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Informational Cities and Global Restructuring

Global forces are penetrating the economic life, political order and post-modern culture of our world so pervasively that it seems as though we are living at the threshold of a new era. The rapid internationalisation of economy since the 1980s, together with the IT boom has created favourable conditions for the emergence of a new economy. In recent times, the same factors have contributed to the emergence of a global market for skilled labour. Companies have started to outsource not only routine manufacturing operations, but also different kinds of R&D activities and IT-enabled services into China, India and other developing countries. Economic recovery has been in progress within the advanced industrial countries, but it has not led to an equally strong job growth such as that experienced during previous upswings.

Changes in the global competitive environment have presented western Europe with difficult challenges. Economic growth in the region has been sluggish, and Europe is falling further behind the United States in areas such as productivity growth. Furthermore, the rate of unemployment has remained on a high level and the number of jobless people has started to increase again. Many kinds of structural adjustments and deep-going reforms will undoubtedly be necessary if Europe is to become the world's most competitive economy, as decided in the European Union's 2000 spring summit in Lisbon (see e.g. OECD 2005; IMF 2005).

Local developments cannot be reduced from their macro-regional or even national contexts. This is why there is a need to paint a more 'pointillist' picture of the global competition

of hi-tech centres and growth nodes (see Anttiroiko 2004). Each locality has some capacity to control its own destiny, even if the structural context, national framework and community characteristics constrain local efforts in various ways. For these reasons, choice of locality continues to bear relevance, and thus merits a closer look.

Clustering and the pull of the city

For some time economists, regional scientists and geographers have been puzzled with the question of why dynamic growth tends to concentrate on some specific locations. Since Marshall's findings about the emergence of industrial districts from the latter half of the 19th century (Marshall 1890), many theories have been presented, including Perroux's ideas about growth centres (Perroux 1970), Porter's cluster analysis (Porter 1998), Castells' analysis of the informational city (Castells 1989), world city hypothesis (Friedman 1989; Sassen 1991), new conceptions of innovative cities, learning regions and ideopolises (e.g. Simmie 1999), the notion of technopoles (Castells & Hall 1996) and certain cultural aspects raised by Kotkin (2000), Florida (2002) and many others. One question remains: why do companies still crowd together in spite of modern ICTs and widely spread networks? From the point of view of an individual city, this question can be translated into a local development policy challenge: What can a city do to gain or to maintain its attractiveness in a highly competitive environment?

Due to the new 'borderless' economy (Ohmae 2005), localities and urban communities need to position themselves in a highly competitive and volatile environment that challenges their creativity, innovativeness, and governance capacity. This requires new strategies and perspectives. In this book, these topics are discussed both theoretically and with reference to the experiences

gained in the last years in the context of one particular city, the City of Tampere in Finland.

Informational cities

The concept of the informational city originated in the 1980s as the response from urban theorists to the intensification of information society development and related urban processes. The most thorough early analysis of the informational city was presented by urban sociologist Manuel Castells in his book *The Informational City*, published in 1989.

The informational city is a macro-theoretical concept, based on an analysis of the relationship between the new information and communication technologies and urban-regional processes, analysed in the broader context of the historical transformation of capitalism. Thus, this new city formation points to transformed spatial forms and processes as a manifestation of changes in technological and organisational development, and of the restructuring of capitalism. In this respect, it comes fairly close to the concepts of e-city, technocity, virtual city, intelligent city, wired community and smart community, which have also figured in urban theoretical discussions (see e.g. Downey & McGuigan 1999; Caves & Walshok 1999; Komninos 2002).

A precondition for understanding the essence of the informational city is to understand its broader context, the historical development of the socio-technical organisation of advanced societies. Suffice it to say that after the historical states of development usually labelled the agrarian and industrial societies, a new societal formation started to emerge in the 1950s, radicalising in the 1980s and the following decade. It is commonly – and according to some newer interpretations mistakenly (Castells 2004, 6–7, 41–43; Dutton 2005, 19–20) – referred to as the information society. Whatever the label
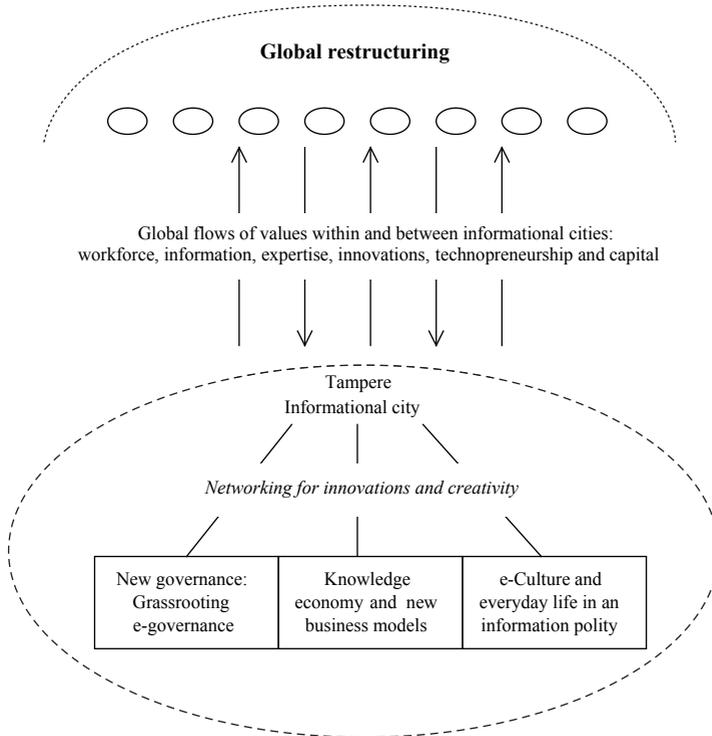
given to this societal formation, its underlying logic revolves around the idea of the informational mode of development, as concluded by Castells (2000, 13–21). Thus, in the same sense as the information, knowledge or network society depicts a new phase in societal development, the informational city reflects the formation of a new kind of urban setting (see Castells 1989).

To take the above-mentioned evolutionary view further, it is important to note that at the core of the informational society there are specific technological arrangements used in production processes. The new technological paradigm emphasises knowledge creation and innovativeness. This new 'informationalism' started to emerge in the 1980s, and has had an enormous impact on society by modifying the material basis of the entire social organisation and structure. Thus, just as the industrial city reflects the urban-regional aspect of the industrialisation of the entire society, the same holds true for the informational city. In brief, the term 'informational' indicates a specific form of social organisation in which the creation, processing and transmission of information have become the fundamental sources of productivity and power. It is important to keep in mind that 'information' in a narrow sense is not enough to depict neither its relevance as a fundamental resource nor its connection to the social role of ICTs (cf. Dutton 2005, 20). Rather, it is vital to contextualise and make concrete this fundamental concept by economic, political and cultural linkages and connections in order to understand its constitutive role in the emerging societal formation.

In concrete terms, analysis of the informational city concentrates on topics such as the formation of a new industrial space, informational capitalism and the space of flows, changes in capital-labour relationships, the dual-city phenomenon, and the urban-regional aspects of globalisation. This discussion

reveals how techno-economic tendencies and social realities pose a challenge to city governments that must design new urban policies in order to mediate the global networks of instrumental exchanges and local conditions (Borja & Castells 1997). The informational city can also be approached as a self-governing democratic city government that represents the locality's needs to develop e-government, e-governance, e-democracy and e-services, and to make use of ICTs in urban-regional development processes (Castells 2002, 146–155). e-City and similar concepts are alternative expressions that have sometimes been used when discussing such ICT-related aspects of urban life.

At the present state of their development, informational cities need to fine-tune their development policies and related practices to meet the challenges of global restructuring. On the basis of Castells' theory, we may conclude that in the context of informational/global economy a crucial role will be played by the complex interactions that develop between the historically-rooted political institutions of an informational polity and the increasingly globalised economic agents and networks of instrumental exchanges. A successful adjustment process requires not only a profound understanding of the dynamics of global transformation, but also an active stance towards the development of local governing, learning and innovation capacities, as well as a readiness to manage effectively their external governance relations. These requirements are illustrated in Figure 1, with special reference to the case of the City of Tampere.

Global restructuring

Global flows of values within and between informational cities:
workforce, information, expertise, innovations, technopreneurship and capital

Tampere
Informational city

Networking for innovations and creativity

| New governance: Grassrooting e-governance | Knowledge economy and new business models | e-Culture and everyday life in an information polity |

Figure 1. Aspects of Tampere's development policy in adjusting to global economy

Focusing on the City of Tampere

In this book, the local adjustment process is discussed from the viewpoint of a particular city, the City of Tampere, Finland. It is based on the framework of the informational city in the context of global competition and new global dynamics of the space of flows. The City of Tampere was born in the wake of industrialisation and must restructure itself in order to be able

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to assert its position as an urban community capable of creating prosperity and welfare for its citizens. The recent restructuring process began during the 1980s, and reached new dimensions in the 1990s and early 2000s. It was inspired by such megatrends as globalisation and the development of the information society.

The Tampere Region (Pirkanmaa in Finnish) is a modern concentration of industry, commerce, services and education in the central part of Finland, two hours by train from the capital city Helsinki. It is the place where the Nokia Corporation started its journey to the top of the world's mobile business (on Nokia see Steinbock 2001). No activities of the Nokia Corporation are currently located in the actual town of Nokia itself, but in the neighbouring City of Tampere the situation is different. Nokia remains the most important private sector employee in the city. Tampere itself is a medium-sized city with some 200,000 inhabitants. In certain areas, it clearly rates among the most innovative cities in Europe.

There is, however, another side to the coin. It is fair to say that the strategies, development policies and measures taken by the City of Tampere have not been altogether unique; similar kinds of development activities have been pursued in a number of other cities in Europe as well as other parts of the world. Neither can Tampere be presented as an exceptional success story. Rather, Tampere is an average European middle-sized industrial city that still suffers, for instance, from a relatively high level of structural unemployment. This makes the story of Tampere interesting to thousands of cities currently struggling with similar problems.

In order to tackle these structural problems and to make use of the opportunities that were emerging with the rise of informationalism, in autumn 2000 the city government and its partners decided to launch the eTampere development programme, a comprehensive city-wide information society initiative with a five-year duration. What may be fairly exceptional

about the eTampere initiative is the extent of networking, partnership and co-operation between the programme's key actors in order to create new adjustment strategies, growth models and spearhead development projects (City of Tampere 2000; see also Castells & Himanen 2003, 124–126). In this respect, Tampere could perhaps be said to represent a new kind of European 'growth node' (for the term, see e.g. O'Callaghan 2005).

Networking

Networking and networks have been a central issue among both practitioners and researchers for almost a decade now. Among researchers, the interest in networks and relationships was already raised in the 1980s, and as companies and other organisations have also gradually bought into it, the idea of networks has also become one of the megatrends in modern management thinking (e.g. Marsden & Lin 1982; Taylor 2001; Castells 2004).

Networks can be addressed from many different levels. The macro-perspective enables an analysis of the forces or powers that have led to the increased significance of networks. Globalisation and heightened competition have increased the need for different actors to concentrate on their core competencies at company, regional, and even national levels. The restructuring of the global economy has challenged various actors to reconsider their positions and to evaluate their strategies. In the new economy, the complex production and business processes can no longer be managed effectively by vertically controlled companies operating separately from each other. Nowadays, many activities are coordinated through global networks consisting of many companies located all over the world (on network enterprises see Castells 2000, 163–215; see also Cooke 2003 and Cooke & Morgan 2000).

At national or regional level, networks can be seen as a means of concentrating on the core competencies of the area. However, one may also focus attention on improving the nation's or region's overall competitiveness (see e.g. Malmberg & Maskell 2001; Gertler 2004). In the former case, the region has developed a clear strategy about its core competencies, and it is determined to exclude activities taking place outside the area. There are quite a few examples of strategies putting everything on one card, which is something that may also involve huge risks. However, in the future this may be the only way of surviving in the globalised world. For instance, during the 1990s Tampere attained a position as a city with a strong knowledge base for technological innovation, especially in the field of mobile communications. At present, the crucial question is how to progress further as more and more R&D operations are being relocated to countries like China and India. How can Tampere ensure a position in global innovation networks in the future, too?

The second type of strategy represents a more traditional way of building networks within a region. In practice, these kinds of networks are often built in order to serve certain rather specific purposes. For instance, innovation systems can be viewed as networks of organisations that aim to promote innovation within the region. The eTampere initiative can be seen as an example of this type of network. However, the problem with networks like this is that since their roots are regional they do not necessarily offer the tools or mechanisms needed to grow beyond the confines of the original region.

At the level of individual organisations, networks can be seen as focal networks, i.e. as a combination of all direct and indirect relationships that the organisation perceives as having an effect on it. Within and between these organisational and regional networks are the personal and social networks, which, in a way, bring all of the different levels together (e.g. Schwartz &

Jacobson 1977). The importance of such personal links cannot be overlooked when discussing networks, but exclusive reliance on local social networks may also be harmful. An active orientation towards the building of international contacts and global networking can provide local actors with a much richer pool of ideas, contacts and people than relying solely on local ties.

Increasing potential for innovation

There is clear evidence of the growing significance of *knowledge* in contemporary capitalism. The baseline argument can be summed up as follows: long-term economic competitiveness is not tied to new materials per se or even increased productivity in 'old' industries, but with new ways of creating, using and combining knowledge. This has led to theorising about knowledge economy (Romer 1990), economies of sign and space (Lash & Urry 1993), learning economy (Lundvall & Johnson 1998) and associational economy (Cooke & Morgan 2000). Castells' (2000) idea of informational capitalism is one of the most widely-used theoretical perspectives on this phenomenon. He claims that we have entered an era in which the innovativeness of firms, regions and nations is fundamental to their competitiveness.

In the 'old economy', economic growth stemmed from increases in the supply of capital, labour, or natural resources. Growth in the new economy stems from increases in knowledge and innovation and its widespread adoption. Technological innovation, in particular, is one of the fundamental drivers of growth in the new economy.

Within individual cities, new strategies are being called forth in order to create and apply innovations. Local innovation capacity needs to be strengthened. This is supported by the regional innovation system, which in turn is framed by the existing national innovation system. Finland has been among the

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first countries to develop a fine-tuned innovation system that has also proved to be cost-effective (e.g. Schienstock & Hämäläinen 2001). The effects of this development are also visible in Tampere. Tampere has paid special attention to research within the eTampere programme and in several other development activities. Networking and partnerships have proved to be important elements in creating a favourable environment for innovation. In addition to business, this approach has also been applied in other areas such as local government.

Knowledge economy and new business models

At the risk of uttering a truism: old principles no longer work in the new age – this is what restructuring in the business world is all about. Businesses have reached the limits of the old model with respect to complexity and speed. With the development of new spaces of flows, it has become imperative for companies to renew their modes of operation even if the immediate returns on these investments have been modest and uncertain (e.g. Shapiro & Varian 1999).

To guarantee success, business organisations need to harness their full potential in a rapidly changing business environment. This development is conditioned by a business environment that has more networking both within and between companies and, to a greater extent, between organisations of different sectors.

Grass rooting local e-governance

Discussion about democratic governance has its roots in the early theorising about participatory democracy and teledemocracy that slowly evolved from the 1960s onwards from actions of small groups of academics and activists towards high-level policy agenda, fuelled by the Internet revolution (e.g. Becker &

Slaton 2000). Moreover, new forms of governance and increased globalisation have made 'democracy as usual' seem obsolete, leading to a situation sometimes referred to as 'democracy deficit'. As a result, by the 1990s the time was ripe for a new discourse that combined issues of democracy and governance with the potential of the new ICTs (Castells 2002, 155–165; Coleman 2003; Mälkiä et al. 2004).

From an overall policy perspective, this can be construed as a convergence of two trends: a strongly government-supported and well-established instrumental 'informatisation' policy on the one hand, and a presumably weaker and more contingent 'democratisation' policy on the other. The emphasis between these two dimensions may vary from case to case. In any case, the core question in this discourse seems to have become the need to assess and recognise new and more appropriate ways of using ICTs in the process of revitalising democracy. In Tampere, this e-transformation in democratic governance has played an important part in the overall development agenda of the city since the mid-1990s.

The culture of informational polity

The development of information society has a profound impact on the socio-cultural sphere of society. Most practices and patterns of behaviour are likely to change due to the radicalisation of information society development. So far, we have seen only the prelude of this transformation (e.g. Dutton 1999). Life can be expected to become more competitive and also increasingly polarised. The material foundations of society, space and time are being transformed, organised around the space of flows and timeless time, leading to a qualitative change in the human experience, as expressed by Castells (2000).

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One interesting aspect of this transformation is the changing nature of territorial communities, citizenship and everyday life. One of the most widely discussed topics in this respect is the digital divide, as the issue of inclusion vs. exclusion is fatal for the development of information society (Loader 1998, Mossberger et al. 2003). This transformation has been followed with great interest in Finland and in Tampere. Among the most interesting areas is the use of ICT applications and communication tools to facilitate everyday life.

Materials included in this collection

We have arranged the articles to be published in this collection beginning with two papers discussing the problems of innovative regions on a general theoretical level. Manuel *Castells* presents in an extremely concise form certain key results of the absolutely unique work he has done in analysing the dynamics of innovative milieus in the context of the ongoing information technology revolution. Philip *Cooke* analyses some of the world's foremost centres of bioscience. He points out the increasing significance of the so-called 'open innovation' model, in which companies rely increasingly on research work done by academic scientists and other organisations. This model is also gradually spreading to other businesses, including IT and automobile manufacturing. Gerd *Schienstock* presents the results of a study analysing the competitiveness of eight European regions, including the region of Tampere. Analysis based upon a company survey does not provide an entirely clear picture of the competitive positions of the various regions included in the study. Some regions with high R&D intensities show rather modest rates of growth, whereas other regions with high shares of non-innovative firms have reached much higher rates of growth. Global competitiveness thus appears a rather complex phenomenon, and it is difficult

to draw a clear divisive line between 'high road' and 'low road' regions.

In his article, Antti *Ainamo* continues the discussion of regional economies by introducing the new growth-node approach, which is based upon the Castellsian idea of 'spaces of flows'. He starts from an assumption that Tampere, which has been the birthplace of Nokia, can very well be regarded as a European growth node whose development has been driven by the very strong ICT cluster. The analysis shows that even if the experiences of the local developmental efforts may not have been entirely unequivocal and the fastest period of growth may be over, the concept of the growth node has shown its fruitfulness as an instrument of analysis. Furthermore, the networks of cooperation that have been developed in Tampere provide a good starting point for future efforts to meet the challenges of global competition.

After these more broad-ranging analyses we have included several articles that take a closer look at the historical roots and present economic developments in Tampere. Pertti *Haapala* opens this section by discussing the early historical roots of the city's informational developments, while Marjatta *Hietala* and Mervi *Kaarninen* complement this picture with an equally history-oriented analysis of the growth of Tampere into a modern industrial centre. They point out the fact that in several stages this progress has been based on lucky coincidence involving several factors, although an important aspect characterising all development has been the high value of education. In addition, this article stresses the significance of the region's rich cultural tradition.

Markku *Sotarauta* and Juha *Kostiainen* write about the concept of an enabling development model which has, according to them, served as the basic approach in the recent modernisation efforts in the Tampere Region. The authors describe the key

actors in collaboration and the strategies they have been implementing during the past years. Their initially very ambitious objectives have not necessarily been achieved completely, but the authors conclude that in principle the enabling approach seems to have been an adequate choice for the purposes of Tampere. Combined with the right kind of leadership, the enabling model may still prove much more efficient than the more traditional organisation-centred approaches. Jari *Kolehmainen* places his main emphasis on the role of knowledge institutions in local innovation environments. In addition to a conceptual discussion of the various levels of innovation environments and types of knowledge institutions, the author takes a closer look at what he terms specialised development organisations with the digital media agglomeration in Tampere as a concrete case. His main conclusion is that both general and specialised knowledge institutions have played an important role in the development of this particular cluster. He also stresses the importance of specialised development organisations that enable actors to better capitalise on the potential of local educational and research institutions in the region's economic development.

Hannu *Jungman* and Tommi *Rasila* focus on another local institution, the eAccelerator, which strives to help start-up companies through an important stage in their transformation into more firmly established economic actors. The eAccelerator constitutes an attempt to bridge the gap that has emerged between new small companies in their early stages and the notably more mature firms that can hope to gain investments from venture capitalists. Despite the authors' statement that the organisation will probably not be able to attain all the objectives set for it for the period 2001–2005, the concept itself has proved its usefulness, and its real impacts can be assessed only during a more significant time span. Marko *Seppä*, Hanna *Martin* and Johanna *Tommila* analyse one particular Tampere-

based knowledge institution, the eBusiness Research Centre, and particularly the annual research forums it has organised between 2001 and 2005. The topics addressed in these forums serve as an example of the transitions in modern business thinking in the era of an increasing 'electronisation' and 'knowledgisation' of advanced industrial economies. According to the authors, these developments require a continuous renewal of the existing approaches to business modelling.

Markus *Laine* and Lasse *Peltonen* open an entirely new field of analysis in their article in which they focus upon the historical development of political culture in Tampere. This analysis is intended to help understand the context in which the recent local developmental strategies have emerged. According to the authors, since the Second World War the local political scene has been dominated by what has been termed the 'brothers-in-arms axis', a close collaboration between the key political actors of the local conservative and social democratic party organisations. All major decisions made in local politics have required the acceptance of this small circle, and they have also become known as the men who have actually transformed Tampere into a modern centre of different kinds of industrial and post-industrial activities. The authors analyse this development against the backdrop of newer urban regime theories, and how recent societal changes have led to a partial erosion and renewal of this particular system of dominance.

Ari-Veikko *Anttiroiko*, Päivi *Kuusisto* and Jari *Seppälä* complement the analysis of changes within the local political regime by focusing upon the recent efforts to create new channels for citizen participation by using electronic networks. The City of Tampere has tried to promote e-democracy by, for instance, creating a special Participatory Portal through which ordinary citizens have the opportunity to discuss topical issues that are currently being processed in the various branches and levels of the

local government apparatus. The authors present a concise history of the development of different kinds of web-based activities from 1995 to 2005 and analyse the efforts made to provide as many citizens as possible with the skills and means required to participate in these activities. The authors conclude that the City of Tampere has been active and innovative in its efforts to promote e-democracy but that no actual transformations can be said to have occurred the local political culture.

Tapio *Häyhtiö* and Auli *Keskinen* analyse the development of e-democracy in Tampere against the backdrop of recent theoretical discussions regarding participatory democracy, the deliberative democracy theory and theories of e-governance. The authors conclude that thus far the e-democracy initiatives of the City of Tampere have managed to gain only relatively modest results in the activation of citizens. One reason for this is that the preconditions for administrative participation discourse have shown only a limited capability for answering to the challenge of authentic citizen politics. In this respect, local civic participation through the internet has introduced alternative meanings and practices from the grass root level, and this seems to have functioned as a better channel for performative political action. In her analysis, Sirkku *Kotilainen* presents results from an action research project which has had an important role in the creation of civic-oriented websites and digital discussion forums. The author's main object of study has been the Manse Square project, which has been in existence since 1998. One of her main conclusions is that a positive attitude towards learning together is a necessary prerequisite for gaining significant results from comparable initiatives. Even if these terms are met, it is important to remember that the process takes time. The project must be open to experimentation, and visionary people are needed in order to maintain the momentum of activities through the more difficult times also.

In her article on e-learning, Tuuli *Kurkipää* opens the next section concentrating on the social and wellbeing-related aspects of developmental activities going on in Tampere. The author points out that the initial expectations about the use of electronic networks in education were vast, and in recent times new applications have been developed from a more realistic standpoint. Similar experiences have also been gained in the Tampere Region, with a rather long tradition of innovative projects on all educational levels. Different actors in the field have come together in the form of the eLearning Cluster, whose task has been to promote network cooperation. At present, e-learning is transforming into a mainstream aspect of education, but much more work is still needed in order to avoid the emergence of new divisions in this area. Hannu *Eskola* writes about local developmental activities in the area of e-health. His article shows the multiple activities going on in this field which, in the future, may also produce a strong new cluster of dynamically developing enterprise activities.

Tommi *Inkinen* explores the social uses of information and communication technologies among citizens living at the Tampere Region in his article. His analysis, based on a survey conducted in June 2004, shows that the use of new information and communication technologies has become an established part of the daily lives of citizens living in this region. Digital divides, based on factors such as age or other socioeconomic or demographic characteristics, are gradually losing their significance. At the same time, however, the author points out the possibility of new divisions emerging based on varying levels of expertise in the use of the new information and communication technologies. Marika *Lehtonen* and Hannu *Soronen* focus on the problems of e-inclusion. They point out that important differences still exist, for instance, between different socio-economic groups and geographical areas in the spread of broadband connections, even if

the declining costs and the building of new networks may correct the situation somewhat. They also analyse the various ways in which Internet use has been promoted in the Tampere Region, and they emphasise the future significance of mobile solutions.

Pirjo *Rautiainen* highlights the ways in which young people in Finland are using new information and communication technologies, especially mobile phones. Teenagers have clearly played a pioneering role in the development of an entirely new kind of communication culture, and although this culture has later spread to all age groups, the use of the media seem to continue to have special importance for the development of the identities of young boys and girls. Despite recent wide universal developments in the area, Finns still appear to figure as a nation with positive attitudes towards different new technologies.

Ajeet *Mathur* starts a section of articles discussing the future perspectives of the information society both locally and on a more general conceptual level. His article deals with the future of international business in the Tampere Region, and in it he adopts a rather critical stance towards the eTampere initiative and other similar development projects guided by grand visions on the region's future growth potential. He points out that many such projects are based more upon myth than any real business activities, and that when one project fails to fulfil the expectations the leaders tend to respond by launching a new one driven by slightly different rhetoric. Despite these critical comments, the author notices that the region also has certain real strengths, and with the correctly chosen internationalisation strategies it might be able to achieve some tangible results. Antti *Kasvio* questions whether the concept of an information society has in recent times lost its earlier status as the grand societal project of advanced industrial countries. After all, the whole economic and societal situation has changed significantly since the late 1990s, and general optimism with regard to the future has changed into

a much more sceptical attitude towards our civilisation's ability to solve its most acute problems.

The collection ends with a short concluding chapter written by the editors.

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