Knowledge-based development of cities: a myth or reality?

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Abstract: Urban development in the first decade of the 21st century has faced many challenges ranging from rapid to shrinking urbanisation, from emerging knowledge economy to global division of labour and from globalisation to climate change. Along with these challenges new concepts, such as essentialism, environmentalism and dematerialism, are emerged and started to influence the way urban development plans are prepared and visions for the development of cities are made. Beyond this, scholars, practitioners and decision-makers have also started to discuss the need for an new urban planning and development approach in order to achieve a development that is sustainable and knowledge-based. Limited successful examples of alternative planning and development approaches showcased potentials of moving towards a new plan-making mindset in the era of knowledge economy. This paper presents a new urban planning and development approach that is taking application ground in many parts of the globe, namely knowledge-based urban development. After providing the theoretical foundation and conceptual framework of knowledge-based urban development the paper discusses whether knowledge-based development of cities is a myth or a reality.

Keywords: Knowledge-based development, knowledge-based urban development, knowledge city, knowledge-based activities, urban and regional planning

Introduction
The impacts of various technologic and economic developments on our cities and societies, particularly in large metropolitan regions, have been among the top socio-economic and urban development discussion themes (Graham and Marvin, 1996; Castells, 2000). Last several decades have witnessed major changes that significantly impacted the patterns of human activity and urban living. Globalisation, knowledge economy, climate change, rising network society, transportation and information and communication technologies, global division of labour force, rapid urbanisation and shrinking cities are among the key issues that are heavily debated and researched. Particularly, factor of change and the need for new spatial arrangements for cities to cope with the change and adjustment of city structures to be more compatible with the knowledge economy are the two crucial issues have been heavily occupying urban scholars, decision-makers and practitioners’ agendas. These two important issues surfaced the need for developing and adopting new planning mechanisms to foster sustainable development of cities and also make them resilient to the effects of change (Velibeyoglu and Yigitcanlar, 2010).

The following three interrelated and important question are still waiting to be addressed in order to successfully manage the move from traditional urban development to a new development form: (1) What are the global changes that have prominent effects towards spatial development order in the 21st century? (2) Do the current city structures able to accommodate the requirements of the era of knowledge economy? (3) To what extent the present urban planning and policies and practices are able to function in the era of knowledge economy?

Beyond these questions, recent years have also brought new concepts and paradigms into our lives and started to effect urbanisation to ease the impacts of above mentioned change. Carillo (2004) has categorised these new concepts and paradigms into four groups namely: dematerialisation (i.e. a lesser volume of material inputs and outputs); environmentalism (i.e. a greater concern with sustainability); an experience upgrade (i.e. the capacity to attain the same results without the conventional means of space and time, and, essentialism (i.e. the understanding and pursuit of ever more fundamental values).

Knight (1995, 2008) argued that city development has been viewed primarily from the perspective of city planning with a focus on their physical form and built environment (e.g. on land use zoning, building and infrastructure). Very little consideration has been given on their knowledge resources or to the cultures that produce knowledge. Previous emphasis has been made on attracting tangible forms of wealth (i.e. labour, land and capital) and knowledge as an intangible asset is often ignored. With the advent of the global knowledge society, there is a
greater attention that needs to be given to the cities structure and making that knowledge as an input to local development.

The types of environment which need to be developed for knowledge-based activities thus differ significantly from those developed by commodity-based activities and call for different development strategies. Carillo (2004) noted that the most immediate impact of the knowledge economy in relation to the urban environment is the reduction in displacements made possible by the internet and wireless telecommunications. Working, schooling and shopping pattern will be changed substantially. Some of the most distinctive characters of industrial city such as commuting, suburban residence, central districts and zoning in general are fading and they will be replaced by the distribution of work and learning, e-services, empty office space and zone reconversions. He further noted that the most important aspects of knowledge urban experience will no longer require presence and simultaneity, and therefore the current patterns of transportation, scheduling, configuration, zoning and infrastructure. Graham (2002), argues that the present configuration, organisation and lifestyle of urban centres might be more of inheritance of tribal, hierarchical and material production patterns than an urban design and culture fit for knowledge society. The new city designs should, for example, consider the notion of accessibility rather than proximity and contiguity, networked knowledge innovation zones rather than classical land use zoning, and the flow of information, goods and people rather than users and products' movement from one area to another.

According to Knight (1995), the task for cities in the era of knowledge economy which characterised by globalisation is that cities need to create environments where knowledge resources are valued, create conditions conducive to their development, and they must ensure that their knowledge resources are securely anchored. He has outlined ten important conditions that are conducive to the development of knowledge cities (i.e. the community able to define, perceive and value knowledge as a form of wealth; the city acknowledge the importance and contribution of knowledge worker; the city able to make the public understand the nature and role of knowledge; place knowledge resources at regional terms; give priority to improve knowledge infrastructure; ensure all members of society have access to careers in knowledge based activities; promote city as a centre of excellent; offer incentives and mechanisms favouring investment in locally based knowledge resources; futuristic vision emphasising on knowledge and other immaterial factors and develop civic leadership). Metaxiotis et al. (2010) highlight that nations and international organisations have realised that the challenges facing modern societies call for development strategies that are knowledge-based.

Following to the general acceptance of the need to develop or transform cities as knowledge cities, the main issue remained as how to use urban planning mechanisms to realise such development or transformation. The rise of knowledge economy is the main driver of global and local economic development, and the aim of urban planning in the era of knowledge economy to achieve a sustainable development by creating a strong urban core, harnessing its economic strength and addressing social exclusion and avoiding physical dereliction (Yigitcanlar et al., 2009). However, traditional normative urban planning lacks the vision and capacity to deliver a sustainable and knowledge-based development. To date, the structuring of most of the cities has proceeded organically; in essence, as a dependent and derivative effect of global market forces. Urban and regional planning has responded slowly, and sometimes not at all, to the challenges and the opportunities of the global knowledge city. A decade into the new century the economic success of the knowledge-based development policies in a number of cities and nations have led urbanists to think of whether similar policies could be applicable for the knowledge-based planning of urban regions. In recent years urban planning has consolidated its interest in the paradigm of post-modern social production under the rubric of knowledge-based urban development (KBUD) (Carrillo, 2004).

The concept of KBUD has started to gain popularity among urban scholars. Parallel to this recognition, KBUD has become an emerging area of research interest which links interests of planners, economists, geographers and other social scientists. Despite this growing interest KBUD still gaining popularity (Yigitcanlar et al., 2008a). The knowledge era has therefore spawned the notion of KBUD whereby it is seen as a new approach in harnessing the considerable opportunities of abstract population for a global order. Planning sees KBUD as a new form of urban development for the 21st century that could potentially bring both economic prosperity and sustainable socio-spatial order to the contemporary city (Yigitcanlar et al., 2008c). KBUD functions as a new paradigm in urban planning and is being implemented across the globe in order to increase the competitiveness of cities and regions.

This paper aims to analyse the context of KBUD within the paradigm of the knowledge economy and the urban planning and development, and discusses whether knowledge-based development of cities is a myth or a reality.
The paper is organised in seven sections. Following this introduction Section 2 provides a background on knowledge city formation and KBUD. Section 3 provides a theoretical base for KBUD. Section 4 details the foundations of KBUD. Section 5 reveals the main characteristics of KBUD. Section 6 presents the achievements and success factors of five global KBUD best practices. The paper concludes by discussing the potentials of KBUD and commenting on whether knowledge-based development of cities is a myth or a reality.

Knowledge city formation and knowledge-based urban development

Knowledge city can be seen as an umbrella concept for geographical entities, which focuses on knowledge creation, and covers other knowledge zones such as ‘knowledge precincts’, ‘knowledge corridors’, ‘knowledge villages’, and ‘knowledge regions’ (Dvir and Pasher, 2004; Ovalle et al., 2004). Knowledge cities are incubators of knowledge and culture, forming a rich and dynamic blend of theory and practice within their boundaries, and are being driven by knowledge workers through a strong knowledge production (Work Foundation, 2002; Yigitcanlar et al., 2008b). As societies become increasingly knowledge-based, the nature of city development changes because activities in the knowledge sector are becoming more important and they require conditions and environments which are very different from those required by commodity-based manufacturing activities in the production sector (Knight, 1995). Recent and growing literature indicates the importance of essential conditions for cities trying to change their status towards knowledge city through KBUD strategies in various development levels and scales (Carrillo, 2006; Van Winden et al., 2007; Yigitcanlar et al., 2007). These broad set of components are outlined in the conceptual framework of KBUD (Figure 1). The conceptual framework consists of three main components that are discussed in this section: KBUD theoretical basis; KBUD foundations; and KBUD characteristics. Additionally, the conceptual KBUD framework also includes information on the actors, levels, models and assessment of KBUD.

![Figure 1. Conceptual knowledge-based urban development framework](image)
Theoretical basis of knowledge-based urban development

There is a growing number of rich and diverse planning theory discussions in the literature that were stimulated by the new and dynamic phenomena of the global knowledge economy (Baum et al., 2007; Plummer and Taylor, 2003; Yigitcanlar and Martinez-Fernandez, 2010). Most of these discussions focused on the necessity of a new planning paradigm or an approach responsive to KBUD. The theory that urban planners could use in planning strategies as a respond to the global knowledge economy is perhaps limited. KBUD attempts to make a significant contribution to the present body of knowledge by linking and in turn linking significant theories related to four main issues of economy, human and social capital, management and spatial development. The theoretical principles that underpin KBUD relate to the key idea of what are the implications of global economic changes towards socio-spatial development order. The theories are explicitly relevant include: Relational Theory (Graham and Healey, 1999), New Growth Theory (Romer, 1986), Human Capital and Social Capital Theories and Creative Class Thesis (Florida, 2002, 2005) and Actor Network Theory (Latour, 2005).

For KBUD, the Relational Theory elaborates the complexity, multi layered functions and flows of today’s global knowledge economy society. The theory serves to stimulate the imagination and the collective and conventional neo classical economic and locational perspectives of the approach to planning (Corey and Wilson, 2006). Meanwhile, the New Growth Theory explains the role of knowledge and technology in driving productivity and economic growth. It suggests that investment in research and development, education and training and new managerial work structures are keys to economic growth. It also emphasises the importance of new technologies and human capital in the production process. The Human Capital Theory, Social Capital Theory and Creative Class Thesis emphasise that people, rather than money, are the motor force of economic and social growth and urban development. These theories explain that the driving force behind the growth and development of cities and regions is the productivity gains associated with the clustering of talented people and human capital. Lastly, the Actors Network Theory explores the institutional relations and non-human actors that mediate the process of urban development. These theories form the backbone of KBUD’s theoretical basis in attempting to comprehend the aspects of socio-spatial response towards global changes (Figure 2).
Foundations of knowledge-based urban development

KBUD is a powerful strategy for economic growth and the post-industrial development of cities to participate in the knowledge economy. It is a strategic management approach, applicable to purposeful human organisations (Carrillo, 2002; Yigitcanlar, 2009). The goal of KBUD is a knowledge city purposefully designed to encourage the production and circulation of abstract work, where it can be regarded as an approach to nourish the transformation and renewal of cities into the knowledge cities and their economies into knowledge economy (Cheng et al., 2004; Yigitcanlar et al., 2008c). The promise of KBUD is a secure economy in a human setting, in other words KBUD has four major purposes; economic, human and social, institutional and urban development. Economic development codifies technical knowledge for the innovation of products and services, market knowledge for understanding changes in consumer choices, financial knowledge to measure the inputs and outputs of production and development processes, and human knowledge in the form of skills and creativity, within an economic model (Lever, 2002). Human and social development indicates the intention to increase the skills and knowledge of residents as a mean for individual and community development (Gonzalez et. al., 2005). Urban development builds a strong spatial network relationship between urban development clusters. In this sense, knowledge precincts play a significant role in the spatial formation of the citywide KBUD strategies (Yigitcanlar et al., 2008d). Institutional development is key to orchestrate the KBUD and bring together all of the key actors and sources in order to organise and facilitate necessary knowledge-intensive activities and plan strategically for knowledge city formation (Yigitcanlar, 2009). Each of these four development area shape the development domains of the KBUD: economy, society, environment, and management. On top of these four domains, two key sustainability and organisational capacities are also need to be added for a successful knowledge-based and sustainable development of a city (Figure 3).

![Figure 3. Foundations of knowledge-based urban development](image)

Characteristics of knowledge-based urban development

A city’s strong economic, knowledge, administrative and socio-cultural basis are among the key characteristics of KBUD for transforming it into a knowledge city. Strengthening the knowledge base of cities requires strong knowledge clustering (e.g. universities, R&D institutions, knowledge precincts), which is particularly important in the promotion of the spill-over effects found to be vital for long-term economic prosperity (Lever, 2002). The economic base of a knowledge city creates high value-added products using research, technology, and brainpower. In a knowledge city, private and the public sectors value knowledge, spend money on supporting its discovery and dissemination, and ultimately, harness it to create goods and services (Carrillo, 2006). Socio-
The cultural base is essential for cities to incubate creativity to ensure economic growth, urban development, and socio-cultural and psychological wellbeing of their residents. Cultural resources are embodied in people’s creativity, and Landry (2000) highlights that knowledge cities aim to create the conditions for people think, plan, and act creatively. In an urban context this means providing an enabling environment that facilitates exchange of ideas, and the possibility to turn these ideas into products, services, and innovative solutions to urban problems. The other key characteristics of KBUD include but not limited to the following:

- Structured and orchestrated
- Negotiated for consensus
- Democratic and transparent
- Participatory and collaborative
- Quality of life and place oriented
- Benchmarked and well planned
- Human and nature oriented
- Accessible and connective
- Sustainable and eco-friendly
- Inclusive and open
- Dynamic and strategic
- Affordable and attractive
- Diverse and socially equitable
- Technology supported and user friendly

Some of the above characteristics worth further elaborating. Van Winden et al. (2007) suggest ‘organising capacity’ or the quality of governance, in various levels, has a significant influence on the KBUD efforts of an urban region. Quality of life and place are defined not only by the level of public service (e.g. health, education) but also by the conservation and development of the cultural, aesthetic and ecological values that give cities their character to attract the talent and investment. Urban diversity is expressed in a cosmopolite atmosphere, accepting others with open channels for communication and knowledge exchange. Accessibility and connectivity emphasise the seamless links with other knowledge centres by the networks of good international and regional transport and information technology infrastructure. Social equity is a key dimension of sustainable urban economic growth. Social tensions and conflicts such as social exclusion and unemployment discourage both knowledge workers and investing firms away from a region of perceived social danger.

Knowledge-based urban development best practices

The recent KBUD literature reveals that the following factors are decisive in the development and growth of knowledge cities: Local, state and federal government commitment; Large corporations; Small and start-up corporations; Quality universities; Public involvement, and; Quality of life and place (Carrillo, 2006; Landry, 2006; Yigitcanlar et. al., 2008a; 2008b). Among a number of cities that adopted KBUD approach, the following five city are generally referred as KBUD best practices – Austin, Barcelona, Helsinki, Melbourne and Singapore. The overall achievements and success factors of these global best practices are summarised in Table 1 (for more information on these case studies see Yigitcanlar, 2009).

Austin, Texas, US was the first American city to recognise the emerging economic importance of knowledge work and the possibilities of attracting industry. The Austin 2020 plan outlines the strategies for the city’s commitment for redevelopment of its urban and cultural life in ways that would attract and retain knowledge workers (Yigitcanlar, 2009). Austin has pursued a quality of place and life, developed a culture of social tolerance that is attractive to creative people with ideas and skills. Florida (2002) noted that Austin was known as a ‘knowledge city’ with more than one-third of its workforce employed in the knowledge based industries. In 2006, the city was found to be the most attractive US location for creative industry investment (King, 2006). Florida (2005) highlighted the three factors behind the success of Austin as ‘technology’, ‘talent’ and ‘tolerance’.

Another KBUD best practice is from the city of Barcelona, Spain, which the initiative for KBUD can be traced back as early as 1999 when Barcelona City Council developed a strategic plan for the development of a city with an aim of turning Barcelona into a ‘city of knowledge’. This plan emphasised the necessity of the cultural sector to become the motor of new transformation of the metropolis on the threshold of the 21st Century. Private sector’s initiatives and actions – mainly in the development of infrastructures and knowledge businesses played an
important role in the success of the whole process. Today, Barcelona is one of the most successful knowledge cities and marked its name as the ‘culture capital’ of Europe (Yigitcanlar, 2009). Barcelona prepared the ‘22@barcelona Plan’ which sets an excellent example of good KBUD practice combining strategic policy making (urban policy), urban planning (urban transformation) and urban discourse (the need for a city of knowledge). The success of KBUD initiative in Barcelona owes much to the innovative ideas put forward in the plan and the considerations taken in a wider context of Barcelona in the knowledge economy and society (Yigitcanlar, 2009).

Table 1. Achievements and success factors of global KBUD best practices (Yigitcanlar, 2009: 232)

<table>
<thead>
<tr>
<th>CITY</th>
<th>REPUTATION</th>
<th>ACHIEVEMENTS</th>
<th>SUCCESS FACTORS</th>
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<tbody>
<tr>
<td>Austin</td>
<td>The human capital of the World</td>
<td>1980s – a leading city in electronics production sector;</td>
<td>Dynamic vision and sound strategic planning;</td>
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<td>The music capital of the World</td>
<td>1980s – a leading city in personal computing commodities sector;</td>
<td>Strong knowledge-based economy;</td>
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<td></td>
<td>1980s – a leading city in personal computing commodities sector;</td>
<td>Well connected university, industry, government relations;</td>
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<td></td>
<td>1970s – a leading city in business and personal computing sector;</td>
<td>Significant investment in human capital,</td>
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<td>1990s – a leading city in technology and computer science R&amp;D;</td>
<td>High quality of life and place;</td>
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<td></td>
<td>1990s – a leading city in creative industries;</td>
<td>Efficient urban transport systems, including affordable housing;</td>
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<td></td>
<td>2000s – a leading city in ICT, biotech, pharmaceutical sectors.</td>
<td>Watching its competitions closely;</td>
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<td></td>
<td></td>
<td></td>
<td>Investing in R&amp;D and education;</td>
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<td></td>
<td>Good governance;</td>
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<tr>
<td>Helsinki</td>
<td>The culture capital of Europe</td>
<td>A new culture and knowledge oriented economy;</td>
<td>Sound vision and planning;</td>
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<td></td>
<td>The tourism capital of Europe</td>
<td>A rich variety of cultural institutions;</td>
<td>Community involvement in urban transformation;</td>
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<td></td>
<td></td>
<td>A strong creative class of knowledge workers;</td>
<td>Full leadership of the local public initiatives;</td>
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<td>Quality public amenity and services;</td>
<td>Strategic urban marketing promotion;</td>
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<td>Conserved heritage built environments;</td>
<td>Building on historical and cultural strengths of the city;</td>
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<td>Conservation of natural surroundings;</td>
<td>Successful KBUD practices – i.e. 22@Barcelona.</td>
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<td>Strong global ties for knowledge exchange, particularly with Latin America.</td>
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<tr>
<td>Helsinki</td>
<td>The telecommunications capital of Europe</td>
<td>First European country with explicit knowledge economy strategies;</td>
<td>Assured vision and strategic planning mechanism;</td>
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<td></td>
<td>The technology capital of Europe</td>
<td>High level of educated population;</td>
<td>Targeting a dynamic world-class centre for business and innovation;</td>
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<td></td>
<td></td>
<td>High quality of life;</td>
<td>A strong knowledge-based economy;</td>
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<td></td>
<td>High quality of place;</td>
<td>Regional focus on development;</td>
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<td></td>
<td>High level of accessibility;</td>
<td>Significant investment in telecommunications R&amp;D;</td>
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<td></td>
<td>Large investment in arts and culture;</td>
<td>Developing high quality infrastructure and services;</td>
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<td>High level of social equity;</td>
<td>Developing affordable and high quality housing and educational centres;</td>
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<td></td>
<td></td>
<td>Presence of a giant telecommunications company, Nokia.</td>
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<tr>
<td>Melbourne</td>
<td>The art and culture capital of the Asia-Pacific region</td>
<td>Local government, private sector and community partnerships;</td>
<td>Developing a gateway for biotechnology;</td>
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<td></td>
<td>The ICT capital of Oceania</td>
<td>Skilled training program for young people;</td>
<td>Redressing skill shortage and building reputation as the ICT capital of Oceania;</td>
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<td>Youth employment scheme;</td>
<td>Attracting strategic knowledge-based and innovative start-ups;</td>
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<td>Community jobs program;</td>
<td>Developing a place of business culture;</td>
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<td>Good governance;</td>
<td>Promoting growth in tertiary education;</td>
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<td>Support and incentives for creative industries and workers;</td>
<td>Developing diverse and highly skilled workforce;</td>
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<td>Important international sports, art and cultural events;</td>
<td>Enhancing livability and lifestyles;</td>
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<td></td>
<td></td>
<td>Programs to boost tourism, sports, art and cultural activities.</td>
<td>Developing affordable and high quality housing and educational centres;</td>
</tr>
<tr>
<td>Singapore</td>
<td>The knowledge capital of Southeast Asia</td>
<td>Ambition of the knowledge-based economy;</td>
<td>All levels of government commitment;</td>
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<td></td>
<td>The constant change capital of South East Asia</td>
<td>A hub for knowledge and creative industries to emerge;</td>
<td>Quality universities and R&amp;D institutions;</td>
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<td></td>
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<td>Spill over effects on the neighboring knowledge milieu;</td>
<td>International large private companies;</td>
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<td>A comprehensive large scale knowledge community product development;</td>
<td>Small and medium size companies;</td>
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<td></td>
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<td>Bringing together the environments of work, life and play;</td>
<td>Public enthusiasm;</td>
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<td>Quality of life and place;</td>
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<td></td>
<td>Attracting knowledge workers;</td>
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<td></td>
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<td>Becoming a city of constant change;</td>
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<td></td>
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<td>Searching for the next new thing.</td>
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Helsinki, Finland has managed to improve its competitive edge, mainly owing to its KBUD strategies that provided significant employment growth in R&D in creative and telecommunications industry (Yigitcanlar, 2009). Finland is among the first countries to develop explicit knowledge based economic development strategies. Her success in
KBUD is mainly originated from early strategic action taken at national level in the 1980s due to the economic crisis. Helsinki, therefore has become a frontrunner city in Europe where knowledge based economic development strategies have only been formulated rather recently in other European cities (Van den Berg, 2004).

The urban process of Melbourne, Australia has been shaped primarily by the 21st century knowledge work and its related activities. A spatial strategy has been developed and applied for the KBUD of the city by the municipal government. It was the ‘Melbourne City Plan’ which has set out the policies for future development of Melbourne to be prosperous, innovative, culturally vital, attractive, people focused and sustainable city. The Plan, has now been replaced by the ‘Melbourne@5million’ which was build on similar visions. It provides directions for a strong and innovative economy based on the view that all sectors of the economy are critical to economic prosperity, where knowledge clusters play a critical role in the success of KBUD in Melbourne. The Plan focus on a more compact city, better management of metropolitan growth, networks with regional cities, a great place to be, a fairer city, a greener city, a better transport links and a better planning decision and careful management (Yigitcanlar, 2009).

Singapore has launched its biggest KBUD project in 2001, known as ‘OneNorth knowledge community precinct’. The proposed 20 year and 200 hectare development is government-led project to propel the city state into the knowledge era and establish it as a regional centre of R&D. One-north provides knowledge workers and their families with quality spaces to live, work, shop and recreate (Yigitcanlar, 2009). The concept and design of one-north as a knowledge community precinct in a creative urban region of Singapore has been influenced by Florida’s ideas whereby his understanding on the importance of attracting and retaining creative talent in a total knowledge environment has been applied in the development of one-north to become the knowledge capital in South-East Asia. It would be a technopole for biomedical, information technology, and media industries in the southwest of Singapore. The ways in which the planning process has been carried out at one-north have also been explicitly prescribed and rationalised in state discourse in relation to the supposed ideals of the new economy. The success of one-north depends largely on the government commitment, public enthusiasm towards a better quality of life and place, ability to attracting knowledge workers and becoming a city of constant change in searching for the next new thing (Yigitcanlar, 2009).

Conclusion
This paper analysed the context of KBUD within the paradigm of the knowledge economy and the urban planning and development. In order to do so the paper introduced a conceptual KBUD framework that brings KBUD theoretical basis, foundations, characteristics, actors, levels, models and assessment together. This framework and KBUD best practice analysis revealed that knowledge-based development of cities is not a myth, actually it is possible to plan and develop cities as knowledge cities. In general, knowledge cities are complex entities, and attempts to transform cities into knowledge cities would likely result in failure unless they are guided by sound strategic visions. These strategic visions should incorporate KBUD policies for attracting and retaining knowledge workers and industries and also empowering citizens as knowledge creators and innovators. Planning for KBUD of cities requires a broad intellectual team with expertise in urban development, urban studies, planning and management, socio-economic development, models of intellectual capital, knowledge management, and so on. Planning for KBUD also requires understanding the diverse spatial forms of knowledge cities where a large number of knowledge clusters and precincts are particularly important in the promotion of the spill-over effects found to be vital for long-term economic prosperity. The following highlights from the literature review and global best practice analysis provide invaluable insights for other cities seeking KBUD (Yigitcanlar, 2009: 240).

- Political and societal will and good governance;
- Strategic vision and dynamic log-term development plan;
- Setting-up of agencies to promote KBUD;
- Strong financial support, partnership and strategic investments;
- International and multi-cultural character of the city;
- Creation of urban innovativeness engines;
- Research excellence – universities, R&D institutions;
- Metropolitan web-portal – E-government, E-democracy;
- Value creation to citizens – skill development, employment, social outcomes;
- Quality of place, life and affordable housing and urban services;
- Low-cost access to advanced communication networks.
References


