants and other stakeholders in the district. So, this actor is crucial to develop and keep societal support on the local level.

### 10.5.2 Towards a master plan

All stakeholders are aware of the need for an integrated development plan for the future development of Maxvorstadt, and are willing to contribute to such a plan. This study has given various reasons for the need of such a plan. Firstly, the district has various functions which complement each other (such as universities and student housing), but also compete with each other for the scarce space. Major contemporary dynamics in these functions include the displacement of the universities and the development/extension of the museum district. Secondly, the potential and ambition of linking different functions, especially culture and science. It is important to show science to the (local) society. This may have different advantages including making kids enthusiastic for technology, the potential of creating new combinations and to create discussion platforms between different disciplines. Moreover, museums can function as places to apply science as well, for instance for art restoration studies. Thirdly, and related to the others, the high real estate prices may lead to gentrification with the risk of loosing certain functions. A key issue for the master plan is how to keep the necessary functions available, either by keeping them in Maxvorstadt or via good (public transport) connections with other areas. Fourthly, both the Lord Mayor of Munich as well as the Bavarian State Ministry for Science, Research, and the Arts have made further development of Maxvorstadt as their priority. So, there is political support from different political layers and the City and the state are willing to join forces, despite possible political barriers (e.g. differences in budgets and interests). Finally, Munich aims to host the Winter Olympics in 2018. This is a shared goal that can bring actors together and to give Maxvorstadt an own function and a face (e.g. the cultural centre) in the total product Munich.

Development of a master plan can not be done by a single stakeholder alone, but requires support of many stakeholders. Major questions are how the development can be managed and which stakeholder takes the lead and brings actors together. The City is seen by many stakeholders as the actor to take the lead in the development of a master plan for Maxvorstadt, although some argue that the state is better equipped for this task due to the availability of resources. Other actors have stated their willingness to support a good master plan and may be able to bring stakeholders to each other, but can not take the lead. Although stakeholders agree that central leadership in developing an integral development vision for the area may be beneficial, some question the possibilities to manage an entire city quarter.

A master plan is a complex plan covering many topics. Based on the interviews we are able to give suggestions for two of these topics: branding and marketing of Maxvorstadt and the integrated use of public space. Regarding the marketing of the area, it is important to create a balanced marketing plan that is integrated in the total marketing plan of the Munich region. Our interviews clearly show that the potential of Maxvorstadt lies in its central location, its specific urban quality for inhabitants as well as commuters and visitors and the presence of the rich variety of cultural and educational institutes. This might be a central part in the marketing plan and Maxvorstadt might be branded as a ‘hotspot where art and science meet’. An important question which needs to be raised for the development of the marketing plan is whether the brand Munich and/or a specific brand Maxvorstadt will be used. As noted in the previous sections, many (potential) city customers (like students) do not distinguish between individual locations such as Maxvorstadt, but live in, consume, or visit Munich. Therefore, and especially for international markets, as one of our interview partners suggested, Munich should be used as the common brand as a focal point for knowledge and culture, with its epicentre within the city of Munich, in Maxvorstadt. Individual locations, such as Maxvorstadt can be used as sub-brands. For, instance, the museum quarter can
be branded as 'Kunstareal Munich-Maxvorstadt'. Also other knowledge locations in the region can then be branded in such a way, like 'University of Munich @ Garching', recognizing both the brand of the region as well as the local setting.

Concerning the integrated use of the public space, some of our interview partners suggested making more public buildings easier accessible as these now look forbidding and closed. This includes using squares and streets between the buildings for public events. The relocation of the Hochschule für Film und Fernsehen to Maxvorstadt can be seen as an opportunity in this respect. Public spaces can also be made more attractive by using art and science. These public art works might also have an educational function in some cases.

10.6 CONCLUSION AND RECOMMENDATION

Munich has a rich tradition in knowledge development. The city houses famous innovative companies (e.g. BMW, Siemens, Linde AG), many research institutes and was home to famous inventors such as Carl von Linde and Rudolf Diesel. It is a leading city in the knowledge economy, with high knowledge indicators and a high quality of life. The success has also a downside in the form of high real estate prices and competition for scarce space, which negatively affects Munich’s demographic composition and its competitive position for certain industries. For instance, lower and middle income groups cannot afford to live in Munich anymore, which may lead to a shortage of labour needed for essential services, such as health care and public safety.

Munich wants to continue its tradition in science and research in order to distinguish itself from other cities and to keep a leading position in the knowledge economy. One of the key locations in Munich’s knowledge economy is Maxvorstadt. This district houses a substantial number of HEI’s and forms the cultural heart of the city with its large collection of museums. The district suffers from a scarcity of space and different functions (education, living, culture and others) compete for this scarce space with higher real estate prices as a consequence. The City of Munich has started a discussion with other stakeholders in order to safeguard and stimulate the potential of the area as a knowledge location. Furthermore, involved stakeholders have discussed the development of a strategic plan for the future development of the area.

Our study has analysed current dynamics in Maxvorstadt including the development of a museum cluster; geographical dynamics in the location of HEI’s; linking culture with science, and rising real estate prices as a consequence of a shortage of space- and aims to give insights for further development and management of the area. This section summarises our main findings and gives some concrete recommendations to develop Maxvorstadt further.

A first conclusion is that Maxvorstadt has a number of key assets. Its major asset is the relatively unique concentration of museums and HEI’s in one city district. This asset has not been fully exploited yet, but there are opportunities to do this. Firstly, the museum quarter “Kunstareal” can become a major part of Munich’s tourist product. It can diversify the tourist product, next to other strong images of the city such as beer, football and the green surroundings. An important and related asset in this respect is the central location and the proximity to the city centre. Nevertheless, the connection with the city centre might be improved by better information provision (e.g. signing) or improved ‘passages’. Another challenge is the development from a collection of single museums to a museum cluster that functions as a common (tourist) product. Some suggestions to do this are the introduction of a shared entrance ticket and joint marketing of the district. Secondly, there are opportunities to link culture with science in which museums show science developed by HEI’s and/or firms. Maxvorstadt has already some major examples of this, including the Doemer Institute and cooperation between the Pinakothek der Moderne and the department of Architecture of TUM. Linking science with education has a number of benefits, such as an educational function (science has been shown to the society), recruitment function (e.g. people can get enthusiastic about science and start studying it, which may prevent future labour market shortages for certain disciplines) and it may link different disciplines. Moreover, museums can function as places to apply science, like art restoration. There are also some critical remarks to be made on the extent science can be linked with culture. Firstly, companies, but also HEI’s are not likely to show basic research due to secrecy reasons. Secondly, with some major exceptions
like the Doemer Institute, most of the museums show fine arts, which is not directly complementary to science. Therefore, a solution might be to start a new museum focusing on science or join forces with the museum which is the closest to science. Fourthly, HEI’s are not likely to function as a museum on their own and are tended to continue focusing on the core business, doing research. However, HEI’s may open their own museums. A best practice in this sense might be the Harvard museum in the USA.

Despite the large number of HEI’s, we have no evidence that Maxvorstadt functions as key knowledge location for local business-university relations. For many firms, Maxvorstadt is not attractive due to the scarcity of suited space and the high real estate prices. Therefore, firms are located in other places and see entire Munich as the relevant region. Similarly, HEI’s in Maxvorstadt have networks with firms crossing the entire Munich region and other parts of Germany. In other university locations of the Munich region, which focus on other disciplines, co-location of universities and firms does matter, such as the Garching Campus.

A related conclusion is that Maxvorstadt is just one of the locations in Munich. Many actors do not see Maxvorstadt, just like other districts, as a specific location, but live, work, consume or do business in the entire Munich region benefiting from the specific assets of the individual districts. This has at least two major consequences. Firstly, in marketing plans, the brand Munich should be used, while Maxvorstadt may serve as a sub-brand (e.g. Kunstareal Munich-Maxvorstadt). Secondly, and although Munich’s (public) transport network functions well, further development and maintenance is essential to link the various districts, enabling the various city users to exploit the assets of the single districts. Moreover, the accessibility of the district for pedestrians and cyclists may be improved due to the fact that ‘physical passages’ between the city centre and Maxvorstadt are missing.

A good working transport network is also crucial for another development, the geographical dynamics in the location of the HEI campuses. The relocation of HEI’s can be considered as a natural process in which HEI’s try to find optimum locations with the right facilities for different disciplines. Some disciplines move to more suburban locations as there is a need for more calm surroundings, sufficient space and good research facilities. Others benefit from a vibrant inner city location, such as Maxvorstadt. A good example of the latter is the relocation of the Hochschule für Fernsehen und Film to Maxvorstadt, which may also increase the vibrancy in the district.

Maxvorstadt, with its central location, rich cultural assets and other urban amenities and the main campuses (management function) of two major universities and several other HEIs, may act as a spider in Munich’s educational and science network. The district may also be attractive to various target groups related to the educational institutes, such as students, visiting researchers and conference participants. Many interview partners agree about the contribution of students and the other mentioned target groups contribute to the vibrancy of the district, although there is no consensus about the necessity that they also live in Maxvorstadt as the district may be too expensive for them (especially students). Moreover, it has good connections with other districts where students and the other target groups can live. Another point which should be made is that just like different HEI’s, students groups and researchers are not homogenous and are not all attracted by a vibrant city centre. Some prefer calm and green surroundings in suburbs instead.

Final conclusions can be drawn regarding the stakeholders involved and the management of the area. Many stakeholders are involved in the ‘Maxvorstadt discussion’, with each own interests and sometimes conflicting tasks. Therefore, cooperation is sometimes difficult. Another barrier for cooperation is Munich’s success. There is not a common threat that brings stakeholders together, like it happened in the regions of Eindhoven and Helsinki in times of deep crises. Munich can try to find a common opportunity to bring stakeholders together. The bid for the Olympic Games might be a good opportunity for this. Although on a smaller scale, the development of the Kunstareal, may also be seen as an opportunity for this.

A positive sign for further development of Maxvorstadt is the willingness among all stakeholders to cooperate and the awareness of the need for an integrated development plan. A major question remains who takes the initiative for such a plan and how the plan is guided during the rest of the
process. There is no agreement on who has to take the lead as both the city and the state can take this role. Although, most stakeholders suggest the city is the most suitable actor to fulfil this role. Other actors can not take the lead due to limited (financial) power, but can play a role as bridge between other actors (e.g. universities can bring the state and city government closer together).

**Recommendations**

In the previous sections we have given drivers and barriers for the development of Maxvorstadt. In this final part, we end with some concrete recommendations that may help to develop Maxvorstadt further.

A major recommendation is the need for the development of a master plan for the entire district which covers various themes, including development of the campuses, development of the Kunstareal, Maxvorstadt as a district to live (dealing with real estate prices and housing problems), and the integration of science and culture. Specific detailed plans can be made for the different themes. It is crucial to integrate these detailed plans into a single master plan. Similarly, the master plan of the entire district should be integrated into visions and strategies for the larger Munich region (e.g. the development of the Maxvorstadt campus can not be seen without the development of other HEI locations). It is especially important to integrate Maxvorstadt with other inner-city districts to prevent overlap and competition.

Regarding the development and implementation of the master plan, more recommendations can be given.

First, we provide recommendations for the management of the area. All key actors (universities, cultural institutes, City of Munich and State of Bavaria) should take an active role and cooperate on an equal (non-hierarchical) basis in order to realize a shared vision. Important in the cooperation is the mentioned role of universities to link the City with the State. The current development of the Kunstareal can be seen as a best practice for the new way of cooperation. Moreover, a suggestion might be to introduce a form of area management to guide further developments in Maxvorstadt. This can only be done after political consensus has been reached on the future of Maxvorstadt. This area management can be organized by an independent accomplished process manager whose main task is to identify common interests and to define a programme of requirements for the area. In a later stage, the area manager can be charged with the establishment of a partnership organisation (with representatives of all major stakeholders) which is responsible for the development and realisation of a master plan. It is important to prevent an imbalance in power which may hinder development of the area as it is the case in Eindhoven, (see chapter Eindhoven).

We can also give recommendations regarding the marketing and accessibility of the area. Regarding the promotion of the area, we suggest using Munich as a main brand and Maxvorstadt as a sub brand. As mentioned, the location may be branded as a ‘hotspot where art and science meet’. So, it can contribute to the identity of Munich as a knowledge city by concretely showing (the meaning of art and science) for the society and visitors. Furthermore, it is important to investigate the wishes and role of different target groups, including students, universities, museums, inhabitants, companies and visitors. For instance, research can be done to find out how and to what extend the specific target groups are related to culture and science. Moreover, potential overlap and conflicts between different target groups should be mapped. Finally, regarding the accessibility, as earlier mentioned, connections with other areas are crucial. Especially important is to improve the visibility of the area. This can be done by improving the physical passages to other parts of the (inner) city, improving the entrances of public buildings, and development of a proper (digital and physical) information system for different target groups, including proper signing and development of specific maps.
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11 San Sebastian: PIA

11.1 INTRODUCTION
San Sebastian is well known as a distinctive seaside location in the North of Spain and as the host of a top international film festival. Tourism is thus, and for a long time has been, the city’s central economic engine. However, driven by the implantation of the public Basque TV in early 1980’s, San Sebastian has also developed a relevant productive system associated with film and other audiovisual activities.

Presently, fundamental trends in global audiovisual markets are imposing many challenges on this system. Its former driver of growth (e.g. Basque TV procurement and government support for the film industry) slowed down, and a large number of established audiovisual activities reached maturity. Simultaneously, although new technologies, e.g. virtual reality, and more “democratic” (internet) distribution channels created room for new entrepreneurship and innovative combinations of activities and skill, this virtuous process didn’t take off yet. In this setting, the City of San Sebastian recently launched an initiative called PIA – Audiovisual Innovation Pole – a “silver bullet” cluster strategy (i.e. targeting a very specific activity) to support the sector through a wide array of services. Part of the strategy is the creation of a new physical hotspot for the industry, in a location at the outskirts of San Sebastian.

This chapter analyses the development of San Sebastian’s audiovisual cluster over time. Based on this analysis, it reflects on the new cluster policy, with a specific focus on the creation of the “hotspot location”. It starts by briefly analyzing the socioeconomic context of the city, and its governance traditions. It continues by sketching the main global trends in the audiovisual industry and assessing its organizational, social and geographical modes of organization. Subsequently, from an evolutionary perspective, a central part of the chapter analyses the driving forces behind the development of this cluster of activities in San Sebastian, and identifies present trends and challenges. We argue that the cluster is in a transition stage, in which public policy might play an important role. Next, we assess the baseline characteristics of PIA. Finally, we draw conclusions and present a number of suggestions for the continued development of PIA as hotspot for the local audiovisual industry.

11.2 SOCIOECONOMIC CONTEXT OF SAN SEBASTIAN
San Sebastian, or Donostia (in Basque), is situated in Guipuzco, a province of the Basque country, one of the politically autonomous regions of Spain. Together with Bilbao and Vitoria, San Sebastian is one of its most important cities, with roughly 180,000 inhabitants. The three cities form an urban triangle at distance of some 100 km from each other; San Sebastian is roughly 30 km away from the French border. San Sebastian’s population is ageing, and migration has increased slightly.

The economic base of the city is highly dominated by tourism and service industries. The region is strongly industrialized however: the Basque country has some of the most industrialized regions of Spain, with strongholds in aeronautics (Airbus), and electrical machinery. In the last decades, besides engineering based industries, the Basque economy and San Sebastian have also developed smaller productive systems, like e.g. activities related with film and audiovisual.

San Sebastian is home to important universities and knowledge institutions, namely units of the Public Basque University. In early 80’s, the decline of among others the metal, chemicals and shipbuilding industries led the Basque government to set up the foundations of a Basque network of strong industry-based research centers. Nowadays those centers are an important part of the region’s research backbone and work closely with the industry in order to promote its diversification towards more knowledge intensive subsectors (e.g. through the use of new materials, energy sources or virtual reality engineering). Together with Madrid and Catalonia, the
The Basque country is one of the most knowledge intensive regions of Spain. The Basque country is export-oriented. Bilbao has an international airport, and there’s a small airport in San Sebastian. There are however few direct air connections to Europe. Concerning digital infrastructure, the city is presently working to expand its fiber optic network. Quality of life attributes and amenities are considered rather high. Lacking the buzz and vibrancy of a big metropolis, the quality of the public space, limited congestion, a strong identity, a seaside location and relatively low cost of living compared with other Spanish and European cities have been playing a role in the city’s attractiveness as a residence.

The population is at present ethnically homogeneous: less than 6% of the residents originate from outside Spain. The majority of migrants come from Latin America. As part of the Basque country, San Sebastian has a strong cultural identity and concentrates a large percentage of Basque speakers. The Basque country enjoys strong political autonomy, and has many degrees of freedom to implement economic and innovation policies. It was one of the first regions to design “Porter style” cluster policies in the early 1990’s (Arbonies and Moso, 2002). Recently, the Basque government has been active in designing new cluster initiatives, like for example the Basque Audiovisual cluster, as a brand, promotion and collaboration platform between its players. Besides general support for entrepreneurship, training and office space provision, the city recently selected three spearhead industries: green technology, assistive technology (medical technology to support elderly and handicapped people), and the audiovisual industry. Each industry is to be supported by integrated programmes encompassing service provision and in some cases infrastructure development.

**Institutions and Organizing Capacity**

The city of San Sebastian has a long tradition of active local economic policy. The department for Economic Development of the city (Fomento San Sebastian) was established in 1902 to support, manage and promote the construction of hotels and public real estate, such as the hippodrome. Its tasks increased in scope overtime, for example, it now includes the promotion of the city’s many festivals, and various types of support for local firms.

In 2004, the department was incorporated in as a publicly owned (100%) private company. This helped to increase its management flexibility. It reinforced its involvement with private companies and allowed the department to assume new roles, including the provision of external consultancy services, the organization of training and brokerage, job fairs, subsidizing entrepreneurship, providing cheaper office space and the provision of accelerator programmes. Moreover, Fomento elaborates economic strategic planning exercises and is working on monitoring and evaluation systems to assess the outputs and results of its actions.

Fomento has roughly 50 employees and manages an annual budget of € 25m. It developed into an institution with substantial capacity to deploy economic policies at the city level. Its staff encompasses a diverse set of skills, strategic management capacity, and experience in the field. Fomento shows indications of internal learning capacity. Moreover, and probably most important, it is seen as a trustworthy and active partner by other stakeholders to intervene and actively support local economic activities (as it was proved during our research visit and interviews).

Why did Fomento select the audiovisual industry as spearhead sector? For one thing, Fomento had stepped up contacts with local firms, by organizing general discussion meetings, surveys, employment monitoring schemes (e.g. initiative “jobs of the future”). The relevance and challenges of the sector popped up in this process (note that the audiovisual industry hardly shows up in statistics). For another, the participation in the INTERREG IIIC network CINESPACE allowed Fomento and the city’s film commission, to capitalize on other cities’ experiences (e.g. Venice, Glasgow) and to start reflecting internally on a way to support the cinema and audiovisual related activities in San Sebastian. The PIA project – Audiovisual Innovation Pole – described in a further section of this chapter, results from these previous efforts.

Presently, Fomento twice a year organizes a forum with local actors in the audiovisual sector (e.g. TV, producers, media firms, knowledge institutes and associations, etc) to discuss and reach consensus on the development of projects and competitiveness initiatives for the sector. The city
has also been active in developing spaces for the needs of the “new economy”. Besides PIA, the city is developing (in partnership with research institutes) a building to accommodate temporary foreign researchers and a dedicated help desk.

11.3 THE AUDIOVISUAL BUSINESS: CHANGING PRACTICES AND GLOBAL TRENDS

This case study focuses on the evolution of a localized audiovisual cluster and on the policies under development to support its transition towards new rounds of innovation and competitiveness. However, first it is important to clarify what it is meant by “audiovisual”, framing it in the context of its evolution towards a broader set of “digital content” activities. Fomento San Sebastian commissioned a study in order to identify new business opportunities in “audiovisual” (Rodriguez et al, 2009). In this study “audiovisual” is understood as a hybrid sector comprising different subsectors. Grabher (2002) argues that the transient nature of new media activity “…confounds any systematic empirical efforts because the research object does not constitute a crisply demarcate sector” (p. 1912). Still, he refers to some specific activities usually considered under this umbrella, namely providers of internet applications, the “infamously famous” dotcoms, new digital providers of music, TV shows or film, web design and a diverse range of new content producers.

As we will see later, some of the subsectors identified as “audiovisual” are reaching (or have already reached) maturity, and are in a process of diversification and integration with other fast growing niches. For the sake of this study, we find it useful to group them in 4 different sets of activities:

- **TV and radio distribution, as well as cinema, video and music (audiovisual in a narrow and more conventional sense);**
- **Internet and new software applications (e.g. search engines, social networks, on-line publications);**
- **Videogames;**
- **Production of digital contents (e.g. mobile contents and services, online digital publications).**

Despite the particularities of each sub-sector, there is a rich body of literature (emanating at the crossroads of economic geography, management studies and sociology) that allows to understand fairly well the organization of production and geographies of “audiovisual”, “content” or “new media activities” (from now on we will speak simply about audiovisual, considering the ensemble of the 4 sub-niches previously mentioned). For example, recent work of Harald Bathelt (2002, 2005) and his co-author (Bathelt and Graf, 2008) in-depth analyzes a group of clustering experiences in media, film and TV broadcasting in Leipzig and Munich (see also van den Berg et al, 1999). Also very insightful for our study is the work of Gernot Grabher (2002) on organizational practices of new media, which frames an evolving research agenda on project based economic activities, like media or audiovisual (see also Sydow et al, 2004). This literature stresses some typical features of the audiovisual industry, to keep in mind:

- **The project based nature of the business.** The “product” is usually developed outside the boundaries of a single firm, implying co-production and cooperation between a set of providers and specialists, often through functional teams. Core capabilities of a firm are often the skill to mobilize internal and external resources towards the development of specific projects or portfolios of projects. The film industry is the extreme example with ‘one-off’ projects, but it also happens to a lesser degree in other types of production (e.g. documentaries, TV shows). It is not rare that one firm has 5-6 permanent workers and hires 50 other free-lancers and temporary staff for a project. This puts rather high demands on project organization skills, but also on risk management and assessment (e.g. financial, but also on the temporary staff’s skills). In the TV industry, we see a similar dynamic. TV stations often outsource a great deal of the creative production to other smaller and more flexible production firms, which in turn combine permanent and free lance staff to satisfy the client’s demand.
- **Regular and intense collaboration between users and clients in product design.** In many
cases, projects and new products are not developed for a particular client, but with the client (Neff and Stark, 2003, quoted from Grabher, 2002). This puts a strong focus on the proximity to the client during the product development process. With the increasing involvement of the client in multiple media platforms and demands of total connectivity, this practice is likely to become bolder. As we will see, this is the reason why some indigenous web design and publicity firms of San Sebastian opened offices in more expensive locations like Madrid, Bilbao or Barcelona, where important clients are located.

- Relevance of “economies of recombination”, i.e., balancing the provision of one-off solution with the ability to develop portfolios of similar products towards efficiency, recombining previously deployed skills and techniques. This is frequent in web-design and other types of consultancy, but also, e.g. in special effects (FX) companies, which may provide similar services for a film production company and for an advertising company.

- Significance of a specialized labour pool and networks of reputation. As Grabher (2002) illustrates, “…the average small size of new media ventures, the temporary nature of projects, and the imperatives to reconfigure firms in short project cycles puts a high premium on access to a local pool of potential project collaborators” (p. 1919). Using freelance creatives and technicians is thus a regular working practice, e.g. for editing, postproduction, artwork, special FX, packaging, music composition, camera and lights, etc). They flow from different projects and create what Grabher calls “latent networks”. Personal contacts are more important than job fairs; CV’s are dominantly portfolios of projects and productions rather than a set of formal qualifications. This has direct consequences for entrepreneurship policies: More than supporting start-ups, the provision of on-the-job and in-house training assumes central relevance to plug new ventures and creatives in a small world of contacts and reputation. Together with “know-how”, “know-who” assumes central relevance. Moreover, networks tend to become rooted in previous practices and well established contacts and “institutions” (Sydow and Staber, 2002) – thus, cooperation and joint projects between older established entrepreneurs and new generation firms won’t flourish immediately.

- Large metropolises “have it all”. Associated with the presence of the most important clients, successive rounds of circular and cumulative causation lead to the concentration of specialized labour pools, large firms, their spin off’s and specialized providers in large cities. Moreover, these cities have a particular ability to attract talent from outside (van Winden et al, 2007), namely due the quality and distinctiveness of their labour markets for audiovisual careers. This set of conditions constitutes fertile ground for the emergence of new combinations, related combinations and innovation in large cities. In smaller cities, the emergence of similar clusters tends to be initially associated with a single large player or client (e.g. broadcasting TV), government action, or content producing specificities related to language or regional culture.

- Role of spatial proximity in fostering knowledge spill-overs. In the creative industries (of which audiovisual industries are part) face-to-face contacts (F2F) and “buzz” are assumed to be critical for innovation (Asheim et al, 2007). F2F is still the essence of project based work - despite the opportunities opened by ICT, the critical moments of production and organization still tend to require meetings and personal interaction. The “buzz” generated by this ecology of contacts (Storper and Venables, 2004) and in some cases the fact of simply “being there” exposed to many sources of “noise” and non systematic information (e.g. Gertler, 2003, Grabher, 2002b) allows for better monitoring and benchmarking about what other firms are doing, essential market and regional political trends, the availability and reliability of potential collaborators, and easiness to find specific pieces of information. Being part of this type of close ecology of contacts allows to filter and interpret information in a more effective and efficient way. The question remains on what spatial level this ‘buzz’ takes place: is it the street, the building, the café, the city, the metropolitan area? And, which possibilities are there for “global buzz”, e.g. through Internet platforms (Jones et al, 2010)?

**Global trends**

A study from the OECD (2007) describes some key trends in the audiovisual and digital content industries for the years to come (see also the study of Rodriguez et al, 2009). Without claiming to be comprehensive, we sketch in the next points some of those central global trends:
• Market structures: as in many other sectors, one may expect (and it is already happening) an increasing concentration, through mergers and acquisitions, resulting in very large media and audiovisual conglomerates. Simultaneously, public assets (like public TV stations) are likely to become at least partially privatized. Audiovisual market structures witness two parallel trends: concentration and presence of large players, determining the level playing field, together with the atomization of small independent firms and producers;

• Distribution: a “democratization” of distribution channels (namely through internet) and an increasing role of the consumer as a “king” (from “lean back” to “lean forward”), with more and more diversified demands; personally produced and distributed contents are emerging fast (e.g. MySpace; YouTube), just like on-demand TV and new ways of cinema like telescopic and 3D;

• Changing allocation of advertisement budgets (e.g. from TV to internet), opening opportunities for smaller content providers to benefit from this budget, if they manage to attract audience and users (e.g. Facebook and its external content providers, like Zinga, the firm who developed the Farmville application). This trend will generate new training and educational markets for specialized providers and e-learning, e.g. in graphic design and digital content production;

• While postproduction services are likely to decrease (people can do it with their own PC), own TV broadcasting is likely to emerge in firms and government bodies;

• Convergence of contents (audio, video and data), platforms (PC, TV, game console) and distribution channels. One key example of almost full content convergence is in our own cell phones or mobiles; Skype and VoIP (voice over IP) is an example of integration data-audio-video; also emergence of new platforms like the e-book;

• New consumer demands and “banalization” of established technologies raising new demands for applications of 3D or special FX in industries like cinema, TV or video games; traditional economic sectors are likely to demand new audiovisual technologies: machine building (image screens), tourism and heritage (GPS systems), etc;

• Developments in breakthrough technologies like augmented reality (e.g. when you point a mobile to a building and see in the screen extra information about it, e.g. shops inside, reviews of restaurants, etc);

• Decline of generous subsidies for the European film industry.

This study of Rodriguez et al (2009) identifies growth activities worldwide, as “audiovisual business of the future”: i) telescopic and 3D cinema; ii) videogames (online games, games for mobiles); iii) low cost exportable films and mini series; iv) digitalization of content for e-books, archives, public libraries, etc; v) e-learning; vi) mobile contents and vii) a diverse array of internet services like streaming services, cloud computing, social networks, virtual worlds and geolocalization. After these general considerations concerning the organization and the future of the audiovisual sector, in the remainder of this chapter we “come back to earth”, zooming in and looking at these trends from a specific and localized perspective, i.e. through the analysis of concrete evolution and challenges ahead in San Sebastian’s audiovisual cluster.

11.4 DEVELOPMENT PATH OF THE AUDIOVISUAL PRODUCTIVE SYSTEM IN SAN SEBASTIAN

Before the 1980’s, the Spanish audiovisual sector was almost exclusively concentrated in Madrid and practically non-existent in the Basque country and San Sebastian. In this section, we analyze how the cluster developed during the 1980’s as a consequence of the Spanish regional autonomy law of 1979. Under this new institutional frame, the political regional autonomy of the Basque country and its strong nationalistic identity are behind two convergent events that ignited the sparkle for clustering to take place: i) the emergence of a (strongly subsidized) Basque film industry and ii) the implementation of the Public Basque broadcasting TV.

11.4.1 The Basque Film industry in early 1980’s

After decades of Franco’s dictatorial and centralistic regime, a regional autonomy law was issued in 1979 giving important political powers and financial resources to the different Spanish regions.
The first years of the 1980’s thus implied significant changes in the Spanish political organization, especially in the strongly nationalistic Basque country. By this time, as a way to promote the Basque nationalistic identity vis-à-vis Madrid, the Basque film industry starts to emerge, largely subsidized by the Basque Government (Department of Culture), and typically through co-productions with other countries. It is also during this nationalist peak that the International Film Festival of San Sebastian is managed by a Municipal Foundation, and becomes rather inward looking. It loses the competition category in 1983, and during the 1980’s the festival gives a strong focus to Basque productions, many of them produced in San Sebastian.

De Pablo (1999) sees a link between the Basque co-productions of early 1980’s and the strategic objective of promoting the national identity of the Basque country in Spain and abroad. He particularly analyses two documentary co-productions with France and Great Britain of the early and late 1980s, produced by the San Sebastian’s companies Frontera Films (*Euskadi hors d’Etat, in 1983*) and Eresoinka (*Gernika, in 1987*), with a lot of shooting taking place in the Basque country and implicit and explicit political messages about the autonomy and identity of the Basques. Those documentaries never tipped in national TVs or abroad, but they involved the establishment of projects between external directors and local staff, script writers, actors and producers, reinforcing its identity and creating demand for a local audiovisual and cinema skills (even if highly subsidized).

Simultaneously, another segment of the Basque film industry started to develop in early 1980s: the production of animations and cartoons. San Sebastian hosted the first Spanish company of animation, and the first Spanish animation movie in 1985 was produced there. Reacting to the emerging opportunities, new entrepreneurs and freelancers started film and animation related activities (post-production, audio, video, etc) in San Sebastian.

11.4.2 The establishment of the Public Basque TV

Also in early 1980s, the Spanish Government and the new Basque Regional Government released funding and provided the legal framework to establish the Basque Public broadcasting TV – EiTB. By that time, very few audiovisual companies and skills were located in the region. Thus, Basque staff received training and learned from established broadcasting TVs in Madrid and abroad (e.g. USA, UK). Freshly qualified technicians and other staff started their work for the Basque TV. The establishment of the Basque TV created new business opportunities in the region through its procurement and outsourcing policy. A number of production and post production companies emerged in the region to supply the TV with small movies, documentaries, fiction, TV shows, advertising clips, and many other audiovisual services and products.

From the beginning, San Sebastian was an important pole for the audiovisual industry. EiTB has production centers in San Sebastian since 1987. An important reason to locate production facilities in San Sebastian was the fact that the Basque language is relatively dominant in the city and the Guipuzcoa province.

Despite the importance of Bilbao as a regional capital, it is estimated that San Sebastian still nowadays concentrates 40-45% of the total audiovisual industry in the Basque country. An important share of the production and post production audiovisual companies that started in early 1980’s are still active today in San Sebastian, and still have the Basque TV as their main (if not only) customer. While the EiTB production centre of Bilbao concentrates the news and informative programmes, San Sebastian has the lion’s share when it comes to TV shows, film and other creative productions.

The involvement of private local and regional audiovisual companies has been strong since the beginning of the Basque TV. EiTB early assumed the role of “spider in the web”, organizing an “extended enterprise” of providers, buying broadcasting products and their copyrights. Still nowadays local companies get contracts for the production of creative pieces to fit the TV’s grids (usually defined twice a year, for winter and summer season). These contracts can take more than 1-2 years, e.g. the production of a TV show of hundreds of episodes. Each of the shows and productions requires a large number of free lance technical and creative services, audio, image,
production and post production, management, etc. Presently, EiTB, in its San Sebastian production centre, works on a regular basis with 8-9 production companies (“first-tier” suppliers) based in the city, generating work for related audiovisual services of other companies and freelancers (many of them originating from spin-offs of the incumbent audiovisual companies).

11.4.3 The audiovisual cluster nowadays
Overtime, San Sebastian has accumulated a number of audiovisual activities and related skills (technicians, directors, creatives, photographers, script writers, etc). As previously mentioned, the agglomeration dynamics were spurred by the convergence of two events: the emergence of a Basque film industry and the implementation of the Basque public TV, associated with the outsourcing of audiovisual content and services.

EiTB has nowadays an annual budget of 25 M for its Production Centre in San Sebastian. This budget has been rather stable during the last years. The company has an in-house staff of 147 persons, plus roughly 60 for the radio section. Externally, EiTB requires the services of roughly 150 creative jobs (firm staff or freelancers) plus around 200 professionals working as actors, singers, etc. To these numbers can be added approximately 30 persons working with lighting, audio, changing plateaus, secretaries and security. Due to EU regulations, at least 5% of the TV outsourcing budget should be outsourced to European producers. Basque producers are potential suppliers, but often in association with other countries. San Sebastian has four other broadcasting channels (small ones), to whom the Basque TV issues broadcasting licences. Their growth potential is limited. Moreover, the number of hours outsourced by EiTB in San Sebastian seems to be also stable (see Figure 11.1).

Recently, EiTB launched the EiTB.com, the internet platform, and it has plans to add more diversified platforms and contents, video, audio, interactive platforms, etc. However, this transition is happening at a slow pace.

Figure 11.1: Number of outsourced production hours in EiTB’s production centre in San Sebastian, 2001-2009.

![Figure 11.1: Number of outsourced production hours in EiTB’s production centre in San Sebastian, 2001-2009.](source: EiTB, own elaboration)

Nowadays, according to Fomento, San Sebastian hosts approximately 300 companies working in audiovisual or related fields. Forty of them are production companies (e.g. cinema, TV, fiction, animation, documentaries). Out of the 40 production firms, 6 are considered “big” (with
Historically (see above), San Sebastian is relatively specialised in the niche of animation (2 out of 5 animation movies in Spain are from San Sebastian, compared with 10 out of 130 total movies). The film industry is still nowadays much based on independent and experimentation movies and co-productions between Basque and other countries, of relatively small dimension (1,5-2 M euro) and highly subsidized, despite their recognised quality (there were Basque films nominated for the Oscars in the last years).

During the last decade many production firms pursued downsizing strategies, giving rise to spin-offs and external content providers. One case is precisely in the animation niche. During the 80’s and 90’s the firms’ internal staff was more than 50 employees; besides writing the dialogues, it was necessary to draw several sequences of cartoons. Nowadays, although the creative definition (scripts, characters design, etc) is still done in San Sebastian, many production tasks and computer drawing, like in many other simple manufacturing activities, have moved to lower cost locations. The internal staff’s downsizing led however an increase in free-lancing activities (technicians, creatives, etc), on a project basis.

Many of the producing companies of San Sebastian have offices in Bilbao and San Sebastian. One explanation put forward is to be closer to the creatives in San Sebastian and to the power in Bilbao (Regional Government). Indeed, previously independent companies of Bilbao and San Sebastian merged recently but decided to keep offices in both cities. Other companies followed an expansion strategy. One example is ARISTA. It started in San Sebastian in 1995 with 5 persons as an informatics and web design firm and evolved towards the publicity, advertising and branding niche. Nowadays ARISTA employs 230 persons in their 4 offices of San Sebastian (115), Bilbao, Madrid and Barcelona, providing individual and tailor made solution to clients like Nestle, Warner, Repsol and other large multinationals. Being in big cities is considered essential to be close to clients for permanent interaction in product and services development. However, important parts of the creative work are done in San Sebastian. Salaries are 25% lower than in Madrid and it is not difficult to hire creatives. ARISTA recently founded a spin-off in San Sebastian (TAK) for the market of e-learning and training. They intend to provide training courses for the audiovisual sector, capitalizing on its experience and foreseeing the market trends of production’s democratization.

Institutional infrastructure

Since the 80’s, and as the clustering process evolved, San Sebastian and the Basque country as a whole developed a specific institutional infrastructure for audiovisual activities. To a large extent, the sector has been organized since the early beginning around the Basque Ministry of Culture (Film subsidizing) and the EiTB. This has led to the tacit establishment of norms, routines and institutionalized behaviours organizing player’s action in the cluster (e.g. contracting procedures of EiTB, the “status” of established independently-working and pyramidal producing firms, the rise of a cultural gap between old and new generation entrepreneurs, reputation, etc). Moreover, since the late 80’s, intermediary organizations were created, like independent producers and actor’s associations, audiovisual sector entities (e.g. Egeda, Aisge or Media Antena), municipal film commissions, and, more recently, networking and external promotion initiatives supported by the Basque government (Eiken audiovisual cluster). Universities and R&D centres developed working tradition with some of these players (namely with the TV), and provide relatively aligned courses and specializations for the sector’s needs.

More recently, local and regional chambers of commerce started to pay extra attention to the audiovisual sector. They organise trend-watching conferences and provide information about global developments in the industry. Specialized courses from the local educational infrastructure and private training providers contribute to the provision of an adequate supply of skills. Recent locally based initiatives – like the “package of support” under development for an Audiovisual
Innovation Pole PIA (see section 11.5) – can also be understood as part of a larger co-evolutionary process between firms, organizations and institutions towards promoting the long term competitiveness of the audiovisual cluster in San Sebastian.

Like in other processes of cluster evolution (see, e.g. Maskell and Malmberg, 2007) and after the initial sparkle of early 80’s, the emergence of a supportive institutional infrastructure in San Sebastian and in the Basque country provided fertile ground for the development of the audiovisual cluster. However, we can see indications that some components of this institutional structure might be hampering the transition towards new stages of development. We will elaborate on this in section 4.5. Before that, in the next section we analyse some of the most recent trends and challenges of the audiovisual cluster in the Basque country, and specifically, San Sebastian.

11.4.4 Trends in San Sebastian’s audiovisual cluster

In this section we critically analyze the most recent trends that affect the development of the Basque audiovisual cluster. Some of them are rather emergent, but may gain dimension are configure important opportunities.

**Market restructuring**

On the one hand, like in many other sectors, also audiovisual and TV companies are passing through diverse mergers and acquisitions towards more efficiency and resource sharing. Worldwide, the bulk of production is increasingly dominated by powerful players (e.g. BBC). Also in Spain, large conglomerates have been acquiring shares and control of other companies, resulting in a larger market concentration. For example, part of EiTB has been recently bought by an international conglomerate; other producers in the Basque country and San Sebastian have been partially acquired by the large Spanish audiovisual conglomerate MediaPro.

On the other hand, also local and Basque firms have been restructuring their operations to cope with the client’s demands (e.g. EiTB procurement). Though it is not a generalized trend (many firms prefer to remain independent), some companies created production chains and reorganized internally. These moves are reinforcing a certain gap between a small number of relatively powerful players and a large number of micro activities and companies. Low cost home-made productions are likely to increase, steered by fierce competition and access to more democratic distribution channels like the internet; TV will likely see reduced the publicity income due to its spread in many other distribution channels. New training companies (e.g. e-learning) are developing fast in San Sebastian – there are growing market opportunities to provide training for old and new small producers.

Despite the emergence of other niches (e.g. videogames), the growth of the audiovisual cluster, and also its diversification towards the production of new contents, will be still highly dependent on the procurement policies and strategies adopted by EiTB (who recently changed its board) – e.g. procurement for internet content. It will be increasingly difficult for smaller producers to access the large contracts and the “big money” available in the near future in the Basque Country. The Basque TV has a potential audience of around 2 M persons in the Basque country - it is a rather regional reality. The big TV business in Spain is in Madrid and Barcelona. This will determine a necessity of firms to diversify to other products and markets in order to grow.

San Sebastian has firms and skills in creative production, ICT, 3D and videogames, but they didn’t converge yet into new products and integrated contents. Different sectors have their own clients, their specific incentives and institutions (e.g. Malerba, 2002) and links are relatively few. On the other hand, some knowledge on virtual and augmented reality, rather relevant for the videogame niche, is still concentrated in Basque excellence research centres. The incentives to invest in growing sectors and new portfolios of innovative contents, games, 3D, etc, are still limited, namely due to i) the presence of captive markets (EiTB) for larger firms of production and ii) the overall small and fragmented dimension of the rest of the audiovisual sector in San Sebastian. However, the potential diminishing resources of EiTB are likely to generate changes in the market, new opportunities for new entrepreneurism and challenges for established ones.
New rounds of external knowledge and brain circulation

The genesis of the audiovisual cluster in the Basque country and in San Sebastian in early 80’s was associated with the access to external knowledge and skills from Spain and from abroad. Also nowadays, an important part of new audiovisual entrepreneurship dynamics taking place in San Sebastian are associated with the return of creatives working and studying in other renowned audiovisual hubs worldwide, for example Los Angeles/Hollywood, San Francisco, Houston, Canada, London or Madrid.

These new ventures are bringing a fresh perspective, knowledge and new clients to the cluster. On the one hand they bring state-of-the art knowledge and experience in new activities, e.g. 3D technologies, virtual graphic design or special effects – FX; on the other hand, they bring a vast network of contacts worldwide which are relevant for their own activities (e.g. new partners for co-production, clients, update knowledge and access variety, get in touch with world market trends) and potentially for the cluster as a whole.

In parallel, Basque research institutes and their most internationalized staff members have accumulated relevant knowledge and have links with many knowledge “pipelines” and external contacts related with audiovisual technology (e.g. 3D, animation, graphic design, videogames, augmented and virtual reality) through contracts with global firms, former students and government agencies (e.g. ESA). Some of these centers have long standing experience in working with the different types of industries, and are well prepared to fulfill the role of brokers between different sectors, and also between academia and new business creation. However, the market applications of these new technologies didn’t take of yet in San Sebastian. For these developments, proximity to final users and clients, permanent interaction and business understanding are essential.

Timid emergence of research led new combinations and converging product platforms

Some of the research groups previously mentioned (e.g. EUVE) have been developing research projects internationally in the fields of 3D and videogames in close cooperation with world audiovisual giants like Disney in Orlando, with a permanent research unit there. Moreover, they control 3D technology and have dedicated in-house infrastructure.

Box 11.1: EUVE – European Virtual Engineering Technological Centre

Located in Victoria (100 Km away from San Sebastian), EUVE is a non profit research centre, public and privately funded. Despite the support of the Basque Government, a substantial part of their income (around 70%) comes from private sources and cooperation with the industry. Some of their main clients are in the fields of aeronautics (airbus), energy and new materials, but also work closely with broadcasting TV EiTB.

EUVE has almost 100 collaborators, most of them graduates and PhDs, divided by 5 units: Virtual Reality, Television, Meteorology, Virtual Engineering, and Information Systems. Most of its internal competences and external networks are of central relevance for the development and transition of the audiovisual cluster in San Sebastian and in the Basque country, namely to bridge competences towards new combinations of products and services that may respond to the present market changes. EUVE manages a large network of international contacts and is active in many fairs and events worldwide, namely in ICT and software breakthroughs and applications, 3D and Videogames (e.g. the renowned world meeting in Las Vegas). Moreover, resulting from a previous cooperation agreement with Mercedes and local authorities in Vitoria, EUVE has a dedicated virtual technology and 3D graphic centre in their facilities. The centre has also a long standing knowledge on working with the TV and the “virtual” business and is aware of the state-of-the-art technology and new challenges of the sector.

EUVE provides presently consultancy to Fomento (City of San Sebastian) in defining the top 10 equipments to invest in for the new PIA building and in fine tuning the concept (prices, markets, companies, etc). EUVE considers moving one research unit there to explore future contacts and project synergies.

Some training firms in San Sebastian (e.g. SYNTESIS) have the technology and skills in 3D, graphic animation and videogame industry. However, as previously mentioned, the transition between traditional audiovisual production towards other integrated platforms of products mixing ICT, graphic design, 3D and augmented reality didn’t emerge yet. The Basque TV, through its new distribution channel EiTB.com is a potential client for new and more interactive contents.
The videogame industry is also a promising niche, though without a significant presence in the Basque country. There might be possible interesting combinations between new 3D developments and the established creatives working in animation in the city, still, it is central to develop the necessary networks to permeate the big markets and supply world leaders or other partners working with, e.g., Sony or Nintendo, at distance. This can be possible, for example, through Madrid. The provision of niche contents, e.g., for mobiles and internet, might be a more feasible niche to plug in, bearing in mind the difficulties of specific contents to flow at “distance”.

Companies from other sectors in San Sebastian and its immediate region (not only from TV and audiovisual production, but also construction or industrial machinery) are getting training in 3D and digital graphic design. Architecture is intensive in graphic design and 3D visualization technologies, and all the machinery more and more require image technology and visuals, e.g. for their dashboards and interface devices. This puts in evidence important new markets and clients for audiovisual and graphic technologies that might be emerging in the region, and whose joint development tends to require strong physical proximity between client and provider (Asheim et al, 2007). Recent investments from the Basque “Filmoteca” – digitalization and reconstruction of former Basque short movies – are providing room for experimentation of new techniques and technologies, just as some new requirements of communication from public and private entities.

Is there a role for the International Film Festival in local audiovisual industry?
The International Film Festival of San Sebastian takes place every year in late September and is presently one of the top European competition festivals (A category) together with Cannes, Berlin and Venice. Its first edition took place in 1953, by the initiative of a group of local commerce companies wanting to “extend summer” and touristic activity in the city. From the 60’s till late 80’s the Festival passed through turbulent times. Till late 70’s, Franco’s dictatorial regime used the festival as a tool to support the image of Spain and the regime abroad. San Sebastian nationalists reacted and in 1977, after Franco’s death, a Municipal Foundation assumed the Festival Management, with implications on its vision – it turned into a more “closed” festival, “for the city”, and as a result, in 1983, it lost the competition (A) category, quality, international exposure, and became a rather inward looking event.

In late 80’s, a new management team struggles to bring back the international appeal of the Festival and launches efforts to attract again international films to competition. In 1988-89 the festival wins back the competition category (A). By this time, a new society is developed to manage and organize the festival, headed by the city of San Sebastian in association with the Spanish and the Basque Government and the Deputation of Guipuzcoa.

**Box 11.2: San Sebastian’s Film Festival: the city and the global cinema industry**

<table>
<thead>
<tr>
<th>The renowned San Sebastian Film festival (SSFF) is a large cinema “bazaar”. The management of the festival identifies 5 different stakeholders for their activities:</th>
</tr>
</thead>
<tbody>
<tr>
<td>i) Citizens, even without visiting the festival or attend sessions: e.g. autograph collectors, fans, people at the door of hotels to see the stars, daily trippers, etc;</td>
</tr>
<tr>
<td>ii) General audience (in 2009, 95,000 tickets were sold and there were 170,000 people in the audience, plus organized chats, speeches, workshops, etc…), including aficionados travelling from the entire world to visit the festival, attend sessions with the directors, etc.…</td>
</tr>
<tr>
<td>iii) Juvenile audience and kids (attending cinema mornings, educational sessions, etc);</td>
</tr>
<tr>
<td>iv) Press, with regular presence of more than 50 international channels, conferences, international press, guests, etc; and, last but not certainly not the least</td>
</tr>
<tr>
<td>v) Cinema industry (the real “business” and core of the festival).</td>
</tr>
</tbody>
</table>

A large festival has multiple impacts in a city, and the SSFF is no exception. The main interest of the city in the past has been linked with direct tourism revenues (hotels, restaurants) and image building; thus, very much focused on the consumption side and opportunities generated seasonally. In reality, there are good reasons for not putting the “spillover expectations” to high. The “business” of the festival and of the cinema industry tends to be much more footloose and sees the festival in a different way – as a competition platform,
a temporary cinema industry hub, part of a global circuit of other festivals where movies are exposed and hopefully sold. For example, as the production director of SSFF puts it, “…for the cinema industry and for the business of the festival is irrelevant if Brad Pitt comes to San Sebastian (it’s only a local event), but it is “big news” if an exhibited Korean movie sells its exhibition rights to 10 different countries”. It’s a buying and selling point, a temporary spot where supply (movies and its producers) and demand (country, region distributors) meets.

The core of the festival of San Sebastian is organized around the competition between of approximately 50 new movies. Other retrospective films are also shown, but these 50 are the centre of the festival for the industry. Film producers from throughout the world propose their movies to be evaluated for the SSFF by a 1st peer review committee (in 2009, 50 movies were selected out of 1800 applications). The ones approved will enter the official competition in San Sebastian and will get international exposure. Those are usually divided in different categories (fiction, action, documentary, etc). Cannes and Berlin are still the big European festival hubs and the best productions try to be selected by those first, but San Sebastian comes afterwards, in strong competition with Venice. Only the big producing houses of Hollywood, with own distribution channels and cinemas are not so active in the film festivals (e.g. Paramount, Universal, Warner).

The main objective of the producer is usually to sell the film to the country and region distributers. Besides the competition stages, there is a sales office where producers and distributers meet. Film festivals are then ranked according with their status for the industry as buying and selling points (e.g. whether there will be many distributors and buyers, whether the festival has good reputation for competition). The more a festival sells, the higher it gets in the ranking, the more distributors and buyers it will attract and also the best movies it will attract, in a cumulative causality fashion. In this sense, keeping the quality of the movies is essential to keep the festival status and its interest for the industry.

The SSFF is the most important “gate” for Latin American cinema. Besides specific sessions in some particular categories (e.g. Basque and Spanish movies, surf, animation), the festival is active in attracting new platforms for eastern European producers and African cinema. However, these categories are usually not under the competition core.

In a first glance, the business interests of the festival (cinema industry) and the local audiovisual industry seem to converge only by chance. Competition is international, and the link between the festival and local and regional production doesn’t seem to exist. It is however interesting to return to the fact that the beginning of the Basque cinema production is associated with an “international retraction” of the festival, putting in the spotlight some emergent cowproductions. In an unintended way, the festival provided exposition and opportunities for emerging companies.

Nowadays there are interesting trends (some of them latent or potential) worth mentioning concerning the link between the festival and the audiovisual production system in San Sebastian:

- The local procurement of audiovisual services before and during the festival (plateaus, cameras, lights, TV, audio, interview stages, plasma, projectors, etc), fully absorbed by the festival, although this procurement is not reflected yet in new technologies and innovations;
- The role of the festival in creating “temporary buzz” (Maskell et al, 2006) and a platform of meetings and networking between international and local producers and firms, activating previous contacts and establishing new ones;
- The recent establishment of a parallel co-production forum for buying and selling during the festival. A group of producers (specially local but also from the EU and abroad) are invited to present their productions (short movies, etc) and are offered the possibility to meet with the TV and other buyers to sell it;
- San Sebastian is the third most popular urban scenery in Spain to shoot movies (after Madrid and Barcelona), but namely to shoot publicity short movies due to tax free incentives. Shootings from external directors are also common. One of the reasons is the sunlight and sunset in September, the month were the Festival takes place - a visit card for potential directors. Many directors attending the festival consider returning to shoot parts of movies (e.g. Woody Allen, in an agreement with MediaPro). The city film commission tries to find local suppliers and partners, but there seems to be room for a more integrated and proactive approach. It is estimated that the city attracts 4.6 M euro in shooting investment in 2008, a 25% increase since 2007.
- The internet and video conference diffusion is likely to have an effect in the way the SSFF is organized. It becomes possible to watch the films and press conferences of directors.
through the internet, as well as participate in meetings at distance through ICT; also new
digital content provision may provoke changes in the way a festival takes place. Although
not completely, these trends are likely to endanger some of the raison’s d’être of the
presence in the festival. That’s why in their Strategic Plan for the coming years the festival
considers to give more relevance to the linkages with the city in order to provide to the
visitors, namely producers and distributors, with a more integrated supply of services
(besides integrated offer of horeca, e.g. also innovation showrooms – like in Hollywood,
3D innovations, etc).

11.4.5 Summing up: positioning the background of action of PIA
From the previous, it becomes clear that, overtime, the procurement of EiTB and the emergence of
a small independent film industry in the Basque Country in early 80’s sparkled the clustering of an
audiovisual productive system in San Sebastian. This cluster shows nowadays well known
agglomeration characteristics typical of many other clusters analyzed in the literature: presence of
specialized providers, anchor players (e.g. EiTB), localized knowledge and information spillover
through labour market dynamics (e.g. free lancers), firm spin-offs and relevant input-output
relations. These dynamics co-evolved with the emergence of an infrastructure of supportive
associations and organizations (Malmberg and Maskell, 2007; Boschma, 2004), but mainly, of
“soft” structural institutional features organizing the system, like specific business routines,
culture, reputation and power (e.g. Cumbers et al, 2003). Figure 11.2 helps us to frame and
understand the present moment of San Sebastian’s audiovisual cluster and the challenges that lie
ahead.

Figure 11.2: An evolutionary view on San Sebastian’s audiovisual cluster

![Evolutionary View](image)

Source: Own elaboration, adapted from Maggioni, 2006.

After almost 30 years after the initial sparkle of early 80’s, a first round of the cluster’s
development seems to have reached maturity. At this stage, saturation of more traditional business
models (e.g. conventional audiovisual production) and challenges imposed by a number of higher
order trends in the industry (see section 11.3) are opening a period of transition and discontinuity.
At this time (2009) direct and indirect dependence of the cluster from EiTB and Government
subsidies is overall high, while the growth rates of firms, jobs and turnover are limited; the market take-off of new innovations is almost inexistent. Simultaneously, new entrepreneurs are adding novelty to the cluster, e.g. bringing external (tacit) knowledge and access to new technologies and clients applying, e.g. 3D technologies, FX and virtual reality (with growing applications worldwide); others are developing contents (e.g. documentaries) for external markets, based on new external networks of business contacts. In figure 11.2, this latter phenomenon is represented by the dashed line that started to emerge below the bold line - a first but still incipient response to the new industry trends. However, all in all, new private ventures and new applications didn’t generate yet the “wave of entrepreneurship” and exploration needed to spur new rounds of innovation and profits in San Sebastian, central to make the dashed line (2) emerge and develop (e.g. through new variety and “Schumpeterian” activity re-combinations, development of new markets or plugging in niche platforms).

In this context, and considering the global industrial challenges ahead, the relative decline of the audiovisual cluster (represented by dashed line (1)) is a risk. It is more the case as the cluster show signs of entering a stage of lock-in (Grabher, 1993; Martin and Sunley, 2006) in their present competences and clients (traditional TV and cinema production). A group of important players enjoy stable and rather captive markets and new entrants lack the structure to compete on the same business models. This is hampering the development of new activities’ portfolios and delaying investments and responses to new challenges and trends. Institutionalized behaviours, culture and an understanding gap between new and former entrepreneurs may hamper the development of new related combinations and transition towards new audiovisual activities.

In this critical stage of cluster’s evolution, research has been clearly arguing that “policy matters”, but the prescriptions are far from straightforward. “Ready-to-use” cluster policies are likely to be misleading (e.g. Orsenigo, 2006; Wolfe and Gertler, 2006). In this context Carlson (2006) asks how policies can be designed “…when the desirable outcomes lies decades down the road and cannot be specified?” (p. 272). The case of audiovisual in San Sebastian shows how a structural policy decision (autonomy law of the Spanish regions) created markets and institutions for the development of this cluster, yet in a rather unintended way. In this case, the cultural background of the city (e.g. Basque language) determined the concentration of creative activities after the TV and cinema public sparkle.

However, concerning entrepreneurship promotion, policy action is more difficult (even more so in specific sector where the role of reputation and job market functioning in rather distinctive). However, as stated by Wolfe and Gertler (2006), …it [new entrepreneurship] seems to be a key element of cluster development in the third and last stage of cluster emergence, particularly to provide an environment conducive to the entering of second and third generation start-up firms. At this stage [emphasis added] government polices to sustain the entrepreneurial drive are perhaps the most important.
(p. 261)

This is the precise stage where initiatives like PIA come in. We will come back to policy analysis and recommendations in the last section, but first we will look at the specific baseline characteristics of the PIA project under development by Fomento in San Sebastian. We look to the soft and hard policies under development, with a particular focus on the setting up of a physical location for audiovisual activities.

11.5 THE PIA PROJECT: BASELINE CHARACTERISTICS

The City of San Sebastian is developing a specific location for the audiovisual industry: The PIA building (figure 11.3). It is located at a business park outside the city centre.

The PIA building is to become a physical concentration of audiovisual activities. Fomento has secured loans for the building from the government; the loan has to be paid back in 15 years.

Fomento has a long tradition of developing real estate for particular economic activities in the city. The organisation owns and manages a number of specific buildings and premises for different
types of activities (see figure 11.4). Examples are the Miromon technology park (a business park for high-tech firms) or the ZENTEK building (for ICT firms).

Figure 11.3. Projection of the PIA buildings

Source: Fomento San Sebastian
There were two basic reasons why Fomento was keen to develop another special building, this time for the audio-visual industry. First, the city has the ambition to further promote this cluster, and it believes that PIA can provide a contribution. And second, more mundane, there were funding opportunities provided by the regional and national government. The PIA building is being developed on a plot of land owned by the local government. The project –budgeted at €20 million– will be financed by San Sebastian Town Council, which was granted a 17 million loan with a 0% interest rate and a € 623,000 subsidy from the Spanish Ministry of Industry, Trade and Tourism in the context of Plan Avanza. The building’s first stone was laid on September 23rd, 2008. Work has been scheduled to finish by mid 2010.

PIA is planned to become the central place for knowledge creation and innovation development in the audiovisual industry. It should offer an innovative space, inviting to collaboration, and endowed with particular facilities for SMEs. Moreover, it should play a role in fostering cooperation between local technological institutes and companies.

**Box 11.3. What will the building be like?**

| The building will be located in Zuatzu Industrial State, a business park outside, but with good accessibility to the city centre. Two buildings will be developed on a plot of land owned by the local government. They will eventually house about sixty companies in the audiovisual and multimedia industries, which will rent the spaces featuring common state-of-the-art equipment. In a 19,000 sq m surface area, the PIA building will offer a number of facilities: |
| i) Room for about sixty companies in the audiovisual industry. |
| ii) Underground car park. |
| iii) New Town Archives. |
| iv) Childcare facilities. |
| v) Audiovisual equipment for companies, including control rooms, dressing rooms, and a set decoration warehouse; a pitch room to screen film projects as in a small cinema theatre; an auditorium; a video library. |
| vi) Card access control system. |

In the PIA building, bioclimatic architecture is applied, which involves the use of geothermal energy to achieve thermal comfort inside, the exploitation of sunlight, the production of solar energy using photovoltaic panels, the capturing of energy and the transformation of CO2 by means of wall coverings, and many other techniques.
Functions of the buildings
PIA is set to be more than just another building where firms can rent premises. In the official brochure of PIA, the following functions are envisioned:

- Organisation of activities that help to dynamise the audiovisual industry and attract film directors and producers so that they shoot in town;
- Renting suites to audiovisual companies at reduced, including common rooms and state-of-the-art technology;
- R&D+i: Setting up a Research Unit for the audiovisual industry, thus strengthening the connection between market and science;
- Carrying out activities to encourage innovation among audiovisual companies.
- Fostering networking and internationalisation through contacts with other organisations, cooperation agreements, and promotional activities at the international level, among other measures;
- Designing and carrying out a financing plan for companies in the audiovisual industry;
- Drafting an audiovisual training plan and setting up a Training Unit;
- Creating an Audiovisual Job Exchange, meeting specific sectoral needs;
- Establishing an Audiovisual Observatory collecting indicators of industry evolution;
- Providing specialist advice to companies that need it: Company cooperation and networking, business management, marketing, merchandising, new markets, legal issues, etc.

In the next concluding section, we will reflect on these goals, and complement them with insights based on the evolution of the local industry and global developments in the audiovisual sector.

11.6 CONCLUSIONS AND PERSPECTIVES

11.6.1 Key conclusions
In the previous sections, we analyzed the development of San Sebastian’s audiovisual cluster (from an evolutionary perspective) over the last two and a half decades. This cluster is not starting today from “scratch”; it presents a story of evolution overtime and a distinctive path produced by the complex interplay and co-evolution of agents, organizations, institutions and routines. The PIA initiative itself is a recent visible face of this co-evolutionary process.

Moreover, we argued that the audiovisual cluster is presently in a critical transition stage. Thus, from a policy perspective, the challenge is not to support an ex-novo clustering process but to facilitate the transition from a stage of maturity towards new waves of entrepreneurship and the development of novel activities with growth potential. It is up to firms and entrepreneurs to be the engines of this transition, but there is an important role to play for public policy to facilitate this process.

When looking to this audiovisual cluster in San Sebastian it is possible to identify at least two different subsectors: one related with film and TV (more mature, with lower growth potential of its own) and one related with new image, motion applications, 3D and virtual reality (much smaller, emergent, but with higher growth potential), not only for conventional TV and film but also for industrial equipments relying on image technology, and services like, e.g. publicity or web design. We know nowadays from the literature that the two niches don’t have exactly the same spatial sensitivity to distance from clients and partners for innovation, and their clients and organizational modes are different (e.g. Asheim et al, 2007). Moreover, they might respond to different incentives and different sector institutional frameworks for innovation (Malerba, 2006) - this is probably why the convergence between both niches towards joint innovation platforms and products didn’t happen yet in San Sebastian. This fact brings complexity to the cluster’s structure and relevant policy challenges.

Overall, the City of San Sebastian, through Fomento, has been able to mobilize the relevant stakeholders for the PIA project. PIA apparently has strong political and social support, ranging from firms, R&D institutes and other organizations and associations. They see it as a “face” or ‘address’ of the cluster (and of the local policy for the cluster), an anchor and a meeting point.
Expectations are high concerning its role to support firm’s development and impulse for new entrepreneurs in innovative activities. However, departing from this general and hardly questionable vision, it is important to discuss the more fine-grained dimensions of PIA in the context previously described.

Before suggesting lines for policy reflection and practice, it is important to stress that understanding clusters from an evolutionary perspective is not the same as applying the famous “Porter Diamond” (e.g. Porter 1990, 2000), and is likely to derive in a different – we hope “better” and more aligned - script of action. From a theoretical and empirical perspective, recent literature in economic geography and urban studies has been skeptical about the use of ‘standardized’ cluster policies (e.g. Martin and Sunley, 2003). A central pitfall is a tendency to ignore rooted and self-constructed institutional frameworks, paths and context that condition the success of any development strategy. Moreover, practice shows the problems of deploying “one size fits all” policies (e.g. the same prescription would fit equally a biotech, shipbuilding or an audiovisual cluster, whether in a small city, a large metropolis or even countries as a whole).

Recent contributions on cluster policy making (e.g. Orsenigo, 2006; Wolfe and Gertler, 2006; Maggioni, 2006; Carlsson, 2006) have argued that policy interventions should be based on functional requirements and multi-level policy making rather than on too focused and targeted policies. It is too difficult and complex to identify beforehand which activities will develop and where. Carlsson (2006) suggests, e.g. general improvements of the knowledge base, the creation of transparent incentives, promotion of experimentation, guaranteeing appropriate market conditions, or promotion synergies between players.

Wolfe and Gertler (2006) refer to policies for clusters in more mature and transition stages, which tend to be more focused and tailored to the specific cluster’s conditions. After reviewing a large number of cases, the authors suggest policies to facilitate:

- Development of strategic planning exercises, in order to evaluate progress, develop shared understanding of the city/region specific assets, external threats and opportunities, identify gaps, steer mindsets and prepare the field for cooperation between involved partners;
- Upgrading of innovation capacity within existing firms;
- Technology absorption and diffusion;
- Development of networks and better links among firms, brokerage and mentoring activities;
- Facilitate the permeability to new and related variety in the region (Boschma and Iammarino, 2008) e.g. through knowledge of new entrepreneurs with working or studying experiences abroad (our adding)

Which policy lines can thus be suggested to facilitate the development of the audiovisual cluster in San Sebastian? Which components and specificities should the PIA project count with?

11.6.2 Outlook: a “script” for reflection and action for PIA (location and cluster policy)

It seems clear for the involved stakeholders (and for us) that PIA should be rather more than “a building”. Some stakeholders in San Sebastian’s audiovisual industry stress that developing “a firm’s hotel” is even undesirable, in the sense of a top quality (and expensive) facility, closed to the outside and with residual interactions between their tenants.

This is not to say that the ergonomics of the PIA’s physical environment (e.g. meeting and common areas, “plug and play” areas) shouldn’t be well planned – its design might actually be essential to the development of new networks, experimentation, unexpected encounters and “buzz”. It is indeed important to take into consideration the specific working practices of the sector (e.g. balance between closed offices and open areas, studios, plateaus, etc), and to reject the growing “one size fits all” architecture projects of technological parks throughout the world.

It is however relevant to stress that the central focus of PIA - as a building area and site - should be
understood as instrumental to a more encompassing strategy and not an end in itself. PIA as a policy effort should be part of a larger strategy and a portfolio of specialized services and actions to guide the transformation of the audiovisual cluster in San Sebastian towards new growth and innovation stages (in figure 11.2, an action to steer the development of audiovisual towards line (2).

In the next points, we give some policy recommendations for the future development of PIA, as well as some operational and organizational issues to bear in mind when planning their implementation. Some are complementary to the present design (see section 11.5), others may imply some reorganization. We hope they can help to raise and steer dialogues between the relevant stakeholders that will take place in the coming time.

PIA may assume the following (sometimes overlapping) roles:

- An engine for collective efficiency of the audiovisual industry, where firms (located in the building or not) can access technical resources, share efforts, access specialized services.
- A recognizable ‘face’ of the local audiovisual industry, with a physical address.
- An access point for important clients and other contacts from outside (connecting to ‘global pipelines’).
- An incubator and cradle for start-ups.
- A platform where members can share information, develop joint projects and innovations, and create a joint strategy.

This has a number of implications:

- PIA should structure a network of people and services, fostering the creation of new linkages between different audiovisual activities (traditional and emerging ones);
- PIA should reduce the start-up risks for small entrepreneurs and free lancers, and help to foster and broaden their knowledge and business networks;
- PIA should allow for the sharing of specialized infrastructures and equipments that otherwise would be way too expensive to acquire independently (e.g. besides dedicated broadband, the share of processing capacity among tenants, license software, plateaus, 3D technologies and other sets of facilities);
- PIA should provide for a sound package of advanced services to firms, taking in consideration the specificities of the audiovisual industry. Examples are accountancy, law and financial engineering (e.g. to reduce the high risk and financial burden of small players vis-à-vis large clients);
- PIA should promote a marketing and communication strategy in articulation with the city and with other regional initiatives (e.g. Eiken- Basque audiovisual cluster); It should directly involve local firms and illuminate the strategy of PIA for local and international stakeholders, namely for potential clients.
- PIA should facilitate the connection of the cluster to external knowledge “pipelines” (see Bathelt and Graf, 2008, for the case of Munich’s film cluster). It should encompass strategies and efforts to help local firms to plug in external knowledge networks, access external clients (whether in creative or “industrial” sectors), and encourage the entrepreneurialship of professionals with experiences abroad or outside the Basque Country (e.g. working with 3D, FX, virtual and augmented reality). This will help to add variety to the cluster, and to avoid risks of lock-in. Moreover, PIA should facilitate the access of innovative audiovisual firms to demanding clients, namely for niches where co-development between client and provider is essential (e.g. image technology for specialized equipments), whether or not within the city’s administrative limits.
- PIA should consider a strategy to use the International Film Festival as a platform for creating “temporary buzz” for the local audiovisual cluster, and as a way to strategically connect local entrepreneurs to external contacts. One example could be promotion of PIA as a distinctive Unique Selling Point (USP) for directors willing shoot in the city, complementing and strengthening the present work of the film commission. It can be very appealing for an external producer if in one single location he or she can access a variety of advanced services, and eventually pay a single “bill”.
- Nowadays, it is rather difficult to specialize in parts of the audiovisual value chain in San
Sebastian - the local market is rather small. Still related with the previous, PIA could act as a facilitator of an “extended enterprise” model, fostering horizontal and vertical division of labour towards efficiency and more specialization. In this USP, local and external directors and clients could more easily find turnkey solutions without losing much time searching (e.g. editing, cutting, experimenting, etc).

- PIA should contribute to create ‘chemistry’ between different types of activities and generate innovation. It should encourage creativity and experimentation. The decision of EUVE to move part of their research facilities to the PIA building is good news: it constitutes an important technological “anchor” that may break ground for the emergence and acceleration of new combinations and spin-offs of new activities. This clearly needs to be complemented with the right mix of incentives, not only from PIA but mainly from the Basque government’s innovation policy. Thus, PIA should find the right articulation platforms to take part (and possibly influence) policies at other spatial levels with impact in the audiovisual cluster.

- PIA should reflect on the way to foster entrepreneurship in this specific industry, which is likely to be rather different than in other sectors, like e.g. biotech. Providing financial incentives per se is insufficient in a sector where the job market and the game of acquiring projects are based on reputation and previous on-the-job training. Traditional initiatives like job fairs are unlikely to be the mechanism used by firms to hire and access skills for their activities. Thus, PIA should combine traditional start-up incentives with a programme of internships in local firms and talent identification, as well as incentives for cooperation with other players locally or outside (in the vein of the EU programme Erasmus for Young Entrepreneurs).

- No less important is the definition of “entry criteria” for PIA. Which types of firms and organizations are “allowed in”? The criteria should be narrow enough to guarantee a certain cognitive proximity but open enough to allow for desirable synergies between audiovisual related activities, clients and technology providers, and avoid the selection and lock-in in certain types of activities or sector “silver bullets”, which might reveal themselves not the most promising in the medium and long run.

- PIA and Fomento should continue a permanent dialogue with the stakeholders in the audiovisual sector. This is important to avoid redundancies and permanently assess the cluster’s needs. Keeping the development of intelligence and sector vigilance of global trends is a worthy activity.

- Despite the permanent need to monitor and adapt the strategy, it is important that the portfolio of services and expectations with PIA are well defined and aligned with the actor’s needs (present and future) from the beginning. Strategies of “let’s go and let’s see” might create wrong expectations and make the project lose momentum, support and interest. The project and services in practice should not be dissonant with PIA’s vision and communication of the project. There are many examples of knowledge locations that raised high expectations and grand visions but got lost in the daily condominium and financial management of simple business parks infrastructures.

- PIA should address some critical organizational and institutional factors
  - The clear definition of a business model (e.g. economic feasibility, rent levels, steering mechanisms, partnerships, etc.). It is conceivable to set rental prices not only according to the number of square meters, but also the types of services that different firms benefit from. It should be clearly defined from the beginning which components of this price will be supported from which sources, under which ranges it should vary to be political and socially acceptable and competitive with other locations, allowing to the clustering of “desirable activities” – the public policy intervention rationale for developing the building after all. PIA might consider different prices also for firms located in the building and firms benefiting from their services, in a “virtual tenancy” fashion. A ‘club model’ can be envisioned, in which also outside members can join the club and may use the facilities.
  - For such a financial and organizational model, it should be defined beforehand which components of the budget will come from the city and public sources and which components should come from the tenants. In combination, they should allow for the establishment of a professional management and technical structure with the skills and
time to proactively implement PIA’s strategy. This team should have the (organizing) capacity and ability to manage the complex web of public-private and private-private relationships that are likely to emerge in PIA.

- The balance between proactiveness and interventionism. Some of the activities proposed by PIA might introduce competition distortions vis-à-vis other market based activities. When a local government rents out specific equipments (plateaus, studio gadgetry, cutting and post production equipments, etc), there may be unfair competition with private audiovisual firms who invested in similar equipments recently. PIA should consider possibilities to involve groups of private firms in collectively investing in these equipments under specific consortiums, or study alternative models of financing to make these equipments available.

- The balance between present and future needs. Some specialized equipments might have a very limited demand in the present but maybe very relevant in the future, e.g. to support the development of new activities (e.g. 3D). Here again, public-private and private-private partnerships tend to be the adequate model to share the risk and the knowledge in these types of investments which otherwise might generate “catch 22” situations.

- The development of an “extended enterprise” organization model implies that firms “open their doors” and also probably to pay a higher fee to benefit from extra services;

- Promote a clear policy alignment between different initiatives at different territorial scales. The alignment between the (cluster) policies at the Basque and local level to support audiovisual activities are not totally clear. It is important to clarify the relations and potential complementarities (or overlap) between both.

Additional remarks

- On the spatial integration of PIA in the urban fabric. PIA will be located at a business park at the edge of city. Its spatial impacts are not likely to be strong. Lacking the atmosphere of the city centre, the area is well accessible and not congested. Nowadays the audiovisual firms are spread over different locations in the city and outside it, in a rather random manner. However, can it be the case that the development of a new location, instead of creating new networks, has the opposite effect of breaking them and create further distance and spatial detachment. This is a risk of the PIA project. Although we acknowledge the difficulty of (re)developing tailor made audiovisual-oriented facilities at inner city locations (e.g. refurbishing and reconverting old buildings), given the ‘urban’ nature of the audiovisual industry, it would have been better to put the PIA-building in an inner-city location. That would have increased the visibility for outsiders as well; moreover, it would have been easier to integrate visitor/exhibition functions.

- The alignment of PIA with other services like accommodation for temporary visitors or kindergarten is highly desirable.

- Other general urban policies with potential impact on the cluster. Besides good jobs and career opportunities, provision of good housing and quality of the public space are proven to be important in the attraction and retention of skills. San Sebastian has both, associated with a strong urban identity. Moreover, the city should not put all its efforts in retaining recent graduates, by all means. There is evidence that a certain brain circulation can be positive for cluster’s development (e.g. Saxenian, 2007). The case of San Sebastian suggests the same, with the returning from abroad of professionals in their 30s who start their audiovisual ventures, driven by family ties and affectivity, a driver often forgotten in urban and regional studies.
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Part III: Findings, theoretical reflections and final remarks
12 Synthesis

In this last chapter, we synthesize the results of our study. In the sections 12.1 to 12.4 we present a number of findings, structured along the main constructs of our theoretical framework (see chapter 4). A number of comparisons are drawn and cross-case patterns are identified, illustrated with examples and practices from the cases. A number of associated policy implications and lessons for the planning of knowledge locations are pointed out, as well as issues deserving further research.

Section 12.5 puts forward a reflection on how to measure the social and economic added value for cities and urban regions of developing knowledge locations. One important issue here is to contextualize the role of locations in the promotion of sustainable urban development, presenting a check-list of issues to bear in mind.

Subsequently, and informed by the findings in this chapter, we refine out theoretical framework and present a number of propositions concerning the antecedents and outcomes of knowledge locations, as well as the dynamics relations between the framework’s blocks (section 12.6).

Section 12.7 wraps up the study.

12.1 CATALYSTS, ACTORS AND INSTITUTIONS

Knowledge locations do not develop out of the blue: they are driven by a number of catalysts that ignite or speed up the (re)development process. The cases analysed in this book show various catalysts – often associated with deeper societal changes – that influence the planning decision of a new knowledge location. This planning endeavour is taken up by a number of actors, whose behaviour is bounded by a number of previous planning practices, production and innovation institutions.

What have been the catalysts for developing new knowledge locations?

A first catalyst relates to the perception of urban policymakers of an increasingly global competition to attract mobile talent, business and investments in knowledge intensive activities. Not surprisingly, cities put a focus on new growth sectors, such as ICT, multimedia, design or biotechnology, and develop knowledge locations to give a face to their portfolio of incentives and strategies. This is very much visible in the promotion strategies of Arabianra (Helsinki), labelled as an “art and design city”, Strijp-S (Eindhoven) dubbed as a “creative city to attract the creative class”, PIA (San Sebastian) as a hub for the audio-visual sector and Digital Hub (Dublin) as a world class location for digital media. Songdo (Incheon) is a rather extreme case. For the Korean government and the city of Incheon, Songdo is a tool to attract international investments and expatriate workers and become a hub in East Asia.

Another major catalyst for the development of (mixed and urban) knowledge locations is the perceived change in lifestyles and working preferences. In many sectors, especially in the creative industries, private life and work are becoming intertwined; working hours are no longer from ‘nine to five’; many meetings combine pleasure and business and are ‘on location’. As a response to these changes, many cities have invested in multi-functional sites that combine work, living, educational and recreational functions. Most essays in this book deal with the development of such areas, focusing on specific areas within a city. They range from downtown areas (Munich and Dublin) to first urban expansion zones (Eindhoven, Helsinki). In the chapter of Songdo, we discuss the development of an entire new edge city vis-à-vis “old” Incheon, in the shape of new generation Free Economic Zone mixing housing, office and industry space and leisure.

A related catalyst is the increasing project-based character of innovation and the economy as whole. Many industries more and more work on a project basis and not (only) on permanent structures, combining different disciplines and skills. Often, research & development is no longer carried out by single researchers in a closed lab, but through an open and interactive process.
between different partners, including clients, suppliers, competitors and or research institutes. This requires new flexible working spaces, meeting rooms, shared and specialized research facilities and a new generation of “open-campuses”. Cities try to accommodate these trends by investing in new knowledge locations that supply or facilitate those types of facilities. Examples include the PIA building in San Sebastian, the former Natlab in Eindhoven, Dublin’s digital Hub or Songdo’s inner city factories. An innovative example is Maxvorstadt in Munich, where museums and research institutes join forces, among other things to use museums as place to create, apply and expose new knowledge and art-science combinations.

Thus, and not surprisingly, cities also invest in knowledge locations in order to strengthen and diversify their regional economic base, as a response to macro economic challenges. One of the major reasons to develop Arabianranta as a multifunctional site - and not as a green area as it was the original plan - was the necessity to create jobs to fight the deep crisis which hit Finland in the early 1990’s. Similarly, in The Digital Hub the focus on a new and more regionally anchored ICT branch (multimedia) has been chosen in order to reduce Ireland’s dependence on FDI. Songdo, in contrast, has been developed to increase Korea’s openness to foreign capital. The city of Eindhoven wants to create a more metropolitan feeling with Strijp-S in order to attract and retain the workers which prefer to live and work in a vibrant urban surrounding. Finally, San Sebastian has initiated PIA as a tool to bring the currently matured audio-visual sector in a new growth stage.

The development of mixed-use knowledge locations – especially in Europe - is also associated with the availability of space due to the closure of manufacturing sites of large companies, such as the former Philips site in Eindhoven, the old Guinness brewery in Dublin or the Arabia porcelain factory in Helsinki. Despite the high costs for cleaning the soil (as a consequence of previous industrial activities), it is still beneficial and profitable to redevelop these sites due to high demand for the scarce space in urban locations. Often, there are financial resources available for urban regeneration. In Europe, cohesion policy is a major source of funding, aimed at leveraging the participation of other players in the development of such sites. But also in Asia there is considerable funding for knowledge locations – many of these projects (like Songdo) are seen as national flagships and benefit from substantial national funding.

Finally, there is a political catalyst. Peer pressure and exposure to international networks of best-practice exchange play a role igniting the development of knowledge locations, e.g. endowing policy makers with legitimation, discourse building and “catch-the-wave” behaviour. For example, the development of Songdo was inspired by Dubai’s model of high-quality Free Economic Zones; in Europe, city networks for best-practice exchange and the diffusion of “success models” have clearly influenced the strategies of many cities in developing new knowledge locations, now seen as a widespread local economic development tool.

Cities can learn from each other’s experiences – fostering best-practice exchange is actually a central objective of our study. However, best-practice should not be taken at face value, but must be deeply contextualized in its spatial-economic context. In a time when the development of knowledge locations has reached the status of a new local planning orthodoxy, urban polices should strive to do contextualized benchmarking and assessments, paying attention to the processes of development of locations rather than basing new projects exclusively on snapshots and “off-the-shelf recipes”.

**The entrepreneurial Mayor, the visionary Planner: on the role of public administration’s players**

As a response to the previous catalysts, who takes action in launching planned knowledge locations? Traditionally, the local government and elected policy makers take the lead, often inspired and supported by the insights and ideas of other local development agents like civil servants, heads of departments, regional development officers and consultants. Cities often have a strong role in planning, decision making, mobilisation of relevant stakeholders and lobbying for financial resources.
However, the degree and type of government involvement differs. In some cases cities enthusiastically support the project and play an active role through the action of many departments. The case of Songdo illustrates the strong involvement of the city of Incheon in comprehensively planning and orchestrating the development of the area, in close collaboration with the national government. The former Mayor of Incheon, coming from the private sector, had a strong role pushing the project, involving consortiums of developers to execute the master plan, as well as key foreign investors. Also in Munich, the development of Maxvorstadt has been supported by many municipal departments and their directors – they aim to mobilise a diverse group of stakeholders - and the mayor shows strong commitment to the district by heading some major working groups that deal with development of the area. In Helsinki, the shape of Arabianranta was influenced by the vision of a planning director, who steered city decisions towards what was seen by the time as a rather innovative planning approach. Moreover, the large span of the intervention required joint efforts of many departments like urban planning, public works, social affairs, culture and economic development.

In other cases, commitment is looser and only parts of the city administration become involved in the project. For example, in Eindhoven, despite the strong support of an alderman, commitment for the development of StrijpwS is looser and only some departments of the city are involved. There is a gap between the interests and visions of the city council and public officials. These differences slow down decision making and the development of StrijpwS in general.

Broad support from the city government can be decisive in the speed and integrality of the development of knowledge locations. However, the role of key persons in the public administration – whether endowed with political or technical power and legitimacy - is pivotal. It is frequently up to these individuals to feed others with their ideas, which eventually gain support and become flagship projects.

The influence of planning institutions and participation routines
The actions of policymakers to create a knowledge location are not context or history free. They are facilitated (or hampered) by previous routines and planning traditions. For example, Incheon’s planning and lobbying power with the national government facilitated taking swift decisions for developing Songdo; the long planning tradition of Munich facilitated the start of participative processes to discuss the development of Maxvorstadt - via conferences and workshops many stakeholders are involved to discuss the possible linkages between cultural and knowledge institutes and how their contribution to social, economic and physical upgrading of the district. In Helsinki, the long cooperative tradition among stakeholders facilitated consensus building around Arabianranta’s concept. In San Sebastian, a strong economic development department provided fertile ground to develop cluster policies in the city and associated locations; moreover, a former municipal arrangement - film commission – provided ground to explore new cross-departmental partnerships for the audiovisual sector. All in all, it is much easier to set up a knowledge location when there are strong cooperative routines developed over time.

Keep the area’s tradition?
Knowledge locations typically build on particular traditions or trades that were present in the city for a long time. Although knowledge locations focus on future business, there are often clear linkages with the past. Cities often use the historical identity of the sites as a core theme that helps to promote the area and to focus on new business that can be linked with the activities that took place before. Arabianranta, the site of a former porcelain plant, is labelled as ‘Art and Design City’ where the focus is on industrial design in the business sector, service design, and aesthetical and urban design in housing and public spaces; and it is home of a major design school.

StrijpwS, home of Philips former physics laboratory (with a glorious past in terms of technology, innovation and creativity), technology, design and culture are selected as core themes, translated into a focus on business-related creative industries, investments in museums, events and other
cultural initiatives, and the use of the site as a test bed for new lightening technologies. Munich’s Maxvorstadt has been home of major universities since the 19th century and was a major location for artists at the start of the 20th century. Now, it wants to distinguish itself from other locations in Munich by focusing on art and science.

When universities and companies influence the location’s vision

Notwithstanding the role of local government, it would be misleading to attribute to cities and their representatives the monopoly, or even the dominance, in the development of a knowledge location (although it may look like that at the first glance). Universities, companies and other actors from local production and innovation systems often play a decisive role, e.g., influencing the vision and strategy of a knowledge location: not only they contribute with financial resources and act as anchor tenants, but also influence the concept and vision for the location.

Our cases provide illustrative examples. The University of Art and Design in Helsinki decisively shaped Arabianranta’s vision, concept and development, namely through the hands of a leading professor, who nudged the city to adopt “art and design” as a transversal concept for the location. Moreover, he is responsible for the introduction of the first “living lab” experiments in Arabianranta, imported from the US. Also in Munich, representatives from the university and the director of a cultural institute joined forces to explore linkages between sciences with culture; further on, they influenced wider reflection on this issue as a potential vision for the future of the Maxvorstadt district as a knowledge location. But the influence of knowledge institutes can even come from abroad – the announcement of the location of a branch of the MIT media lab in Dublin was a key driver for the development of the Digital Hub as a specialized new media location.

Also localized companies play an important role shaping the vision for a knowledge location. For example, lead firms in Helsinki and associations of audiovisual producers in San Sebastian played an active role in the definition of the location’s concept. In the case of Songdo – and also coming from overseas - renowned American planners and developers deeply influenced the design and master plan of the entire area; moreover, former returnee US-Korean researchers influenced many of the activities that are currently boosting Songdo and its high-tech vision.

From a policy perspective, it is important to open up the debate on the design of knowledge locations to the real “knowledge players” like universities, companies (or even museums, in the case of Munich). They often have ideas about what works out and what does not. Moreover, they often have knowledge about concepts from other locations that might fit the new location’s context. Our evidence shows that these players are often essential bringing in new insights – and even key investments – from abroad. Their participation in discussion arenas should be fostered and their “gate keeping” role nurtured.

The regional institutional setting: Proactive involvement or vested interests?

Our evidence suggests that when universities and companies are strongly involved in the location’s vision, the concept is strongly influenced by the production and innovation institutions of the region. San Sebastian and Helsinki are excellent examples. In San Sebastian, the development of PIA is part of larger evolution process set in motion during the last decades when audiovisual activities (but also related research) grew in San Sebastian – now audiovisual agents (including the city) call for a new location to support the development of the sector further. In this case, local entrepreneurs, associations of audiovisual companies and research institutes support the city in defining the “right mix” of facilities and supports in the new audiovisual pole.

In Helsinki, as we stressed in the case - for the sake of getting the causality relation right - it’s the set of design related agents and institutions that influence the concept of Arabianranta and not the other way around. Industrial design in Helsinki has more than one century of history, and attracts knowledge and companies from the entire world. Thus, it is not surprising that a concept like Arabianranta emerged in Helsinki. Besides the previously mentioned role of the University of Art and Design, a number of flagship companies with strong roots in the region influenced the
development of Arabianranta towards the art and design theme – a perfect showroom for their
design intensive products.

Though the participation and proactive involvement of stakeholders like universities, companies
and associations may have many positive sides, there is also the risk that actors try to secure their
vested interests by orienting and influencing the location’s shape. This power is in principle
proportional to the relevance of the company/sector for the city and region and may pose threats to
a region’s adaptability overtime. On the other hand, a new knowledge location can be a powerful
tool precisely to break vested interests and open new horizons of regional economic
diversification. San Sebastian, Munich and Eindhoven strive to use their locations to foster new
combinations and support their local established industries towards new stages of development,
e.g. through linkages with ICT, art and creative industries respectively. Songdo specifically tries to
give opportunities to foreign direct investors in new sectors, countering vested interests in
construction and logistics in the area.

To avoid lock-in and prevent the protection of vested interests, cities should pay attention to
involve “birds of different feathers” in the discussions and concept definition. They should not
only involve established industrialists but also younger entrepreneurs with new ideas – San
Sebastian is a good practice in this case.

Is it about institutions or about persons?
At this point it is important to stress that our research shows (and confirms) that it is often
misleading to speak about local government, universities and even companies as if they were
homogenous entities. To understand the emergence and development of knowledge locations it is
essential to take a more fine grained view and understand that these organizations as composed by
a number of individuals that simultaneously comply with the routines of their own organization
yet bridge knowledge outside its walls and nudge other players towards certain actions – e.g. the
vision for a new knowledge location. Our study clearly spots many professors, directors of
planning departments, company managers and so on that play this role – some locations become
even associated with the central role of these persons.

This is far from saying that institutions are irrelevant. On the contrary, they are central in bucking
the actions of these individuals. However, what is remarkable - and important to grasp from a
policy perspective - is the way through which the action of these visionary individuals breaks up
with old routines and starts to institutionalize new procedures in public administration (e.g. new
departmental routines between planning and economic departments), but also in the relations
between, e.g. universities and cities. When these procedures don’t get institutionalized, relying on
key persons may become risky in the medium run, namely when central persons leave their
positions (e.g. in Helsinki the change of the University’s dean threaten the development of
Arabianranta to a new stage). Although further research is needed on this issue, a clear challenge
for cities is to spot these key visionary and proactive individuals, empower them and spread the
new behaviours in order to change old, inefficient procedures.

12.2 GOVERNANCE AND POLICY ARENAS
The physical and organizational shape of a knowledge location will be determined and evolve out
of a number of negotiation rounds, through the involvement of the previously mentioned actors in
governance and policy making arenas. Understanding the functioning of these platforms and the
different emerging governance models is essential to plan a knowledge location.

Many players are involved, with fundamentally different interests
The governance of a knowledge location is a rather complex process. This complexity starts with
the variety of actors involved - each has its own interest: typically, local government wants more
jobs and a better image, universities want good premises to attract students and conduct research,
developers look for a good return on investment, companies want attractive premises at low costs,
and local communities want a diversified area with more working and leisure opportunities. Higher government levels - which often financially support the development – want to foster economic diversification and the development of new innovative sectors.

Knowledge locations can be thus be seen as ‘arenas’ in which many conflicting interests meet. For example, the developer’s interests may be at odds with the communities and companies expectations; universities interests might be to expand facilities in a sub-urban location while the city planning department might favour a inner-city infilling strategy. But also within one organization interests might differ, e.g. between urban planning and economic development departments.

Moreover, different actors also have different time horizons – developers and companies’ time frames are usually very different – shorter - from universities and cities. Also the apparently convergent objectives of “more jobs” and “economic diversification” may have very different policy answers – in the short run the latter is often not convergent with the former.

This clash of interests does not mean that they cannot find common denominators and converge for a common good – our cases provide several examples of this convergence. However, without guidance and coordination, the development of knowledge locations risks arriving at a standstill. It is a task for urban managers to prevent this situation, organize negotiation platforms, monitor and follow-up the many expected rounds of negotiation and decision making.

Expect plan changes and contingencies
Building a knowledge location is a long and complex process. The planning of Helsinki’s Arabianranta started back in the 1990s, and still the area is under development. The same is true for many of the other cases discussed in the essays. Over such long periods, typically, there is no straight line from A to B: over time, economic, social and political conditions change, often with deep implications for the planning process, and random events can have major impacts. Dublin poses a good illustration of this: At its start, Dublin’s Digital Hub was built around the multi-million investment of MIT’s media lab. Some years later, MIT unexpectedly pulled out, and the Digital Hub had to reinvent itself. It successfully diversified, and attracted smaller new media firms. The crisis of 2008 again fully changed the landscape: the planned urban development around the digital hub was stalled because of a collapsing property market.

The high level of ‘contingency’ in long-term projects puts challenges for cities. One implication is that concepts for knowledge locations should be flexible enough to withstand major changes, but at the same time, they need to remain ‘recognisable’ for the outside world over a longer period of time. Likewise, organisational and management bodies for knowledge locations should also reflect this reality, and be sufficiently flexible and ‘open’ to allow for new entrants and working methods as situations change. It has become a commonplace to state that involving stakeholders is important in the design and conceptualisation of urban development projects. The long-term nature of these of the types of projects under study here asks for structures that are able to respond flexibly to changing circumstances along the way.

The role of “Special purpose vehicles” and dedicated agencies
Cities in our studies deploy different ways to develop and manage their knowledge locations. The choice depends on national planning rules, local planning traditions and cultures, and the specific situation at hand (i.e. land ownership conditions, type of development, integrated plan versus single building, type of sector/concept chosen).

Some of our cases (Dublin, Helsinki) have created dedicated organisations (SPVs, special purpose vehicles). Typically, an SPV unites the main actors in the knowledge location, and operates at arm’s length from the government. In Helsinki, for examples, the ADC – Art and Design City Helsinki- was founded, a public-private company responsible to coordinate the development of Arabianranta involving the relevant stakeholders: landowners, private parties, universities and inhabitants, but also other players including the Ministry of Trade and Industry, and companies.
Under the umbrella of ADC, different players were involved to share and jointly develop ideas for the area. This was especially important to overcome the rigidity and physical oriented philosophy of the City Planning Department, bringing innovative ideas, communicating openly between partners and overcoming lengthy, closed and bureaucratic decision making processes. Overcoming bureaucracy, cultural gaps and lengthy processes was also a central reason behind the establishment of Incheon’s Free Economic Zone as the managing authority for Songdo.

In Eindhoven, a dedicated management company was created to manage the Strijp-S area with the municipality of Eindhoven and a real estate company Volker Wessels as the two shareholders. This organisation implements the Master plan for the area, in close collaboration with two housing corporations.

Creating an SPV is no guarantee for a smooth decision making process. In the Eindhoven case, there are frequent discussion and disagreements among the key stakeholders over the strategy to follow. Major disruptive events - like the unexpected economic crisis starting in 2008 - can shift the balance of interests and put cooperative institutions under severe pressure.

Other cases in our study do not have this type of PPP. This is the case for example in San Sebastian; the city obtained a soft loan from the national government to create a media/ICT centre. From that moment on, the city arranged a series of meetings with many actors in the local media industry, to collect information on the different needs and ambitions. This forms the input for the final layout of the building.

Based on our study we cannot draw definite conclusions on the ‘best model’ for developing and running knowledge locations – we can however say that the best-model is certainly very context specific. The challenge for cities is to develop a model that allows to manage the location – both strategic and operational monitoring bodies will certainly be required.

**Financial models and public private partnerships**

None of the knowledge locations in our study is developed as a ‘normal’ commercial real estate project. The government –local or national- always plays some role in it, assuming that the location generates public benefits like preserving heritage, steer firm’s collective efficiency or contributing to neighbourhood rejuvenation. Importantly, the severe economic crisis has radically undermined the financial underpinnings in some of our study cases, especially those in Dublin – where private developers play a key role - and Eindhoven, where development is still in an early stage.

In terms of finance and the role division between the public and private sector, the cases in our research are rather different from each other. In some cases, the model is relatively simple. In San Sebastian, for example, the location consists of only two buildings. The construction is funded by the city (helped by a soft loan from the State). Most of the other cases are more complex in terms of functions and partners involved, and consequently have more complex financial arrangements. Here, we see all sorts of public-private funding models.

Due to the size of the projects and variety of goals, financial contributions of municipalities and developers often need to be complemented by higher-level support (like National Government or European Union funds). However, the involvement of higher governments differs per case, from offering a subsidy - as it is the case for PIA - to a strong active role, as we have seen with the support of the Korean Government in Incheon. In the latter case, the Korean state recognises the importance of Songdo’s district in the strategy to foster Korea as a Northeast Asian Business Hub. Worth mentioning is also Maxvorstadt in Munich, where the city aims to increase state support, as many issues in the development of this inner-city district fall under the responsibility of the state government (such as the development of universities and certain museums). Without state support, development goes relatively slow and remains limited to small-scale initiatives.

In a situation of regeneration of industrial or cultural heritage (as is the case in Helsinki, Dublin and Eindhoven), local governments typically take an active role, making large up-front
investments to clean the site and preserve the heritage. Private developers normally have no incentive to do this, so without government intervention, development would take place elsewhere and heritage would be lost. Besides ‘cultural’ arguments, local governments justify such investments by stating they yield social returns like neighbourhood regeneration, or preventing urban sprawl.

By funding heritage preservation or restoration—if done properly,—governments not only ‘save’ heritage from a cultural point of view, but also help to increase land and real estate values in the area. The benefits of this accrue to current landowners. To minimize the ‘free rider’ effect, government can acquire the land before restoring the heritage. In the case of industrial heritage, governments may change land use plans—allowing housing or commercial real estate development—after restorations, and benefit from increased land values. Alternatively, we could think on models in which private landowners are involved in funding the regeneration—it increases the value of their properties, after all. However, we found no cases of the latter in our study.

The role of the private sector varies from case to case. In the Digital Hub project (Dublin), relatively much is left to the private sector. In a concession model, developers have won contracts to develop of the lands of the Digital Hub Development Agency (a 100% publicly owned vehicle set up to develop and to run the location), under some conditions set by the Agency. This ‘anglo-saxon style’ business model is innovative, but also vulnerable: the crisis has stalled the private developments so far. In continental Europe, concession approaches of this type are rare.

Not surprisingly, due to its dimension, the Asian case of Songdo shows the most complex financial engineering in our study, with multiple private and public players involved, from many locations in the world. One interesting component of Songdo’s model consists in capturing and channelling real estate profits in the new city towards the revitalization of older neighbourhoods in Incheon, which risk detachment from the new developments—this is seen as essential to foster spatial cohesion within the city.

Locations and private real estate developers
Developers (e.g. real estate firms, pension funds) are responsible for the actual development of (parts of) knowledge locations, based on master plans. As it is shown in Helsinki, Dublin, Eindhoven and Incheon, cities contract developers to come up with new innovative ideas and to bring variety in the concept. Interesting is the case of Incheon, where the city invited foreign, mainly American, developers to team up with local developers in order to bring new approaches in Songdo’s planning system and to increase the external visibility of the project.

In order to safeguard the concept, some cities set concrete goals and boundaries in the freedom of the developers (e.g. a minimum number of social houses). In addition, governments can take additional measurements to cross fund non commercial goals of projects. For instance, Eindhoven and Helsinki both use a “cultural budget” to invest in art and culture. The construction of the budget differs; Eindhoven works with a fixed annual fee, while Helsinki asks developers to spend 2.5% of their budget on culture. Finally, developers in Dublin need to pay a lump sum cash sum which has been used to realise non commercial goals.

The different budget schemes each have advantages as well as disadvantages for the development of knowledge locations and it’s up to cities to find the right mix. For instance, the model used in Eindhoven guarantees a constant cash flow in time to spend on culture, but this annual obligation becomes a burden in times of financial downturns as we have seen in the current credit crunch as both governments as well as private developers cut in cultural budgets.

The voice of the community and stakeholders involvement
One key lesson is that stakeholder involvement is essential at the start of the development: that sets the tune for the years to follow. The cases of Helsinki and Dublin stand out in the way they involved stakeholders in the design stage. Helsinki’s very successful Arabianranta project thrived
on a good start, in which many stakeholders reached basic agreement on the path to follow. And in Dublin, a very careful community participation stage helped to ensure support for the development of the Digital Hub. We have also seen that stakeholders can influence major decisions and planning. For instance, in Eindhoven, the management of StrijpwS decided to reconstruct the NatLab – the former physics laboratory of Philips where major inventions were done - after protests of inhabitants and the municipal monument commission against the plan to tear this historical building down. Also, tenants in StrijpwS joined forces to increase their voice in discussions with the SPV.

In this respect, the challenge for cities is twofold. The first is to facilitate stakeholders’ participation in the discussion process and in the management structures of the location. It is important to ensure that parties (e.g. local communities) don’t get excluded when their “voice” is difficult to be organized collectively. The second is to make sure that the discussion arena is diverse enough to allow for innovative solutions that challenge the status quo of potentially dominant players.

12.3 OUTCOMES
In the previous point we stressed that the interplay between a diverse set of actors – taking place in complex governance arenas – shapes the design and organization model of a knowledge location. A central question at this point is to identify what kind of benefits do knowledge locations offer in practice, and under which conditions those are more likely to be achieved.

Locations as arenas for new combinations and innovation
Knowledge locations are often planned to become prime sites of new innovative combinations between different industries and activities. Innovation is more and more understood as an interactive process, thus requiring proximity and regular contact between knowledge producers and knowledge users. Linear models of innovation (funding → universities → prototypes → industrial applications) are perceived as outdated, while new paradigms of open and user driven innovation are being embraced. Therefore, knowledge locations in our study envisage facilitating the “innovation sparkle” through the joint location and multidirectional interaction of companies and universities involved in “new economy” sectors like the creative industries, ICT or biotechnology. Innovations crossing these fields are often the most promising: just think of, e.g. smart phones (requiring new materials, design, geo-location technologies, several ICT technologies and applications, etc) or sophisticated medical solutions (requiring bioengineering solutions, image, nanotechnologies, etc).

Our cases provide vivid illustrations of this trend. Arabianranta was conceived as a location to host art and design activities ranging from industrial design to new media – one ambition is to provide conditions for interaction between these sectors, and to continuously upgrade traditional industries like furniture or ceramics with symbolic and design inputs. The vision of StrijpwS is somehow similar: to diversify and upgrade Eindhoven’s industrial fabric through creative industries. In Munich, finding new combinations between “art” and science” and fostering interactions between museums and universities is the raison d’être behind Maxvorstadt strategy. Songdo introduces an interesting and flexible concept to foster new combinations in such a diverse knowledge location: the development of “inner city factories” where different companies and researchers (national and from abroad) can come together on a temporary basis to work on new product development.

The Digital Hub in Dublin and PIA in San Sebastian target new combinations within specific sectors. The Digital Hub tries to support the development of new partnerships and cooperation within the new media sphere, and its management team organizes meetings between companies to this effect. In San Sebastian, the strategy is to provide a number of shared facilities (plateaus, advanced audiovisual equipment) so that audiovisual companies can evolve towards new stages of advanced production. Moreover, PIA’s infrastructures are designed to facilitate linkages with other partner companies in the audiovisual and multimedia sectors.
Marshallian heaven and the meeting-in-a-bar: myth or reality?

More than one hundred years ago, Alfred Marshall (1890) introduced what turned to be one of the most influential ideas in spatial studies of knowledge and innovation: the hint that in certain districts (by the time British industrial districts), secrets of trade and technology are in the air and accessible for those who locate within but not outside the district. This notion was associated with the advantages of proximity and clustering to support knowledge networks and innovation, and underlies the vision behind the development of most “knowledge locations”: inspired in narratives of places like Silicon Valley and Richard Florida’s ideals of vibrant and cool districts, fostering agglomeration of companies and “unexpected meetings in a bar” became the new must. In line with many recent studies, also our research shows that this – important notion needs clarification and a more critical look.

In all our case studies we found only slight evidence of dense firm-firm and firm-university relationships within a knowledge location. Most innovation linkages are with players outside the location, often with established partners. This is not to say that important relations do not unfold within the location and in bars or informal settings; yet our study pointed to the fact that they often do not relate directly with “knowledge and innovation” partnerships, but more with access to business information (e.g. market trends) and policy-related information (e.g. access to subsidies). As Huber finds out for the case of Cambridge ICT workers, “in bars people is often too drunk [to say something technically meaningful]” (2009).

Just like in other studies of the geographies of innovation, our research found that for the planning of knowledge locations, the role of proximity has been taken at face value, i.e. related with physical or Euclidian proximity an much less with cognitive proximity, which embodies the essential social, cultural and institutional dimensions of the proximity concept. Through several talks with companies and universities within knowledge locations, our study indicates that it is when these dimensions come together that the famous “knowledge-based cooperation” is more likely to emerge, and not when (any) people are placed together in rooms next to each other.

Fostering agglomeration in proximity is thus not a sufficient condition for innovation and knowledge exchange. Cognitive and cultural clashes that reduce “proximity” (and thus innovation potential) can easily happen within knowledge locations, for example i) between different types of organizations (e.g. between firms and universities, but also between universities and museums, like in Maxvorstadt), ii) between companies with different working practices and cultures (e.g. between western and Asian players) and iii) between companies working in different fields and with different modes of innovation (say, biotechnology and creative industries).

Social, cultural - and thus cognitive - proximity between people can be improved overtime through fostering encounters and making firms and universities recognise the “business case” in cooperation, but also here even “best-practice” knowledge locations seem to face constrains. In Arabianranta, a structural lack of meeting facilities and joint working space for companies is referred as a barrier in nurturing linkages between same-building companies with potential complementarities. In the beginning there were no catering or meeting places at all. To counter this problem, some companies within the location started organizing their own gatherings within the building, designed to meet other tenants (“happy Fridays”); moreover, they lease their own office space to others whose skills and competences are potentially complementary. Similarly, in Eindhoven tenants on Strijp-S organise informal gatherings as the development of bars and restaurant is behind development of offices.

These recognitions open up an important set of recommendations for planning and designing knowledge locations – namely if the objective of the location is to foster knowledge exchange between tenants and the development of new activities and products.

Firstly, having admission criteria is essential. On the one hand, the broader it gets (e.g. knowledge and creative industries) the less likely is that the location will generate significant knowledge spillovers and interactions internally. When the demand for office space in a park is not that high, the tendency is opening the doors to every kind of activity – while in the short run this may make the location financially sustainable, in the medium and long run it downgrades the concept and the
value for tenants. On the other hand, setting a too narrow criteria (e.g. molecular biotechnology, film), may also be unfavourable for innovation and exchange, since the learning potential and the development of new combinations is lower: the tenants are too similar to each other. Hence the challenge, as pointed out by Nooteboom (2000) and Boschma (2009) in other contexts, is to find a proper level of cognitive proximity as a basis for an admission criterion: activities that are related to each other but that are not exactly the same. PIA (audiovisual) and The Digital Hub (new media) are good cases in this respect.

Secondly, a number of knowledge management tools may help to increase “proximity” and cooperation potential in the knowledge location. Our cases provide a lot of insightful examples like i) the planning of joint facilities like cantinas, restaurants and other areas in buildings where tenants can be nudged to meet (although, as we saw, this is not a precondition for interaction), ii) the planning of flexible and ergonomic-friendly working spaces facilitating team work and other temporary arrangements (like in Songdo and in the Strijp-S), iii) the strategic design of the public space in the location to foster meetings and encounters, e.g. during walks - new architectural concepts can do a lot in this sense and iv) cluster community building, e.g. promoting regular meetings, spreading information, developing devoted ICT platforms for the location (like in The Digital Hub).

Thirdly, the design of locations can benefit from more informed distinctions between the types of “knowledge networking” that the location tries to nurture. In line with Giuliani (2007), our research suggests that knowledge related with market trends is more pervasive than technological-related knowledge (within locations). Further research on the networking within knowledge locations should try to distinguish these two dimensions more clearly.

Different modes of innovation and physical-organizational requirements
Recent research (Asheim et al, 2008) demonstrates that different types of activities show rather different sensitivities to proximity for knowledge exchange. For example, in the creative industries, innovation heavily relies on interactions with costumers, knowing the right persons, informality and on a number of inspirational ambiances feeding creativity and place-based symbolic content. Free-lancing and job rotation is frequent and reputation is a central asset. But in other sectors like biotechnology, innovation processes are highly planned and based on previous formalized knowledge and scientific-deductive methods; know-what and know-why become more relevant and interaction needs are rather selective and not likely to evolve under informal bar settings, but much more in shared laboratorial facilities. Technical cooperation often takes place through international networks of carefully selected partners. But even within certain sectors, modes of innovation differ – industrial design is very different from shooting a film; discovering a new molecule requires other procedures and “proximity” than developing new human tissues.

Our examples show that even in locations with a rather selective theme, innovation and organization modes of tenants can be rather different. In San Sebastian, TV content producers usually rely on the outsourcing of a large player (the local broadcaster) and can work in isolated teams of creatives, while other audiovisual multimedia companies rely on close proximity and permanent interaction with a more diverse range of clients (e.g. for advertising or imaging). Also in Arabianranta and the Digital Hub, design and new media have very different applications, clients and interaction needs. In Munich’s Maxvorstadt, fostering innovation links between universities and museums are a justified objective but its accomplishment is far from straightforward. These differences may look marginal at first sight, but entail very important consequences. Beyond the risks of cognitive dissonance for innovation (see previous point), different types of entrepreneurship policies may be needed. In some cases, startups may be effectively encouraged by offering office space and shared labs (e.g. biotechnology), in other cases, success may be heavily dependent on previous experience and reputation (like in design and audiovisual).

Planners of knowledge locations are wise to adopt this more nuanced sectoral view when designing admission criteria, but also the right types of joint facilities and supportive (e.g. clustering and entrepreneurship) policies to implement. This becomes more relevant as the more
promising innovations and new combinations are precisely in the interface of different innovation modes. Knowledge brokers and ‘middlesmen’ should be identified and empowered for this task; physical locations can also help – the inner factories of Songdo are promising in this respect.

**Scales of interaction: the park, the city, the region, the world?**

As mentioned before, physical proximity is a sufficient nor a necessary condition for innovation and knowledge exchange. Not surprisingly, all our cases suggest that cooperation between knowledge institutes and industry mostly takes place at the larger metropolitan and regional level, or even at national and international levels. The knowledge and informational resources that companies and universities benefit from in the location should be seen as complementary to others accessed outside it, and never exclusive alternatives – it is in the interest of the location itself that companies and other organizations are well plugged into regional, national and international networks.

Knowledge locations have become sites of intense transnational connectivity. Academic researchers and entrepreneurs play a key role linking knowledge locations with the outside world, bringing in new ideas. An important component of Arabianranta’s success is related with the development of living lab experiences, a methodology brought from the US/MIT by a professor at the University of Art and Design – the professor played the role of gatekeeper, accessing external knowledge and diffusing it locally (Giuliani, 2005). Other types of important players that fulfil this role are the transnational entrepreneurs, i.e. “individuals that migrate from one country to another, concurrently maintaining business-related linkages with their countries of origin and currently adopted countries and communities” (Drori et al, 2009).

For example, in San Sebastian, audiovisual entrepreneurs who studied and/or worked in hotspots like Hollywood, London, Madrid or Berlin brought fresh ideas, new clients and technology to the local cluster (they also actively participate in the design of PIA as a knowledge location, countering vested interests of other established companies). Similarly, Basque knowledge institutes and their most internationalised staff members have cumulated relevant knowledge via their external contacts related with audiovisual technology (e.g. 3D techniques) through contacts with global firms, students and government agencies. In Songdo, we found evidence that that the role of Korean expatriates and highly qualified persons with working experience abroad (new firms’ CEOs, research professors, etc) played an important role in attracting new external companies and investments; the same happened in Dublin, through historical links of expatriates and communities in Boston/MIT.

The presence of gatekeepers and transnational entrepreneurs seems to be an important condition for knowledge networking and diffusion, as well as for the challenging of status quo, not only within knowledge locations but also in its cities and regions. Through the action of these middleman and mediators, knowledge locations may eventually become what Hansson (2005, pp. 1047) called “social capital catalysts of the knowledge society”. These individuals may be central fostering new networks and innovative start-up ventures. Further research is needed on how to anchor external knowledge in a location, in particular on how to increase the potential and action of transnational entrepreneurs. Moreover, also the other side of the coin requires further analysis: if these individuals are so important in the innovative outcomes of a location, how to reduce the dependency on one or a few key persons?

**“Begging the neighbour” and displacement versus distinct location alternatives**

New knowledge locations may compete with other business premises in the city region. Developers and city governments are wise to take this into account and seek a distinct identity, avoiding zero and negative sum games and displacements. For example, Songdo is originally planned as a location for international business and new high tech industries, which should explicitly complement the city centre and other nearby locations. However, displacements are still happening – the relatively low prices and excellent infrastructure in Songdo is attracting companies from the old city centre. Moreover, Songdo also offered irresistible conditions for the
relocation of departments of the University of Seoul, generating backlashes from professors, researchers and students. In San Sebastian, PIA will be a top location for audiovisual companies and will probably generate relocations from other sites in the city where some of these companies are currently based.

The locations in our study tend to have a specific profile. Arabianranta distinguishes itself from other major knowledge locations in Helsinki: it concentrates a specialised labour pool of artists and designers. Many not only work but also live there. The location is thus rather unique in the region. The same goes for the Digital Hub on what concerns new media. Strijp-S has potential to profile itself as a showroom for innovation (e.g. through temporary expositions and events); similarly, Maxvorstadt is not ‘known’ as a specific location in Munich, but its central location, presence of universities, museums and amenities makes it an attractive location for congress visitors and as a living area for researchers and students, notwithstanding high real estate prices.

From an urban policy perspective, fostering relocations is not bad per se, namely when it facilitates the clustering of related activities and facility sharing conducive to innovation. In this sense, the guiding principle when developing locations should be to achieve more coherent and complementary new locations without harming others, or, in other words, foster consistent agglomerations without fragmenting others. To achieve this aim, a central challenge for the location and urban managers in general is to look beyond the location itself, position and integrate it within the spatial-economic context of the city and region.

**Knowledge locations as “faces” of the knowledge economy**

Knowledge locations are highly linked with urban images: they tend to become leading “faces” of the knowledge economy in their host cities and regions. In California, the ICT industry is tightly linked with the image of Stanford’s research park and Silicon Valley; in London, the Soho district is a central face of the city’s creative production. Likewise, also all the knowledge locations in our study, directly or indirectly, envisage creating a strong brand and image. This not only signals that the city and region are well plugged in the knowledge economy, but also that the location itself is the “place-to-be”, a unique selling point for certain types of activities and residents.

Specialized, thematic locations usually transmit a stronger image, which may attract new companies and residents. The Digital Hub has developed as a strong brand, and is perceived as the place-to-be for digital media, both for local and foreign companies. The same goes for Arabianranta, intensively promoted and developed as an art and design district. Those are powerful messages for companies. Just imagine the case of a foreign furniture company willing to locate a design “antenna” in Helsinki, in order to tap into Scandinavian design trends – many location options are available, but with incomplete information, the image of Arabianranta speaks louder, reducing the uncertainty of selecting a location. The presence of key anchor organizations in the location (e.g. a large university, and lead firm or a top research institute) also enhances its image further, as companies and tenants perceive it as locus of information spillovers, and a place to find qualified staff.

This phenomenon might produce agglomeration effects, even if there is only limited networking and knowledge exchange in the area. In our study, we found evidence that a number of companies relocated to these strong brand locations in order to tap into the promised “buzz”, but got slightly disappointed latter on – despite other relevant benefits and quality of the space, it seems that in the end knowledge was not in the air. However, the brand of a specialized and differentiated location increasingly got rooted as more and more companies agglomerate there.

Songdo, being a rather diverse location (“knowledge and business”), has the most explicit branding and promotion strategies in our study. Songdo can be seen as a marketing tool in itself to signal the change from a culturally close Korea to an open, vibrant and diverse place, open to foreign investments. An impressive number of amenities reinforce the package and signal Songdo and Korea as serious competitor in East Asia to attract knowledge and talent. Image building is focused on transmitting the image of a futuristic city to the most diverse targets through promotion centers, events, media and international campaigns.
In sum, it is important to stress that although the image of the planned location is surely a powerful magnet influencing the locations’ capacity to attract new tenants, jobs and investments (i.e. agglomeration), this is not necessarily related with innovation and knowledge networking in the area. Thus, image building policies for planned knowledge locations should be articulated with other knowledge management tools. Images should fit the area’s identity – which may evolve overtime. However, the starting moment may be crucial: when a location starts out with a poor image (e.g. “a firm’s hotel”) it may have difficulties in changing investors and people’s perceptions latter on.

**New urbanity and “Phoenix from ashes”: regeneration of empty and derelict areas as urban legacy**

Planned knowledge locations have been traditionally targeted at i) attracting talent and companies, ii) developing knowledge networks, innovations and new combinations, iii) creating jobs, iv) fostering entrepreneurship and v) image building. We have looked at many of these dimensions in the previous points; this is the turf of economic development departments.

However, another common theme in our case studies is the growing ‘urbanity’ of knowledge locations. As previously shown, there are good reasons underlying this new trend, e.g. preference changes, knowledge economy requirements or the willingness to fill empty city spots by city administrations. Maxvorstadt is a dynamic inner city district in Munich; Arabianranta, The Digital Hub and Strijp-S are more than economic development and “knowledge” objectives: they are also key urban regeneration projects. Even free economic zones are becoming urban - Songdo is a brand new district, built from scratch in sea-reclaimed land, built under a highly integrated city master plan.

This brings new planning challenges. In Helsinki and Dublin, the redevelopment of brownfield areas into knowledge locations was used as tool to regenerate social and economically degraded neighbourhoods, with high unemployment, poverty and environmental problems. In Eindhoven, Strijp-S is also instrumental filling in an abandoned empty spot after the relocation of Philips facilities (plants, offices, R&D centres, etc). Therefore, a central idea is that behind the development of knowledge locations in urban settings lie key social and physical legacies. Besides the potential to re-fill empty spots, knowledge locations are often a way of preserving the area’s identity while giving it a new life, in a “phoenix-from-ashes” fashion. The development in Arabianranta evolved around the regeneration the old Arabia pottery and porcelain factory into showrooms of industrial design, as well as the studios and facilities of the Art and Design University; in Dublin, it evolved around the regeneration of the old Guinness Brewery towards a more lively, functionally mixed and diverse location, improving living and housing conditions in the Liberties area. Moreover, these operations contributed to green the area, often heavily polluted due to decades of water and soil pollution.

A new challenge for cities is thus to link these dimensions together towards an integrated and coherent urban area. Another challenge (although not found in our cases) is to regenerate old science locations outside the urban fabric – here the challenge is to bring “city” and “integration” into this mono-functional science and business areas. Achieving these integration objectives is however far from straightforward. Figure 12.1 provides an “integration checklist” to bear in mind when designing urban integrated knowledge locations. In the next points, inspired by our examples, we explore some of those challenges.
Unavoidable gentrification and enclave formation?

Some of the knowledge locations in our study also developed into up market residential quarters (Maxvorstadt was already an expensive residential and office location). Strijp-S and Songdo envisage becoming a distinctive urban area with a metropolitan and cosmopolitan feeling. Arabianranta, in contrast, complements the city centre by offering a residential environment with an urban feeling and working atmosphere in a waterfront setting, making it attractive for families and wealthy target groups. Also in Dublin, the planned housing units in the Digital Hub should attract higher incomes.

Without policy intervention, market forces may drive out former inhabitants and activities, and also some segments of the “creative class” (like young entrepreneurs) with limited capacity to pay high rents or prices. A gentrification process may endanger the initial diversity and liveliness objectives for the location, and transform it into a social and physical enclave for the well off.

Our cases provide good illustrations of policy interventions to avoid the negative effects of gentrification and mono-functionality. This is often achieved through contracts between the city and private developers, binding the latter to the development of more affordable (and typically less profitable) types of housing and office space in return of the rights to develop other areas. In Dublin, the developers pay a lump sum to the city for these rights, which the city uses to develop more socially inclusive facilities and infrastructures. In Arabianranta, in order to preserve the area’s diversity, the municipality also developed social renting schemes to keep a mix of incomes and social uses. In Songdo, to make the district more vibrant from the beginning, developers are obliged to build commercial space and at the same time develop residential areas. In context of financial constrains, the economic slowdown and tight municipal budgets, keeping these schemes alive is a true challenge of financial engineering and requires strong political commitments.
Socio-economic integration: Community participation, educational opportunities and affectivity

The development of knowledge locations is an opportunity to achieve important social remits in old city districts. Dublin is an interesting example. From the start, the city envisaged community involvement to prevent the detachment of the new location from the more deprived populations living in the adjacent area – this as been put in place through programmes of e-literacy and education, supported by the Digital Hub. This helps to socially integrate the location in the social fabric; moreover, in time of financial constrains where local policies tend to turn to more short-term job creation investments, measures like this provides place like the Digital Hub with a “licence to operate”.

Also in Arabianranta community involvement played a key role and was highly innovative. There, a dynamic community association represents the interests of the inhabitants in the management organization ADC. Moreover, a community of e-moderators (managers of each building’s intranet and forum platforms) provides the digital backbone of many real-life interactions and civic participation. An example is the organization of car pooling schemes for the elderly to go shopping, but there are many more. These initiatives led some commentators to dub Arabianranta as a Social Silicon Valley.

In Songdo, built on virgin lands, social integration is at the present not an issue but may soon become so – action will be needed to avoid the spatial detachment of this new “high-tech” and expatriates district and the “enclave feeling” vis-à-vis the old city centre of Incheon. It is therefore also important that the new location can provide jobs and services for the locals – linking the new location with event hosting and eventually with industrial tourism might be good alternatives to foster this interaction.

Other dimensions of ‘social embedding’ are rather neglected. For instance, more can be done in linking former workers of these locations to its new users. Many former workers of Philips, Arabia and Guinness still live in the city and are emotionally tightly linked with the area. Urban managers and location directors should find new ways to re-connect these people with the location, e.g. through storytelling or photo expositions – small actions like this might provide a bridge between the past and the future of the area and better integrate it with the social fabric. So, former workers can act as ‘ambassadors of knowledge locations’.

Physical integration and smart growth

A central objective of many knowledge locations is to achieve their physical integration in the city. Firstly, these locations are often part of ‘compact city’ strategies that contribute to counter urban sprawl (and its negative social and environmental consequences). This is true for the cases of Helsinki, Dublin and Eindhoven. In Munich, one of Europe’s most compact cities, the aim is make an existing location ready to facilitate new art-science combinations in a physically compact setting.

Contrarily to ‘gated’ locations (e.g. traditional science parks) all the cases in our research lack walls separating them from the rest of the city. This way, a knowledge location can more easily become part of the city itself, rather than a segregated place where the high qualified locate and knowledge creation “happens”. Also in all our cases we can witness a prime preoccupation with the quality of the location’s public space, the presence or proximity to advanced amenities (Songdo is extreme in this sense) and excellent transport connections. All these dimensions are central not only for the location’s attractiveness, but also for its integration in the larger urban fabric. The accessibility to public transport and open access to the location’s public space are also relevant from a social perspective: public transport and the public space are much more democratic than gated locations or areas only accessible by car.

Besides transport connections, the availability of top broadband infrastructure and digital accessibility solutions is also a common feature of knowledge locations, and may provide their tenants with competitive advantages vis-à-vis other locations. Arabianranta was among (if not the
first) knowledge location in the world to develop centrally managed broadband infrastructure just like water or electricity – this facilitated the development of e-platforms and e-inclusion experiences in the area. Songdo is also endowed with top broadband infrastructure, (Korea is a world leader in this respect); Dublin’s high-capacity and cheap broadband access is important for the activities of new media companies, and the infrastructure can also be used by the local community. Moreover, it gives these locations advantages as test beds of new technologies and innovative concepts.

Locations as test beds and urban laboratories

Many of the locations under analysis became prime sites of urban experimentation, arenas to test new urban concepts and technologies. The very particular characteristics of some of these places within cities (e.g. social diversity, superior technological features like broadband or even access to privileged government funding) raised the profiles of some areas as laboratories of “green experimentation” and user-driven innovation. The cases of Arabianranta, Songdo and Strijp-S are paradigmatic.

Arabianranta was among if not the first site in Europe to implement living lab innovation concepts - designing and testing new technological concepts based on the user’s requirements in their daily city life (e.g. new technologies for traffic control, smart-phone applications, geo-location for the elderly, etc). Although the concept was first developed in the MIT, and adapted for the context in Helsinki. Arabianranta was a natural place to implement the concept, with its presence of advanced and centrally managed broadband infrastructure, its diverse social profile, and an existing network of e-modulators trusted by the inhabitants. The first living lab/user driven experiments were conducted by local government, with the participation of strong local players like the Finnish giant Nokia.

In South Korea, Songdo is a designated arena for the development of ubiquitous computing and augmented reality technologies. Korea has the ambition to develop a network of u-cities, where persons and objects are fully connected in an undistinguishable fashion, anytime and everywhere. Korea is a first mover in many of the technologies (e.g. advanced sensors and systems) applied, and is strongly betting on innovative and futuristic u-city concepts. Among other things, ubiquitous systems have potential to contribute to traffic efficiency, health monitor systems, crime prevention or environmental risk reduction. Again, the rather virgin and experimentation prone character of Songdo makes it the perfect place to test new u-concepts and infrastructures. The wide access to broadband infrastructure and the low privacy fears of the Korean society vis-à-vis western cities make it an apt place for these types of experimentation. Songdo also hosts advanced research centres in u-technologies, and national and foreign companies have located in the area to design and test prototypes.

There is more experimentation going on in Songdo: the buildings are also among the first in the world with LEED accreditation – leadership in energy and environmental design – and the entire area strongly invests in climate proof technologies an clean solutions. A lot of green experimentation is also going on in Eindhoven’s Strijp-S, namely of new clean soil technologies for brownfield redevelopment - here groundwater remediation has been combined with groundwater energy. Such tests are generating new knowledge and insights in the form of new localized competences.

The development of this type of experimentation is an arena where economic development and innovation meets sustainability and integrated urban development objectives. Due to the cultural and physical proximity requirements for such experimentation projects, local companies are often involved and develop first mover advantages when the concept scales up. Bearing in mind technical and socio-cultural specificities of the location, urban managers can do a lot by steering the development of technological niches through experimentation in knowledge locations. Here, existing regional competences can be enlarged through the use of urban experimentation arenas. It’s also a way to foster economic diversification.
Urban fetishism, or the new planning orthodoxy of “mixing”

The development of knowledge locations as mixes areas “to live, work and play” is increasingly popular (at least in the political discourse). However, it is important to contextualize this trend, and not take the ‘urban integration factor’ for granted as necessary success condition of a knowledge location.

In principle, as we described before, urban integration has many advantages and may generate important social, economic and environmental side effects. However, according on many indicators (related with innovation, start up creation, jobs, etc) locations like science and technology parks still do pretty well outside the urban core. It is thus difficult to say a priori which type of urban integration a new knowledge location should be pursued. It seems to be again very much dependent on the type of activities the location envisages. For example, the working and innovation needs of (most of) the creative industries privilege dense urban environments and vibrant urban atmospheres; moreover, the type of activities is not very space consuming and living-working premises are often mixed and can be accommodate in a limited number of square meters; cities and the public space are often “living rooms”.

This may be however very different for biotechnology and engineering activities. Biotechnology activities rely on laboratorial facilities and those are more space consuming; moreover, they are very specialized, expensive and often exist in universities (which are often outside the city core). Innovation does not rely on buzz, but on highly formalized procedures with carefully selected partners. In engineering related activities, physical proximity to clients for interaction and development of joint pilots is central. Activities are much more space intensive, can be noisy and have strict safety requirements, making it unfeasible to mix with, for example, residential and city centre uses.

Beyond the most appropriate urban or sub-urban setting for a knowledge location, what is always critical is the provision of good internal and external accessibility conditions. This will determine the attractiveness of the location. In the knowledge economy, easy movement of people and goods remains a prime requirement for a location’s success.

Knowledge locations and institutional learning

Our cases show that the development of knowledge locations is a source of learning for the involved stakeholders, in particular local governments.

One example is Arabianranta. The planning and development of the location implied the involvement of a number of city departments in multiple platforms. Moreover, it was a one of the first joint development projects between local government and private developers in Helsinki. This experience left roots both within and outside the municipality. Municipal departments developed new cooperative routines and social capital between the city and other external stakeholders increased. Nowadays, regeneration projects in old harbour areas follow a similar organizational model, highly facilitated by the existence of former cooperation routines and organisational model.

The development of PIA in San Sebastian provides another interesting example. In order to design PIA, the city’s economic development department organizes meeting and queries among audiovisual companies and stakeholders in the city, improving the relations between the sector and local government. The pole is also supposed to be an arena of cooperation between the city and the famous cinema festival in economic affairs. This will imply new cooperation routines with the city, for example with departments and structures that organize events.

In order to achieve this outcome, it is essential to have structures and persons in charge of monitoring the results and evolution of the location. It requires a very proactive type of urban management and individuals able to spread new routines within the structures of the local government.
**12.4 HIGHER LEVEL INSTITUTIONS AND RULES OF THE GAME**

How do higher order institutions that vary across large geographical areas – varieties of capitalism and planning systems – influence the development of knowledge locations? In our study we could collect evidence from South Europe, Scandinavia, Central Europe, Anglo-Saxony and Eastern Asia.

**Varieties of capitalism: convergence or divergence?**

As hypothesized in chapter four, institutional features of each country – which we proxy as varieties of capitalism – matter in understanding the way knowledge locations unfold in different settings. Understanding these features (e.g. presence of social institutions that facilitate interactive learning and trust; participation of universities in business affairs; state intervention in the economy and innovation) is important to benchmark policies, best-practice and draw comparisons.

Probably the sharpest contrast can be seen between state intervention levels in Europe and Korea on what refers to industrial policy and innovation support. In Europe, competition policy limits the level of state intervention in business affairs, and direct innovation support – directly “picking the winners” (companies, industries) is generally not allowed. In Korea, the state traditionally intervenes much stronger and more direct, providing massive subsidies and R&D incentives for “new sectors. Biotechnology, nanotechnology and other technologies receive full support in Songdo; moreover, the free economic zone status of Songdo is unmatched in Europe.

There are however domains of apparent convergence. One is the involvement of private players in the development of knowledge locations in a risk-taking role. In Southern Europe this is relatively rare: governments simply contract the development to private developers (like in San Sebastian). But more and more, in Europe as a whole, private players play a role not only taking the risk in the location’s premises, but also influencing its design. In Korea, these developments are traditionally in the hands of the state – yet, Songdo the first development of its kind in which private developers (a joint venture of a Korean and an American developer) took a central role designing the master plan and building on its own risk. Also in Songdo, the Korean government played a large role attracting foreign universities to the area, something hardly replicable in other European settings.

Throughout the cases, we also observe a significant involvement of universities in development, although the level of involvement varies widely (from a simple tenant to an active player in the location’s design). Understanding how and why their role varies across varieties of capitalism is an issue for further research.

**Planning Systems matter**

Planning systems across our study zones also explain the different ways locations unfolded. Two central issues are the land ownership and cooperation tradition among stakeholders.

In cases where the land is in the hands of the local government, the development process runs smoother and often faster. Moreover, it is easier to define and impose functional mixes in the area. In these cases (traditionally in Scandinavia and Continental Europe) local governments have more power vis-à-vis private developers and can more easily impose rules and control the development. In Southern Europe, usually private players have a lot of power due to land ownership, and expropriations are difficult. In Songdo, the opposite happens: the state has full control of the land, since it was sea-reclaimed and belongs to the state; besides, its virgin character makes it fully flexible for new developments.

In Arabianranta, most of the land was in the hands of the city of Helsinki, making it easier to set the rules. However, not all of it was – there were some private owners that could endanger the consistency of the entire concept. When this is the situation, the planning and cooperation culture plays a decisive role. The Finns have a long tradition of cooperation, and their culture favours consensus. The alignment of different parties involved could be smoothly achieved around the “art
and design” concept. In other cultures, achieving consensus often takes a long time and may endanger the momentum for the development.

12.5 ASSESSING THE ADDED VALUE OF KNOWLEDGE LOCATIONS

We found out in our study that cities have difficulties to assess the degree of “success” of their knowledge locations. Usually, the most common success indicators focus on issues like rises in property value, number of new jobs in the location, number of start-ups, number of students and new inhabitants, etc. These are surely important indicators; moreover, they are rather prone to comparisons across locations and data can easily be collected. Moreover, these quantifications and estimations are often essential in order to feed in cost-benefit analysis to judge the (social) return on investment.

However, on the flip side, these data have substantial limitations. Firstly, they conflate knowledge and innovation outcomes with urban and spatial development outcomes. For example, the number of students can mean a lot for the vibrancy of the location but might mean nothing for innovation and knowledge networking outcomes. Secondly, indicators like “number of firms” fails to account for displacements from other locations; thirdly, they provide a very limited capture of the potential benefits, limitations and problems (ex: social polarization) associated with knowledge locations, and hence, how to plan and achieve “success”. In this view, the usual set of indicators isn’t more than the tip of a much larger iceberg (see figure 12.2).

In our study, we suggested that the success of knowledge locations needs to be seen from two angles, which are related, but should not be conflated: 1) economic development, clustering and innovation and 2) sustainability and urban integration. We thus argue that a challenge for cities and knowledge locations is to develop better tools and indicators to qualify and access (and not necessarily “measure”) the success of knowledge locations. The design of these assessment tools requires further efforts. In figure xx we provide some first inputs for this task.

*Figure 12.2 Assessing the success of a knowledge location*

Source: Own elaboration
12.6 THEORETICAL FRAMEWORK AND PROPOSITIONS

In chapter 4 we presented a theoretical framework (figure 4.1) to guide us through the case studies. A central question was, and still is, “how does a knowledge location emerge and evolve over time in its spatial-economic context”. We linked a number of constructs from economic geography, urban studies, political science and public management studies, and conceptualized cities and regions as ensembles of political, economic and spatial systems that shape (and are also dynamically shaped by) the development of knowledge locations.

During our study, and informed by the cases’ evidence, we felt the need to fine tune the initial theoretical framework towards a more fine-grained view on the relationships and mechanisms that tie the building blocks together. As mentioned in chapter five, we made use of inductive, theory building methodologies, crossing differences and similarities among the cases and main variables under analysis (see previous point), in an interactive fashion. In order to increase the consistency of the framework and its relationships, we also tested it against evidence from extant literature and our own previous research (see chapter four).

The reworked framework is depicted in figure 12.3. The key building blocks remained in place, but there are two important add-ins: 1) the conceptualization of feedback loops between the location’s outcomes and its spatial economic context, namely the systems of production and innovation, and policy and local planning; and 2) the introduction of moderator effects between the location’s design and its outcomes. The remainder of this point presents a group of propositions (P1 to P16) underlying our framework.

Figure 12.3: How does a knowledge location emerges and evolves over time?

Emergence and development of knowledge locations

New knowledge locations do not emerge and develop in virgin socio-economic landscapes. On the one hand, the city’s economic system and involved actors will strongly influence its emergence and shape (e.g. through the alignment of agents, institutions and their vested interests; through the action of emerging, “out-of-the system” agents; or combinations of both). On the other hand, also central is the character of the political and planning system: the emergence and design of a knowledge location is tightly linked with the policy making process, the will and legitimacy of
political representatives, the knowledge of their advisors, and deeply rooted cooperation and planning traditions.

The interests and power of the actors from these two systems will determine the “design” of the location. On the one hand, actors from the production and innovation system will tend to privilege designs that favour clustering, innovation and knowledge transfer. Moreover, certain activities are likely to be privileged over others. On the other hand, actors from the policy and planning system are in principle more prone to favour job creation, increases in land value and spatial integration objectives like reconverting unused areas to new functions. The latter might cohere with the visions of leaders in the production and innovation system, or propose and adopt different solutions. The power distribution among the actors (or simply the participation or non-participation in the governance arena) will determine the speed of the negotiation process and the degree of integrality and balance of the concept.

Out of a number of negotiation rounds a first design for the location emerges. But this design is not static and once-and-for-all. New external developments and catalysts may imply further changes. Moreover, the design may evolve as the location’s dynamics unfold – the location (as a group of actors and as a new institution in its own right) becomes itself part of the socio-economic landscape and can influence further developments. In these next rounds, previous influential actors from both systems may leave and others may enter, making the location’s design evolve in a dynamic fashion.

To sum up, we put forward that:

- **P1:** The emergence of a knowledge location results from a dynamic governance process in which actors from two distinct and localized systems strategically engage: systems of production and innovation, and political and local planning systems.

- **P2:** Governance dynamics are triggered by the need to anticipate or respond to challenges that can be both external and internal to the localized systems.

- **P3:** The design of a knowledge location depends on the power exerted by the actors of each system in governance arenas.

  - **P3a:** In governance arenas with more uneven power distributions and/or less wide participation, the location’s concept design will emerge faster, but is likely to be more volatile.

  - **P3b:** In governance arenas with more uneven power distributions and/or less generalized participation, the location’s concept design will be more unbalanced.

- **P4:** Governance arenas co-evolve with the knowledge location, as the location (as an agent and as an institution) becomes part of both localized systems overtime.

- **P5:** The vision for a knowledge location evolves overtime, over multiple rounds of decision making.

**Outcomes of a knowledge location**

We posited that the design of a knowledge location depends on the interplay of different actors, whose interests are coupled governance arenas. However, some issues remain unanswered, namely which impacts can we expect from a certain location’s design, and what do they depend on. It is now evident that the resulting design of knowledge location influences its outcomes. For example, while some designs may result in a very holistic type of location serving several objectives at once, some locations will be more prone to excel in fostering innovation in certain sectors; others, still, will put a strong focus on e.g. urban regeneration or property development. As we had the chance to analyse, despite being related, these outcomes do not always go hand-in-hand, although they always emerge in a lesser or larger degree.
There are thus 4 types of outcomes associated with a knowledge location: “clustering and agglomeration”, “image”, “urban-spatial integration” and “organizational learning”. So, for the sake of completion we propose that:

P6: The development of a knowledge location evokes new spatial agglomeration and clustering effects

P7: There is a degree of urban-spatial integration associated with the development of a knowledge location

P8: There is a degree of image effects associated with the development of a knowledge location

P9: There is a degree of organizational learning associated with the development of a knowledge location

Locations tend to become associated with images, and those images play a role in attracting more companies, investments and talent to the location. Although the presence of agglomeration and innovation dynamics at the location may influence this image effect further (e.g. presence of knowledge circulation and innovation networks), they do not directly determine, at least exclusively the perceived image of the location (which may be, e.g. more directly linked with the premises or the region’s characteristics). Thus, image itself has an impact on the attraction of new companies and tenants to the location, which overtime become part of the local production and innovation system themselves. Thus,

P10: Overtime, the image of a location affects the local production and innovation system.

It is expected that a knowledge location contributes to agglomerate “knowledge based activity” in a certain area (chapter 1 and P6). However, new knowledge locations do not emerge and develop in a virgin productive and economic landscape: its antecedents and history (“what a region is good – and frail - at”) will always influence the capacity of a location to attract and nurture certain types of economic activity. For example, when a region is traditionally strong in industrial design, with systems of aligned actors and institutions, a new location with the aim of steering new art and design activities further is very likely to succeed. On the contrary, promoting knowledge locations for biotechnology or laser technology in regions with no knowledge production in the field or related entrepreneurial tradition is likely to be like “throwing seeds in the desert”. This is not to say that new locations with visionary objectives cannot attract tenants and generate innovation and new knowledge networks – those efforts may effectively challenge the status quo, avoiding regional lock-in and regenerating production and innovation systems. However, the productive and innovation history of the region will still moderate and condition the agglomeration and clustering potential of the location in a certain moment in time. Hence, we propose that:

P11: The history of the localized system of production and innovation moderates the agglomeration and clustering potential of knowledge locations.

P12: Overtime, the capacity of a knowledge location to attract new tenants and steer clustering effects feeds back in the localized system of production and innovation, in a co-evolutionary fashion.

Knowledge locations also provoke impacts in the urban fabric. For example it may affect traffic movements, gentrification patterns, district revitalization, liveliness, urban experimentation or social integration. However, the degree of those effects – and namely the achievement of “sustainable” results from a broader societal perspective – depend on the character and history of the policy and local planning system, namely planning and organising capacity, tradition of cooperation within the city administration and between different stakeholders (developers, community associations, etc). This capacity and tradition will moderate what it is expected to be achieved with the location in terms of urban-spatial integration. Overtime, the new knowledge
resulting from the location’s experience will feed back in the policy and local planning system (e.g. new planning traditions, organizing capacities and political discourses). Thus,

**P13:** The history of the localized system of policy and local planning moderates the urban-spatial integration potential of knowledge locations.

**P14:** Overtime, the capacity of a knowledge location to steer urban-spatial integration dynamics feeds back in the local system of policy and local planning, in a co-evolutionary fashion.

Independently of the spatial-integration outcomes of a location, the process of planning and development will be associated with organizational learning from the city and in its relation with other stakeholders (whether in case of the location’s success or failure). Just like above, new knowledge will feed back in the system of policy and local planning. Hence:

**P15:** Overtime, organizational learning effects of a location affect the local system of policy and local planning.

Finally, as depicted in the previous point, the functioning of this whole system, its institutions and actor’s behaviour is likely to vary considerably in space, namely across varieties of capitalism and higher order planning traditions specific of different world regions – these are the “rules of the game” under which knowledge locations emerge and unfold. As mentioned, this is essential to compare best practices and benchmark other experiences. To conclude, we put forward that:

**P16:** The whole process underlying the emergence and development of knowledge locations is influenced by higher-level political economy institutions and planning systems.

### 12.7 FINAL REMARKS

In the last decade, the planning of specific locations where the knowledge economy can unfold – e.g. science parks, knowledge hubs or creative districts - has become one of the most visible initiatives of local governments worldwide. This type of areas are central ingredients in what has been called a knowledge turn in urban policy (van Winden, 2010).

Local governments, alone or in cooperation with other stakeholders, are investing large sums of money in the development of knowledge locations. The complexity of these investments and their insertion in urban areas require an integrative planning approach – however, not many studies analyse knowledge locations from this perspective. In this study we paid close attention of the functioning of a number of those locations within their spatial economic contexts, and, when possible, how they evolved overtime. We focused our research on a number of European cases: The digital hub in Dublin, Strijp-S in Eindhoven, Arabianranta in Helsinki, Maxvorstadt in Munich and PIA in San Sebastian; moreover, we extended our research to Northeast Asia in order to learn from the process of development of an entirely new “knowledge district”: Songdo, in Incheon (South Korea).

In this study, we reviewed existing literature on planned locations, and developed a conceptual framework to understand the development of knowledge locations within their spatial economic contexts. This framework – refined during our field work – combines otherwise disperse constructs from economic geography, urban studies, political science and public management studies, conceptualizing cities and regions as ensembles of political, economic and spatial systems that shape (and are also shaped by) the development of knowledge locations. Each of the cases in this study was in-depth analysed; subsequently, we made an international comparison, and developed a checklist of integration challenges and criteria to better assess the “success” of a knowledge location.

The contributions of this study hopefully can guide further theoretical advances in the study of knowledge locations; moreover, we expect that these contributions can support the design of better-informed policies, more contextualized benchmarking and possibilities to learn from real-
world practices. An important concern in our study is to provide insights on the social added value of knowledge locations.

Our study shows that the challenges cities face in the developing knowledge locations are growing. Beyond the more “conventional” clustering, networking and innovation concerns, the increasing urbanity of these locations raises integration challenges – economic, social and environmental – but also plenty of opportunities to regenerate derelict areas, preserving identity, create urban liveliness and controlling urban sprawl.

This implies that multiple policies and tools need to be deployed simultaneously, involving multiple departments in the city administration and other stakeholders, including private companies. In context of tight municipal budgets and credit constrains, but also in the face of increasing societal demands, the design of innovative and committed multi stakeholder partnerships will be a determinant condition for the success of planned knowledge locations. This is certainly a key challenge for the future.

REFERENCES


### Appendix A: Tenants on Strijp-S

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## Appendix B: Tables chapter 7

### Table 7.4: Buildings in Strijp-S

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</tr>
<tr>
<td>Klokgebouw (1928)</td>
<td>3</td>
<td>Philite(^{46}) plant</td>
<td>Office space of mainly the creative sector</td>
<td>Mixed use</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Completely rented out (about 100 tenants)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Event space</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Cultural facilities</td>
<td></td>
</tr>
<tr>
<td>Machinekamer (1929)</td>
<td>2</td>
<td>Steam energy plant</td>
<td>Closed</td>
<td>Mixed use, with focus on catering facilities</td>
</tr>
<tr>
<td>Ketelhuis (1929)</td>
<td>2</td>
<td>Electricity plant</td>
<td>N.a.</td>
<td>Special functions like bars and restaurants</td>
</tr>
<tr>
<td>Veemgebouw (1942)</td>
<td>2</td>
<td>Logistics for radio plant</td>
<td>N.a.</td>
<td>Commercial functions: ‘Fresh market’, design hotel, restaurants, shops</td>
</tr>
<tr>
<td>SWA/Glasgebouw (1948)</td>
<td>4</td>
<td>Light bulb plant</td>
<td>Temporary rent for SME’s</td>
<td>Office space</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Nearly 70 tenants</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Top floor rented out to five cultural organisations</td>
<td></td>
</tr>
<tr>
<td>SFJ (na)</td>
<td>4</td>
<td>Machinery plant</td>
<td>Rent out to companies involved in technology, design or innovation</td>
<td>To be demolished</td>
</tr>
<tr>
<td>NatLab (1922)</td>
<td>1</td>
<td>Physics laboratory</td>
<td>Reconstruction started</td>
<td>Work and live space for companies in the field of design</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Design incubator centre</td>
</tr>
</tbody>
</table>
Art institute
Catering services
Various functions: housing, offices, commercial space and cultural facilities

<table>
<thead>
<tr>
<th>Initiative</th>
<th>Type</th>
<th>Function</th>
<th>Funding</th>
<th>Link with Strijp-S</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hoge Rug</td>
<td>2</td>
<td>Radio plant</td>
<td>Temporary office space</td>
<td>Design Store (shows products of local artists and organises meetings)</td>
<td>To be demolished</td>
</tr>
<tr>
<td>Consists of SAN, SBP and SK buildings (1927)</td>
<td></td>
<td></td>
<td>5 minutes museum</td>
<td>Ontdekfabriek (museum for kids to get in touch with technology and innovation)</td>
<td></td>
</tr>
<tr>
<td>SEU (na)</td>
<td>Na</td>
<td>Na</td>
<td>Skate hall</td>
<td>The Building (Stage for Hiphop and street culture)</td>
<td>To be demolished</td>
</tr>
<tr>
<td>SBX (na)</td>
<td>Na</td>
<td>Na</td>
<td>Broet (movie platform: cinema, work space and supporting facilities for starting film makers)</td>
<td>Monck Buldergym (Climbing facilities)</td>
<td>To be demolished</td>
</tr>
</tbody>
</table>

Source: Own elaboration

Table 7.5: Cultural initiatives

<table>
<thead>
<tr>
<th>Intitiative</th>
<th>Type</th>
<th>Function</th>
<th>Funding</th>
<th>Link with Strijp-S</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>BALTAN</td>
<td>Art science lab</td>
<td>Research, network, educational, exhibition and promotional function</td>
<td>Subsidies</td>
<td>Strong focus to contribute to the concept of Strijp-S by linking technology with art; Located on Strijp-S, in SWA building; idea is to move to renewed Natlab in a later stage.</td>
<td>In operation as a pilot (started in 2008)</td>
</tr>
<tr>
<td>STRP</td>
<td>Art and technology Festival</td>
<td>Educational and promotional function</td>
<td>Subsidies, sponsorships</td>
<td>Management office in Strijp-S Strijp-S is the location for the event</td>
<td>Organised since 2006; growth from a three day to an 11 day event</td>
</tr>
</tbody>
</table>

_fit_
<table>
<thead>
<tr>
<th>Dutch Design Week DDW</th>
<th>Design Festival</th>
<th>Network function; tourist attraction; promotion of business and city</th>
<th>Subsidies and sponsoring</th>
<th>Strijp-S is one of the locations of this festival</th>
<th>Organised since 2002</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flux-S</td>
<td>Art Festival</td>
<td>Promotion of Strijp-S: create awareness among general public</td>
<td>Subsidies from municipality private sector</td>
<td>Organised to promote the location</td>
<td>Organized in 2009: 9,000 visitors</td>
</tr>
<tr>
<td>Glazen depot</td>
<td>Museum for contemporary art</td>
<td>Leisure/tourist attraction for research and educational function</td>
<td>N.a.</td>
<td>Plan to open at Strijp-S</td>
<td>Fund raising stage; plan to start pilot in 2010</td>
</tr>
<tr>
<td>Institute van Beelden Geluid</td>
<td>Museum for broadcasting</td>
<td>Leisure/tourist attraction, education</td>
<td>N.a.</td>
<td>Plan to locate on Strijp-S</td>
<td>Concept stage: intention contract has been signed</td>
</tr>
<tr>
<td>Ontdekkfabriek</td>
<td>Technology museum</td>
<td>Leisure; focus on children Educational function</td>
<td>Subsidies, sponsoring, ticket revenue</td>
<td>Located on Strijp-S</td>
<td>Opened in 2009</td>
</tr>
<tr>
<td>Vijf Minuten Museum (5MM)</td>
<td>Museum for modern art</td>
<td>Leisure</td>
<td>N.a.</td>
<td>Located on Strijp-S</td>
<td>Opened in 2009</td>
</tr>
<tr>
<td>Broet</td>
<td>Platform for film production</td>
<td>Support independent film makers: networking; cinema; Revenue from tickets, Sponsoring</td>
<td>Sponsors, ticket revenue</td>
<td>Located on Strijp-S</td>
<td>Started in 2008</td>
</tr>
<tr>
<td>Area 51</td>
<td>Indoor Skate Park</td>
<td>Leisure</td>
<td>N.a.</td>
<td>Located on Strijp-S</td>
<td>Opened in Strijp-S in 2006</td>
</tr>
<tr>
<td>The Building</td>
<td>Podium for HipHop and Street culture</td>
<td>Leisure</td>
<td>N.a.</td>
<td>Located on Strijp-S</td>
<td>In operation</td>
</tr>
<tr>
<td>Opus 28</td>
<td>Theatre, professionals and amateurs</td>
<td>Leisure; platform for new talent</td>
<td>Subsidies; Sponsoring ticket revenue; Located on Strijp-S</td>
<td>Started at Strijp-S in 2007</td>
<td></td>
</tr>
<tr>
<td>--------------</td>
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<td>---------------------------------</td>
<td>----------------------------------------------------------</td>
<td>-----------------------------</td>
<td></td>
</tr>
<tr>
<td>Room 306</td>
<td>Music studio</td>
<td>Leisure</td>
<td>Subsidies from cultural fund</td>
<td>Located on Strijp-S Fit in theme culture/history 74</td>
<td>Opened in 2009</td>
</tr>
</tbody>
</table>

*Source:* Own elaboration
Notes

1 Three combined sets of mechanisms are often pointed: i) labour mobility, e.g. by the tacit knowledge embodied in employees that change jobs in the region in the within the same or related industries (Almeida and Kogut, 1999; Boschma et al, 2009); ii) knowledge spillovers, e.g. through localized social networks (Breschi and Lissoni, 2001) and casual interaction and exchange between firms and other organizations just by “being there” (Gertler, 2003; Maskell and Malmberg, 1999) and iii) spin-offs (e.g. Wenting, 2008), e.g. when new firms inherited the competences, knowledge and routines of rooted “parent” organizations, like older established firms or research institutes.

2 For the sake of simplification, we did not specifically frame important players like, e.g. real estate developers and community associations, though we deal with them throughout the essays in this book.

3 Also “quadruple helix” variations, adding the civil society and community involvement.


10 http://medialabeurope.org/about/ - Accessed April 22nd 2009

11 Although this is not made explicit in various policy documents, interviews indicate that this is potentially an important function of The Digital Hub


13 Dublin institute of technology (DIT) will consolidate all of its activities throughout the city on one campus in the Grangegorman area.

14 Based on interviews with CEO’s of Digital Hub companies

15 Based on interviews with CEO’s of Digital Hub companies

16 Cognitive distance can be understood as a measure of the lack of sameness of ideas between actors. Large levels of cognitive distance reduce the ability to transfer knowledge, because knowledge becomes incompatible. Small differences in cognition do not lead to new ideas since, although knowledge is very compatible, it is also highly related and often based on the same principles and ideas.


18 The Digital Hub is Ireland’s star product in the digital media sector. Whether it is a star product in an international context will require additional research.
Together with other shareholders, Amsterdam is investing in a company building a "fibre-to-the-home" broadband access network connecting 37,000 households in Amsterdam. The total equity investment in the project is €18 million. The Amsterdam municipality owns one third of the shares, two private investors, ING Real Estate and Reggefibre together another third, while five housing corporations own the remaining third. The wholesale operator of the new fibre network was selected through a tender procedure and will provide open, non-discriminatory access to retail operators which offer TV, broadband and telephony services. After an in-depth investigation, launched in December 2006 (see IP/06/1872), the Commission concluded that the municipality participates in the project on the same terms as would a market investor. Therefore the Commission has concluded that no state aid is involved. See http://www.citynet.nl/

For instance, Eindhoven ranks fourth on the European scoreboard for innovation power, after Stockholm, Helsinki and Munich. It even leads the ranking in terms of patent density per worker. In 2001, it had nearly 550 patents per 10,000 active workers, which is more as three times as high as the number two, Oberbayern, which had about 150 patents per 100,000 workers (Commissie Sistermans, 2006).

The triple helix cooperation started in the 1990’s during a deep crisis which forced actors to join forces and to develop and joint vision and strategy in order to receive financial support from the EU. Nowadays, there is still successful cooperation and many actors often jointly lobby for national funding.

To name a few: ASML, Philips, DAF and VDL Group.


Inter-city trains connect major cities and do not stop at small places.

SRE was a regional development partnership between municipalities. Recently it merged with another regional development organisation (Stichting Brainport) and continue with the name Brainport Development.

It is difficult to make a clear distinction between creative and cultural industries, as there consist several definitions and categorisations in theory as well in formal statistics, often overlapping and contrasting each other with many gray areas (e.g. see Hesmondhalgh and Pratt, 2005; Sunley et al, 2007). Creative industries often refer to commercial industries whereas cultural industries refer to non- or low-profit industries which are often subsidised by governments (Cooke and Lazzeretti, 2008). Even with this distinction there are many gray areas; e.g. many museums are heavily subsidised, whereas others are highly profitable. Being aware of the limitations, we use this categorisation. The category “Creative industries” consists of multimedia; graphic design; fashion design; architecture; product design; interior design; web design and various design. “Art and culture” includes theatre; video; photography; music; sports; art and antiques; galleries; cultural platforms; and other. As formal statistics were not available, we categorised the firms by ourselves, based on descriptions on the websites.

Unfortunately these data were not available.
Also the possible extension of Eindhoven Airport is beneficial for Bosch. Currently, Bosch mainly uses the airports of Amsterdam (Schiphol) and Dusseldorf as these airports have better connections. Especially, Dusseldorf is important due to its strong position in the German flight network.

For instance, in one project, the company tries to integrate audio systems with stadium speakers. This is developed in jointly with a Bosch subsidiary in the USA.

The crisis in the first half of the 1990’s was characterised by a banking crisis, a fivefold increase in unemployment and government debt approaching international lending limits, representing 15% of Finnish trade and deregulation of financial markets (Worldbank, 2005).

For instance, over 40% of Helsinki’s population has third level of education. This is much higher than other knowledge intensive cities in a study by Van den Berg et al (2005), such as Munich (about 25%), Amsterdam (31%) or Eindhoven (23%).

For instance, the Helsinki region counts nearly a quarter of the country’s population and has a share of 30% of the total Finnish GDP (Susiluoto, 2003).

There is a formal competitiveness strategy for the Helsinki Metropolitan Area, set up by Culminatum, the major regional development organisation that consists of representatives of governments, firms and knowledge institutes.

For instance, in the Cushman & Wakefield European Cities Monitor (2008), Helsinki takes a 28th place in terms of quality of life for employees. This is much lower than other cities in Northern Europe, like Stockholm (3rd place), Copenhagen (9th) and Oslo (12th).

During the 60’s and 70’s, the need to accommodate fast population growth led to the development of suburban areas, focused on traditional and mono functional zones, mainly based on undifferentiated housing.

For instance, Kone, one of the largest firms that produces elevators has its headquarters in the Helsinki region. Besides industrial design, the company increasingly uses aesthetical design to improve its products. Therefore, the company works with specialised design companies, such as Marimekko, to decorate elevators.

For example Nokia has 300 in-house designers, and sources design from specialised companies (interview).

One product designed and developed in the Design Factory Finland is the “Power Kiss”, a charging system for mobile phones that is wireless and integrated in furniture.


Source: Citation from Website Helsinki Virtual Village: http://www.helsinkivirtualvillage.fi/Resource.phx/adc/opiskelu/livinglab/livinglabinenglish.htx

It should be mentioned it is possible to make a vision for the area which includes various scenarios (e.g.
development with and without TaiK). This prevents that the development comes to a standstill.

43 Value that the bank/evaluator thinks the developed assets are worth.

44 For example, Ter Wal (2008) demonstrates that in the case of the large French Science Park Sophia-Antipolis, even after 20 years of co-location, the collaborations between multinational and local firms were almost inexisten in biotechnology and only slightly higher in the realms of ICT, the latter largely due to firm spin-offs.


46 www.mstatistik-muenchen.de - Accessed December 2009


48 For instance, Munich has with 5.0 one of the lowest unemployment rates of the German large cities. It is followed by Stuttgart (5.7%), while Berlin has the highest unemployment rate of 14.1%. Source: City of Munich,(2010); data 2009. Source: Landeshauptstadt München, Referat für Arbeit und Wirtschaft, Munich the Business Location. Facts and Figures, 2010

49 The GDP per capita in the Munich metropolitan region is 72.163 Euro and has grown with 34.6% since 1997. This exceeds the German average (59.410 euro / +21,2%) and competitors Hamburg (68.957 euro / +21,9%) and Berlin-Brandenburg (50.605 euro / +10,1%). Note: Data stem from the economic crisis that started in 2009. Source: http://www.metropolregion-muenchen.eu/ueber-die-region/hintergrundinformationen/wussten-sie-schon-dass.html - Accessed December 2009.

50 Some data to illustrate Munich’s strong knowledge base are: i) 18,2 of every 1000 employees in Munich are working the field of R&D, which is roughly 2,5 times the German average, ii) the private sector spends 3.8% of the GDP on R&D, which is roughly double of the German average; iii) Oberbayern - one of the administrative districts in the Free State Bayern of which Munich is the core city – ranks third, after Stockholm and the Helsinki region, on the European innovation Scoreboard (2003) and with over 150 patents per 100,000 workers it takes a second position in patent density after the Eindhoven region. Data from City of Munich (2005); Commissie Sistermans (2006) ; BBSR (2009).

51 For instance, Munich received 4.7 million visitors (arrivals) and registered 9.5 million bed nights in 2007. Source: City of Munich (2008)

52 For instance, in the Cushman & Wakefield European Cities Monitor (2008), Munich ranks second after the city of Barcelona in terms of quality of life for employees.


The Oskar von Miller Forum is an independent educational initiative supported by the Bayerische Bauwirtschaft (association of construction workers' union and of Bavarian construction industry) and dedicated to enhance the image of construction engineering in wider society. See: http://www.oskarvonmillerforum.de/

E.g. the location is too expensive for starting artists and for artists who are focusing on aesthetical value of art and have low interest in making money.

For instance, TUM, LMU and University of Applied Sciences cooperate with various city departments. City department heads give lectures at universities and university professors provide new ideas for city management and cooperate in thinking about solutions to city problems. Specific programs have been developed where architects and city planners that graduate follow an internship with the City of Munich. The best students are then retained and offered a job. This cooperation is for a long term. On a yearly basis the City gives a prize to the University of Applied Sciences for the best plan to improve the city of Munich. It should be noted that according to our discussion partners the contact between the City of Munich and LMU seems to be weaker than with TUM and HM. An explanation might be that LMU's priorities lie elsewhere, for example at academic performance. This is key for LMU, and TUM as well, as both are ranked in the top Germany university rankings. This allows them to use the label 'university of excellence' which is rewarded by substantial funding.

The film commission is a networked structure within city government coordinating efforts related to the shooting of films in the city (e.g. closing streets, collecting taxes, dealing with the producing teams, getting local service providers for the directors, etc.) and it involves many city departments like transport, planning,
finance, public infrastructure, beach management, hotels, horeca, etc). It targets the creation of a *Unique Selling Point* between a film producer and the city where shooting activities take place. It links departments of the Municipality to provide permits, for example, but also hotels, discounts, etc.

67 However as interview partners pointed out, these markets are highly specialized and technologies are often not compatible.

68 Philite is the Philips brand name of the first type of synthetic plastic that was developed by the Belgium engineer Leo Baekeland. He introduced the product under the protected trade name Bakelite. The product was used in several electronic products.

69 This table is not comprehensive.

70 Note that BALTAN is the anagram of NatLab.

71 With tourist attraction we mean attraction for tourist as well as for inhabitants.

72 In the 1930’s Philips planned to start TV production in Strijp-S, but it changed its focus and as a consequence it was decided to set up broad casting facilities in Hilversum. Hilversum is now also the location of an already existing Institute Beeld en Geluid.

73 Area 51 started in an old hangar in Meerhoven in 2002.

74 Room 306 used to be the room number where Dick Raaijmaakers used to work.