

# The Development of the Successful City in the Knowledge Economy: Toward the Dual Role of Consumer Hub and Knowledge Hub

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**Abstract** The purpose of this paper is to analyze the urbanization phenomenon and to present the characteristics of the city in the knowledge era. In the knowledge era, we argue that a successful city assumes the role of: (a) a knowledge hub, because large cities host high-tech industries, corporate headquarters of multinational companies, higher education and research institutions, and knowledge-intensive business services, including consulting, financial services and insurance, legal services, and accounting and (b) a consumer hub, which generates consumption, especially of an intangible nature such as services, culture, entertainment, and products which spread culture and knowledge (e.g., fashion and design products). This paper aims to provide a conceptual framework to understand the key factors (education systems and research, development of institutions providing services, logistic infrastructures, and so on) useful to the development and success of the city; in this framework, we distinguish between built-in assets and dictated policies. We examine one specific Italian city (Genoa) that has evolved as a knowledge and consumer hub.

**Keywords** City · Urbanization phenomena · Knowledge economy · Knowledge management · Dictated policies

## Introduction

The evolution of cities is becoming an actual topic in itself, due to the intense increase in the recorded urbanization rates both in advanced and in developing countries (Madon and Sahay 2001; Clark 2003b; Glaeser and Gottlieb 2006; Turok 2008). Recent analyses carried out by leading consulting companies confirm the trend toward an urban world, as cities' contributions to the economy and global society—

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in terms of wealth creation and population concentration—has grown in the last 30 years (McKinsey Global Institute 2011; PWC 2005).

The relevance of the phenomenon has therefore attracted the attention of researchers (mainly regional and industrial economists and urban planners) and practitioners, as well as public administrators, who have attempted not only to interpret explanatory factors and the path leading up to this phenomenon, but also to perceive/identify the social and economic effects of urban concentrations.

This paper aims to analyze the urbanization phenomenon in the knowledge economy. The knowledge economy is connected to a greater reliance on intangible assets such as intellectual capabilities rather than on physical resources (Levitt 1976; Gershuny and Miles 1983). This change is reflected in the increasing share of intangible capital in the gross domestic product (Abramovitz and David 1996).

The literature on knowledge economies focuses heavily on knowledge production and concentrates on some important topics: the role of knowledge as a source of innovation (Bell 1973; Romer 1990), the new features of knowledge-based firms and of their productive processes (Kochan and Barley 1999), and knowledge management and the valorization of knowledge transfer within organizations and between organizations (Drucker 1993; Nonaka and Takeuchi 1995).

Furthermore, the knowledge economy also affects consumption patterns, because consumers are spending more and more on intangible goods or information goods and services—e.g., culture, entertainment, software, film, books, CDs, DVDs, etc. (that are knowledge-goods)—rather than only on tangible goods (Rifkin 2000; Powell and Snellman 2004). The percentage of intangible consumption tends to increase the wealthier people's income and/or levels of education.

Due to the growth in production and consumption of intangible assets, several studies and statistical data have documented the current transition taking place in advanced nations from an economy based on physical assets and on industry to one based on services and intangible assets (80 % of GDP in the USA, 70 % in Italy) (see OECD 2011; ISTAT 2012).

Moreover, the knowledge economy is also linked to the globalization of markets, driven—among other factors—by the diffusion of ICT in business management and social relations. In globalization and in the knowledge era, some cities become “global cities,” a place of intersection between the global and local in the sense that many cities worldwide have developed into transnational markets and have now more features in common with each other than with their regional or national contexts since global cities have similar structural characteristics (Sassen 1991).

In light of these considerations, the work aims to answer the following research questions:

1. Which are the developing and important cities in the current knowledge economy?
2. What are the permutations in role and function of the city in the knowledge era?
3. What are the key factors in the development of successful cities in the knowledge economy?

The present study is based on the following hypotheses.

A preliminary hypothesis is that the development of cities does not affect all urban centers but only those that have structural factors consistent with the features of the

knowledge economy (i.e., the important role of intellectual capital in business processes and of intangible consumption).

A second hypothesis is that city development is primarily driven by strategic choices and the localization of knowledge-based businesses. The competitiveness of these businesses—for which human factors present important competitive advantages—depends on the ability to attract “talents” that move to places where they can find a better quality of life.

This paper aims to provide a conceptual framework to illustrate the key factors (education system and research, development of institutions providing services, and so on) useful to the development and success of the city; in this framework, we distinguish built-in assets and dictated factors.

### **The Importance of the Urbanization Phenomenon in the Knowledge Economy**

As advanced transport and telecommunications infrastructure enabled economic, social, and cultural activities to take place regardless of spatial concentration, a lot of the literature predicted a progressive dissolution of cities. Castells argued that cities tend to vanish as electronic networks substitute face-to-face contact, in addition to the range of agglomeration phenomena (Madon and Sahay 2001; Castells 1989; Evers et al. 2010). However, scientific studies on urbanization have shown that the role of large cities in the knowledge economy tends to be reinforced as they become centers of governance in global networks (Sassen 1991, 1994; Hendriks 1999).

In fact, there is also a strong “urban shiftability”; the scenario of the top cities is actually changing with the inclusion of new cities, mainly located in the southern and southeastern countries of the world (McKinsey Global Institute 2011). In recent years, urban centers belonging to the newly industrialized countries of Asia and Latin America have become focal hubs in the global economy.

Moreover, in addition to the traditional dominance of certain cities (London, Monaco, Tokyo, New York, Paris, etc.) and new global metropolises (Bangalore, Bangkok, San Paulo), other minor cities are emerging as important as they link up to the global network and focus on specialized activities (such as biotechnologies, entertainment, robotics, etc.). They become successful cities, because their economic growth is robust, employment is plentiful, urban services are reasonable, and the quality of life is appealing and highly regarded. These cities attract specialized firms and new citizens, thus contributing positively to the economic and social growth of the country where they are located (Turok 2008; PWC 2005).

The empirical evidence—based on cases of important metropolitan areas—shows that successful cities consistently feature the following two dimensions of the knowledge economy:

- (a) The important role of knowledge in production
- (b) The important role of knowledge in consumption

These cities can be defined as knowledge cities. Carrillo (2004) coined the concept of knowledge city to identify metropolitan areas that—similar to a production system—are able to facilitate the creation of knowledge.

The model of the industrial city is, in fact, disappearing, because firms specifically locate operational and manufacturing activities where a comparative advantage of cost can be found; support activities, based on knowledge, are established in geographical spaces that facilitate knowledge-based production. In large cities in developed countries, manufacturing has declined drastically in the last few decades, and the service sector has grown as many manufacturing firms have closed or moved to lower-cost locations. The process of deindustrialization is often seen as part of the inevitable shift toward a knowledge-based economy, and urban economies come to rely on research and development, financial services, tourism, and the creative industries (Van Winden and Van den Berg 2004, 2010).

As a result, the top cities (London, Monaco, Tokyo, New York, Paris, etc.) or new global metropolises (Bangalore, Bangkok, San Paulo) host knowledge-based firms (Lever 2002), but successful cities also accommodate service producers and other operators that contribute to creating the broad demand for services concentrated in large metropolitan areas (Carrillo et al. 2010). In other words, the successful city—in the knowledge economy—is heading for a dual role, i.e., a center of knowledge creation (knowledge hub) and a center populated by consumers and companies/institutions that offer services and intangible goods (consumer hubs).

## The Dual Role of Successful Cities in the Knowledge Era

### The Knowledge Economy and the City's Role as a Knowledge Hub

Knowledge management studies have emphasized the city's role in the production of knowledge supporting the hypothesis that knowledge-based businesses are oriented to seek a location in large urban areas. In the knowledge economy, the most successful cities operate as knowledge hubs in a connected global system of information, trade, and financial flow. Knowledge hubs exist where there is an agglomeration of organizations, which show the importance of knowledge as both input and output factors and which become a node in a network of knowledge production and knowledge sharing (Hendriks 1999; Marmolejo 2007; Evers et al. 2010).

Studies carried out on corporate localization recognize that knowledge-based firms—high-tech companies, knowledge-intensive business services (KIBS), corporate headquarters of multinational companies, or service-based subsidiaries of large companies (e.g., R&D, design, marketing, etc.)—choose metropolitan areas (Gabe and Abel 2011; Genco 2007). Nascent and creative industries, such as digital media, publishing, and music companies, could also be included in this category.

Knowledge-based companies concentrate their localization, unlike the companies that provide services to “operational business services” (rental services, maintenance, call center services with low added value, etc.). The latter tend to spread out over an area where there is more extensive demand or more competitive cost conditions (Turok 2008). For example corporations adopt the hub and spoke model for their structural and spatial configuration:

- (a) Strategic business units, responsible for tactical coordination and/or focused on high-value activities (sources of competitive advantage), are located in the large metropolitan areas.
- (b) Operational units are dispersed where they can find lower cost or demand.

The appeal of large metropolitan areas for knowledge-based companies is linked to agglomeration economies. Urban agglomeration economies differ from marshallian economies in industrial districts. Urban agglomeration economies are “knowledge agglomerations”: they produce synergies due to the closed transmission of knowledge between: (1) knowledge-intensive firms; (2) areas such as higher education, research, and development (universities); (3) complementary knowledge-intensive business services; financial intermediation, national and international public institutions, and telecommunication networks that are placed in large metropolitan areas.

An essential tool for the knowledge hub is the presence of research centers and of training centers, because of the recognized importance of the human factor; the role of universities is crucial owing to the fact that it fulfills a dual function of research and training and triggers a positive impact on the territory. Another essential factor is urban mobility (needed to connect major points of production services downtown, new office buildings, residential areas, and so on) and the logistic accessibility to/from other international hubs; the presence of airports with many connections, high-speed rail tracks, and a developed highway infrastructure network are important.

In general, the bigger the city, the better the access firms may have to a deep labor pool, a large customer base, choice of shared services and suppliers, and good external connections (Turok 2008).

Urban development depends on the spatial proximity between knowledge-based businesses and advanced services present in the central business districts of large metropolitan areas, enabling the transfer of uncodified knowledge, which is a fundamental part of the core competencies of these companies. Proximity facilitates face-to-face contact, high-level communication, and sharing of new ideas (Isaksen 2004). Despite the increasing availability of more advanced communication tools that have helped to diminish the importance of physical distance between economies (Krugman 1998), direct contact between human beings is still a primary source of knowledge transmission. Electronic networks do not depress the value of co-localization of urban enterprises, since a significant part of the competitive advantage and the transmission of knowledge is anchored to transfer tacit models facilitated by proximity.

Therefore, the development of large cities is largely based on the ability to attract knowledge-based businesses. Urban governance should define a set of structural conditions and infrastructure that are able to create an appropriate framework for the development of these types of businesses.

#### City as a Consumer Hub

People prefer to live in large cities. Certain cities offer unique advantages to consumers. The choice to live in a large city rather than a small town is rooted in the perceived

higher quality of life, despite the fact that the cost of urban living is higher. Cities can be desirable by virtue of consumption amenities.

Metropolitan areas are defined as consumer cities (Glaeser and Gottlieb 2006) or entertainment machines (Clark 2003a, b); the coexistence of different amenities and the reduction of transportation costs due to proximity lead to a considerable increase in social life and a perceived improvement in quality of life.

The higher density of museums, restaurants, cinemas, theaters, auditoriums, and sports facilities provides the opportunity for higher intangible consumption. These facilities such as major entertainment venues, convention centers, museums, opera houses, art galleries, or specialized centers for education and health can be enjoyed all the more in large cities since they are not present elsewhere (Turok 2008); they are characterized by high fixed costs, so they can only be sustainable in the presence of a large mass of demand that can be found in large metropolitan areas. Cities also offer greater choices of restaurants, hotels, shopping centers, and sporting facilities which draw people there to visit, live, and work.

In service management, it is well known that services must be located close to the demand, and as the metropolitan areas are characterized by a large demand, the two factors are obviously highly compatible. In addition, inhabitants of large metropolitan areas show a higher propensity to consume cultural and high-value services and to appreciate amenities than inhabitants of small cities as people in cities have been revealed as having a broadly higher level of culture and disposable income (Glaeser and Gottlieb 2006; Turok 2008; Jones and Hiller 2002).

But consumers in large cities are not only inhabitants; cities attract other types of consumers. Consumers in the city are made up of: inhabitants, commuters, be it for work or study purposes, tourists, and users of advanced consumer services (e.g., public administration, leisure, health services), in addition to businessmen that have large financial resources and spend on high-value services (luxury hotels, luxury catering, purchases of luxury fashion products, consumption of cultural activities).

As in the knowledge hub, the vitality of the city is driven by the location choices of firms producing high-value consumer services and managing amenities and cultural facilities.

The development of consumer hubs also depends on the development of large multinationals in the fields of retailing, leisure entertainment, and the hotel trade. These companies, working on a global scale and with a standardization perspective, tend to look for (1) large catchment areas and (2) similar users (business people, people attending conventions, metropolitan consumers, etc.) that live in cities, while in small towns, the population is intrinsically linked to where people were born and brought up (their native environment).

The downtown becomes a place of consumption, increasingly populated by service companies and people who prefer to “live in the city but work in the suburbs” (Glaeser and Gottlieb 2006). The downtown of large cities takes on a standard conformation, accommodating multinational malls or megastores that replicate their servuction in the main cities; the city center is surrounded by suburbs and new suburbia that host, for example, KIBS and residences for knowledge workers (Warnaby and Davies 1997; McKee and McKee 2004; Benninson et al. 2007; Padilla and Eastlick 2008; Turok 2008).

## Why Are Knowledge Cities Knowledge Hubs and Consumer Hubs?

The roles of consumer hub and knowledge hub are interlaced. London, New York, Tokyo, Singapore, etc.—that have always been centers of traditional business (ports, commercial, and/or industrial activities)—are becoming centers for KIBS, multinational companies' headquarters, financial services, universities, research centers, and administrative headquarters. The “business function” is connected to the “consumption function,” since they become consumer cities and entertainment machines that attract several categories of people. The dual role of consumer and knowledge hub could be expressed through a metaphor: the city can be depicted as a knowledge harbor (Edvinsson 2006), through which “talents and knowledge” flow.

Talents are represented by knowledge workers and form the creative class (Florida 2002). Knowledge workers, employed in knowledge-based businesses, live where they can find a highly regarded quality of life. International studies, carried out on location choices of high-tech companies (Malecky and Bradbury 1992), showed that the presence of amenities and quality of life are a very critical factor.

Florida (2002) argues that the development of a region or of a city is driven by the location choices of the creative class; the creative class prefers “different places, tolerant and open to new ideas,” according to the model of the three Ts (technology–talents–tolerance). The amenities activate a virtuous circle, as “talent attracts talents, shaping a density of clusters” (Edvinsson 2006).

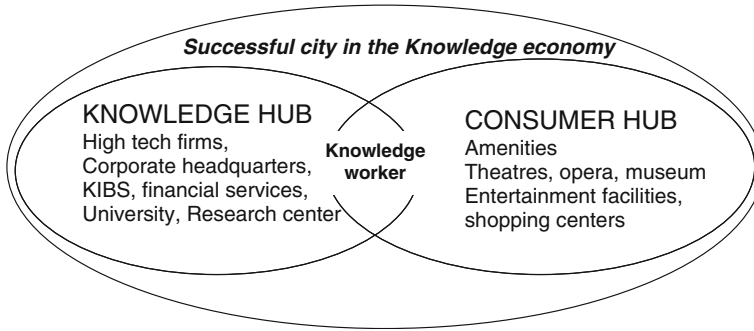
Yigitcanlar et al.'s (2007) recent study elaborates the question of attracting and retaining knowledge and creative workers in the knowledge economy by addressing the needs and desires of knowledge workers in the contemporary urban context. The creative class expresses a specific demand for the city. The knowledge and creative worker look for a city that stimulates creativity and inventiveness, and ensures a very high quality of life due to the advanced services and amenities located in the metropolitan area.

The city concept is thus becoming more and more a strategic tool in the global competition of knowledge or talent war (Edvinsson 2006).

The double role of consumer and knowledge hub creates virtuous circles:

- The role of hub of knowledge stimulates the growth of intangible consumption in the metropolitan area and the role of the consumer hub: knowledge workers, who represent the key factor of the modern economy, are also consumers of intangible goods and services because of their higher cultural and economic level than those operating in manufacturing and operational services (Carrillo 2004; Yigitcanlar et al. 2007).
- The presence of consumer service enterprises in the metropolitan area enlarges the perceived quality of life in the city, making it more attractive for knowledge workers and consequently for the most competitive knowledge-based firms.

Cities with appealing amenities, life style, and good logistic connections may also attract and retain people with different aptitude, such as entrepreneurs. Figure 1 shows the dual role played by the “city of knowledge,” identifying the actors in the creation of the hub and the nodal role of knowledge workers who are both actors (producing knowledge) and users (spending on consumption knowledge).



**Fig. 1** Cities in the knowledge economy

In order to attract knowledge workers, urban governance should be able to reinforce the city in its dual role: the role of knowledge hub and the role of consumer hub. Take the case of the city of Pittsburgh. Pittsburgh was the Steel City, and in recent years, it has been able to convert its economy to a service and knowledge economy; Pittsburgh is the seat of a prestigious university (Carnegie Mellon University) in the field of information systems. Pittsburgh's DNA has changed from an industrial vocation to a knowledge vocation. The problem is that currently, the city is not appealing enough in terms of the quality of life it offers, so there is a deep and strong hemorrhage of talents to other destinations, more attractive due to their urban amenities. On the contrary, following the economic slowdown due to the crisis in industry and ports, several Italian cities have enhanced solely the role of the consumer hub. These cities, defined by Becchi (2007) as city–hypermarkets, have been able to offer value for money for the inhabitants which is, however, unbalanced as it is not backed up by “quality” amenities, so they have progressively lost inhabitants and knowledge workers.

### **The Conditions for the Development of Cities in the Knowledge Economy: Built-In Assets and Dictated Policies**

The knowledge–management literature defines the factors that lead to the development of cities in the knowledge era, identifying strategic factors (for example, political support, urban planning, financial incentives, etc.) and operational factors (the presence of wireless networks, universities, PR of the city) (Carrillo 2004; PWC 2005; Lehmann and Fryd 2008; Ergazakis et al. 2009; Yigitcanlar et al. 2008).

In light of these considerations, we argue that the development of a city, in the knowledge era, is due to a mix of factors that could be classified in:

- (a) Built-in assets, which regard the presence of knowledge activities and amenities in the “DNA” of the cities
- (b) Dictated policies aimed at promoting the city as a knowledge city

If the city is a knowledge city due to built-in factors, the urban development is a result of spontaneous localization of companies and actors who produce knowledge; in this case, the presence of universities, research centers, large enterprises, or high-tech districts stimulate the agglomeration process and the urban development.



Therefore, urban development is mainly anchored to the “knowledge atmosphere” that attracts and retains business and knowledge workers; amenities and cultural and entertainment operators help the creation of a good quality of life.

In the case of dictated policies, the city becomes a knowledge and consumer hub, because of knowledge management orientation in the urban governance. In management theory, Knowledge-Based Urban Development is a tool for planning, promoting, and managing the development of the knowledge city (Yigitcanlar et al. 2008).

Drawing from the vast literature on urban competitiveness and from successful cases of metropolitan areas in the knowledge era, several cities have been able to become new centers for knowledge-based activities and for amenities and consumer services: Barcelona, Stockholm, Turin, Milan, Oslo, Madrid, and so on (Trono and Zerbi 2003; Carrillo 2004; PWC 2005; Edvinsson 2006; Wong et al. 2006; Yigitcanlar et al. 2008; Ergazakis et al. 2006, 2009).

London—which has always been a knowledge city and in the top of global urban centers—has recently adopted dictated policies aimed to enhance its role as an advanced services center and a destination for tourism and cultural visits, making London “the UK’s only global city.”

Barcelona, for example, hosts eight universities, many R&D and technology centers, and a scientific park network specialized in the technology and engineering fields. Barcelona has adopted a Strategic Metropolitan Business Plan in which the concept of knowledge city is a dominant characteristic: moreover, the city authority coined the brand “Barcelona Knowledge City.”


The city of Stockholm is conducting a strategy directed to develop Stockholm as a knowledge city. Significant amount of the overall city budget supports this strategy. In particular, strategic actions are aimed to develop high-tech businesses, attract highly educated and skilled work force, and provide high-quality everyday life.

Turin is used to be known as an industrial town (the Italian capital of automobile); since 2000, the first strategic plan of the city, called “Torino Internazionale,” promoted a new city brand based on knowledge and creativeness. The direction was confirmed in the second edition of the plan where the vision of the future of the metropolitan area was declared a “knowledge society.” The Winter Olympic Games in 2006 gave the opportunity to present the new image of Turin (Vanolo 2008).

On the basis of these cases, the following figure shows the conceptual scheme of classification of these factors (Fig. 2). The scheme has normative valence, especially useful for those cities that do not belong to the high-ranking metropolis.

Dictated policies and built-in assets are both necessary. In fact, successful cities should have a core infrastructure, such as—among other factors—the educational system, amenities (museums, theaters, cinemas, cultural events) for the quality of life, transport systems, the entrepreneurship vocation of the area, and so on.

On the other hand, the development of cities—especially those who do not belong to the most important cities in the international urban ranking—requires a coherent vision of the necessary interventions and dictated policies for knowledge.

	Built-in assets and factors	Dictated policies
<i>knowledge-hub</i>  <i>consumer-hub</i>	Presence of knowledge clusters, knowledge-based firms ( <i>see Barcelona</i> ); Specialization in h-tech and creative industries, KIBS ( <i>see Oslo</i> ); Academic excellence (performance) and university-business link ( <i>see Stockholm</i> )	Knowledge-based City branding ( <i>see Barcelona, London</i> ) Planning towards the creation of centers of knowledge (Park; High Tech district, ecc.)
	Location of the city Logistics infrastructure (es. London)	Urban Governance: Strategic Plan, city manager, City branding etc.. ( <i>see Barcelona</i> )
	Quality of the city: education system at various levels, and public health services, transport and logistics ( <i>see Berlin</i> )  Size and multi-ethnic nature of the city ( <i>see Madrid</i> ) Museums and cultural points of aggregation Large producers of consumer services (hotels, restaurant, leisure) Cultural Events ( <i>see Turin</i> )	Promotion of cultural and international events ( <i>see Turin</i> )  Digital services for inhabitants and tourists ( <i>see Stockholm</i> )  Urban policies for new edges for knowledge workers ( <i>see Sao Paulo</i> )

**Fig. 2** The factors of knowledge creation of the city

Some cities promote dictated policies: Barcelona, Turin, Oslo, Gothenburg, and Amsterdam (PWC 2005). Other cities—belonging to the international rankings for the spontaneous existence of built-in factors—have adopted dictated policies to foster urban transformation to a “knowledge city.” These policies aim to enhance competitiveness of these cities and of the national system in which they are located, as well as to realize a harmonious development with the other neighboring towns.

It is not a coincidence that London—which is ranked higher than all the EU cities as a knowledge city—has recently implemented dictated policies, making the city government's activities more coherent. The city, which produces/works toward precise dictated policies to enhance its role as a center of advanced services and a destination for tourism/cultural consumption, is committed to “ensuring London sustains its success as UK's only global city” (Turok 2008). In the contemporary economy, in fact, cities are in competition with each other in attracting investments, business, inhabitants, and tourists and in improving citizens' satisfaction. In order to deal with this competition, cities use different tools: strategic planning, marketing strategies, city branding, etc. In particular, having dictated policies brings the following value to cities:

- Increased competitiveness, resulting in a positive impact on investment, jobs, inhabitants, visitors, and events
- Higher returns on investment in real estate, infrastructure, and events
- Coherent city development, as the physical, social, economic, and cultural aspects combine to deliver the brand promise

- Pride in the city as the inhabitants, businesses, and institutions experience a new sense of purpose and direction

### The Case of Genoa (Italian City)

Genoa is an Italian urban area of medium size, with an original polycentric structure. It is located in the northwest of Italy. The metropolitan area of Genoa is the result of the aggregation of many subcenters, such as municipalities, characterized by a different socio-economic and functional identity (Fig. 3).

Since the 1970s, Genoa has been involved in an intense process of economic urban slowdown; many companies (heavy industries and state-owned companies) have closed down, and the port has become more and more obsolete (Arvati 2010). The critical factors of the port of Genoa have been two: the inadequacy of its logistic system (space, layout, intermodal connections) and the strength of the corporatist organization of work that paralyzed productivity and efficiency.

The result was dramatic unemployment. Following the structural crisis, the city has lost a quarter of its population (from 800,000 to 600,000 in three decades), mainly consisting of young people who have found employment in neighboring regions. Despite the worrying demographic data and economic decline linked to the port and industrial crisis, local authorities understood the necessity to give the city a new identity.

The city of Genoa in the last decade has tried to exploit with a view to converting itself into a renaissance city and, in particular, into a knowledge and cultural city. Starting in 1992, Genoa has undertaken the transformation of its port, mainly to enable Genoa to host various international events more effectively. The evolution of Genoa from an industrial port to a city economy centered on tourism, services, and technology saw the internationally renowned architect Renzo Piano employed by the city to construct a new image. Piano's plan saw Genoa reimagined as an “urban laboratory” proud of its past but open to innovation.

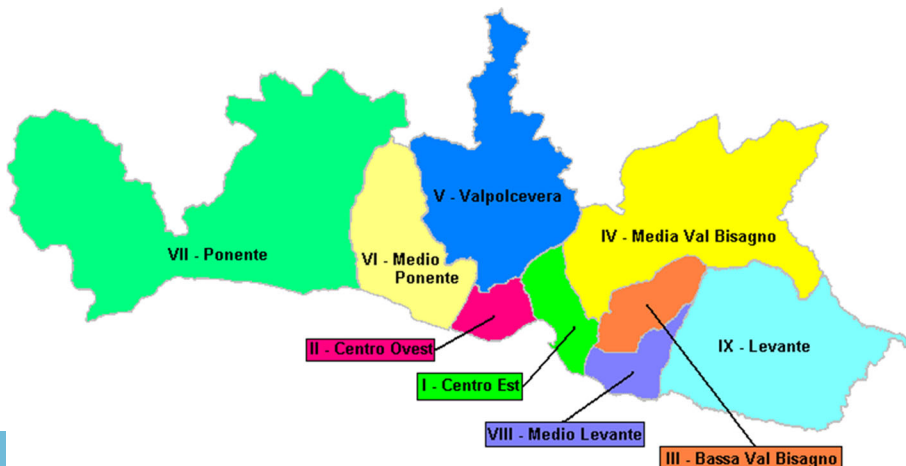


Fig. 3 The metropolitan area of Genoa: the submunicipalities

The project has made it possible to recover the city's old port for leisure and tourism activities. This process was subsequently expanded to encompass the historic center, under the Strategic Plan for the Historic Centre. The physical transformation of the city was complemented by cultural activities, including the upgrading of existing museums and the opening of new museums.

As in other European urban cases, the process of conversion of the city toward a knowledge economy is the result of dictated policies for promotion of heterogeneous urban resources (industrial, touristic, cultural, etc.).

As outlined by the Strategic Development Plan of Genoa, the dictated urban policies tend to promote the multiple vocations of Genoa. Since the 1990s, the urban model has been based on the ability to attract headquarters of multinational strategic functions (think Siemens, Ericsson, among others) and flows of visitors and tourists, moving toward a community where knowledge becomes the backbone of cultural and economic growth.

For these reasons, the Genoa Authority is now formulating dictated policies aimed at making its image more upmarket and raising the quality of life in Genoa, in order to attract not only new city users, such as tourists, conventioners, and visitors, but also new knowledge workers; these policies are able to enhance the competitiveness of existing businesses and also appeal to new knowledge-based businesses.

#### Evolution of Genoa Toward Becoming a Knowledge City: the Built-In Assets and Factors

The built-in factors of Genoa's transformation are the result primarily of the processes of industrial restructuring. Steel and engineering industries and shipyards have played an important role in the economy of Genoa and contributed significantly to the economic and social growth of the city (Genco 2007).

Since 1990 (the 1990s), the industrial core of Genoa has transformed itself into an industrial electronics and process automation industry and, more recently, into electronic communications, information technology, biomedical, software, and information technology and the Internet.

In the metropolitan area of Genoa, knowledge-based activities (i.e., R&D, design, automation) of large multinational companies (Siemens, ABB, Ericsson) are predominant. Genoa hosts an important high-tech cluster, with a strong specialization in the electronics industry (hardware and software), represented by 100 medium-sized firms that employ 11,743 people. They employ mostly knowledge workers, because 80 % of total employees are graduates. Forty-four companies have an incidence of R&D expenditure on sales of more than 5 %, above the national average. This cluster has been reinforced by industrial policies (e.g., the identification of the District of Integrated Intelligent Systems and the establishment of the Association Dixet).

In this context, the marginal role of the university should be noted—the role that in other contexts (think of Pisa) has been the driving force behind the creation of a knowledge city—although now the level of integration with the local economy is improving thanks to policies whereby research results are capitalized on. Only recently, the University of Genoa has promoted some Centres of Excellence and projects aimed at putting research results to practical use.

With regard to its role as consumer hub, Genoa, despite its long history, has always been perceived as only an industrial and port city and, moreover, as experiencing a phase of decline: the image of Genoa was modest and only related to trade fairs (in particular the International Boat Show in Genoa). However, Genoa has attempted to exploit the city's vocation for consumption and entertainment, in order to attract a large number of visitors and to raise the perception of quality of life.

This renaissance process was not spontaneous, but the result of dictated policies linked to urban renewal. The increasing demands for cultural services and urban development policies have triggered the recent development of creative industries (Creative Cities 2010). The creative industry in the Municipality of Genoa accounts for 5.7 % of urban businesses and, approximately, 5.4 % of employees. New companies, specialized in leisure and entertainment, are located in Genoa (105 Stadium for entertainment, Costa Edutainment for edutainment, new shopping centers).

### A Dictated Policy Framework for the Development of the City as a City of Knowledge

As shown, the city of Genoa pursues a development policy which fosters the built-in assets for its role as knowledge hub and dictated policies for the promotion of its consumer hub.

Due to the complexity of urban governance framework, some topics should be clarified, such as:

- (a) The governance of Genoa's transformation
- (b) The creation of new knowledge centers
- (c) The strengthening of entertainment providers

#### 1. The governance of Genoa as a knowledge city

Genoa does not have a city manager but is currently embarking on a Strategic Plan developed by civil servants (the local administration/town council) with the collaboration of significant private stakeholders. Planning is viewed as an important tool in attaining coherence of actions and objectives within the broad range of topics. The Municipal Plan defines five main programs prompted by the consideration of case studies of other paradigmatic and successful EU cities. These programs are:

- (a) A “new government approach” (public participation in decisions)
- (b) The “city where life is good” (security, legacy; public policies for housing, education, and sport; social policies)
- (c) The “creative city” (development of innovation, university, culture; reasonable employment)
- (d) An “accessible city” (transport and logistic connections inside Genoa and to/from Genoa)
- (e) A “sustainable city”(an eco-city) (green policies, urban policies, public transport) (Genoa City 2011).

A key role in the development of the city is played by urban planning policies that have transformed the city's features over time. Urban Lab is a laboratory of urban

design—planned and coordinated by Renzo Piano—who studies city transformation and works with other stakeholders and the Municipality in the preparation of the PUC (Municipal Urban Plan).

The Municipality of Genoa has been able to participate in international networks and EU partnerships and to benefit from EU funds (Table 1). Table 1 represents the most significant international networks and projects in which Genoa is involved (City of Genoa, 2011).

2. The dictated policies aimed at strengthening the knowledge hub: the new top-down projects

The local authorities have defined specific policies to enhance the production of knowledge, in particular through the creation of new technology and research centers. The most interesting projects consist of:

- (a) The Italian Institute of Technology, IIT
- (b) The Technology Village Project (Erzelli)

IIT was created with the objective of promoting Italy's technological development and higher education in science and technology. The research is carried out in highly innovative scientific fields, which represent the most advanced frontiers in modern technology; their contents are widely applicable to multiple areas, from medicine to industry, from computer science to robotics, to life sciences and nanobiotechnology.

IIT is a private foundation, created with special government legislation. The IIT–Central Research Lab (CRL) is located in Genoa and is linked to the other nine research centers located throughout Italy. The CRL is designed to be one of the largest multidisciplinary research laboratories in the world. IIT currently attracts about 750 researchers (a figure which will reach 1,000 in 2012), mainly non-Genovese, whose average age is around 34 years (IIT 2011).

IIT creates a class of knowledge worker; 48 % comes other countries. Relations between the IIT and the departments of the University of Genoa are intense. From the

**Table 1** Major international projects and networks for the promotion of the city

International general networks	International thematic networks	Med Partenariat
•Eurocities	•REVES (Reseau Européen des Villes et Regions de l'Economie Social).	•“Sommet des Villes de la Méditerranée” (2000): Charte d'Alliance” with Marseille, Lyon e Barcelona
•Creative cities	•Forum for urban security	•“Med’Act–fase 2”, with Marsiglia, Sidi Abdellah (Algeria) e di Amioun (Libano)
•Smart cities	• <i>Si tous les ports du monde</i>	•“Archimedes,” Venice (head), Bordeaux, Istanbul, Sofia, Oran (Alger), Beirut, El-Mina (Liban)
•Genoa—digital city	•AICE (Associazione Internazionale Città Educative)	•Cat-Med (Change Mediterranean Metropolises Around Time?)

Source: City of Genoa, 2011



point of view of the transfer of research activities, spin-off processes are constantly creating new ventures.

The experience is still too recent to be evaluated, but it leads to a reassessment of the role of Genoa in the national and international arena.

The Erzelli project is still under development and involves the construction of the “Leonardo Technological Village,” a “science citadel” that will begin to host the first high-tech companies toward the end of 2011.

This is an intervention, unlike any other Italian technological village or park, founded with the aid of project financing. Erzelli is sponsored by the Faculty of Engineering, the CNR laboratories, and other research centers, local firms, and subsidiaries of multinational high-tech firms.

It is interesting to note that policies enhancing the role of Genoa as a knowledge hub have included the construction of a technology park–district connected to the new industrial DNA of the city.

### 3. The policy for the promotion of Genoa as a consumer hub

In the 1990s, Genoa realized the transition from industrial city to a knowledge and cultural city. The main urban policy was the reappraisal of the old port and its conversion into an attractive waterfront with an appealing range of services. The traditional location for maritime trade and production has been turned into a prime location for entertainment and leisure. The old port was chosen as the site for a large aquarium. In Genoa, Costa Edutainment SpA—which manages some public and private facilities dedicated to recreational, cultural, teaching, and scientific topics in Italy—manages Acquario, Bigo and Bolla (a project carried out by Renzo Piano). The Aquarium of Genoa is the largest aquarium in Italy and the second largest in Europe. Built for Genoa Expo '92, the Aquarium of Genoa is an educational, scientific, and cultural center. It welcomes over 1.2 million visitors a year.

The new image of Genoa is also linked to a process of “urban renewal” of the Old Town that now hosts a new class of inhabitants (formed by students, young couples, and singles) and recreational and entertainment clusters (pubs, theaters, restaurants, disco bars, etc.). It has sparked off a new social scene or *movida*. During this period, Genoa has been able to revitalize its image thanks to specific events.

With its waterfront renovation, Genoa has hosted international events that have promoted a new image of the city and helped to raise more public funding, useful for urban renovation.

In 1992, Colombiadi—the celebration marking 500 years since Columbus's discovery of America—was the first big event that encouraged the new image building. In 2001, Genoa hosted the G8 political forum. In 2004, Genoa became the European Culture Capital.

Since 2003, Genoa has hosted among other events the “Festival della Scienza,” a benchmark for science communication thus creating a meeting point for researchers, people keen on science, schools, and families. It is the main event on an international scale which focuses on science dissemination, an appointment for everybody giving them access to lectures, exhibits, workshops, special events, and talks about science with an innovative and communicative approach, with interactive events ([www.festivallescienza.it](http://www.festivallescienza.it)). The Festival was conceived as an international

event. Each year, the Festival proposes events inspired by the most contemporary and exciting subjects.

The Festival launches exhibitions dedicated to the nexus between Art and Science, with a particular focus on the most cutting edge advanced research and on researchers from emerging countries. Moreover, Palazzo Ducale—the old government palace for the Ancient Republic of Genoa—hosts cultural and art exhibitions, and Arena del Mare, in the Old Port, has become the main arena for musical events, festivals, and meeting congresses.

The outcome is that Genoa's image is growing, and Genoa is now able to attract talents and knowledge workers that previously would not have considered settling in Genoa. The recent policy for attracting new high-tech firms also contributes to promoting the quality of life in Genoa for new workers and entrepreneurs. At the conclusion of the analysis of the case of Genoa, Fig. 3 shows built-in assets and dictated policies aimed at promoting the city of Genoa (Fig. 4).

The built-in factors are linked to the conversion process from heavy industry to advanced technological activities; the development of new amenities—that enhance quality of life and the role of the consumer hub—was induced by the processes of the new urban regeneration, urban planning, and events management. Therefore, the dictated policy has been crucial.

Many issues still have to be addressed, problems that slow down urban development and may irreparably compromise the urban economy and the effectiveness of promotion policies. Transport and logistics limitations hinder Genoa's appeal to new and existing firms. Proposed urban projects (“Terzo Valico” the project for a high-speed rail track and “Ronda” the project for a motorway) have come up against major obstacles, both financial and linked to the proposed stakeholder management. A further problem concerns the image of the city that has not yet been established as a highly regarded place to live and work.


	Implicit factors	Explicit policies
<p><i>knowledge-hub</i></p> 	<ul style="list-style-type: none"> <li>• Evolution of core industrial activities: new high-tech districts; creative industries</li> <li>• University and cooperation projects</li> </ul>	<ul style="list-style-type: none"> <li>• Technology Village – Leonardo Erzelli</li> <li>• Italian Institute of Technology</li> </ul>
	<ul style="list-style-type: none"> <li>• Favorable geographical position of the city and excellent climate</li> <li>• <b>FAILURE AND CRITICAL: <u>transport</u></b></li> </ul>	<ul style="list-style-type: none"> <li>• Governance: Strategic Planning and knowledge-based objectives</li> <li>• City Branding</li> <li>• Urban Lab (urban policy)</li> <li>• Coordination and participation in cultural and branding projects in collaboration with other EU cities</li> </ul>
	<ul style="list-style-type: none"> <li>• Presence of museums and cultural / leisure points of aggregation</li> <li>• Presence of consumer services producers (hotels, restaurants)</li> <li>• Corporate entertainment: Costa edutainment - Vaillant Palace • s</li> </ul>	<ul style="list-style-type: none"> <li>• Old Port - a location for cultural events and facilities</li> <li>• Events: from GeNova 2004 to Festival della Scienza; exhibitions, special events</li> <li>• Digital services</li> <li>• Planning policies for the Old Town</li> </ul>
<p><i>consumer-hub</i></p>		

Fig. 4 Built-in assets and dictated policies of development in Genoa



## Conclusions

The considerations proposed in this paper have been prompted by the assumption that only several cities grow in the knowledge era (in terms of population, income, product, quality of life, etc.). The successful cities become the location of companies that produce knowledge and poles of production and consumption of intangible goods. The consolidation of these cities is determined by the position of knowledge-based enterprises. The city also accommodates the provider of facilities offering immaterial consumption. The knowledge workers represent the link between these two roles assumed by the successful cities.

So, the city has to create the conditions to fulfill the typical requirements of the urban economy within the knowledge economy: to be a hub of knowledge-based enterprises and institutions (e.g., high-tech enterprises, headquarters, and high-value services of big corporations, creative businesses, universities, research centers, etc.) and, at the same time, a hub for knowledge production and consumption.

In the case of cities that do not belong to the higher ranks, we have proposed a scheme that highlights the built-in factors and the dictated policies in the knowledge economy. It should be noted that dictated policies for the development of the knowledge city are essential to enhance the appeal to knowledge-based enterprises and quality of life for inhabitants and knowledge workers. It is no coincidence, in fact, that the need to adopt dictated policies for the development of the city was felt even by internationally ranked cities such as London and Monaco.

The benefits of the dictated policies are known. Dictated policies, in fact, form a coherent framework for decisions and foster the convergence of internal resources toward the same goals. Moreover, the formulation of dictated policies creates greater legitimacy among stakeholders of the city, since it facilitates a disclosure of information. Finally, it stimulates the quantification of urban strategy objectives and targets and increases the level of strategic control in the implementation phase.

The importance of the formulation process should also be underlined. The formulation of dictated policies facilitates the learning process, promoting the collection and interpretation of external key environmental variables and the allocation of resources. Facilitating dialog between policy makers and enterprises, the adoption of more formalized procedures creates an optimal context for strategic decisions.

This work presents some limitations which may be ironed out in future studies. First, this study is based on a single case study. Secondly, the case of Genoa is referred to a city which has only recently started a process of transformation toward the model of “knowledge city,” so it is difficult to assess whether the case is successful or not.

But some insights are of practical relevance to practitioners and public authorities as the results allow to identify the important role of dictated policies in development of a knowledge city. The dictated policies should be consistent with built-in factors; many cities, in fact, have adopted strategic plans in which the concept of “knowledge city” is a dominant characteristic, even if the urban image does not correspond to the real situation.

This is the case of Genoa; despite a progressive and formal emancipation from the industrial and port nature of the city, Genoa continues to be considered by residents and by local firms as an “old-age city,” a “traditional city,” a “poor city.” What is new

in Genoa is the growing interest in promoting many dimensions of the typology of knowledge city (e.g., cultural image, high-tech activities, strategic plan). These policies are mainly appreciated by tourists and visitors, but they are not perceived by the residents. In the case of Genoa, little attention has been given to social cohesion between immigrants and residents and to attractiveness of the city in the eyes of young people, aspects of the human capital dimension of the creativity economy depicted by Florida. To put it briefly, Genoa should invest more deeply in the formation and endorsement of a class of knowledge workers that is the central topic of the knowledge economy.

In terms of future research, the first challenge is to identify and classify best practices used in new successful knowledge cities and in cities to be developed in knowledge base ways; another challenge is to create a framework which will support local authorities and city managers for the development of a knowledge city.

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