Study on the Social Impact of ICT
(CPP N°55A – SMART N°2007/0068)

Topic Report 1
Revised Version

Conceptual framework 1st Version
Outlines of the vertical domain reports
Outline of the horizontal domain report

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Overview:

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1 Introduction

Recent years have witnessed a growing awareness of the extent to which ICT permeates all our society and economy, and of the wide-reaching implications this has on the structures and dynamics of the European society. But in contrast to the wild speculation which was typical of the late 1990s environment before the bust of the so-called 'Internet bubble', researchers have since the turn of the decade made much progress in establishing solid evidence of the often highly complex ways in which the take-up and use of ICT has initiated, enabled or fostered process of social change. While many leading thinkers painted either utopian or dystopian scenarios in the 1980s and 1990s, what is developing now is a well-founded understanding of the real social impacts of ICT in Europe.

This research has shown that deterministic accounts of the effects which 'follow logically' from the features of certain ICTs are ill-informed. There are considerable differences not only in the extent, but also in the ways in which ICT is utilised in the Member States of Europe, and the impacts derived from them. There are, arguably even bigger, differences in the social impact of ICT between Europe and other parts of the world in which up-take of ICT is widespread, such as North America, Japan and the fast developing countries of South-East Asia. What this means is that social practice, which includes policy-making, can have a real effect on the benefits which members of society derive from ICT, and on the extent to which potential disadvantages exert a negative influence.

While considerable theoretical insight and empirical evidence have been collected on the individual factors which underpin 'quality of life', 'empowerment' or 'freedom', a widely accepted assessment of the impact of ICT on individuals in their societal context is not yet available.

It is against this background that the present study was set up. This conceptual framework will provide the basic approach, concepts and questions used to estimate the social impact of ICT in contemporary European societies. The time span that is chosen for this estimation is 25 years. In the year 1983 the first PC with a 'simple' operating system for a mass audience was offered by IBM. This has launched the whole technological development that has led to the breakthrough of the Internet in the shape of the World Wide Web ten years later. Twenty five years of experience affords to strike a better informed balance, both empirically and theoretically than the utopian and dystopian speculations of the 1980s an 1990s.

The following section will give a short overview of the most important general conceptions of the impact of technology on society. It is impossible to escape questions about causality between technology and society in general when our task is to estimate the social *impact* of ICT. These conceptions will be put on a scale between technological determinism on the one side and social constructivism and voluntarism on the other. Often these ideas will be linked to dystopian views and utopian views respectively. A third conceptual distinction will be related to the nature and speed of change discussed here: has the social impact of ICT an incremental, evolutionary or revolutionary nature?

In the third section a number of frequently observed pitfalls in the estimation of the social impact of ICT will be discussed. These pitfalls haunt many popular and policy conceptions of the opportunities and risks of new technologies. Examples are the notion of a *technological fix*, the idea that ICT straightforwardly fixes a large number of existing problems in society and the notion of a *total revolution*, the assumption that new technologies will completely change or overturn basic structures of society such as the meanwhile silently deceased conception of a 'new economy'.

The fourth section is the largest one. Here the conceptual approach of this framework is revealed in the description of ten basic trends in contemporary developed societies that are

reinforced by ICT. This section shows the basic approach of this EU project. The estimation of the social impact of ICT *departs from basic societal trends and not from the technological characteristics of the technology under consideration* such as connectivity and convergence[1]. We first describe and analyze what has happened in the past 25 years in the societal domains that are investigated in this project and subsequently try to answer the question which impact ICT has had on these events. What would have happened without the advent of this technology? This thought experiment affords an unconditional and unbiased estimation of the effects of ICT. The conclusion we reach then, after empirical observation, is that the transformative potential of ICT is more of an evolutionary than a revolutionary nature. Therefore, the section title calls ICT a trend amplifier.

In this concise conceptual framework the ten trends presented can only be described in a general way and provided with references. Empirical specifications of some of these tends will be supplied in the domain reports and the statistical report. However, these trends are so broad that we will not attempt to fully cover them in the domain reports. The function here is to propose a particular approach to the social impact research question.

The following function of this conceptual framework is to provide a number of common themes and questions for the domain reports. We have to prevent the risk that they will produce overviews of particular domains that are fragmentary and have no relationship to each other. Therefore section five will describe common themes running trough all domain reports together with a number of questions all reports will try to answer when appropriate.

2 General Conceptions of the Impact of Technology on Society

The question of the current social impact of ICT is a special case of the general influence of technology on society. Other case examples are the impact of biotechnology and nanotechnology or the impact of older media such as the press and broadcasting.. In the philosophy and history of technology the conceptions of the influence of technology on society range from full technological determinism to pure voluntarism. The first extreme holds that technology has a decisive influence on society; the second extreme maintains that technology affords many, if not any choices societies can make by the use of technology. We will shortly pass this scale from determinism to voluntarism in describing a number of popular conceptions of the impact of ICT on society.

Technological determinism claims that society is shaped by technology in general and techniques in particular. The technology is *defining* because it has a number of intrinsic characteristics that define what people are able to do with this technology. The effects of these characteristics - the techniques in the technology - on the behaviour and conceptions of people are fixed. Often one uses concepts with the adjective technological, such as technological culture and technological environment. Jacques Ellul has written the most technological- determinist analysis that has appeared so far: *The Technological Society* (1964)[2]. This is a deeply pessimist portrayal of man and society that are completely subjected to modern technology without any potential to escape. In 1977 Langdon Winner

[1] This is the basic difference with the approach taken by RAND in their study *Policy Options for a ubiquitous Internet Society* (SMART 2007/0031). This study departs from a technology assessment, in this case of connectivity, convergence and other Internet trends, and tries to assess the social and economic impact of these technological trends and the policy challenges they pose. This is a very common approach. However, it runs the risk of technological bias. In this study we want to explore the approach that departs from societal trends.

[2] Originally published as *La technique ou lénjeu du siècle* (1954).

published a book with the telling title *AutonomousTechnology*[3]*.* According to him techniques have autonomous power; they are 'greedy' and gradually take control of society, politics and culture. Pessimism about the impact of technology is a feature of many evaluations in the twentieth century before the rise of the internet and other supposedly liberating technologies. For example, the members of the Frankfurter Schule, in this case notably Horkheimer's philosophy of technology, strongly testify to this attitude. Pessimism is a common attitude among technological determinist scientists and philosophers but optimism might be more popular among the people. This appears in conceptions of technology creating a complete revolution that offers progress for society. These ideas will be discussed in the next section.

The best-known analyst of the impact of ICT on society that testifies to a (moderate) technological-determinist view is Manuel Castells. Technological determinism is explicitly denied by Castells himself[4] but the central theme in his magnum opus *The Information Age* is the effect of informationalism (a mode of development) on capitalism (a mode of production). He defines a mode of development as a *technical* relationship of production and a mode of production as a *social* relationship. It is a new kind of base-superstructure distinction. Some determinism also appears in Castells' view on the network society. According to Castells the 'logic' of the network society is pervading all spheres of social, economic and cultural life. It is *self*-expanding, *all*-embracing, and tends to marginalize the remnants of the old society. 'In the Information Age, the prevailing logic of dominant global networks is so pervasive and so penetrating that the only way out of their domination appears to be out of these networks and to reconstruct meaning on the basis of an entirely distinct system of values and beliefs'[5]. According to Castells this escape is attempted by particular communities and resistance movements. There is no opposition inside networks. Castells once expressed his view that with networks 'we have created a machine which is dynamic, full of opportunities but is controlled by no one'[6]

At the other side of the scale of general conceptions of the influence of technology on society we find the opposite view of technological voluntarism. Individuals, organizations and societies at large are in control of technology and they are able make it work as they wish. In this view society, culture, politics and individuals create all techniques and all aspects of technology. This affords to make many, if not all choices they like to make: the technology is *enabling*. Techniques have no fixed inherent characteristics and technology is neither good nor bad. Here the instrumentalist view of technology is most popular. This view will be discussed below. Instrumentalism also is an option with technological determinism. However, here the instrument is a powerful force that cannot be escaped and that is used by powerful interests in society to suppress others. In technological voluntarism technology most often is an instrument of liberation and it can be used for progress in all spheres of society. According to Ithiel de Sola Pool they are *Technologies of Freedom*[7]*.* So, optimism is more frequently observed with voluntarism than with determinism.

A well known moderate type of technological voluntarism is the social constructivist view of technology. This view claims that individual and organizational users and regulators in society are continually constructing the design and operation of technologies[8]. Strong and

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3 Cambridge MA: The MIT Press.

4 M. Castells (1996) *The Information Age Vol I., The Rise of the Network Society*. Oxford: Blackwell, p. 5-7.

5 M. Castels, Idem. Vol I, p. 351.

6 In an interview with a Dutch newspaper: Oosterbaan, W. (1997) 'We hebben een machine gemaakt die door niemand beheerst wordt: Socioloog Manuel Castells over de netwerkeconomie. *NRC Handelsblad, November 8,, p. 33.*

7 I. de Sola Pool (1983). *Technologies of Freedom. On free speech in an electronic age*. Cambridge: Cambridge University Press.

8 W. Bijker, T. Pinch and T. Hughes, eds.(1987). *The Social Construction of Technological Systems: New Directions in the Sociology and History of Technology*. Cambridge MA: The Mit Press. W. Bijker and J. Law,

weak social constructivist claims are available[9]. The weak claim means that 'technological configurations are variable and strongly conditioned by social factors'. The strong claim goes further stating that 'technological change can be entirely analysed as the result of processes of social negotiation and interpretation, and that the properties of technologies are not objective, but are effectively read into the technologies by social groups'[10]. So, social constructivism argues that technologies, certainly technologies with strong human characteristics such as *information* and *communication* technologies are socially shaped. This view certainly denies that technological change follows a fixed, linear path which can be explained by some inherent logic. Instead, this path is non-linear and can go in all directions according to the wishes of users and designers.

In this conceptual framework a dialectical conception of technology that is both *defining and enabling* is defended. It tries to escape the extremes of determinism and voluntarism and it claims that technology and society are in a continuing process of *mutually shaping* each other[11]. Regarding society this view explains the dialectic of social structures and human actions that mutually shape each other[12]. Concerning technology this view defends the dialectic of technical structures or characteristics and their design and use, also mutually shaping each other.

The importance of emphasizing the enabling dimension of technology is that it offers us continuous choices and that it leaves room for policies, among them EU policies. The relevance of searching for defining characteristics of the technology under consideration is that it shows which characteristics are exerting pressures and putting limits on these choices and policies. To emphasize that these characteristics are not purely objective and follow no inescapable inherent logic and that they are not completely (inter)subjectively framed either, the word *capacities* of technology, or capacities of ICTs, might be better than the term characteristics.

Another position taken in this conceptual framework is the conception of the nature and speed of change that is created by information and communication technologies in society. The position taken is that the impact of ICT is *evolutionary*, rather than revolutionary. ICT sooner reinforces particular societal changes that were already going on than revolutionizing society. The technological capacities of ICT such as convergence and connectivity might be revolutionary in their own right, but their impact on society might not be of that nature. A popular everyday notion is that contemporary changes in technology and society have never been so fast before. It is doubtful whether this is true. Exactly hundred years ago, at the former turn of a century, rapid changes also occurred in a short period of time. They took place in society (urbanization and industrialization) and in technology (the introduction and diffusion of photography, film, telephony, radio, television and new transport means such as cars). Who is able to show that the current 'digital revolution' offers so much more sweeping change?

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eds. (1992). *Shaping Technology/Building Society: Studies in Sociotechnical Change*. Cambridge MA: The MIT Press.

9 Ph. Brey (2003). 'Theorizing Modernity and Technology'. In: T.Misa, Ph. Brey and A. Feenberg, eds. Modernity and Technology. Cambridge MA: The Mit Press, p. 31.

10 Ph. Brey. Idem, p. 31.

11 An important forerunner of this view of technology is the famous historian of technology Lewis Mumford. In his *Technics and Civilization* (1934), Orlando: Harcoutt Brace & Co. he shows that new techniques and important scientific discoveries are mainly used to reinforce existing societal processes and relationships instead of replacing them. These techniques and discoveries are preceded and accompanied by cultural changes. Before humans started to use machines on a massive scale our worldviews and relationships were already mechanized.

12 An instance is the well-known structuration theory of the British sociologist Anthony Giddens.

This is not to underestimate the importance of contemporary change affected by technology in general and ICT in particular. - In biology evolutionary change might also be radical: whole species and kinds disappear from time to time in natural history. – Here we will take the position that changes reinforced by ICT are not incremental, but transformative for many social structures and aspects of daily life. According to William Dutton[13], choices about the use (or non-use) of ICT "reconfigure the electronic and physical processes through which [people] access vital social and economic resources", by which he means: people, services, information, and technology. Such reconfigurations, he says, give rise to social transformation, often related to empowerment of people as citizens, workers, consumers, patients etc.

Often, "transformative" is understood as uses of ICT that open up substantially new ways for individuals, firms and governments to achieve their goals. In many cases, this refers to activities which *would not have been possible without ICTs*. Conversely, we will ask ourselves repeatedly in the following domain reports *what would have happened in these domains without ICTs*? By not taking the technology (in this case ICT) and its capacities or challenges as our point of departure we hope to uncover its impact on society in an unbiased a fashion as possible.

Before we are going to describe a large number of current societal trends that are reinforced by ICT we have to reveal a number of pitfalls in the estimation of the social impact of ICT that are commonly made in policy documents and in public opinion. These pitfalls are related to general conceptions of technology that are either overly deterministic or voluntaristic.

3 Pitfalls in the Estimation of the Social Impact of ICT

Usually there are three questionable ideas or types of reasoning behind exaggerated estimations of the consequences of new technologies. They have been listed and discussed by Joseph Corn in the 1980s[14].

3.1 The idea of a total revolution

The first assumption or idea is that new technologies will radically change our lives. This is a conspicuous refrain in many thoughts about the present and the future of technology. However, it would be wise to remember that this refrain has resounded many times in history before. A first example is the invention of electricity that was estimated to lead to a radical decentralisation of society in the nineteenth century, notably just before the rise of massive bureaucracies. Another example is the advent of radio that spurred expectations that people themselves could become broadcasters and direct democracy would lie ahead. What actually happened was the rise of communism and fascism shortly afterwards. Currently, the same song is to be heard. It is argued that the participative nature of the contemporary Internet will fade away the traditional mass media and institutional politics. In education so-called independent 'new learning' is held to replace traditional classroom learning. Many other examples could be mentioned. Some of them will be given in the next section. What is actually wrong with this argument? The first mistake of this argument inspired by

[13] Dutton, W.H. (2004) 'Social Transformation in an Information Society: Rethinking Access to You and the World', Paris: UNESCO; Dutton, W.H. (2005) 'The Internet and Social Transformation: Reconfiguring Access', in Dutton, W.H., Kahin, B., O'Callaghan, R. and Wyckoff, A.W. (eds) 'Transforming Enterprise: The Economic and Social Implications of Information Technology', Cambridge, MA and London: MIT Press, pp. 375-397.

[14] Joseph Corn, eds. (1986). *Imagining Tomorrow. History, Technology and the American Future*. Cambridge MA: The MIT Press.

determinism is that technical opportunities are converted into social realities much too fast. Technological innovations rarely lead to societal revolutions straight away. This did not go for the industrial revolution and it won't happen either with the current information or communication revolution. Technological innovations only drop into fertile soil when they join with social, economic and cultural innovations, subsequently perhaps emphasized and accelerated by these technologies. The second mistake in this type of reasoning is that it often is wishful thinking. The hope that tomorrow will be better than today or yesterday is the driving force behind the idea of a total revolution.

3.2 The idea of social continuity

The second argument is the exact opposite of the former. This is the assumption of social continuity. Here new technologies are seen as mere continuous improvements of existing technology. The motor car was an improved coach. The Internet primarily is faster: it is an electronic highway. Potential societal effects do not bring much news. At the most new technologies can solve old problems. What is wrong with this pragmatic and sober argument? In the first place this type of reasoning underestimates the transforming potential of ICT. Not all changes brought forward with the aid of ICT are incremental. But transformation is not yet a revolution. This would require structural changes in society. Examples of such changes are the break away of the 9 to 5 working day as a norm, the replacement of the modern capitalist economy by a 'new economy' and a domination of the mass media by so-called user generated content. In the analysis below we will argue that these revolutionary changes are *not* to be expected.

A second underestimation of this argument is that the technology in its own right certainly can be revolutionary or disruptive. The most important revolutionary characteristic of present-day digital technology is the convergence of most old infrastructures creating a all-embracing, digitally enhanced infrastructure for our (network) society. This might lead to a number of substantial social changes. Some of these changes will never be discovered following the argument of social continuity. Usually they are called second order effects of new technology: social side-effects not foreseen.

The last mistake in this argument is that it appears to have a blind spot for new effects. This is caused by the fact that new technology creates new problems, and not only helps to solve old problems.

3.3 The idea of a technological fix

A third type of doubtful reasoning is the idea that new technology can solve most if not all social problems. This is the voluntaristic idea of a technological fix. The new technology, e.g. ICT is seen as a solution for a large number of societal problems. Does one observe a gap between politics and citizens? Internet democracy is the solution. Is our car circulation stuck in traffic jams? Telework shows the exit. Is there not enough manual care in hospitals as compared to administration? Electronic patient systems free doctors and nurses for physical care. The obvious mistake in this simple reasoning is that it is much too superficial. The problems mentioned have much deeper causes. They are not to be solved by ICT as a set of instruments alone when no organizational and political measures are taken simultaneously. Moreover, in this argument a certain technology is often related to one particular effect only. Telework reduces traffic queues. Video camera's in public spaces have a 'Big Brother' impact.

3.4 Instrumentalism

We want to add a fourth pitfall. The main argument in this conceptual framework is that ICT primarily reinforces a number of existing societal trends. At first sight this seems to reveal an instrumentalist view of technology. Apparently, technology is seen as some kind of lever.

However, we try to escape an instrumentalist view as this is much too simple and does not correspond to the argument we propose. In the instrumentalist view technology is a *means* for a particular *goal*. Several actors are able to use this means for their own goals. In this way technology is seen as a solution for existing societal, organizational and individual problems. This view easily leads to the view of ICT as a technological fix. However, the difference between the two is that the idea of a technological fix is always framed in a positive manner while instrumentalism can also be linked to negative uses and consequences. This possibility of both positive and negative effects immediately shows the first problem with this argument. Often totally different goals are reached as compared to those expected or desired. In the section below we will come across many instances of this occurrence. We will mention a few examples. One expects to save time using applications of ICT but increasingly full calendars or schedules and a speed-up of all social, economic and cultural processes are the actual result. One assumes that telework can solve traffic jams but the overall use of ICTs supports mobility instead of reducing it. One notices that the Internet gives access to more knowledge and information for everybody, but we will also show that an increase of inequality is a more probable result because the Internet and these sources of information are used so differently by people with different social backgrounds. Frequently, these unforeseen effects are so-called *second order* effects. They usually have much deeper social causes than the *first order* effects expected by people defending an instrumentalist view of technology.

A second problem with the instrumentalist view is that in fact goals and means are not independent, but they influence each other. This is the well-known interaction of technology and social context. This means that the instrument is continually reshaped through goals that are aimed for in practice. As soon as particular users of mobile phones, particularly young ones, started to use the marginal design feature of SMS, to the utter surprise of the telephone manufacturers, these producers immediately adapted their means (supply) to this goal (demand).

A related problem is that a means is able to corrupt a particular goal. It can cause new problems. Sometimes the means, the cure is worse than the problem to be solved, the disease. Examples are the many failures of automation in organizations that tried to improve their effectiveness and efficiency with the aid of ICT. A very high percentage of automation projects in companies and government departments is known to fail or at least delayed. In these cases goals are not only not attained but in practice often also changed during the project to prevent explicit failure and image damage. The interesting conclusion of many evaluations of these projects is that many times a very narrow instrumentalist view of ICT was adopted and important social and cultural characteristics of the organization concerned ignored.

A final problem with the instrumentalist view is that ICT as a collection of means reveals a clear affinity with particular goals. So, ICT cannot be easily separated from these favourite goals. And it cannot be used for opposite goals. In particular respects technology can be defining. This goes for instance for the registration and control potential of ICT. This cannot be cut out of this technology. Particular social effects of this potential, such as likely privacy loss can be combated but the registration and control potential remains. In these defining aspects of technology probably hide the most important social effects of ICT in the long term. Unfortunately, the instrumentalist view tends to emphasize the enabling aspects of technology that are much easier to find.

4 ICT as a Trend Amplifyer: The Reinforcement of Ten Major Trends in Contemporary Society

In this long section we will describe ten major trends in contemporary European societies that might be influenced by and are often even believed to have been caused by the arrival of ICT. The selection of these trends was made with the following considerations:

- They should be social, not technological trends
- They should be sufficiently broad to encompass social, economical, political and cultural aspects; basic coordinates of society such as time, space, scale and social structure should be contained
- They should be sufficiently broad to be influenced by other factors than technological factors only;
- They should be longitudinal or epochal trends that may have already started several decades ago in order to be able to observe the influence of the arrival of ICTs
- They should be related to ICT in many scientific analysis and policy documents; this is not to conflate ICT and its social impact but to rule out the possibility that important social trends are ignored that might be influenced, if not caused by ICT.

Nevertheless, others may observe other major social trends influenced by ICT that we have not selected. The pretention of completeness would be too high for this relatively short framework.

4.1 Time: the acceleration of all societal processes

Let us begin with the most basic dimensions, those of space and time. The core of the opportunities of ICT according to many analyses and documents is that the technology works 24 hours a day and seven days in a week, and that this goes world-wide. The popular view is that ICT annihilates the significance of space and time and that this is a new phenomenon. Promoting this view Cairncross declared 'the death of distance'[15]. Some scientists such as Castells support this view with expressions such as 'the annihilation of time'', 'timeless time' and a 'space of flows that replaces a space of places'[16]

In fact the importance of the dimensions of time and space grows in the contemporary network society[17]. Their significance radicalizes because they are used ever more selectively. The new media support this. However, this trend is not new. The acceleration of social life already appears from the start of Western modernization in the sixteenth century. After the industrial revolution it was set into a following gear. Without the intervention of ICT acceleration would have stepped-up again in the twentieth century, if only by the steep rise of transport means.

Giddens[18] has described human history as an extension of the dimensions of space and time. Traditional societies rest on direct interaction between people living close together. Modern societies expand more and more in both space and time. Time barriers are crossed by a turn over of tradition in all kinds of sources. Spatial barriers are crossed with transport and

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15 Cairncross (2001). *The Death of Distance: How the Communications Revolution Is Changing our Lives . Harvard Business School Press.*

16 M. Castells (1996). *The Information Age Vol. I The Rise of the Network Society,* Oxford: Blackwell

17 J.A.G.M. van Dijk (1999/2006). The Network Society, Social aspects of new media. London, Thousand Oaks CA, New Delhi: Sage.

18 Giddens, A., *The Consequences of Modernity*, Stanford (Cal): Stanford University Press. Oxford: Basill Blackwell, Cambridge: Polity Press, 1990.

communication means. ICT has only continued this historical trend. Until the trend reaches a particular tipping point and bounces back. Then time and space actually start to shrink within expanding limits. For this phenomenon Harvey uses the term *time-space compression*.

The term compression best expresses what happens: a radicalization of the significance of these dimensions. The time and place options are treated ever more critically. The new media enable this treatment. Despite or by means of the existence of ICT the location of a company or institution becomes ever more important. With applications such as Google Maps and the mobile phone we can make appointments on the exact spot of a meter. Our very precise electronic calendars stimulate to fill the last holes in a daily schedule. The plain fact that one is able to check ones email at home, or everywhere else gives us the opportunity to complete a task for Monday morning already on the Sunday night before.

Does this mean that the radicalization of the significance of time also has a decisive influence on our daily spending of time? This is not the case. The technological opportunity of time compression collides with the physical and social reality of human beings. These poor creatures are not able to meet the speed of systems of ICT for seven days a week, let alone 24 hours a day. Biological and social rhythms are standing in the way. The best proof of this statement is that 25 years of PC and Internet experience and the real opportunities of telework, telestudy and the like have not managed to break the nine to five daily rhythm. This stands solid as a rock[19] for both full-time and part-time employees, though small fringes of the nine to five time-span are cut back by those trying to escape traffic jams going to work and returning home. [20]

Future expectations are that these fringes will be stretched more with the aid of ICT, but not that the basic synchronization of humans living together or fixed rhythms for the day or the week will be broken. That would be a true revolution.

4.2 Space: increasing mobility

A comparable popular idea is that place is no longer significant with applications of ICT. After all one is able to get access about everywhere to the global network. Initially, this was linked to the assumption that getting access would happen primarily from the home. In 1980 Alvin Toffler in his Third Wave still proclaimed the electronic cottage as a serious future perspective. In the mean time this appears to be a mistake of the same order as the paperless office projected in the same 1980s. Nothing has come true of this perspective, despite all marginal attempts to realize telework at home[21]. Actually the opposite has happened: a sharp rise of overall mobility in society[22] and a strong support of this trend by ICT.[23]

Increasing mobility is a deeply rooted trend in modern society. By itself it has no relationship at all with ICT. Instead it has many social causes[24]. On the field of demographics we are able to observe the shrinking household and the rise of the number of people living alone that

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19 European Survey on Working Conditions. Available www.eurofound.europa.eu. Breedveld, K., Broek, A. van den, Haan, J. de, Harms, L., Huysmans, F. en Ingen, E. van, *De Tijd als Spiegel, Hoe Nederlanders hun tijd besteden*, Den Haag: Sociaal en Cultureel Planbureau, 2006.

20 Harms, L., *Overwegend onderweg, De leefsituatie en de mobiliteit van Nederlanders*, Den Haag: Sociaal en Cultureel Planbureau, 2008.

21 The maximum current number of teleworkers (broad definition) in the EU ranges between 5 and 10 percent.

22 Breedveld a. o p. 31 a.n. See 19

23 Harms, p. 86; cf. G. Sciadas, *Our Lives in Digital Times*, Research paper, Statistics Canada, 2006, http://www.statcan.gc.ca/pub/56f0004m/56f0004m2006014-eng.pdf

24 Mokhtarian, P. et al., TTB or not TTB, that is the question: a review and analysis of the empirical literature on travel time (and money) budgets, *Transportation Research Part A-Policy and Practice*, 38(9-10), pp. 643-675. 2004.

drive people outdoors for social life and assistance. In the economy the geographical scale of labour processes is expanding and labour participation of women and housewives is rising. The growth of income and car ownership enable unimpeded travelling for work, study and leisure time. In a cultural respect spending leisure time outdoors is intensified and varied. ICT strongly supports all these trends. Below it will be argued that the new media enable an individualized existence and lifestyle. Simultaneously, these media maintain the possibility to keep in touch with employers and colleagues at work being on the road or working at home. These days appointments for our overfull calendars of leisure spending can only be realized with the aid of cars and modern communication means such as mobile phones, PDA's and e-mail.

As argued above the selectivity of space and places also increases. This goes for location of companies, the choice of places to live and of appointments for meetings and joint activities. Better logistics is not only a secret of efficient modern business management, but also for the coordination of modern life. ICT is becoming an essential means for this purpose. However, the successful use of ICT for everyday logistics largely depends on the extent to which online communication can be a replacement of offline communication or a supplement of this. Or can both be successfully integrated in the coordination and realization of our daily activities?

Considering the relationship between online and offline communication we have witnessed three periods with different perspectives in the past 25 years. In the 1980s and the start of the 1990s online communication or CMC ('computer-mediated communication') was seen as a potential replacement for offline or face-to-face communication. The image of the electronic cottage as a replacement of outdoor living and working fits into this perspective. Frequently online communication or CMC was immediately characterized as a second-rate substitute for familiar offline activities that regarding quality is no match for face-to-face communication.

After the breakthrough of the Internet and the World Wide Web in the second half of the 1990s the value of online communication was rated higher. For many activities this would be a serious supplement of offline communication with its own additional qualities such as independence from time, space and physical conditions. All kinds of e-activities, from eCommerce to eGovernment started to be viewed as required supplements for comparable traditional activities.

After the sudden end of the Internet hype in 2000 and with the rise of mobile equipment of ICT the perspective of the integration of online and offline communication appeared. As a supplement both types of communication are used in parallel. With integration both types of communication merge. Lightweight mobile equipment allows to be both or simultaneously active in online and offline environments. Undoubtedly, this is the perspective of the future. It enables us to attach an ever more selective importance to particular times and places. We can choose the best times and places for high-quality communication while keeping in touch with messages and events with a lower value for us.

The argument above implies that the trend of increasing mobility will only be reinforced more by ICT in the future. Until this trend also reaches its limits. Mobility will collide with the physical limitations of humans to be on the road al of the time, the material restrictions of rising transport costs and the limits of ecological non-sustainability.

4.3 Scale: globalization

That ICT supports globalization, is a statement almost everybody takes for granted, whether one believes in McLuhan's *global village* or not. Yet, a number of comments have to be added to this statement. Globalization is no new phenomenon either. It has occurred in many waves since the Western colonization of the world[25]. Each time progress in information and

[25] C.A. Bayly, C.A., *The Birth of the Modern World, 1780-1914*, Oxford: Blackwell, 2004.

communication technologies offers a strong support. At the former turn of the century a worldwide industrial capitalism caused a new wave of globalization. This was supported by the technology of the first communication revolution of modern times[26] that gave us telephony, photography, film, radio, television and an (inter)national press among others. The second communication revolution currently happening, marked by digital media, is indispensable for the acceleration and deepening of contemporary globalization characterized by the diffusion of borders in a worldwide production, circulation and consumer processes and by a liberalization of the world market. In the cultural sphere international satellite television and telephony have unified the world before. The Internet, e-mail and wireless mobile communication have added a significant further step, particularly in the experience of people.

An important difference between the former and the current wave of globalization can be observed. While the former was dominated by scale extension, among others supported by powerful new mass media, the present wave is a combination of scale extension and scale reduction. The last trend is a reduction that among others appears in the growing attention to local activities or identities and in the basic process of individualization. Sometimes the term 'glocalization' is used for this combination of scale extension and reduction. Networks, among them networks of ICT have both a centralizing and a decentralizing effect, though many will emphasize the horizontal dimension of networks. In the course of the twentieth century information and communication networks have primarily supported a spread of transnational companies across the world. From the 1930s onwards they enabled a simultaneous process of downsizing and a division of production activities followed by expanding subcontracting with a central management still being able to keep an eye on the divided process by means of ICT. In this way the processes of centralization of capital and control of production have been combined with a decentralization of production itself[27]. ICT and forms of network organizations have realized this combination and created a sweeping flexibility of economic processes.

4.4 Social infrastructure: network individualization

This global infrastructure of scale extension and reduction combined is also reflected in the social infrastructure of contemporary Western societies. According to many sociologists individualization is the most important trend of these societies. This means that increasingly the individual is the basic unit of society instead of groups or collectivities. This process appears in quite a number of trends such as the reduction of average household size, a bigger part of the day that people are spending alone or in the company of media, the differentiation of needs and activities and greater personal independence from the immediate physical and collective environment. ICT is one of the technologies enabling this way of living, together with transport, energy and household technologies. All these technologies have supported this way and style of living.

Sociologist Berry Wellman[28] has invented the concept 'network individualism' for this trend, while van Dijk prefers the term 'network individualization'[29]. The increasing significance of social and media networks for our network society is the necessary counterpart of individualization. After all, the social, collective and societal aspects of our existence are not less important than before; they are only organized in a different way. Henceforward, the individual is the starting point, at least in Western societies.

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[26] J. van Dijk (1991/2006). The Network Society. See 17

[27] J. van Dijk (1999/2006). The Network Society, Chapter 4. see 17

[28] B. Wellman (2000)., Changing Connectivity: A future history of Y2.03K. In: *Sociological Research Online*, Vol. 4, No 4., 2000. www.socratesonline.org.uk/4/4/wellman.htm, Geraadpleegd op 8-12-2000.

[29] J. van Dijk, See 17

From 1975 onwards the number of direct, physical social contacts, both in households and outdoors has been steadily reduced[30]. This is a clear sign of individualization. However, from the 1970s onwards this decline of physical contacts is compensated by fast increasing telephone use. In the last fifteen years this has been stepped-up by mobile telephony, e-mail and instant messaging or chatting[31]. So-called strong ties have partly been replaced by weak ties on a longer distance. In recent years we have witnessed the phenomenal rise social networking sites such as Facebook, Friendster, Hyves, LinkedIN and MySpace. In EU countries it is estimated that between 20 and 50 percent of Internet users have a profile on these sites[32]. Another fast growing phenomenon is online dating that is estimated to be used by 20 to 25 percent of Internet users searching for a partner. These are all appearances of network individualization on a personal scale. The new media support this trend with ever more facilities that strongly stimulate our abilities of creativity in communication.

The classical sociological discussion on the question whether the Internet in general reinforces or reduces the sociability and the social cohesion in society , recently is ever more settled to the advantage those who observe a reinforcement[33]. According to Katz and Rice the Internet increases social capital in terms of social , citizen engagement and community. Only, the problem is that some sections of the population benefit much more than others from these opportunities (see below).

The Internet does not only offer unprecedented facilities for social contacting but also for community building. Existing communities are not only going online more and more ('communities online'). The Net also creates virtual communities that often are communities of interest ('online communities'). Does this mean that both types of communities are recovering the so-called 'lost communities' of traditional mass societies and that they will compensate the lost direct social contacts in online environments? Most likely this example of a technological fix will not occur. Traditional forms of sociability will not return. They will be replaced by new forms that might be new in their electronic or digital shapes but in fact will only extend a number of trends that are a hundred years old and that do not depend on ICT a all. These are trends such as the extension of social and personal networks across much larger distances than before, the support of our social relationships by telecommunication media and the blurring dividing lines between public and private communication[34]. The trend of greater personal discretion in choosing contacts according to ones liking in stead of being determined by birth or location also is an older modernization trend.

4.5 Complexity: the rise of registration for control

That ICT offers the most important means to satisfy the growing need or drive for registration and control in all parts of contemporary society is easy to understand. The question what is the origin of this need is more difficult to answer. That requires a typification of our society. For this purpose a large number of classifications are offered that all are related to registration and control. The classifications information society and network society have a very general nature. The first indicate s that all activities in our society have a growing information intensity. This implies the registration of these activities. The second classification points out that increasingly the organization and structure of society are carried

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30 W. Breedveld a,o. See footnote 19.

31 Huysmans, F., Haan, J. de en Broek, A. van de,. *Achter de schermen, Een kwart eeuw lezen, luisteren, kijken en internetten*, Den Haag: Sociaal en Cultureel Planbureau, 2004.

32 OECD (2008) 'Measuring user-created content: Implications for the "ICT Access and Use by Households and Individuals' Surveys, Working Party on Indicators for the Information Society, Paris: OECD. See also: Fisch, M. and Gscheidle, C. (2008) 'Mitmachnetz Web 2.0: Rege Beteiligung nur in Communitys', *Media Perspektiven*, 7, pp. 356-364.

33 See a.o. Katz & Rice (2002) and Wellman and Haythornthwaite (2002)

34 J. van Dijk (1999/2006). The Network Society

by integrated social and media networks. Networks happen to be vulnerable social and technical (infra)structures that require control and need particular norms, codes, standards or protocols to operate [35]. What would be the Internet without the TCP/IP protocol? To communicate in decentralized environments and in peer-to-peer networks would be impossible. So, in certain respects a technology can be defining.

The use of the general terms information and network society does not rule out more traditional classifications. Clearly, European societies are capitalist in an economic view, constitutional democracies in a political sense, post- or late modernist in a cultural fashion and non-sustainable in an ecological respect. It would be possible to show the relationship between all these classifications and the needs for registration and control. That would go much too far here. After all, two other labels seem to be better suited to the trend discussed here.

Ulrich Beck[36] has called contemporary society a risk society. This is a type of society that continually prepares itself on risks in modern society that are created by humans themselves, not so much the risks of nature. These self-made risks originate from her exceptionally complex present-day technology and organization. These risks can only be kept under control by permanent control by, among others, registration and signal systems. According to David Lyon[37] this leads to a surveillance society. This term indicates a society in which the individual is observed by a focussed, systematic and permanent registration of personal data in order to reach more influence, to be able to lead, manage and govern and to protect[38].

Van Dijk[39] has tried to specify these general classifications linking them to the rise of ICT. He has done so via an extension of the historical analysis of James Beniger in his book The Contol Revolution[40] In this book Beniger describes a number of societal innovations in the second half of the nineteenth and the first half of the twentieth century as solutions for a crisis of control in production, distribution and consumption, a crisis that appeared in the aftermath of the Industrial revolution. These solutions were the innovations of the bureaucracy, new ways of transport and communication and the rise of mass communication and mass consumption. According to van Dijk these solutions became impediments for the organization of society in the twentieth century. For instance, it got caught up in bureaucracy. Gradually they have been replaced by new solutions, a large part of them carried by ICT. The bureaucracy is replaced by a 'infocracy': organizational control supported by ICT. Old connections of transport and communication are supplemented and partly replaced by ICT networks. Finally, mass communication and mass consumption are partly replaced by narrowcasting and personalization in the media and in marketing. These processes are clearly backed by the Internet and other digital media. The three series of solutions or innovations completely depend on the registration and control potential of ICT.

So, in this respect ICT again is an amplifier of trends that are much older than 25 years. They are a consequence of the epochal trend so thoroughly analysed by Max Weber: the rationalization of politics, economy, culture and worldviews that started at least 50 to 100 years before the coming of ICT. In turn, rationalization is a response to the increasing

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35 L. Lessig (1999). *Code, and other laws of cyberspace*, New York: Basic Books; D. Grewal, (2008). *Network Power, The Social Dynamics of Globalization*, New Haven en Londen: Yale University Press.

36 U. Beck (1992). *Risk Society: Towards a New Modernity*, London: Sage; Beck, U.(2008). *World at Risk*, Cambridge: Polity.

37 D. Lyon (1994). *The Electronic Eye: The Rise of the Surveillance Society*. Cambridge: Polity.

38 D. Lyon (2007). *Surveillance Studies: An Overview,* Cambridge: Polity, 2007. P. 14.

39 J.van Dijk (1999/2006). *The Network Society*

40 J. Beniger (1986). The Control Revolution:Technological and Economic Origins of the Information Society, Cambridge, MA: Harvester.

complexity of modern society[41]. Contemporary ICT only reinforces the registration drive and potential of present-day society, linking a longer existing database technology (already available before the computer came) with that of computer networks. Subsequently, these networks have become mobile and ubiquitous. They are currently penetrating in all pores of society and human lives, as no longer only humans are connected but also things with chips built inside. In the mean time individuals can be traced 24 hours a day, and in most of their activities and spheres of life. The loss of privacy linked to this trend is deplored by many. Nevertheless it continues unrelentingly.

Even so, the harm of privacy is no inescapable future prospect. The classifications of society defined above make a determinist impression. In fact, these characteristics of society are created by people that have other needs than efficient organization and safety only. For example, the needs of freedom and protection of personal life. In response to the privacy threats of ICT use three kinds of protection have been developed: privacy law and regulation, self-regulation (from codes of conduct to Internet filters) and so-called 'privacy-enhancing technologies' (among others encryption).

4.6 Capitalism: rejuvenation and growing instability

According to Manuel Castells capital is global and, as a rule labour is local[42]. He argues that the information revolution contributes to globalization and the concentration of capital precisely by using the decentralizing power of networks. Opposed to this, labour is disaggregated in its performance, fragmented in its organization and divided in its collective action. The ensuing loss of the strength of labour and the labour movement has led to a reconstruction, we would rather say rejuvenation of capitalism. Henceforward, the value of labour power all over the world can be used. New production and consumption markets, first of all those of China and other emerging markets, have created new sources of profit for capital. The international logistic transport and communication systems required have become so large and complicated that they could not longer be coordinated without ICT.

During the days of the Internet hype many thought that this would lead to a new economy without crises. This thought is a clear case of the idea of a total revolution. However, this expectation appeared to be too high. There are very few rules and regularities of capitalism that substantially change on account of ICT. All in all, only three can be derived[43]. The first is the reversal of the value chain. In electronic commerce the traditional preponderance of supply partly shifts to demand. Consumers become co-producers in self-service. The second change is the dematerialization and division of the value chain of production, distribution and consumption. All available information belonging to these parts can be detached from the material processes concerned, and divided among separate businesses. Most often these are the most profitable parts of the whole chain. However, along the same track of dematerialization financial assets can also be uncoupled from the so-called real economy. On the financial markets ICT plays a major role. The third change is a mitigation of the periodic crises of overproduction that haunt capitalism. Electronic stock management and production on demand can lead to more appropriate production planning.

However these innovations have a counterpart. This rejuvenation of capitalism and this uncoupling of 'virtual' from 'real' economic processes also create instability in the system, despite the stabilisation brought by the mitigation of overproduction. The network society in general and the financial markets in particular have become very unstable because all social and economic processes are accelerated in electronic networks. Behind this acceleration

41 J. Urry (2003). *Global Complexity*. Cambridge: Polity.

42 M. Castells (1996). *The Information Age, Vol. I, The Rise of the Network Society,* p. 475.

43 J. van Dijk (1999/2006). The Network Society

work so-called network effects such as power laws ('the rich get richer' etc.)[44]. Rumours and hypes are built and exchanged much faster than before. Networks of ICT clearly intensify the yoyo movements on the stock markets and the crises in the financial system. The real value of financial products is very difficult to detect in the current far-reaching dematerialization of the value chain.

4.7 Class: growing social inequality

Many social scientists and economists have observed a rise of social inequality, particularly income inequality worldwide, and especially in countries such as the United States since the 1980s[45]. So, in countries where this trend occurs it precedes the advent of ICT. In this section we argue that ICT tends to reinforce this trend.

Many will have doubts about the assertion that a technology so appropriate to distribute unprecedented amounts of free information and understandable knowledge among the mass of the population would contribute to rising social inequality. Yet this can be shown and explained, provided that one considers ICT as a technology that is able to reinforce the position of some people in societal competition and weaken that of others. So this concerns relative inequality and much less absolute inequality: the complete inclusion or exclusion of access to computers and the Internet.

Without in fact supporting an instrumentalist view of technology – see above- it can be argued that ICT has a leverage effect on existing types of social inequality. Most research of digital media access, that often deals with the so-called digital divide shows that there is a strong correlation between access and personal or positional characteristics of people[46]. Primarily education, age and societal position appear to be important. Considering physical new media access income still plays a role caused by the regular expenses for purchase of new hardware and software and usage costs that have to be made. People that need ICT for their work or education have a much higher chance of having physical access.

It is important to make a distinction between kinds of access to ICT. Van Dijk distinguishes between four subsequent kinds of access[47]. The process starts with motivation. Subsequently people will have to attain physical or material access to be able to work with digital media, Than they will have to develop digital skills. Finally, they will make various uses of these media,

In 2007 about half of European households have home access to the Internet, and slightly more have a PC[48]. This does not mean that every household member uses these media. To reach the number of actual users one has to subtract at least 15 percentage points from those connected. This means that a minority of Europeans has entered the digital world of computers and the Internet. Other digital media such as those for telephony, photography, video and music are used by larger sections of the population. The motivation to work with

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[44] B. Huberman (2001). The Laws of the Web; J. van Dijk (1999/2006). The Network Society; D. Grewal (2008). Network Power

[45] IMF (2007) *World Economic Outlook 2007*, Chapter 4, Globalization and Inequality, http://www.imf.org/external/pubs/ft/weo/2007/01/index.htm, Retrieved at 8-10-2007; C. Goldin and L. Katz (2008).*The Race between Education and Technology*, Cambridge MA en Londen: The Belknap Press, 2008; Also see Note 55.

[46] P. Norris (2001) *Digital divide, civic engagement, information poverty and the Internet worldwide*, Cambridge: Cambridge University Press; , K. Mossberger a. o. (2003) Tolberger, C. en Stansbury, M., *Virtual inequality: Beyond the Digital Divide*, Washington DC: Georgetown University Press, and J. van Dijk (2005). *The Deepening Divide, Inequality in the Information Society*, Thousand Oaks CA, London, New Delhi: Sage.

[47] J. van Dijk (2005). *The Deepening Divide, Inequality in the Information Society*. Thousand Oaks CA, London, New Delhi: Sage

[48] See Eurobarometer 2007 and J. van Dijk (2008) One Europe, Digitally Divided. In:

digital media has sharply risen in recent years. In most European countries all parts of the population, from young to old, and from low to high educated want to participate. The phenomena of computer anxiety and computer hatred have diminished. The biggest access problems are now a lack of digital skills and very unequal use, both in time and in type of applications.

One of the main reasons for unequal use of computers and the Internet is a lack of digital skills. Four types of digital skills can be distinguished. First we have operational skills; the popular expression is 'button knowledge'. Then we have formal skills. Every medium has particular formal characteristics. Regarding the internet one has to learn to browse and to navigate using hyperlinks. The third type of skill is information skills: the ability to search, select and evaluate information in computers and on the Net. The last type of (so-called 'higher') digital skills is strategic skills: using computers and the Internet as a means to reach a particular personal or professional goal[49]. Information and strategic skills appear to cause the biggest problems. Only a minority of Internet users master them sufficiently [50].

Unequal skills next to diverse interests of users are the main reason for unequal use of the Internet by different sections of the population. Usage can be measured in different ways. Among others one can look at kinds of applications such as the classes of information and entertainment. On this issue van Dijk has observed a usage gap of Internet applications between the higher en lower educated in several studies[51]. The higher educated primarily use the advanced and 'serious' applications of the Internet that serve their occupational and educational careers, while the lower educated use the simple applications for entertainment, basic communication, shopping and auctions relatively more.

Unequal skills and differential use of the Internet reinforces existing social and economic inequalities. One social category or class benefits more than the other. Again, we are able to argue that the rise of social and economic inequality in the world is a longer existing trend. It has many causes that cannot be discussed here. It has to be noticed that this rise of inequality is bigger in a country such as the USA than in most countries of Europe. In their book The Race between Education and Technology Goldin and Katz[52] have shown with abundant statistical data that except for economic reasons the extent to which the standard of education and the skills learned in education are able to keep up with technological progress explains a large part of growing wage inequality in America after the Second Word War. Since 1980 the standard of education lags ever more behind technological development. This causes those who are able to keep up with this development to take a clear lead. This growing gap van also be observed on the level of countries according to the IMF[53]. The use of technology, particularly of ICT is the main cause. Previously, Dutch economists Nahuis and de Groot observed a skill premium on wages on account of ICT skills in a large-scale and longitudinal international comparison[54].

The expression of a race between education and technology indicates that future solutions of this problem have to be found in all kinds of education, both regular and adult education.

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49 J. van Dijk (2005). The Deepening Divide ; A. van Deursen and J. van Dijk (2008). Measuring Digital Skills

50 A. van Deursen and J. van Dijk (2008).

51 J. van Dijk and Hacker (2003); Van Dijk (2005), (2008)

52 C. Goldin and L. Katz (2008).*The Race between Education and Technology*, Cambridge MA en Londen: The Belknap Press, 2008.

53 IMF (2007) *World Economic Outlook 2007*, Chapter 4, Globalization and Inequality, http://www.imf.org/external/pubs/ft/weo/2007/01/index.htm, Retrieved at 8-10-2007.

54 R. Nahuis and H. de Groot (2003).Rising Skill Premia, You ain't seen nothing yet? *CPB Discussion Paper* No. 20, The Hague: CPB, Netherlands Bureau for Economic Policy Analysis.

Almost everybody has a need for better information and strategic digital skills. Seniors primarily need operational and formal digital skills[55].

4.8 Politics: civil emancipation and the rise of populism

In the past 25 years organized participation in society gradually has declined in many countries of Europe[56]. Generally, voluntary work in associations also is diminished. In this period, already starting before the breakthrough of the Internet and ICT in general on a mass scale, a clear shift has occurred in kinds of societal participation. The trends are from institutional to personal participation and from physical to virtual or mediated participation. Both trends have been reinforced by the coming of the Internet.

Institutional participation is membership of political parties, trade unions, churches or other large-scale societal organizations, voting or working for these organizations and attending their meetings. This kind of participation has steadily been replaced by a more personal kind that is no more or less than an epiphenomenon of individualization. Personal characteristics, interests or concerns are deciding, not group identities given by birth and kept all life[57]. Conversely, these persons increasingly approach societal organizations in a functional and anonymous way. Membership cards are exchanged for check-book donations. These organizations have come to be seen as facilitators for individuals or citizens. This does not rule out personal contributions.

This businesslike and individualized approach of societal organization would have occurred without ICT. After all, check-books and donations are age-old technologies. And the telephone precedes the Internet as an online medium. This kind of personal citizen participation perfectly fits into the contemporary age of individualization and emancipation. However, the Internet and ICT in general do enable individualized citizens to keep in touch with society much better than before. They are able to be kept informed, to exchange knowledge, to discuss views with other individual participants, to draft petitions and to be served with transactions and advice by professionals of the organizations they are linked to. Here the transition is made from physical to online participation. For many years now it has been argued that online participation would be able to compensate for declining collective and institutional participation, in the way virtual communities would revitalize traditional communities. Most data show that this does not occur. ICT does not cause more political and societal interest among citizens, no higher turn-out with elections and no higher membership for political parties, trade unions or churches[58]. However, online activities contribute to the individualized kind of participation and individual citizen emancipation described. The contemporary citizen acts from his/her own environment and experiences and s(h)e inserts these experiences in public opinion, among others the online public sphere. There is less deductive reasoning from collective political, social or cultural interests.

In politics this has lead to the rise of populism in election campaigns and in parliamentary work. Increasingly, political candidates directly address individual citizens as persons, not as members of parties or other organized collective interests. Both more candidates and more voters or citizens prefer this personalized attitude. Political parties evolve from program

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55 A. van Deursen and J. van Dijk (2008). Measuring Digital Skills. Paper presented at The 58th Annual ICA Conference in Montreal Canada, May 22-26, 2008. A. van Deursen & J.A.G.M. van Dijk (*in press*). Improving Digital Skills for Online Public Services. Government Information Quarterly.

56 For example, data on the Netherlands can be found in: P. Dekker, P., Hart, J. de en Berg, E. van den, Democratie en civil society. In: Sociaal en Cultureel Planbureau, *In het Zicht van de Toekomst, Sociaal en Cultureel Rapport 2004*, Den Haag: Sociaal en Cultureel Planbureau, 2004, pp.181-219.

57 P. Dekker et al. (2004). P. 196

58 J. Katz and R.Rice, Bimber (2003), S. Ward and R. Gibson (2008). European political organizations and the Internet.; J. Brundage and R. Rice (2008). Political Engagement Online:Do the information rich get richer and the like-minded more similar? Eurobarometer data required.

parties and parties of elected executives to campaign parties. The campaign party supports the popular leader as a person with attractive single issues.

What is ICT contributing to this development? It certainly has not caused it. The rise of populism and the campaign political party took place in the age of television democracy and politics starting in the 1960s. Just like the program party was linked to the age of press democracy and politics before. In that sense McLuhan's expression 'the medium is the message' still carries some truth. However, the role of persons in politics and the media has much deeper roots than in the media only according to the psychology and sociology of culture. It does not only belong to the epochal trend of individualization described, but also relates to the desire of intimacy and personal expression in an alienating mass society[59] and to the fall of public man in the privatized modern economies and societies[60].

Once again, the Internet and ICTs mainly reinforce these trends of citizen emancipation and the rise of populism. Henceforward, favourite political persons and single issues can be consulted and supported by individual citizens on specialized websites. Slowly, but surely the age of Internet politics is approaching. It has not yet supplanted the age of television politics but in the USA and in Northern and Western Europe election campaigns are drawing to the Internet. Recently, Barack Obama could build a large online grass-root support and enormous funding via mainly small online donations. However, it should be noticed that he has spent by far the largest part of campaign funds to television ads and that face-to-face door-to-door propaganda and rally meetings were prominent parts of his campaign as well. So, the integration of online and offline activities discussed above seems more like the future of politics and elections than a replacement by ICT activities alone[61].

4.9 Culture: the rise of participation in the media

A rise of participation in the mass media is a trend that precedes the Internet. From the 1960s and 1970s onwards the number of letters by readers of newspapers and magazines started to rise. Many young people applied for their favourite music numbers on the radio. From the 1960s onwards one of television viewers greatest desires was to personally appear on television to have their '15 minutes of fame' according to the 1960s Pop Art artist Andy Warhol.

With the advent of the Internet the opportunities of participation in this medium and others sharply increased. In the perspective of so-called Web 2.0 and the rise of participatory new media such as weblogs, wiki's, social media (for social networking) and online civic journalism opportunities have again grown in the last five years. However, in the Web 2.0 perspective the individualized kind of participation described above is provided with a touch of utopianism that we knew from the time of the rise and hype of the Internet. Here the Internet is seen as an empowering medium for users. Users are expected to be able to create alternatives to institutional politics, the traditional mass media and knowledge institutions together with other users. Institutional politics is supposed to be ready to be replaced by forms of direct or teledemocracy, the traditional mass media by civic journalism or on demand media and the established knowledge institutions by peer-to-peer networking or wiki's. These expectations presuppose the following five characteristics of the Internet as a:

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[59] MR. Merelman (1984). *Making Something of Ourselves: On ulture and Politics in the United States*. Berkely: university of California Press. R.P. Hart (1994). *Seducing America: How Television Charms the Modern Voter*. Oxford: Oxford University Press.

[60] R. Sennett (1977). *The Fall of Public Man*. New York: Knopf.

[61] S. Ward and R. Gibson (2008). *European political organizations and the Internet: mobilization, participation and change*; R. Davis a.o. (2008). *The Internet in U.S. election campaigns*. Both in: A. Chadwick & Ph. Howard, *Handbook of Internet Politics*. London, New York: Routledge.

- *interactive* medium that departs from the one-sided communication of existing mass media;
- *active and creative* medium enabling users to transform from viewers, listeners and readers to participants;
- *direct* medium in which individual users to determine at a distance what happens in the centre (of among others politics and the mass media);
- *platform* on which everybody is equal in principle as assumed expertise has to prove itself before being accepted;
- *network* medium enabling the collective creation of products online, not primarily by individual authors or businesses.

All these assumed characteristics exist to a certain extent. However, everyone of them can be contested too. The Internet has substantially changed in the last ten years. The share of user-generated content has markedly increased by means of the number of personal websites, weblogs, chat boxes, online for a, contribution tot online newspapers, journals and broadcasters, so-called wiki's, exchange sites for (partly own) music and videos and finally profiles in social networking and online dating. But that does not mean that the Internet is sufficiently interactive for, among others, customer and citizen support. This still is massively given by call centres and service desks. Neither are online media on the Internet flooded with contributions of users. The relatively passive and consumption use of online contents still is much larger than the creative contributions. In 2006 downloading and exchanging online contents was three times as popular in the US than creating own contents[62]. Apart from chatting, profile sites and the like 'serious' website contributions are provided by less than twenty percent of Internet users[63].

That the Internet is a direct medium that serves as a platform and locus of exchange of knowledge, views and products of culture such as music and video files does not imply that experts or intermediaries (editors, moderators, educators, researchers and advisories) have no function anymore. On the contrary: the information overload and the inferior quality of much Internet content require more, not less intermediaries. Only those who accept or agree to the abundance of low-quality content on the Internet would support the view that they are not needed anymore. In his book *The Cult of the Amateur* Internet critic Andrew Keen[64] has argued that opinion is sold as fact, rumor as reportage, and insinuations as information. He claims that on the Net differences between information, advertising and sheer nonsense are blurring.

Finally, it has to be emphasized that networks, among other peer-to-peer networks are shaping a third mode of organization in the economy and in governance besides the hierarchy and the market, indeed[65].. However, this is not to say that it will become the predominant mode in the near term. The established economic and political institutions, the market and regulation will also keep playing an important, if not decisive role on the Internet of the future.

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62 Pew Internet and American Life Project (2007). Eurobarometer or other European sources to be added.

63 Pew, Idem

64 A. Keen (2007). *The Cult of the Amateur, How today's Internet is killing our culture*, New York, Londen: Doubleday/Currency (Random House)

65 Y. Benkler (2005). *The Wealth of Networks, How Social Production Transforms Markets and Freedom,* New Haven en Londen: Yale University Press, 2005; D. Tapscott & Williams (2006). *Wikinomics How Mass Collaboration Changes Everything,* New York, Londen: Portfolio/Penguin Books,; J. van Dijk (2006). The Network Society; C. Sunstein (2008). Infotopia

After the quality of user-generated content on the Internet the actual participation in the production of this content is another overrating that has been made in the Web 2.0 perspective. Serious user-generated content that could play a role in politics, the business world and societal participation is delivered by a minority of people with high education. One will not find many weblogs and much civic journalism among the average of the population. Here one does find the exchange of music files, videos and photos. This is an instance of the usage gap that was discussed in a former section.

So, we are able to conclude that the Internet extends the opportunities of societal emancipation and participation. However, those who were already frontrunners in participation, the higher educated and those motivated to participate, benefit a lot more from these opportunities. This means that existing (relative) inequalities will remain, if not increase (see above). Users will not overtake the power of mass media editors. Institutional politics will not be swept aside by direct teledemocracy. Finally, it would be inconceivable for the extremely complex society we are living in that expert knowledge would be overrun by the lay knowledge of 'wise crowds'. These instances of a revolutionary transformation caused by ICTs will most likely not occur.

4.10 Daily life: increasing choice opportunities

With the growing prosperity in affluent societies, the increasing complexity of modern life and the individualization of social living the number of choice obligations and opportunities in daily life have multiplied. Evidently, ICT very much enables to conduct a life with so much complexity and choice. Perhaps the most important technological capacity of the new media next to speed, virtuality and interactivity is selectivity: the capacity to make choices among a seemingly endless number of products, contents and contacts[66]. The menus of choice in hyperlinked websites, both informational and commercial seem to be endless.

However, once again we should be aware of the fact that increasing choice opportunities and needs precede the advent of ICT in contemporary society. They are derived from the following epochal trends in Western society.

As has already been discussed the individualization of daily life between and within ever smaller households has grown during the whole twentieth century and has accelerated in the 1960s with cultural emancipation and the rise of a youth culture. This life requires that individuals are able to make continuous choices for themselves. After the Second World War (mainly) young people started the make their own life and emancipate from their families and communities. The new media have only intensified this trend. The sharp rise of mobile telephony use is an indication of the need to connect individuals, rather than households. Presently, even children and young teenagers are individualizing themselves from their families in their own rooms equipped with a computer, telephone, stereo and Internet connection.

The second basic trend is the increasing complexity of all spheres of life in modern society. Tasks at work, in education and in leisure or family life have become more complicated and more difficult to coordinate. In the course of the twentieth century all kinds of information and communication means have been invented and introduced to cope with this complexity. ICT is just the latest of these means, though a much more powerful means for the coordination of modern life than those offered before. Not only mobile and fixed communication means are used for that purpose but also all kinds of information agent software. They range from search engines, price comparison sites and online dating profiles to self-therapy for mental and relational problems. But it must ne noted that library assistants, consumer guides, marriage counsellors and therapists have performed similar functions.

[66] See J. van Dijk (1999-2006). *The Network Society* for a complete list of capacities of ICT

The time compression and speed-up of modern living discussed before cause a further trend that was already visible before the advent of ICT: the intensification of daily life appearing in ever more busy daily schedules and the rise of an experience economy in culture. ICT supports this trend with all kinds of electronic calendars, contact lists and lists of favourites. Though they make daily life outside work more businesslike their use seems to be inevitable for most people. ICT further enables the trend of intensification with multimedia and virtual reality experiences. Computer games have become one of the most popular new media applications. They add to older massive music, dance and theatre events, (sport) games, cinemas and individual media games introduced in the last century.

The most basic material trend is the abundance of products and services of mass consumption of increasingly prosperous developed societies. Mass consumption has two sides to it that are both supported by ICT. They are the differentiation and the standardization of products on large-scale markets. Long before the rise of ICT mass markets already contained a rising number of products and services. This variety could be supplied because production processes and product forms were standardized in mass production. With the introduction of ICT both differentiation and standardization could be supported. Most contemporary products and services to be chosen in online supply are just variants of the same basic product. The favourite choices of consumers are first marketed with techniques of segmentation and subsequently by personalization.

The rise of self-service in consumption was already prevalent in the twentieth century economy before, for example in supermarkets and hobby practices such as sewing and knitting both at home and outdoors. With e-commerce, online public services and online distance education self-service has multiplied. This has stimulated another, more active kind of consumer that is sometimes called 'prosumer'. Co-creation of products and services in networks is not an entirely new phenomenon but it certainly is proliferated in the (peer-to-peer) networks of ICT.

4.11 General conclusions

In this section it has been argued that the social impact of ICT has no revolutionary but an evolutionary nature. From a technical point of view ICT may be revolutionary, but her societal impact is not of that nature. This does not rule out that ICT contributes to important societal transformations. With ten contemporary trends it was observed that they are reinforced by ICT. Without ICT they would also have occurred, though to a lesser extent. This would have led to major problems in a number of societal domains such as a congestion of social and economic exchange and all kinds of organizational processes. These problems will be identified in the domain reports that come after this conceptual framework.

The non-revolutionary impact of ICT on society follows a historical pattern that has been observed many times before. Brian Winston speaks about the 'law of the suppression of radical potential' in the history from the telegraph, the telephone, radio and television through the Internet [67]. On every occasion the anticipated revolutionary potential of a new communication technology is incorporated in existing societal relations after having become mature. Isn't that what happened with the Internet after the utopian prospects that came forward in the 1990s and the days of the Internet hype?

Again, this does not rule out important societal transformations on account of ICT. Only, they are still largely unknown. Currently, we can observe a number of tendencies that will be extensively analysed in this report. Often these tendencies are opposed, such as with a technology of freedom and control, or a technology that we use to strike a compromise between privacy and security. The advantage of this state of affairs and this dialectical view

[67] B. Winston (1998). *Media Technology and Society: a History from the Telegraph to the Internet*, London: Routledge.

of technology is that important choices can still be made and that many policy options are still open for us to choose.

5 Common Themes and Questions

To find the potential long-term transformations on account of ICT we have to dig deeper. We will have to identify a number of common themes that will be discussed in all ensuing domain reports. These common themes are very basic social (infra)structural characteristics and goals of contemporary European societies. They are the themes to look at when we describe the impacts of ICT in the societal domains. We have identified five common themes:

5.1 Rationalization (effectiveness, efficiency, innovation)

This goes for the organizational aspect in all domains. It does not only concern production systems and the economy, but also consumption patterns and everyday life. For instance, partly on account of ICTs everyday life has been found to become more business-like as well. Think about the effects of electronic calendars and explicit choice or preference lists in profile sites and online dating.

Rationalization as a theme enables the domain report to look for the objectives in a particular domain, already present before ICT arrived but subsequently more or less supported by this technology. Further, it forces us to look at the costs the use of ICT requires as a means. Are the costs of this means worthy of the achievements?

Finally, ICT is some kind of innovation. What is the innovative capacity of ICT as compared to old activities and techniques?

This inspires the following questions each of the domain reports will try to answer:

- What are the traditional goals in term of effectiveness in the domain under consideration? Has the introduction of ICT brought these goals closer?
- What ICT expenditure has been made in the domain? Did it bring the expected returns yet in terms of efficiency, or are the main results still to come?
- Have the ICT applications in the domain only brought forward technological innovation or also social and organizational innovation?
- When the domain is non-economic in its nature – because it is in the social, political, cultural, education or health field- has the introduction of ICT reinforced businesslike approaches of calculation, registration, economic measurement and management control?

5.2 Networking

In all domains the (social) infrastructure of activities is changing on account of the networked character of present-day ICTs. A physical classroom produces different social networks than online education. Policy formation in meeting rooms is different from online forums. Telemedicine hospital treatment engages other doctor-patient exchanges than physical doctor, nurse and patient interaction. The specific properties of networks (such as network externalities), in combination with the particularities of (digital) information goods when compared to tangible goods, imply that network creation is one of the main underlying principles for transformative “impacts” of ICT. We argue that most transformative change of ICTs will be in the relations and the resources we derive from them in the information and network society. This also contributes to changes in social capital (see below).

This inspires the following questions each of the domain reports will try to answer:

- To what extent is the domain under consideration already networked? Or does it still largely consist of separate entities that are either not online or that still work offline most of the time?
- Has networking changed the organizational structures in the domain? Has it lead to new roles, functions, jobs or organizational positions of people working in the domain?
- Can particular network externalities be observed in the domain? For example: has a critical mass of online connectivity already been reached? Is there a call for common standards or protocols for the networks used in the domain? Are power laws observed such as strong actors becoming even stronger by means of networking or are so-called 'long tails' occurring: the availability of a great diversity of choice in small numbers?

5.3 Empowerment and participation

The common scientific and public opinion expectation is that ICT will change power relations in many, if not all domains in society. Some think that centralization will occur, but most think decentralization will happen. The most popular expectation is that ICT is empowering users of all kinds: citizens, consumers, workers, patients, students and audiences. Here the main question is: Do/will ICTs substantially change the relations between governments and citizens, producers and consumers, doctors and patients, teachers and students etc? Increases in participation and empowerment could be understood as key elements of beneficial, transformative change, but ICTs can potentially also be used to curtail participation and individual freedoms.

This inspires the following questions each of the domain reports will try to answer:

- What has been expected of a change of relationship between the most important actors in the domain and what has actually occurred? Have those in power yet reached more power in their control of design, investment and implementation of ICT or can a bottom-up trend be observed? Is the popular expectation true that users and user-generated content increasingly define what happens in the domain?
- Has the *nature of the relationship* between governments and citizens, producers and consumers, managers and workers/employees, doctors and patients or teachers and students changed on account of ICT?
- Has ICT increased participation of citizens, consumers, workers, patients and students in goal settings and in the ways goals are being persued?
- What is the level of access to ICT (primarily computers and the Internet) in the domain under consideration? This question goes for at least three types of access: 1. physical access to computers, the Internet and other digital media; 2. digital skills and 3 use: the quantity and quality/ kind of applications.

5.4 Social capital

Many expect that ICT will affect the distribution of social capital and the strength of social cohesion in society. Social capital is defined here as "... *the sum of the actual and potential resources embedded within, available through, and derived from the network of relationships possessed by an individual or social unit*[68]. High stocks of social capital in a particular society, nation state, region or local community are associated with relative ease of the sharing of knowledge and expertise, with community building and social cohesion.

[68] Nahapiet, J. and Ghoshal, S. (1998) 'Social capital, intellectual capital, and the organizational advantage', Academy of Management Review 23(2): 242-266.

Woolcock[69] has proposed three types of social capital:

- bonding social capital, i.e. strong ties between like people (or organisations) in similar situations;
- bridging social capital, i.e. more distant or "weak ties" of like persons (or organisations);
- linking social capital, i.e. weak ties which reach out to unlike people/ organisations, such as those which are entirely outside of the community or in a different sector.

This inspires the following questions each of the domain reports will try to answer:

- Can a particular growth of social capital be observed in the particular domain? 2. Does social networking contribute to improvements or degradations in the domain according to accepted norms or values?
- What type of social capital presently dominates the domain: bonding capital (strong ties of similar people), bridging capital (weak ties of similar but distant people) or linking capital (weak ties of unlike, mostly distant people)?
- What is the role and what are the achievements of so-called social or participatory media (see trend 4.8 above)?
- Does ICT lead to more or less social cohesion in relevant communities of the domain (e.g. health, education, leisure and resident communities)?

5.5 Information and Lifelong learning:

The meaning of the concept information society is that in all human activities and in all domains information intensity is increased. This implies that a growing part of all activities, in work and leisure time, and obviously in education consists of searching, collecting, processing, evaluating and applying information. Among others this means that the number of pure information jobs is growing and that the other jobs contain ever more information processing. This requires lifelong learning both on the job and in special adult education. It is important to know that the growing role of information processing and the information society in general already started long before the coming of ICT. It is linked to the rise of literacy, science and scientific management since the industrial revolution[70]

Obviously, ICT strongly supports the opportunities of lifelong learning, both on the job, in formal education and in leisure time. Referring to leisure time is important as presently people, especially young people learn a lot from using computers, the Internet and other new media outside formal educational environments. Learning is not only aided by the innumerable sources provided in this way by ICT but also by networking, both in professional knowledge networks and in social networking. In all domains knowledge networks, more in general information exchanges via digital media are growing. This enables new ways of learning by cooperation and association. Again, it is important to argue that so-called 'new learning' in schools, departing from classical classroom education is not only related to the new opportunities brought by ICT but has much broader cultural roots in processes of individualization, cultural differentiation and emancipation.

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[69] Woolcock, M. (2001) 'The Place of Social Capital in Understanding Social and Economic Outcomes', Canadian Journal of Policy Research, 27(2): 151-208.

[70] J. Beniger (1986). *The Control Revolution*. See note

This inspires the following questions each of the domain reports will try to answer:

- To what extent have information jobs and information activities grown in the domain under consideration? What are the typical ways of information processing and exchange before and after the introduction of ICT?
- What is the relationship between professional and lay information processing or learning in the domain? For example, how do teachers and students, doctors and patients, civil servants and citizens, managers and employees learn and exchange the results of learning. Do applications of ICT support these ways of learning?
- What are the opportunities of learning with the aid of ICT in the domain? What is the role of peer-to-peer networking at all levels? What are the opportunities of computer interfaces in interactive learning for students, workers, consumers, citizens, patients etc.?
- Does ICT only support so-called 'new learning' by individual and network interaction and association or also more traditional modes of knowledge transfer (classroom and unidirectional learning)?

6 Domain Report Design (Initial Proposal)

These questions cannot be answered in the same way or to the same extent in all domain reports. The main reason is that the selected domains are rather different in kind. We have a number of concrete societal fields such as work, education, health and community and more abstract domains covering several of these fields: policy making, lifelong learning, consumption and innovation. Therefore a fixed scheme for all domain reports cannot be made. So, the questions framed above are items of attention in the domain reports.

However, following the conception of technological change in this framework a particular sequence in the analysis of the domain report is highly recommended:

- The start will be a summary of the *most important social trends* in the domain of the last 25 years or even broader: the course of the 20th century. The attempt will be made to *not* refer to ICT in describing these trends. This affords a unbiased treatment of the impact of ICT in these domains.
- Subsequently, the *arrival in the domain of ICT* in the 1970s and 1980s will be described. The most important task is to describe the *perspectives*, the opportunities and risks assigned to ICT at that time. The most important perspectives are the policy goals in the domain, goals thought to be reached by means of ICT. This is the start of the present-day evaluation of these perspectives later in the report (E).
- The arrival of ICT is the occasion to discuss the *factors encouraging or discouraging the take-up* of ICT in the domain both in the past and today. This affords to pay attention to present-day issues of access and participation.
- Than a (not too long) description could follow of *the evolution of ICT in the last 25 years* while it is introduced in the domain. This enables to discuss the common themes described above and, when appropriate, some of the ten general societal trends listed in section 4 of this framework.
- This could result in a *summary of social impacts* to be compared to the earlier perspectives (opportunities and risks) attached to ICT. This could also be the best location to present the results of the thought experiment suggested before: what would have been happened in the domain without the introduction of ICT?
- Logically, this extends into the *future perspectives* of these impacts beyond 2010, taking due account of the distinction between short, medium and long-term impacts.

Finally, a relatively short analysis can be made of the existing *policy initiatives* and how these relate to observed impacts, taking account of the different specific European social and economic contexts.

Participation in Policy Making

University of Twente

Table of contents:

1 Introduction

This domain report makes an inventory of the impact of ICT on public policy making in contemporary European societies. This issue is known as e-participation. However, this is a very broad concept that can be applied to the participation of people in all kinds of domains in society both public and private. Participators could be workers or employees in labour organizations, patients in health care, students and teachers in educational institutions and audiences in the media. This report focuses on citizens that participate in public life that is under the influence of governments and that try to shape this part of public life using tools of ICT, particularly Internet applications.

This focus is still too broad. Meijer and Bekkers[1] have distinguished between political participation, policy participation and social participation. This domain report will be about policy participation and it will frequently also refer to political participation. Social participation that focuses on building social capital building in social networking and communities will be discussed in the domain report about the Community and the Family. In the domain report you are reading participators will be called citizens and the venues in which they participate - that range from elections and consultations to public services- can be both offered by governments and their civil servants or by citizens themselves. All have public goals, some have political goals.

Policy participation is defined here as *taking part in public affairs by both governments and citizens trying to shape these affairs in a particular phase of institutional policy processes, from agenda setting through policy evaluation*. Traditionally, participation in public policy processes shaped by governments is approached with a government-centric view. This means that all initiative to invite and pressure citizens to take part in policy processes came from governments and institutional political parties themselves. More or less autonomous initiatives and actions from individual and collective citizens to influence public affairs or governments have not acquired much attention from politicians, civil servants or social and political scientists.

This also goes for e-participation[2]. Until recently, most initiatives in e-participation came from government employees and politicians trying to involve the citizenry in public and political affairs with applications of ICT, mostly Internet applications. In the last five years a significant change has occurred. Now citizens themselves can take the initiative to influence public and political affairs with freely available new Internet applications. Most of them are known under the labels of Web 2.0 applications and so-called user-generated content. In this report the government centric view of e-participation will be exchanged for a two-sided government and citizens view. Both government and citizen initiated applications will be discussed.

According to Sæbø, Rose and Skiftenes Flak[3] "governments may seek to promote participation in order to improve the efficiency, acceptance and legitimacy of political processes. Citizens, non-governmental organizations, lobbyists, and pressure groups may demand participation to promote their own interests, either within the established political system or outside it through activism and opinion forming. "

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[1] A. Meijer and V. Bekkers (in press). Citizens2Citizens, Mapping participatory practices on the Internet. *Electronic Journal of e-Government, Vol. 6* (2009).

[2] See a.o. A. Macintosh (2007). E-Demmocracy and e-Participation Research in Europe. In: H. Chen. L. Brandt, V. Gregg and W. Traummüller (eds.) *Digital Government* . New York: Springer.

[3] O. Sæbø, J. Rose and L. Skiftenes Flak (2008). The shape of eParticipation: Characterizing an emerging research area. *Government Information Quarterly 25*, 400-428.

Before the extensive treatment of these applications of e-participation in section 4 of this report two sections will follow. First we will describe the rise of attention for e-participation against the backdrop of much longer existing societal trends of civic participation. This goes in line with the approach of the Conceptual Framework. Part of the mater is not new at all and the opportunities of electronic venues of participation have to be compared against comparable older ones and related to the current needs and capacities of citizens.

The ensuing section 2 will describe the advent of ICT in this domain during the 1980s en give an historical overview of the expectations of the opportunities and threats of ICT tools in policy participation by citizens developed from the 1980s to the present. Here we will also summarize six general views of democracy that usually hide behind these expectations. Particular views of democracy happen to be more in favour of some applications of e-participation while other views back other applications.

The long empirical section 3 will give an overview of the characteristics, the use and the expectations regarding the most important applications of e-participation in policy making. They will be arranged in the framework of the general phases of the policy process: 1. agenda setting, 2. policy preparation, 3. decision making, 4.policy execution and 5. policy evaluation. In every phase both government initiated applications and citizen initiated applications will be described.

In section 4 the common themes for all domain reports announced in the Conceptual Framework will be addressed. In the domain of participation in policy making we also have rationalization (effective policy making), networking (peer-to-peer networking citizens, civil servants and politicians), empowerment (of citizens and governments), social capital (differentiation or homogenization) and lifelong learning (user-generated and collective intelligence).

Finally, section 5 will present practical options for policy makers to make better use (according to their views) of e-participation by the citizens in their domain.

2 Epochal trends and the arrival of ICTs in the domain

2.1 Epochal trends: the participation of informed citizens in contemporary society

Government invitations of citizens to participate in policy making and the motivation of citizens to participate certainly are not new. They became an ever more important part of governance in modern democratic societies since the Second World War. Especially in the 1960s and 1970s a wave of interest in democratizing all domains in society launched by young people of the 'protest generation' could be observed. In those decades the power of traditional authorities began to crumble. Authority was no longer taken for granted. Henceforth it had to prove itself continually, not simply by claiming it, but through action and by communication with the subjects concerned.

After the 1970s institutional participation by membership of political parties, trade unions, churches or other large-scale societal organizations, voting or working for these organizations and presenting their meetings began to decline. This kind of participation was replaced by a more personal kind that was no more or less than an epiphenomenon of individualization. Personal characteristics, interests or concerns came forward, not group identities given by birth and kept all life[4].

[4] P. Dekker et al. (2004). p. 196

Table and Figure from the Eurobarometer

These lines are the introduction for a description of the following longitudinal trends of participation:

- Individualized societal participation
- Collective intelligence and action at a distance
- Emancipation drives (of youth, women and minorities of all kinds)
- Democratization (of labour organizations, educational, health and welfare institutions, community and cultural organizations and the media)
- Rise of informed citizenship
- Differentiation of citizenship

All these trends preceded the coming of ICTs. They only used traditional organizational and media means.

2.2 The arrival of ICTs and the opportunities of e-participation

In the 1980s ICTs arrived on a massive scale with the introduction of the PC with a relatively simple operating system and popular software in workplaces and households, The Internet appeared in academic circles. Immediately these technologies appealed to the imagination of future watchers, scientists and the early adopters of these technologies to launch more or less utopian visions of the future, among them in the field of politics and policies. The following characteristics of computers connected in networks (the Internet) were thought to have revolutionary or at least transformative implications for the democratization of politics and society at large (see Conceptual Framework); the Internet was seen as a:

- *interactive* medium that departs from the one-sided communication of existing mass media;
- *active and creative* medium enabling users to transform from viewers, listeners and readers to participants;
- *direct* medium in which individual users to determine at a distance what happens in the centre (of among others politics and te mass media);
- *platform* on which everybody is equal in principle as assumed expertise has to prove itself before being accepted;
- *network* medium enabling the collective creation of products online, not primarily by individual authors or businesses.

Imaginations were often framed in the ideas of a total revolution, a technological fix or as instruments that would overturn institutional politics and modes of policy making.

Four waves of these more or less utopian perspectives can be distinguished:

- 1980s: *Teledemocracy* perspective (notorious authors: Ch. Arterton, Th.Becker, B. Barber)
- The Athenean agora was the most important source of inspiration for the idea that in networks citizens can perform politics and determine what happens in the centre of society working from their Internet or cable TV terminals. The expectation was that the removal of space barriers in ICTs and their central storage capacity would enable forms of direct democracy without intermediaries such as parties and representatives.

- Early 1990s*: Virtual community* perspective (authors H. Rheingold, In this perspective the rise of usenet groups and other online communities would stimulate both online communities (communities of interest) and communities online (supporting existing physical communities). Main expectation was that these virtual communities could make up for 'lost community' in modern society (the crisis of traditional village and neighbourhood sociability).
- Around the turn of the century: the time of the *Internet hype* after a massive spread of the Internet in society. Here visions of a *'new democracy'* came forward that were equivalent to the vision of a 'new economy'. The basic idea was the prospect of mass participation in politics and policy making via the Internet. In some visions citizens could even bypass institutional politics and the state to create their own political and policy reality. From the perspective of governments first experiments were waged in online consultation and debate of citizens considering government plans. The main expectation was that this would broaden participation.
- From 2004 to the present: *the Web 2.0 perspective*. Observing the sharp rise of social and participatory use of the Internet by (co-)creative Internet users producing user-generated content it was expected that citizens would increasingly contribute to policy making in all kinds of ways: with online petitions, weblogs, civic journalism, wiki's (collective intelligence) etcetera. The main expectation is that a multitude of creative contributions of user-generated content will appear.

Behind these expectations of the potential aid of ICT to the participation in policy making clearly lie different views of democracy. Some support individual contributions in a teledemocracy referendum style, others stress discussion or debate and again others community building and inclusion. It is very important to make these views evident from the start. Six views of democracy will be distinguished and linked to their favourite applications of e-participation[5]

The classical Western view on democracy is *legalist democracy* – a so-called procedural view of democracy, regarding the constitution and other laws and rules as the foundations of democracy. Here a small, but strong and effective state is preferred. In this view e-participation of citizens can help to improve public support for the government and the administration by offering more and better information in both directions.

The second conception of democracy is called *competitive democracy*. It is mainly supported in countries with a two-party or a presidential system. According to this view, parties and leaders compete for the support of the electorate. This rather elitist view of democracy emphasizes representation and efficient decision-making by leaders. Digital media are first and foremost used for information campaigns and election campaigns.

Four other views of democracy have a completely different strategic orientation. They are not government-centric but reason from civil society. Supporters of these views fight for a socialization of politics. This implies a more prominent role for social organizations and individual citizens. The assumption is that computer networks such as the Internet will enable them to have a direct influence on politics, and even to bypass institutional politics or replace it with their own political relations. While the first two views, intending to strengthen institutional politics are mainly supported by politicians and administrators, these alternative views are defended by many social organizations and intellectuals.

[5] J.A.G.M. van Dijk (1996). Models of democracy behind the design and use of ICT in politics. *The Public/ Javnost III (1):* 43-56. Jan van Dijk (2000). Models of Democracy and Concepts of Communication. In K. Kacker and J. van Dijk (Eds.) Digital Democracy. Issues of Theory and Practice. London, Thousand Oaks CA, New Delhi: Sage.

The most radical view concerning existing political practice is *plebiscitary democracy*. According to this view, political decisions have to be made through referenda or plebiscites. This implies a preference for direct democracy instead of representative democracy. The opportunities offered by computer networks to hold telepolls or telereferenda and to have online discussions have had an immediate appeal to the supporters of this view.

Another alternative view is *pluralist democracy*. In this view, opinion formation within and between social organizations is emphasized. Democracy is not the will of the majority but that of a constantly changing coalition of minorities. Its most important value is pluralism in social and political discussion and in the media. It is a combination of direct and representative democracy, since representation is exercised not only by politicians but also by societal organizations. Digital media offer numerous opportunities for pluralism in public debates, among them online for a. Sometimes group decision support systems can be used.

The fifth view discussed here is *participatory democracy*. Its supporters promote a socialization of politics, encouraging active citizenship. The emphasis lies on the broadest possible opinion formation about political affairs and on a particular combination of direct and representative democracy. Its most important instruments are public debates, public education and citizen participation in general. If the digital media are to play a positive role in enabling these instruments, access for all is vital.

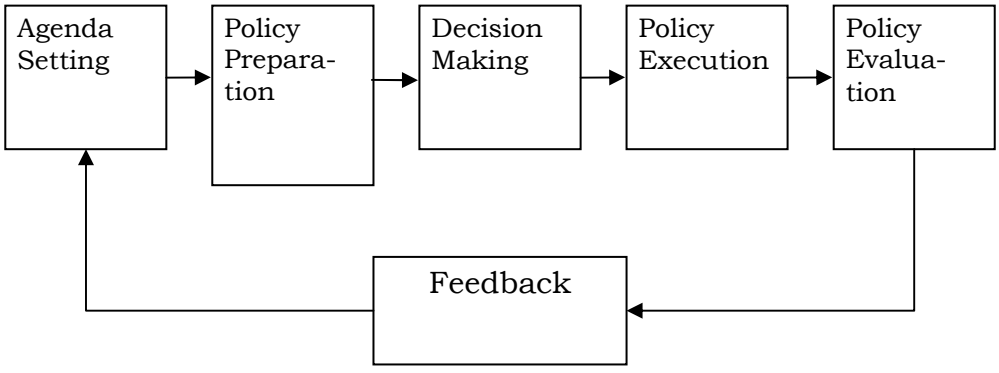
The last view on democracy has appeared as a dominant model among the pioneers of the Internet community. The *libertarian view* is close to the pluralist and plebiscitarian views in several respects, as the opportunities for (virtual) community building, telepolling and online debates are proclaimed. Specific to libertarianism is the emphasis on autonomous politics by citizens in their own associations using the horizontal communication capabilities of computer networks in general and the Internet in particular. Favourite e-participation applications are e-activism, online petitions telepolls and online fora.

3 Applications of ICT in the domain

3.1 Introduction

In this report the numerous kinds of applications of e-participation are classified and analysed according to generally accepted phases of the policy process in general. This is a cycle that consists of the following phases:

Figure 2: Phases in the Policy Process



Currently, most experience in e-participation has been reached in the phases of agenda setting, policy preparation and policy evaluation. Applying e-participation in decision making and policy execution is contested. The views of democracy that strongly emphasize representation and representative democracy, the legalist and competitive views have

doubts about directly engaging citizens in decision making and policy execution. These phases are supposed to be reserved for political representatives and public administrations executing the decisions of governments and parliaments. Here the only option for them would be e-voting in systems of representation.

This is related to the *nature* of activities in e-participation. The so-called participation ladder – see Figure 3 - arranges these activities in the order of a number of steps that are increasingly difficult to take. All views of democracy and participation support open and accessible information exchange between governments, public administrations and citizens in the policy process. Citizen consultation is also supported by all, but the representative views do not want that obligations for governments are derived form the consultation results. Seriously accepting citizen advice is even harder to accept for the strict representative democracy views. Finally, co-production by citizens and governors of government policy and public service (design and execution) is accepted by some views of democracy but not by others. Co-decision is even more contested. Actually only the plebiscitarian and libertarian views of (direct) democracy – see above- support this opportunity of e-participation.

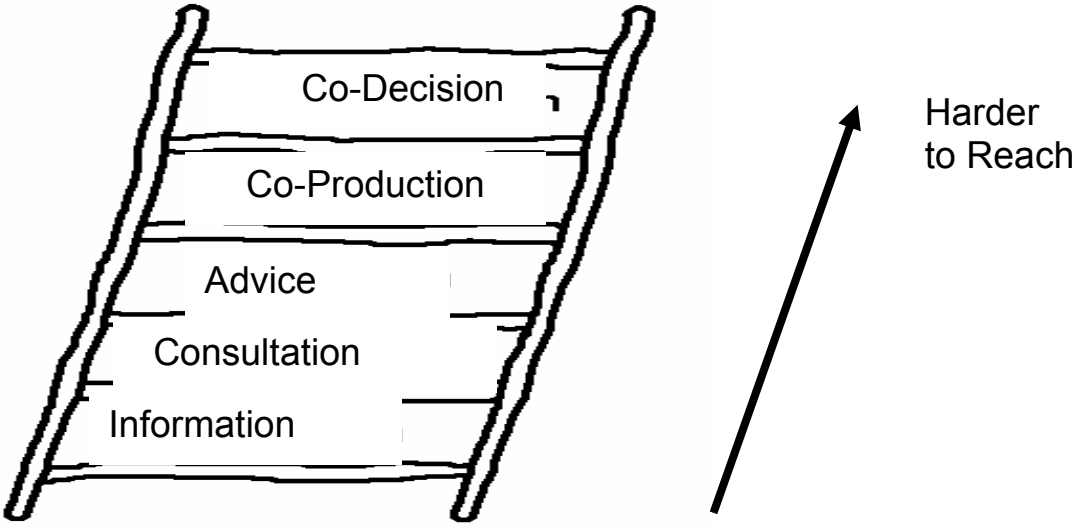


Figure 3: The Participation Ladder and the Nature of Activities in e-Participation

In the full domain report the following eleven applications of e-participations will be fully described and analysed (advantages and disadvantages) and provided with as much empirical data about their use and results as we can find. In every phase of the policy process both the applications initiated by governments or public administrations and citizens will be listed.

3.2 Agenda setting

1. Open Online Consultations (governments and public administrations)

Governments sometimes not only inform citizens about their policies on government websites, but also invite citizens to reply or to have an input with their own ideas, suggestions or complaints. Public administrations more often ask for complaints and suggestions about their public services to improve quality and develop new services often asked for. Some governments explore the Internet to seek for weblogs, online discussions and actions in order to know what the mood is among citizens.

Although information exchange without participation is no part of e-participation the quality, accessibility and usability of the information provided for consultation appears to be decisive

for its success. Another vital issue is trust: some citizens are rather cynical in their belief that governments and public administrations will not perceive or act on their input to open consultations.

2. E-petitions and E-activism (citizens)

In many EU member states, notably the UK citizens initiate or use e-petitions to put single issues, complaints, or requests on the political or government agenda. In Scotland this has become an official initiative of parliament (citizens are invited to fill petition lists on a website)[6]. E-petitions can become very important tools in those countries were there is a legal right to put issues on the agenda of parliament after having collected a particular large number of signatures. The Internet is a much more powerful tool to reach this goal than traditional means of signature collection.

The Internet is also used on a massive scale for E-activism. Numerous groups launch websites to promote their special interests and viewpoints appealing not only to fellow citizens but also to governments and politicians. These voices generally are autonomous and not influenced by governors or politicians. However, it is rarely clear whether these activists only speak for themselves or for a particular part of the citizenry. The communication style of E-activism is to express and to try to convince and influence the opinions of others and not to discuss own opinions.

3.3 Policy Preparation

3. Online Plan Consultations (Governments)

During the years of the Internet hype many European governments launched official online consultations of citizens to discuss government plans that were already prepared. The intention was to engage more citizens in the process of plan making than only those citizens that were known as more or less professional lobbyists gathered on official meetings. This application has been used by national ministries discussing new policy documents and by local governments presenting zoning and building plans for particular neighbourhoods. In general the results were disappointing as the same kind of lobbyists showed up as before and because governments did not accept results as they were deemed to be not representative.

In the current stage of Internet diffusion and technological development the opportunities for online plan consultations increase because more citizens are able to participate and because plans can be visualized better with all kinds of visual and simulation aids. For example, citizens can see and choose between visual models of particular street or neighbourhood plans or explore Second-Life-like environments of their future district.

4. Online Forums for Policy Making (Citizens)

Since the advent of Usenet groups more than twenty years ago Internet users have discussed all kinds of societal issues in online forums. They offer the opportunity of contributing to discussions 24 hours a day and from every location without the necessity to meet. All contributions can be made simultaneously. Many online forums are dedicated to political and policy issues. About every important issue stirs some kind of discussion on the Internet. Sometimes, they are linked to E-activism.

[6] http://www.scottish.parliament.uk/business/petitions/open/index.htm

Evidence shows that online forums do not draw more people into these discussions than in traditional meetings discussing policy or political issues, with the important exception of a part of the young generation. Moreover, discussion is not equalized as most online forums are dominated by a small core of contributors. Finally, it must be acknowledged that these forums have no, or only a small effect on opinion formation and decision taking in institutional politics, even less than the official plan consultations discussed above. Governors complain about the lack of representativeness. However, as these forums are so popular with many thousands of participants in very country, they must have some effect on the consciousness and knowledge of policy issues among citizens.

Deliberating online groups have some important disadvantages that should be corrected by moderation, discussion rules and the filtering of contributions marked by scolding, insults and flaming to make these collectives effective[7]

- *Amplifying errors*: bias in groups tends to be not reduced but extended; escalation to a course of action that is failing can often be observed;
- *Common knowledge effect:* information and views held by all group members have far more influence than minority or individual information/views (that tend to remain silent);
- *Cascades:* following the lead of others people go along with the crowd to maintain a good opinion of others though they know better (remain silent)
- *Polarization*: deliberating groups turn individual initial different views more extreme instead of coming together.

Another condition is the organization of an equal playing field for discussion. When the weblog of a particular person or the website of a particular pressure group launches the discussion postings often will simply be used for propaganda or advertisement. For example on the very popular weblog of the Italian comedian Beppe Grillo, that also acts as a populist politician Grillo himself is the central actor in a 'discussion' with his readers following a star structure. Grillo introduces his statements and readers respond with all kinds of postings that are published without any filter. In such a structure rarely a discussion or discussion thread appears among the readers themselves. See: http://www.beppegrillo.it/eng/aiuto.php

3.4 Decision Making

5. E-voting (governments; election committees)

ICT offers new channels for voting both in elections and in referenda or official opinion polls. A distinction should be made between electronic machine voting and electronic distance voting. The last kind of e-voting is discussed here. It offers new opportunities for people who live far from a polling station, have a lack of time or are handicapped. However, most evidence in the few instances where online e-voting is already practiced – mainly among expats- shows that these opportunities do not, or only scarcely result in a higher voter turnout. E-voting will be an important *additional* channel in future elections but the following conditions should be met regarding some basic problems to be solved first:

- The highest security of the system
- The secrecy of the vote

[7] C. Sunstein (2008). *Infotopia. How Many Minds Produce Knowledge*. Oxford, New York: Oxford University Press. A host of social-psychological publications exist that testify to the special group dynamic effects in computer- mediated communication and online discussion groups. Some of them support the discussion quality of online groups and others harm it.

- Accessibility and usability of the system to the highest degree
- Opportunity of individual voting without consultation and social pressure (often neglected drawback of voting at home)
- Exclusion of election propaganda near the e-voting application comparable to the ban of such propaganda inside polling stations (propaganda for a particular e-vote could be just one click away).

6. E-campaigning (citizens and politicians)

The Barack Obama campaign has shown how important E-campaigning can become for elections. With his Internet applications he gathered more than 500 million dollars of funds and organized an army of campaign volunteers as participants in his campaign. E-mail, YouTube, social networking sites and an extended own website were very frequently used. This electoral technology will somehow move to Europe as well.

Citizens themselves can also use E-campaign means to put a pressure on governments. This also happens outside election times. On the Internet we have thousands of European pressure groups trying to influence government decision making.

However, currently the most important applications of E-campaigning for citizens themselves are *E-voting guides* that are very popular in several European countries. They are decision-support systems helping voters to choose the best party, candidate or referendum option on the basis of a number of positions and statements. Their result is a particular advice to vote. These guides have a number of advantages and disadvantages that will be treated in the full domain report.

3.5 Policy Execution

7. e-Maintenance of the Law (by citizens invited by governments)

Of course governments use ICT systems extensively to control for criminality and offenses of rules and regulations themselves. However, the government can use additional eyes to survey what happens in society. This certainly is a kind of participation in policy execution. We are talking about municipal and police sites on which citizens are able to report all kinds of offenses, from child pornography to having seen someone driving a car using a mobile phone that is not hands-free. These snitching sites are increasingly popular among the population. They can also turn against governments as they can also be used to report offenses by civil servants and to launch complaints against government acts (see below).

8. e-Government services following the needs of citizens and including participation (government initiative)

The provision of e-Government services is still marked by a strong supply-side orientation. The goal is to provide as many public services online as possible and to offer them in the most advanced shapes, including full electronic transactions. However, it appears that there is scarcely any correlation between the supply of these services and the demand by citizens that lags far behind. For example, in 2009 Austria has an availability of 100% of government services for the public while only 39% of Austrians have used the Internet in the last 3 months for interaction with public authorities (Eurostat 2009) – Also see the 'i2010 eGovernment Action Plan' (Commission, 2006) for a comparison in all EU countries.- Online public services can offer major improvements for European citizens but we have to admit that many still prefer traditional channels and that online services often increase the use of call centers and the like because the Internet services often are not sufficiently user-friendly or interactive. A multi-channel strategy is required (van Dijk et al. 2008, Ebbers et al. 2008).

The main solution to this mismatch of supply and demand is the systematic registration of user needs, competencies (skills) and behavior. This is common practice in the corporate sector, but unfortunately not in the public sector. Citizen's needs and behavior in using online government services have to be continually monitored and *demand side* benchmarks have to be developed. This is a general way to offer citizens more participation in the practice of e-Government services.

A second solution is to link democratic participation to service provision. Usually e-Government mimics a rather narrow type of e-commerce. However, government services often can be linked to opportunities for citizen input and for more 'political' uses. For example, governments can offer simple online schemes to request garbage collection at a particular address and time. But they also could extend these services with venues for complaints and suggestions of improvement concerning environmental and dirt issues in the neighborhood concerned. This is an important new kind of participation in governmental affairs that has to be explored.

9. e-Government services with participatory user-design (government initiative)

Some electronic governments do invite citizen input in designing and improving online public services in advance, not the use of it afterwards. This is called user-centred service design. This is quite a step to take for the traditionally supply-oriented online and offline government public service provision. It is a part of the start of a demand-side shift that is made by some European governments under the influence of the opportunities of ICTs.

10. E-complaints and e-surveillance (initiated by citizens)

Citizens themselves are also able to launch sites for complaints against wrong or badly executed government policy on the fields of social and public services, the execution of for instance environmental, juridical, mobility and minority or immigration policies and even cases of corruption. Here it appears that these opportunities of e-participation can be a two-edged sword as the same technology can be used to undermine government policies and regulations. For example, sites are available that warn drivers for the exact places were speed cameras along the road are installed.

3.6 Policy Evaluation

A fast growing number of applications are available for policy evaluation both on the initiative of governments and citizens. Along with the applications of agenda setting and policy preparation they are most frequently used.

11. Quality panels and individual evaluations of online public services (government initiative)

Some governments, mainly on the local level have installed online quality panels or individual feedback systems in their online public service supply. This enables citizens to rate the level of service provision and to return suggestions. For governments this gives the opportunity to improve services continually. Notice that this application is the registration of citizen *opinions*, not citizen usage *behaviour* as called for above (under 8).

12. Citizen control sites and information services for public or government policy (citizen initiative)

The fastest growing applications of e-participation are all kinds of control sites and information services for citizens that enable them to evaluate official policy results on a daily basis *and to use them for their own decisions* in daily life, such as the choice of a place to live. The issues concerned are not as political as the familiar policy debates on the Internet

and other mass media. However, they prove to be very attractive to average citizens, also those with no political motivation. Examples of these control sites are sites where local residents are able to report the level of noise around airports and the pollution of particular regions or waters. Extremely popular are *social geographical cards* of quarters and neighbourhoods reporting their statistics of criminality, housing prices and living quality. Citizens frequently use them in their decision to buy a house somewhere. Strikingly, these services usually are private initiatives of small Internet companies that process publicly available data from governments in a far more efficient and usable way than governments themselves apparently are able to do.

4 Social impact analysis

This section discusses some common themes that will also appear in other domain reports. At least five themes will be discussed .

4.1 Rationalization

What are the effectiveness and efficiency of these applications of e-participation ? The answer clearly depends on the view of democracy one supports. In one view the quantity of participation by citizens is the decisive norm, in another view it is the quality, e.g. the quality of deliberation in online discussion. In again other views it is the influence on decision making by governments that holds. All views support the norm that e-participation is able to improve the quality of policy making by the exchange of information between citizens and governments in two directions. The quality of information in decision making is an aspect of rationalization in contemporary society.

4.1.1 Effectiveness

The effectiveness of applications of e-participation depends from the goals governments or citizens attach to them, and behind these goals often are different views of democracy. Those supporting better information exchange between policy makers and citizens will look at different goals to be achieved than those attempting more deliberation between the parties concerned or participation in decision making.

According to the literature the goals of *governments* with e-participation are:

- Improving the quality of government policies and services
- Closing the gap perceived to be growing between governments and citizens
- Boosting the legitimacy of government policy (because citizens are consulted)
- Knowing what is going on in society: e-participation as social antenna
- Insight in the growing social, cultural and opinion diversity in society
- Mobilizing unknown creativity and expertise in society at large, both among professionals and lay people.

The goals of *citizens* with e-participation often are:

- Citizens want to put (new, forgotten or neglected) issues on the agenda
- Citizens want more attention to a particular special interest of their own
- Citizens want more information and better services
- Citizens want to discuss particular issues
- Citizens want more choice or a larger part of policy decision making
- Citizens want to monitor the execution of government policy that is in their interest

- Citizens want to call attention to particular abuses or criminal acts
- Citizens want to help in solving particular social problems

Arévalo, Fernández and Messia de la Cerda[8] have made the ambitious attempt to construct an E-Participation Index of European countries in 2006. They define e-participation as

- *Using ICT to increase the supply of information useful in the process of consultation and for decision making;*
- *Using ICT to enhance consultation; and*
- *Using ICT to support decision making by facilitating people's participation.*

Their index is a qualitative measure adding proxy indicators for:

- *Quality of the services/products it offers on the websites for this purpose;*
- *Relevance of the information and services provided;*
- *Usefulness to the citizen as users; and*
- *Willingness (if any) of the government to provide relevant information and services; and encourage the public to be active in promoting deliberative, participatory decision making in public policy matters.*

Rank	Country	Index	Rank	Country	Index
1	Unit. King.	1,000	14	Spain	0,461
2	Netherlands	0,803	15	Poland	0,434
3	Denmark	0,674	16	Italy	0,420
4	Malta	0,674	17	Luxembourg	0,379
5	Sweden	0,620	18	Czech Rep.	0,301
6	Belgium	0,609	18	Slovenia	0,301
7	Ireland	0,559	20	Hungary	0,224
8	Portugal	0,551	21	Latvia	0,164
9	Germany	0,545	22	Slovakia	0,148
10	Estonia	0,542	23	Greece	0,113
11	Finland	0,537	24	Lithuania	0,082
12	France	0,535	25	Cyprus	0,066
13	Austria	0,527			

Table 1: E-Participation Index of EU Countries: Advanced Status (Arévalo, Fernández and Messia de la Cerda)

4.1.2 Information: better informed policies?

In all applications of e-participation one of the main goals is to mobilize and exchange all relevant information in society on the issue under consideration in order to improve policy making. This goes both for governments or public administrations and for citizens. Governments and administrations want to mobilize unknown expertise in society and they want to know what is going on and what the moods and opinions of citizens are. Often they also want to inform, that is wage information campaigns in the shape of participatory methods on order to be more effective. On their turn citizens want a (powerful) audience (the

[8] G. Arévalo, E. Fernández and J. Messía de la Cerda (2006). The state of e-Government and e-Participation in European Regions. *Proceedings of the International Multi-conference on Computing in the Global Information Technology (ICCGI'06)*, IEEE Computer Society.

government and the administration) to receive their views, needs and complaints or they want an audience among fellow citizens that are interested or want to achieve the same goals.

All opportunities in this respect depend on the *quality* of information exchanged in the channels of e-participation. The quantity usually is no problem, or it is a problem in the form of information overload! Not all information exchanged on the Internet is valid and reliable, not even that of governments and public administrations. When exchange means discussion or deliberation the tone and style of the computer-mediated communication practiced is vital. This can be both constructive and destructive. Here the opportunities and threats of *collective intelligence* built online will be discussed.

4.1.3 Speed: faster policy making?

Another impact that is aimed for or not is increased speed of policy making. For example, a function of e-petitions is to gather support much faster than with traditional means. E-voting could be faster than the traditional polling station; referenda and opinion polls could in theory become instant and frequent events. A final example is e-consultation that will require less time than a long series of local meetings to reach the same goal. However, the question always remains whether speed goes at the expense of quality. Another basic question is whether direct inroads of citizen participation do not disturb a policy process that needs time for deliberation and consideration by representatives and administrators.

4.2 Networking

The power of e-participation is the power of networking between governments and citizens and between citizens themselves. Here the new opportunities of peer-to-peer networking in wiki's, blogs, social networking sites and other social media come forward. What are the opportunities and threats of peer-to-peer networking for participation in official policy making?

The first opportunity is a multiplication of public spheres that gives every citizen the chance to participate in public life and public policy making. The traditional spheres created by the mass media (the press and broadcasting) or those existing long before the advent of the mass media in public meeting places such as markets, streets, parks, pubs and coffee houses are supplemented by all types of communities and online forums on the Internet. Together they create a 'mosaic of public spheres' [9] that are interlinked in all kinds of ways (e.g. TV-programmes and weblogs discussed in a pub).

The second opportunity is the rise of participatory mass media and online civic journalism created by user-generated content. This is the perspective of so-called Web 2.0. In the field of government issues and public policy at large (peer-to-peer) networking offers venues for political and cultural expression (free speech), mass creativity and the mobilization of more knowledge and innovative ideas that rest in society or among the people than ever before.

However, the first threat is a growing complexity and fragmentation of all these public spheres. Any oversight is lost and official policy makers do not know to what public spheres they have to turn to or what they should believe. So, they tend to stick to the traditional public sphere in the mass media they know and have access to. Many policy makers have doubts about the quality of user-generated content on the Internet and about its origin and representativeness.

So, the quality of the products of peer-to-peer networking might be a second threat. Ever larger quantities of output with low quality are produced. Research indicates (see above under online discussions) that without some kind of organization in the form of moderation,

[9] John Kean (2000). Structural Transformations of the Public Sphere. In: Kenneth Hacker & Jan van Dijk *Digital Democracy, Issues of theory and practice*. Pp. 70-89. London, Thousand Oaks, New Delhi: Sage

editing and filtering the quality of this input in public policy making is low. According to Internet critic Andrew Keen "on the Net differences between information, advertising and sheer nonsense are blurring"[10].

4.3 Empowerment and participation

One of the big issues in the debate around e-participation is whether the applications discussed increase citizen participation, cause participation to become more unequal or even decrease participation (because some people do not like computer-mediated communication). Most current evidence points in the direction of increasingly unequal participation. This means that those that already participated to a large degree before are participating more in e-participation. It gives them a new and powerful tool. However those not interested, without sufficient citizen competency and obviously those without Internet access do not participate. Besides physical access the lack of digital skills is the most important problem. For most e-participation applications a relatively high level of skills is required.

However, there is also evidence that these applications are able to draw a larger part of young citizens into participation. Increasingly, they will expect to be approached with these means by their governments. Moreover, some popular applications called above that have a less classical political flavour and address every interests more might be able to increase participation among the population at large.

4.4 Social capital

Some of the applications discussed above rest more on citizen-to-citizen communication than on citizen-to-government communication. This particularly goes for the applications that are based upon discussion and networking. Some application support (local) community building and long-distance communities-of-interest building. However, some highly individual, service-oriented applications might produce the opposite. For example, the citizen control sites enabling citizens to better choose their neighbourhood to move into might lead to more segmentation or segregation.
The social capital produced by community building is the topic of another domain report.

4.5 Information and Lifelong Learning

As has been claimed several times, information exchange between governments and citizens and between citizens themselves is the prime objective of all views and applications of e-participation. The real new opportunity here is so-called user-generated content: the input of all knowledge citizens have in the policy process. Some even speak of a 'User-generated State'[11]. However, what are the possibilities of user-generated policy content and collective intelligence on the Internet? Do they produce so-called 'wise crowds' or perhaps 'stupid mobs'. What are the conditions for the validity of collective intelligence? In any case, all applications discussed strongly depend on *informed* citizens that have sufficient education and have learned a lot after their formal education. Information and strategic skills are vital for citizen e-participation .

The information exchange occurring in e-participation in policy making will also require new ways to process information and new skills to participate. An important *second order effect* (see Conceptual Framework) of participation with new media is a change in the nature of

[10] Andrew Keen (2007). *The Cult of the Amateur, How today's Internet is killing our culture*'. New York: Double Day/Currency (Random House)

[11] Ch. Leadbeater and H. Cottam (2008). The User-generated State and Public Services 2.0. Available: http://www.charlesleadbeater.net/archive/public-services-20.aspx

policy making. This has always been a practice of meetings and face-to-face communication for talkers and organizers. They used verbal skills, management capacities and the art of negotiation. E-participation is an individual or collective practice of citizens working behind computer screens using many techniques. This requires a routine of technical and symbolic-intellectual skills instead of practical organizational and verbal intellectual skills. What will be the impact: the second replacing the first, or will they supplement each other and integrate?

5 Policy implications

Obviously, all policy implications to be discussed in the final domain report cannot be treated here either. However, the following seven suggestions for policy makers in national and local governments, administrations and EU institutions will be elaborated anyway.

5.1 Clarify goals, means and responsibilities with applications of e-participation

Most failures of experiments of e-participation by governments inviting citizens can be ascribed to the omission to clarify the goals and potential outcomes in advance. Often citizens were disappointed when they noticed that representatives, administrators and politicians ignored their input and nothing was done with it because this did not fit into the scheme of responsibilities and regulations. Moreover, goals were not clarified because in fact the application was a matter of 'playing' with imaginative new technologies. Finally, they did not care about distributing the means, as if everybody is able to work with the new applications directly.

5.2 Do not consider applications of e-participation as a technological fix

These applications have particular advantages and disadvantages as compared to traditional participation. However, basic problems of a lack of motivation, of current political and administrative practice and of inequality, all impeding participation will not be solved with these instruments alone.

5.3 Stimulate the widest participation among the population

Policies to support e-participation should always be accompanied by attempt to extend access and the digital skills required to use them. Extension of participation is one of the most crucial factors of success or failure.

5.4 Provide reliable and usable information

Another critical success factor of e-participation is the reliability and usability of the information exchanged between governments, administrations and citizens. At least the information of governments and administrations should be reliable and accessible or usable by all citizens.

5.5 Develop demand-side benchmark indicators of e-government online public services, not only supply-side indicators

The systematic registration of online services use behaviour by citizens is the basis for adapting e-government online services to the needs of citizens. In fact this is basic citizen participation in online government service provision.

5.6 Stimulate innovations of hardware and software enabling e-participation

Effective applications of e-participation do not show up automatically. Many experiments with them are not organizationally and technically sound. Experience has to be built and investments should be made into the hardware and software innovation of e-participation.

5.7 Tune government initiatives to citizen initiatives

Section 4 described a conspicuous split between government and citizen initiatives. Governments and administrations will be more effective when they tune their initiatives with those showing real potential and attention among the citizenry.

5.8 Adapt the organization of governments and public administrations for e-participation: develop transparency and responsiveness.

When governments and administrations will continue to operate with the same closure and rigidness citizens often experience e-participation will not work. The responsiveness of governments and transparency of public administrations for citizens will have to be improved.

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[B] Education and Lifelong Learning

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1 Introduction: ICT transforming Long-Life Learning into Life-Long Learning

It may be clear that, seen from the perspective of the modernized 'networked' society, (Craven & Wellman, 1973), (Wellman, 1988) and (Hiltz & Turoff, 1978) we have high expectations from the further evolution of learning based upon ICT-saturated infrastructures as we have in the western world; European Commission (2001). And indeed, if we look to schools and training institutes nowadays: they are immersed in ICT technology: Distance learning, blended learning, web-based learning support systems. It is quite hard to remember and imagine backwards the situations from before the arrival of the web; not to talk about the situations from before the arrival of the PC, even if we have been subjected to it ourselves. In this study report the question will be touched however if and how the essence of learning has been affected by the entrance of ICT? If regular education covers around 30% of our life span, and if the largest part of national budgets is spent to education, why then focus on the learning after that period? Is it because we expect ICT not to penetrate regular education? (Sánchez, 2008). Or is it, as we expect, ICT to affect (continuous) life-long learning in particular? (European Commission report on Lifelong Learning, 2008). The most likely explanation is that we believe in its combination: "Great that ICT penetrated school education, but now, will it boost life-long learning as well?" (Thorpe, 2005). What is the state of the art situation on ICT for life-long learning? Initially persons mesmerized once they become alerted by the vast amount of information they can open via the web: be it professional-, medical-, technological and ideological information, both local and global sources for extending our understanding, taking decisions, finding experts etc. It leads to questions like: What conceptual frameworks, ambitions and search skills are needed in order to benefit from those sources? But quite understandable it may lead to the question "what do we still need to learn, if all this information is at the tip of your finger?" One step further is if and how we can learn from this information access; can we enlarge our professional and existential scope through being supported by having access to these almost infinite residues of human expertise on the web? As information access becomes so ubiquitous the questions may arise: "Do we still need to learn?" and "Should we assess learning outcomes while the learner is amputated from information resources when in daily life information access is abundant?" The notion of 'distributed cognition' has been coined to assert that in every-day life the expertise is between rather than in persons. So why not prelude on the new collaborative skills in educational settings as well? (Salomon, 1993). The EU-given task of this report is to find an answer to the question "if and how ICT influenced Life-long Learning?" Even more important: to make more transparent that the mere added value of ICT so far only penetrated in a particular part of life-long learning so far. In other words: there are potential added values of ICT that are only used for a minor part;

- Which are they?
- How can they be exploited better the coming years?
- Which ICTs are currently used in life-long learning?
- Which benefits are made out of them?
- What benefits remain to be explored further?
- What are the policy implications to allow for a broader use of these ICTs?

Whereas school-based education has served the transition from feudal- into urban- and into industrialized societies, life-long learning may be obstructed by institutionalized education. Irrespective from the traditional schooling paradigm it should grasp its own opportunities and responsibilities for learning in the ICT era. The overall message of this report is that ICT should be instrumental to learning; learning on its turn should be instrumental to societal

ambitions at that very moment at that local social context. In order to trigger the a priori question for this report even more provocative: If ICT is the solution for life-long learning; then "What is the problem?" And indeed we have to admit that both the paper and pen, the printing press, the radio, telephone, television and the interactive white board; they have not been developed based on a need in education; they have been permitted to enter education on the basis of curiosity and because no sufficient objection was available at that very moment; life-long learning nowadays is just an eye-opener as it interferes with orchestrated institutional learning that was a revolutionary solution in the mid 19th century.

2 Epochal Trends and the Arrival of ICT in Life-Long Learning

Starting from "life-long" learning, it is inevitable to open a short review of what learning implies from a historical point of view. Initially learning intended to prepare yourself for entire life. It was one of the few protections against joining work from the earliest moment that it was physically possible; (Rousseau, 1762). In its romantic apprehension learning should address the essentials that prepare for entire life: "Long-Life Learning" rather than "Life-Long Learning". Thinking of the idea that "learning never stops" would have been hailed as a nightmare; how can you establish a society if its members keep changing themselves? Before addressing the question on how to conceive 'life-long learning' it is necessary to question human learning on general. As we discern phylogeny from ontogeny it is clear that the more humans create cultural habitats the load for ontogeny (the coping with changes, accommodate and learning in an individual's life span) becomes more heavy as phylogeny (how the human species managed to cope with unforeseen situations) carries along fewer and fewer solutions. We may say that learning is the Lamarckian mechanism in order to make descendents to adapt to what ancestors already conquered before. (Egan, 2008). The main question to be answered is "How do we envisage human learning"? By tradition we have accepted learning to be successful as it allowed persons to adapt to certain new situations. In respect to the learning of society as a whole, it is questionable if this definition satisfies; its definition does not hold for societies to learn from past history. Neither does it satisfy the convergence of learning of a new generation. School-based learning can very well be understood as the socializing process in order to make the young generation 'compatible' to the older one. In a class-based-, modal- and stratified society the school-based education makes sense in terms of Lamarckian transfer: Allow descendants to benefit from ancestors' struggles. The question is if learning in the postmodern networked society can still be envisaged as a convergence process. If not, how to imagine curricula, grouping the learners and how to define assessment criteria? Institutionalized education may become obsolete. However at the same time 'life-long learning' may be an ever more complex process to be orchestrated. Neil Postman (1986) in his "The End of Education: Redefining the Value of School" Postman suggests: " … that the current crisis in our educational system derives from its failure to supply students with a translucent, unifying "narrative" like those that inspired earlier generations. Instead, today's schools promote the false "gods" of economic utility, consumerism, or ethnic separatism and resentment. Postman questions what alternative strategies can still be used to instill our children with a sense of global citizenship, healthy intellectual skepticism, etc." Life-long learning in the epoch of the world-wide web can best be considered as permanent effort to let persons accomplish learning needs based upon continuous shifts in both the individuals' interest and the societal focus. Centralized efforts to accommodate such a delicate and transient process seem to have failed already. The web with its potentials to make persons to find each other on any criterion like interest, ideology etc is a good candidate infrastructure for promoting learning in a non-centered-, networked society. Where ICT has provoked education to focus on informational resources, we may meet biochemical- and sleep technologies the coming years. The nature and culture of

learning will work together more closely than we did in classrooms before. In the case of life-long learning we need to distinguish two contrasting learning paradigms:

1. Regular 'school-based education' implicitly targets convergence between learners. It also rests upon predefined goals, -methods and prior assessment criteria. One could say that the essential learning momentum emerges in its curricular conception; the roll-out of a course is just a matter of transfer from those who know to those who don't know yet.

2. Life-long learning: the continuous day-to-day learning in the manifold situations during work and leisure time. Life-long learning is mainly driven by its situational and existential motivation. Quite often is has been labeled as "just-in-time" learning: the learner decides when prior knowledge fails and additional expertise is needed. Due to the fact that persons arrive at careers, jobs and finally need to be retrained, L.L.L. (Life-Long Learning) is a vital process in preventing the person to suffer from adaptation rather than raise creative solutions and complement initial weaknesses.

In the last thirty years we saw that ICT failed to innovate formal education. We expect life-long learning to benefit more from coming ICT learning support. ICT has not only worked out as a catalyst ingredient; it also stimulated education to approach learning as a *developmental* rather than a *transfer* process. The traditional approach is to see education as a process that transfers knowledge and experience from the elder to the younger generation. ICT in combination with emerging needs of knowledge economies has promoted learning that exceeds this transfer process; it relies on education that innovates existing disciplines and in fact *develops* new understanding.

3 Applications of ICT in Life-Long Learning

Due to the shift towards knowledge-intensive economies, creative industries and ICT a new set of learning paradigms have evolved around the concept of *incidental learning*:

- Embedded, problem-based and learning by doing, the main contribution of which is the acknowledgement that learning in isolation makes application in real life situations unnecessarily problematic (Kommers et al., 2004).
- Distributed cognition is the notion that human expertise manifests between- rather than in persons. Many jobs demand team work and rely on several disciplines to merge before optimal solutions can be reached.
- Collaborative- and constructivist learning methods have complemented the instructional repertoire. It implies a sharper focus on learning competences rather than 'following' predefined curricula. The core idea in constructivist learning is that understanding and application of skills and complex conceptual domains need a highly active and individualized process or mastery. Subsequently the role of the instructor differentiates in subject matter expert, diagnostic coach and facilitator. Cognitive learning tools are indispensible in this regard (Mayes, 1992).
- Blended learning, based on the fact that both face-to-face and remote presence is needed in order to offer flexibility to the learner and its coach. Instead of uniform assessments the situation of blended learning will be evaluated with a learner's unique portfolio that demonstrates all competencies required in order to function adequately in a certain professional layer.

This brings up an essential question for the debate around lifelong learning: If it is correct that incidental learning is more important than learning in more formal settings, does this imply that efforts which aim to increase adults' participation in training courses and other structured and intentional learning activities should be abandoned, and that policy should rather concentrate on boosting chances of people to acquire knowledge through experience (such as "learning by doing" on the job)?

Life-Long Learning addresses both formal and informal aspects of learning. Formal education has met severe problems to assimilate and exploit the added value of ICT. At the same time we have seen the relevance of the web for learning in daily life. CoPs, "Communities of Practice" rest upon the notion of distributed cognition (Salomon, 1993) that allows professionals to instantly benefit from each other knowledge and experiences. Lave and Wenger studied the relation between enculturation in collaborative environments such as midwifes and sailors, where they identified the CoP. It was only later that this form of learning was also detected in ICT-mediated communities. (Wenger, McDermott & Snyder, 2002). An academic question that arises here is if this mechanism of peer consult 'promotes' or 'bypasses' learning essentially? It is clear however that society nowadays cannot go without the knowledge dynamics via 'instant' peer consult. Salomon's paradigm of distributed cognition pleads for a new learning culture that stimulates students to build upon each other understanding rather than promote an exclusive, individualistic and competitive learning climate. It also pleads for assessment methods where students may use the full functionality of the web, inclusively the consult of experts around the world.

4 Social Impact Analyses

In the search for "Social Impact of ICT" the sector of Education and Learning is quite relevant as it reflects how society expects ICT to prepare for the future. This study starts from the fact that education and learning have become a major factor in societal awareness. The elements of 'social' and 'awareness' have been supplanted by the notion of the 'economical' effects of education the last decades. In how far ICT affected the orientation of innovation in the educational sector so far? We see that ICT has entered our schools and has sped up earlier trends towards adaptation and differentiation and has been weak in re-establishing a balance between for instance expository-, problem based- and collaborative learning. The key question here is if the entrance of ICT has shown its own agenda; in how far has it been an autonomous factor? Being in the middle of this process it is not easy to see where cosmetic effects gradually become a transformation or even an evolutionary factor. What indicators are there at the moment, that predict the direction and the magnitude of life-long learning via the web? From the analysis of ICT in regular education we may extrapolate and predict that the instructional, curricular and assessment-driven scenario should be avoided in order to keep the learning flexible, alert and vital. This report attempts to discern the *catalyst*- versus the *reorientation* effects of ICT in education. It is seen as an undisputed fact that mass media had an enormous impact on the emancipation and self efficacy of citizens in the sixties and seventies (Garnham 2002). It is now the question if ICT is instigating a new trend in education with a similar direction as the mass media before? The introduction of ICT in western society has affected the role and practices of learning dramatically. The fact that information access and consulting human expertise became a commodity rather than an upper class privilege is its most obvious phenomenon. Three unique relationships between ICT and learning emerged; ICT in schools became almost synonymous innovation to educational innovation in itself.

1. As ICT has been the quickest developing technological strand in the last two decades, it has been the field of learning and education that was called upon for making citizens "aware", "literate" and "skilled" in this field.

2. As in the preceding half century the underlying paradigm of learning focused on instruction (the systematic- and the guided transfer of information from the expert to the novice), there has been an excessively high ambition on the role of ICT in enabling learning as a *dissemination* rather than a *developmental* process.

3. The cybernetic role of ICT has been quite a welcome metaphor for learning as process that relies on *external*- rather than on *internal* control. Rather than empowering the learner as an autonomous learner it have been ICT advocates who recognized the merits of channeling learning into one of "process control".

The Eurobarometer highlights "Learning or doing online courses" as favorite activity via internet: 35% (The table on Page 16) of the Analysis of the Eurobarometer Data. The table on Page 17 associates "Learning or doing online courses" closer to "Amusement" and "Consumerism" (.43) rather than with "Working" and "Investing" (.24). These data suggest that ICT has managed to transform the essence of learning from centripetal into centrifugal; learning via the web is generally seen as "relaxing" rather "charging". If it comes to ICT users' opinions, 74% expresses that internet has helped them to improve the opportunities to learn; (The table on Page 37). In conclusion: ICT has been adopted as a welcome tool for sustaining instructional procedures in the second half of the twentieth century. At the same time the learner nowadays recognizes the impact of the web and in fact enjoys the lack of instruction as the web and interactive programs allow the user an optimal freedom to navigate and branch all the time. It seems that the perceived ICT roles have been understood quite different by those who learn versus by those who teach.

4.1 Rationalization

Educational institutes tend to adopt ICT measures even to preserve its "*main contract*": Learners are supposed to learn what has been defined as valid by authorities before. The larger portion of ICT application in schools nowadays is in the massive use of ELSSs "Electronic Learning Support Systems"; in essence not more than the emulation of the roster, the blackboard and the exercise book. ELSSs in Secondary and in Higher Education dominate the fuller spectrum of potentially contributive ICT tools. It cannot be ignored that to a larger extent ELSSs work out as a cosmetic tool in order to disguise the still dominant main contract between institution and the learner. Web technologies are recently exploited to mimic solid "Distance Universities" while in fact they are just administrative offices for brokering remote experts and students. Typically we see the ELSS Blackboard™ that reflects the overall interest of educational institutes to keep new ICT support as isomorphic as possible to the traditional artifacts and procedures in 'lecture-hall-teaching'. Though web-based learning has contributed to make higher education accessible the last two decades, from a conceptual point of view it is not their merit that traditional institutes start to lose their hegemony.

4.2 Networking

Already in the late sixties and seventies, the early precursor of the "networked society" arose. "De-schooling Society" is the epitome of reform pedagogies that had a critical stand on schooling institutes as mainly surviving for its own sake. As solution they promoted open knowledge sources and ubiquitous learning. ICT, and especially the web, has allowed citizens to access abundant information sources lately. Even the training of skills can be made via online games and simulations. Quite often it raises the idea that finally the web will bypass educational institutes. It would be too simplistic to say that ICT has enabled the process of "De-schooling Society" (Illich; 1971, Freire; 1972, 1995 and Reimer; 1971). At the other end it is fair to say that these authors would have been surprised to see that their apocalyptic forecast became so tangible within 35 years already. ICT has instigated learning

to transform itself from *convergence* into a process of *divergence*. This can be seen in the informal-, non institutional-, non certificate-oriented aspects of learning that typically exhibit how the world *should* be understood. It is clear that the dominant textual format will be supplanted by complementary modalities like visual, voice, haptic and kinesthetic sensations and expressions. A decisive factor is if the learner finds a way to satisfy him/herself after having mastered a certain mental goal. In terms if ICT support we might easily overlook the role of chocolate, drink coke or social talk for the overall pacing of the learner. Once these prime factors of pleasance work out in the awareness of the student, it is hard to distinguish intrinsic from extrinsic motives during learning. The overall instructional approach focuses entirely on the external regulation. But in fact the crucial step is if learners manage to incorporate the external regulation into (internal) self regulation. Recently the role of internal speech in becoming an autonomous learner is considered more, (Agina, 2008). Even if learners are fully dedicated to master a certain knowledge or skill, still many rituals on 'how to learn' can be observed. Research determined only very few basic mechanisms on how to learn best. At the same time we must admit that human learning manifests in hundreds of types of situations. Theories on how learning essentially works have been subject to a natural science discipline to find out the first order essentials when and how learning occurs. This has led to the many attempts to reduce the essentials of learning. The most dominant ones are mechanisms like contiguity between reinforcement and desired response, the role of motivation, variation in methods and environments, etc. In other words: there is a significant mismatch between the theoretical and the situational aspects of the nature of learning. The typical result of laboratory experiments is that learning theories have a strong emphasis on elementary types of learning: rote learning rather than meaningful, reproductive rather than productive, intellectual rather than emotional, social and creative learning. Its result is that ICT as learning support has by and large focused on practice-and-drill, hierarchical and task-analytical domains. The penetration of media of any kind has a pervasive effect on the way we suppose the human mind works best. Education itself has become a media genre on how to prepare the younger generation for real life best. Still its main premise is that it is best to bring learners together in rather homogeneous groups and let them be taught *about the topics* by educationalists rather than by domain professionals. And again: It stays under the 'basic contract' that learning becomes more successful as it makes the learner more aware of the knowledge of the prior generation. As it is obvious that for life-long learning this premise does not work out, it is a challenging question on how regular education can make young learners sensitive for the more authentic and autonomous learning for life-long learning. If we see how web-based communities, in particular the 'communities of practice' enable large-scale learning among professionals, it becomes clear that ICT started to transform the learning culture drastically. The big question is: *If, when and how education will adopt these methods. When will it blend its "main contract" with the more rich practices of web-based life-long learning?* ICT has left only minor effects on school didactics. Traditionally teaching modes have been built upon the various ways of learning the domain of learning and on a priori learning concepts/paradigms. (Kearsly, 2008). The trend from behaviorist via cognitivist to constructionist learning paradigms, education has managed to maintain its institutional nature. As will be summarized in the final conclusions it is the basic contract that prescribes learners to incorporate what has already been mastered by the elder generation. Subsequently we see that "the new learning paradigms" have little or even detrimental effects on the innovation of education as a whole; the introduction of ICT is taken as a cosmetic make-over for the traditional recipe.

4.3 Empowerment and Participation

In 2008 the Horizon Advisory Board highlighted the growing interest for *Creative Expression* in teaching and learning comes forward. A good example of it is a tool like Google's Mashup

Editor[1] that makes it relatively easy to create applications, grab online data, organize it, and display it the way the author wants. ICT has enabled education to transform faster. And not surprisingly negative effects became visible more quickly than positive ones. Apart from sporadic initiatives there are no signs of education to incorporate the real potential of ICT. The main stimulus to take ICT seriously is the urgent need for active, creative and collaborative learners. If schools keep ignoring this challenge there is a chance that young learners consider schools as "social duty" and explore the web-based learning communities to access "more important" notions for life. A significant term here is "regaining ownership of one's learning". Web-based learning communities act as networked "self-help groups" in order to understand new phenomena much quicker. Their speed and versatility widely exceed curricular-based learning. *Authority* is taken as a derivative rather than an a priori. This process slows down as long as employers tend to rely on the status of certification rather than assessing employees' acquired capacities like problem solver, team player, solidarity etc. themselves. In terms of "Finite and Infinite Games" (Carse, 1986), learning tends to transform itself all the time. However institutions prefer to consolidate the basic contract in order to reduce uncertainty. While promoting "quality awareness" throughout all levels of education, we see that information systems and its underlying "rational" jumped too easily on aggregating quantitative learning outcomes. Rather than asking "what qualities of learning" should be taken into account, it became attractive to reify what could be measured. The fact that date became available for managers and decision makers has helped to see learning as a transfer- rather than as a developmental process. At the micro Level we see ICT tools like simulation and gaming to become subordinate to the *instructional* metaphor: optimizing the learning through optimizing external conditions. As soon as it comes to 'learn to learn' current educational innovations are typically incapable to accommodate pedagogical processes like self-regulation and moral development other than "prepare yourself for the test". Teachers who fulminate against "new learning" soon fall back to "teach the test". At the meso level we see attempts to transform the "learning by transfer" into the "learning by development". School leaders and institutional creeds advocate their students to become autonomous and authentic learners who have the attitude to excavate and even 'create' new understanding. Similar phenomenon at the meso level is the introduction of "competences" rather than knowledge and skills. Its implementation under the same basic contract however falls back upon a checklist for observing the learners to prove mastering "competences". At the macro Level we observe policy makers embracing ICT as a way to monitor quantitative educational outcomes more and more. Incentives to get good national ranking stimulates institutes, teachers and students to comply with national tests primarily. Also this mechanism shows that ICT is instrumental to make students and teachers keen on 'standards' rather than diversity and authenticity. Institutional policies advocate the integration of "learning management systems" rather than learning support systems in education. Its effects penetrate the meso level. As it comes to the actual level of didactics and teacher guidance there are only sporadic effects of ICT in the learning methods. Its explanation is that the final account for successful teaching and learning is in the students' score on centralized examinations. These ignore the more authentic learning achievements by learners. In other words: The incentives for teachers to apply ICT innovative learning methods are not there yet. In terms of policy recommendation this should be high on the agenda for the coming decade at least.

4.4 Social Capital

Recent evidence suggests that incidental learning has a significant role to play in skill acquisition:

[1] www.code.google.com/gme/

- A US study of about 1,000 workers in seven companies found that roughly 70 percent of on-the-job-training received by employees is informal, and concludes that "informal learning was widespread and served to fulfil most learning needs. In general, we noted that informal learning was highly relevant to employee needs and involved knowledge and skills that were attainable and immediately applicable. [...] Workers constantly learn and develop while executing their day-to-day job responsibilities, acquiring a broad range of knowledge and skills" (Centre for Workforce Development, 1998).
- In Germany, the "Berichtssystem Weiterbildung" reports that three out of four persons in employment state to learn informally for their job (Report by the Bundesministerium für Bildung und Forschung); see Dehnborstel, Overwien & Bernd, 2003.
- Data from an the eBusiness Watch surveys shows that enterprises regard "learning on the job" clearly as the most important way to develop IT skills in the company. About 60% of enterprises say that "learning on the job" is "very important", much more than in the case of formal training schemes. This confirms results from the BISER survey targeted at workers. (EBusiness-Watch).
- Livingstone, who conducted the first Canadian national survey on adults' informal learning practices, found that adult Canadians spend on average 15 hours per week on informal learning (most of which related to paid or unpaid work), in addition to 4 hours per week spent on average on participation in training courses. 95% of adult Canadians were involved in some form of adult learning which they can identify as such. (Livingstone, 2001).

Despite of these findings, we must be doubtful about the ability of experiential learning to prepare people to learn (as opposed to coping with change) – something which has become vitally important in times when we all need to adapt much quicker to the ever-changing socio-economic environment. There is a wide-spread perception of lack of skills among workers as well as among employers – which seems to imply that even if the large majority carries out incidental learning, it appears not to be able to meet all skill needs. Anecdotal evidence would also suggest that more formal, purposeful learning, (especially if it yields a form of certification), provides benefits in the form of higher self-esteem and motivation. Therefore, we plan to underpin with empirical data that incidental learning with access to the Internet) has a major influence on the amount of skills a person is likely to acquire. The potential of ICTs for transforming the acquisition of knowledge and skills is, therefore, by no means limited to intentional and structured processes of education and training.

4.5 Information and Life-Long Learning

The question is whether lifelong learners will master these new learning skills as a large part of the older population did not learn to use ICT for learning at schools or work places. In so far as directly ICT-related skills are concerned, a distinction is being made between e-skills and digital literacy skills. E-skills themselves can be broken down into:

- ICT practitioner skills: The capabilities required for researching, developing and designing, managing, the producing, consulting, marketing and selling, the integrating, installing and administrating, the maintaining, supporting and service of ICT systems;
- e-Business skills: the capabilities needed to exploit opportunities provided by ICT, notably the Internet, to ensure more efficient and effective performance of different types of organizations, to explore possibilities for new ways of conducting business and organizational processes, and to establish new businesses.

- ICT user skills: the capabilities required for effective application of ICT systems and devices by the individual. ICT users apply systems as tools in support of their own work (which is, in most cases, not ICT) or private life.

In addition to these directly ICT-related skills, there are skills of a more generic nature which are required to fully participate in a society which is increasingly dominated by knowledge- and information-rich environments and technologically mediated communication. These are often subsumed under the term "digital literacy skills". For the conceptualisation of the different kind of skills which make up digital competence, the categorisation suggested by Steyaert and further developed by van Dijk (Van Dijk, 2005) is of particular value. They differentiate between operational (instrumental) skills, informational (structural) skills and strategic skills:

- Operational skills are needed to operate ICTs (computers, software, Internet connections, mobile devices);
- Information skills are required to search, select and process information from computer and network files, which implies the ability to structure information according to specific requirements and preferences;
- Strategic skills denote the ability to take own initiative in searching, selecting, integrating, valuing, and applying information from various sources as a strategic means to improve one's position in society. It often implies the continuous scanning of the environment for information which might be relevant to the four spheres of life: personal life, family life, work life, and community life.

Recent performance tests of these skills among the Dutch population have shown that operational skills are possessed to a reasonable degree but that performances of information and strategic skills on the Internet are far below expectations (for example of governments expecting that their citizens can use the Internet). This also goes for the youngest generation. (Van Deursen & Van Dijk, 2007). It is important to take into account that digital literacy is by no means limited to the utilization of the Internet. Any definition and operational definition of digital literacy needs to include the full spectrum of (current and future) ICTs, which include mobile applications and services which are expected to become much more dominant in the coming years. More generally, any definition of digital literacy must be open to new technological and market developments which will become relevant in the future. Against this background, it may make sense to define as the focus of digital literacy any ICT-enabled means with which to access, manage, integrate, or evaluate information, construct new knowledge, or communicate with others.

4.6 Discussion

One of the key notions is the *basic contract*: learners need to incorporate what has already been mastered by the elder generation. Its typical consequence is that regardless of ICT sophistication and its "seamless integration" we see that "the new learning paradigms" have only little or even detrimental effects in ongoing educational innovation programs. ICT by its nature already stimulates life-long learning and can offer even more support in the next coming years. Seen the momentum of formal (institutional) education it is inevitable to look as a curator to this wide societal and economical sector. The first symptom is that already students start building their web-based social networks. It will be hard for institutional players to build on them while keeping both the students' enthusiasm and the institution's need for robustness in tact. The most feasible approach in this is to instigate teachers to build and invest in professional networks inn order to support their day-to-day teaching. At least it will allow them to understand better the ways students learn from social networking. Besides the

well-known factors like declining student enrollments and growing costs reports like included in Appendix 1 mention two problems explicitly:

1. Incoming students do not necessarily master the needed ICT skills. Yes, there is an "ocean" of user-created content, collaborative work, and instant access to information of varying quality. However students lack the skills of critical thinking, research, and evaluation. Indeed the more fundamental underlying question is if this attitudinal aspect at the students can be ascribed to preceding educational stages.

2. Students enter higher education already a member of web-based social networks, its tools and its conventions and etiquette. Mobile devices, flexible software tools like voice recognition are fully integrated in their daily life. The question is how can higher education with its centrally orchestrated ICT infrastructure accommodate this large variety?

One option is to allow higher educational institutes to build a thin layer of web-based facilities and leave it to incoming students to rely on their own connectivity. At this point we may expect higher education to explore all kinds of creative solutions and will be part of their marketing strategy.

5 Policy Implications

Life-long learning is an important application field for ICT; Learning is a vital element for the evolution of society and social awareness. Education and learners themselves are quite aware of the strategic value of ICT. Web-based "learning support systems" and even "web-based communities" stay behind in grasping the full potential of collaborative learning. Limiting factor for the full adoption of ICT in orchestrated education is the "Overall Contract": Novices are supposed to learn what the experts already know. Testing and certification has become a goal in itself; Learning effects that are hard to assess tend to be ignored. Life-long learning is complementary to the majority of subsidized education; its goal is to embed the many types of learning in day-to-day life. Life-long Learning is a much more versatile practice; it is often a momentary "just-time-learning". 'Communities of Practice' are pragmatic solutions for building upon the colleagues' expertise and subsequently for retrieving one's own experiences so that peers may benefit from it. Communities of Practice heavily rely on a combination of the best available technologies nowadays: Mobile, ubiquitous, collaborative, constructivist- and virtual reality for optimizing colleagues to complement each other. An important impact is the use of learning communities for teachers; Once a teacher feels robust (s)he can announce his/her role as mentor/mentee in order to find colleagues to spar with and find practical solutions. ICT has brought "social software" (the Web 2.0) and "web-based communities". Seen the imperfect distribution of ICT skills it seems a good idea to orient teachers further on how to use the tools and methods that underly social software. This is the way to let life-long learning penetrate real life. For a long time (down from the early EU-supported DELTA projects in the early nineties) there has been the 'believe' that the integration of ICT in Education and Training is a way to vitalize these sectors as such. Now as urban societies can be considered as saturated by ICT, it is inevitable to reconsider this long-term believe.

1. ICT as information and communication facilities should no longer be seen as endemic to innovative learning. More urgent is the notion that learning is a social and an emancipator societal process that should not be delegated exclusively to institutions. The recommendation is to open the educational floor to more diverse players. Not by

promoting further privatization of school-based learning, but by giving parts of the national educational budgets to any person who offers face-to-face tutoring to youngsters. The fee providing learning support is a voucher that gives the right for being taught yourself. The formula for the voucher tutor-tutee transaction equals: Qualification x time x learning-effect. A trusted body should administer learning transactions and balance the voucher- against Euro equivalents.

2. Teachers, both at the secondary and tertiary level, need to compete with the effects of "ambulant" tutors as described under the first recommendation. Vital precondition for allowing a more developmental learning in schools is that learning effects are no longer assessed by centralized uniform examinations. Instead of that learning should be evaluated on the basis of individual learner reports (portfolio dossiers) with authenticity, creativeness and societal/technological value as main criteria. Teachers should adapt their practices to the more unique learner profiles of their students.

3. ICT is a vital (but not a sufficient) precondition for this evolution of the teacher role. Rather than bringing ICT to regular education it is now urgent to instigate new learning paradigms in the networked ICT society. Social constructivism is a promising paradigm for describing societal awareness and learning at the level of a community.

The EU commission should encourage its member states to diminish state-financed Higher- and Vocational Education. They should subsidize the experts, brokers and moderators of informal life-long learning; Not for the sake of so-called 'stimulating market-mechanisms', but rather for the sake of acknowledging that networked societies need a much more versatile learning than we have seen in learning institutions during the last two centuries. The Web 2.0 provides ample facilities to let learning-minded citizens to find each other and recruit experts rather than teachers. The voucher mechanism should be formalized as a tokenized currency expressing someone's credits for allowing others to learn rather than "learn" in a solistic way.

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7 Appendix 1

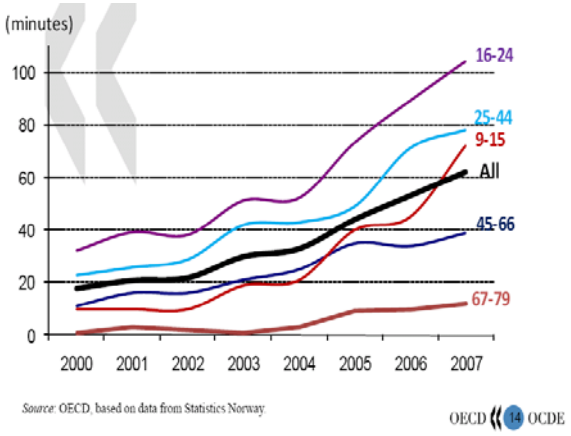
Key Trends by the OECD- and the Horizon Reports

The 2007 OECD study based on Norway shows in Table 1 an overall trend of about 15% increase in internet use per year. Age is a relevant factor; youngster in the group 16-24 y.o. make use of internet for about 100 minutes per day. The age group from 9-15 is an outlier and typically spends less time on internet. One of the potential explanations may be the pressure of homework at the start of Secondary Education. Becoming familiar with internet at earlier ages causes the younger generation to spend about double the time on internet compared to the average user.

Table 1 Age and time spent on Internet in Norway, 2000-2007

	Age 16 – 24		Age 25 – 54		Age 55 – 74	
Country	**Men**	**Women**	**Men**	**Women**	**Men**	**Women**
Germany	59	29	42	21	16	4
Ireland	24	24	26	18	6	3
Italy	39	25	28	13	7	1
Netherlands	20	4	14	3	4	1
Norway	69	38	53	30	18	12
UK	51	35	40	22	18	6
EU (25 countries)	47	29	33	17	11	3

Table 2: Percentage of population with a high level of computer skills, according to sex and age, 2006



In Table 2: Besides the peak in high-level computer skills in the age group of 16-24, its skewness in gender is quite remarkable. Analogue to the pressure on gender bias in Mathematics and Physics, we may face the need to have both sexes working with ICT independently in order to avoid unnecessary negative transfer on the self image of girls. Four measures of ICT inclusiveness were presented, (Lagesen & Sørensen, 2008):

1. Access to and use of the internet
2. Computer skills
3. Higher education graduates in computing
4. The ICT workforce

Both the OECD and the HAB (Horizon Advisory Board) signal the same key trends in the practice of teaching, learning, and creativity. In its 2007 report the HAB mentions six trends that may show a significant impact in education in the next five years.

Work

University of Siegen

Table of contents:

1 Introduction

ICTs have been implemented in many application fields in Europe, frequently in the work domain. After its diffusion and adoption in information- and knowledge-intensive areas of work, ICTs started to gain more and more importance also within work realms, where its adoption had not been that obvious (for example, agriculture and fishing, manufacturing, mining and construction, to name only a few). Nowadays it is hardly possible to find an area of work, in which ICT is not of any relevance in one way or another.

During the last three decades, ICT-based industries and services have rapidly grown. With ICT, the way in which companies gain, process, store and distribute information and knowledge has changed. Organizational processes in companies have been re-engineered, for example, when implementing knowledge management (KM) systems, enterprise resource planning (ERP) systems, or eLearning platforms. Moreover, the growing division of labour within or between organizations was supported by ICT applications. Prominent examples are inter-individual, inter-group or inter-organizational (tele-) cooperation, industrial clusters and company networks, virtual teams and organizations, and off-shoring.

Changes and developments in ICTs are thus correlated with transformations of work forms in the European countries. In return, they are accompanied by changing demands and requirements placed on workers, among others, with regard to their qualification and skill level. The diffusion and use of ICTs in the work domain raised questions about its impact on the quality of work and the working conditions in Europe, which are discussed under the label of the “information society”.

There is much empirical evidence of the high extent to which ICT permeates the European work domain as well as evidence of transformations of work processes in Europe. What were the transformations in the work domain and how were they related to the advent of ICT? In order to discuss these questions empirically, we first have a look at the epochal trends which occurred in the course of the 20th century and which have been extensively discussed within the discourse on the transformation of work. Secondly, we contrast the historical visions about the development and the implementation of new ICTs with empirical evidence of their practical outcomes in the work domain.

After that, we start analyzing ICT-based collaborative ways of working along the concept of eWork. In a next step, we show another important area of ICT applications, which we call “work-supporting ICT applications”, and which mainly consists of single-use application. As work is nearly always situated in the division of labor, and the practical effects of single-user applications differ from the anticipated ones not less than in other fields, the differentiation between ICT-mediated collaboration (eWork) and ICT-mediated single-user work is not too strict. However, it makes clear that the view has to be widened to cover the full role of ICTs in work infrastructures, which may consist of eWork and work-supporting ICT applications.

We will summarize some direct health effects of ICT-related work, which actually have been identified by research in work-psychology / work organization / work ergonomics. Besides these ergonomic issues, we focus upon the impacts of ICTs on collaboration, creativity and competence development within the work domain.

2 Epochal trends and the arrival of ICT in the domain

In this chapter we describe the most important socio-economic trends and changes in the European work domain in the course of the 20th century. We begin our historical review of main transformations in the work domain in the late 1960s. Trends of that time were, among others, described in the theories of "post-industrialism". After describing the related trends, we switch to the emergence of new management and organizational practices in the late 1970s and 1980s, which were discussed under the label of post-Fordism.

In the next step, the conceptions of the "Information Society", which came along with the emergence of the World Wide Web in the 1990s, will be discussed. We close our review with an investigation of the most important research findings on the work domain which are currently discussed.

Thus we perform a selective description of major historical trends and of the main visions and ideas which have been attributed to the transformation of the work domain. These concepts substantially shaped the expectations of the relation between ICT and work during the respective time periods.

2.1 *The De-industrialization of work*

In addition to the considerations on the relationship between technology and society presented in the project's conceptual framework, the following chapter introduces the scientific discourses of the last 25 years, which have most intensively dealt with transformations of work and employment in modern industrialized societies after the Second World War. The selected three discourses (post-Industrialism, post-Fordism and Informationalism) have in large part dominated the scientific and public debate about the future development of work and employment in the OECD countries. To some extent, the present discussion in international policymaking under the label of the *information society* can be traced back to these three discourses. What they have in common is that they

- examine the socio-economic transformations of society in terms of technological and/or organisational innovation;
- assert a decline of the industrial society and a transition to a new economic and societal structure;
- describe these socio-economic transformations as equally severe to the replacement of the agrarian society through the industrial society.

The different considerations on the impact of technology on work, which have emerged within these discourses, are generally based on the assumption of a de-industrialisation of modern societies. Thus, individually, they prove not to be entirely appropriate for explaining the actual specificity of social changes in the work domain. However, each of the conceptions presented here has pointed out individual historical phenomena of social change in the work domain. Merging the findings of the independent discourses, the epochal social trends of the last 25 years in the work domain are thus preliminarily described by the following trends:

- The individualisation of work (flexibility and autonomy)
- The informatisation and computerisation of work

At first sight, these trends seem pretty much inter-related with the ten major trends of contemporary society presented in the conceptual framework. Processes of work flexibilisation are, on the one hand, straightly related to trends such as increased time

autonomy and individual mobility, with potentially positive impacts on the quality of work. On the other hand, many scholars associate work flexibilisation with a "re-establishment" of Taylorist forms of work organization as a consequence of the developments in ICT. It is thus very difficult to identify and analyze general causal relationships between ICT use and social change in the work domain. For our evaluation of the social impact of ICT on work it is thus necessary to be aware of the mostly contingent character of social impacts on work derived from the introduction of ICT.

2.1.1 The post-Industrial society

Information and knowledge as new economic resources

The discourse on the post-Industrial society has been mostly shaped by the analytical work of the sociologist Daniel Bell (1989), who pointed to the growing importance of the emerging information sector in opposition to the declining industrial production of goods. Bell claimed that the transformation from an industrial society into a post-industrial society would be performed by a fundamental shift from an economy producing goods into a service economy. In this view, industrial and manual forms of work would progressively disappear and knowledge and information become a new added value with a crucial impact on productivity and growth.

Bell sees the main reasons for transformation in the introduction of new technologies (in particular micro-electronics) and the wide diffusion and differentiation of knowledge. While in the industrial society goods were produced primarily by machines, in the post-industrial society the production of information and knowledge is said to play the key role.

2.1.2 The post-Fordist approach

The emergence of new modes of production and work organisation:

- New modes of production and work organisation
- Lean production, cost and profit centres, outsourcing and off-shoring
- Downsizing and decentralisation
- Complex and individualised products
- New customer-producer relation

Table 1: *Fordism and Post-Fordism (Rustin 1989)*

low technological innovation	accelerated innovation
fixed product lines, long runs	high variety of product, shorter runs
mass marketing	market diversification and niche markets
steep hierarchy, vertical chains of command	flat hierarchy, more lateral communication
Mechanistic organisation	organismic organisation
vertical and horizontal integration, central planning	autonomous profit centres, network systems, internal markets within firms; outsourcing
bureaucracy	professionalism, entrepreneurialism
mass unions, centralised wage-bargaining	localised bargaining, core and periphery work force divided, no corporation
unified class formation, dualistic political systems	pluralistic class formations, multi-party systems
Institutionalised class compromises	Fragmented political markets
standardised forms of welfare	consumer choice in welfare
Prescribed 'courses' in education	credit transfers, modularity, self guided instruction, 'independent' study
standardised assessment (O level)	Teacher-based assessment (GCSE) or self assessment
class parties, nationwide	social movements, multi-parties; regional diversification

2.1.3 The conceptions of Information Society

The rise of the Internet and the informatisation and computerisation of society

- ICT-enabled products
- The appearance of an IT business sector (the "quaternary sector")
- The emergence of new occupational forms and professions (e.g. the "knowledge worker")
- The "informatisation" of work
- Important role of ICT implementations for business restructuration

2.1.4 Contemporary issues in Europe

The erosion of traditional forms of work

- Traditional and flexible work forms:
    - Full-time employment vs. temporary contracts
    - Temporal and spatial flexibility of work (for e.g. part time work and home work).
    - Share of new professions and occupational roles
    - Sham freelancers

ICT related issues on the working conditions and the quality of work in Europe

- Work intensification and diversification
- Work related stress (e.g. informational overload)
- Work-life balance
- ICT-related skills and qualifications
- The aging workforce and ICT use by elderly people at work

2.2 *Dystopian/utopian visions that shaped expectations in the domain*

We start with general information on the context of the advent of the Information Society in Europe. Therefore we first point out two opposite issues, which dominated the public debate in the 70ties, in times of economic stagnation. The issues illustrate the political and social milieu in which expectations on ICT were formulated.

- Knowledge and information as a resource: productivity boost due ICT
- Fear of mass unemployment

In the next step, we describe some of the dystopian/utopian technological visions which started to appear in the 80ies with the advent of ICT in the work domain.

- Artificial Intelligence and the "automation of automation"
- Computer-integrated Manufacturing (CIM)
- Paperless Office
- Industrial Democracy
- First generation Knowledge Management

3 Applications of ICT in the domain

3.1 *Classification of applications*

Empirical findings show (see chapter 3.3), that technological visions are one thing, factual practical outcomes of projects often quite another one. Besides anticipated effects, innovative technology projects often have unanticipated ones. In spite of this difference, technological visions are of considerable importance, for instance, motivating technological programs and projects.

However, not only ICT development, but also ICT appropriation has often become a nucleus for innovative activities. This means that in quite some cases, user have become a kind of innovators of their own.

Similarly, the idea of substituting cognitive information processing of humans by ICT, which was prominent in early ICT development and expected to reduce error-prone human influence, has been criticized. Today, ICT is rather seen as a facilitator of human creativity and as support for innovative experts. This, in return, demanded for ICTs, which allow for creative use.

3.1.1 ICT as facilitator of human creativity and innovation at work

Inter-disciplinary discourses emerged that reflected the role of ICTs at work in respect of collaboration, creativity and competence development. Among those were:

- Socio-technical design approach
- Participatory Design
- Computer-Supported Cooperative Work and Learning
- End-User Development and meta-design

3.2 *Discussion of application areas*

3.2.1 The concept of eWork

The emergence of the aforementioned visions (see chapter 2.2) was accompanied by a gradual implementation of ICT in the work domain. However, the results not only differed from case to case but deviated very much from the expected outcomes as well. This motivated efforts to address these outcomes empirically.

One conception for related empirical research is the concept of eWork, which comprises all kinds of ICT-based forms of collaborative work. eWork was very much in the public focus, as it represented partly new work forms, for which related applications (groupware, for instance) were explicitly developed as business enablers.

In table 1, the grey cells contain the main types of eWork, while the last row lists some types which do not fall into the eWork category. In this understanding, eWork comprises any type of tele-mediated remote work and includes the following types:

- individualised or shared-office-based work (refers only to the physical workplace of the worker, not to the fact that they share an office with the principal or collaborators);
- collaborative work (tele-cooperation, virtual teams) or work which is performed in the context of principal-agent type relationships;

- work interaction which is inter-organisational, i.e. coordinated by the market (such as client/contractor relationships and freelance work) or work interaction which is intra-organisational, i.e. coordinated internally in organisations.

eWork also comprises phenomena such as virtual organisations and eOutsourcing. Furthermore, eWork does not only affect industrial work or traditional business organisations, but Non-Profit- and Non-Governmental Organisations (NPOs and NGOs), social welfare and service organisations, as well.

Table 1: Typology of eWork and distinction between definitions of eWork and NWEs

		Coordination mechanism			
		Principal/agent		**Collaboration**	
		intra-organisational	**inter-organisational**	**intra-organisational**	**inter-organisational**
Work environment	**Individualised eWork (away from office premises)**	*Telework in employment relationships*	*Freelance telework*	*Work in virtual teams composed of teleworking employees from a single company*	*Work in virtual teams made up of teleworkers from different companies (or self-employed)*
	eWork on shared office premises	*eWork at other site of same company (e.g. back offices)*	*eOutsourcing*	*Work in virtual teams composed of employees from a single company*	*Work in virtual teams composed of employees from different companies*
	Non-eWork (examples)	*Employed agents co-located with principals*	*Self-employed co-located with clients*	*Work in co-located teams composed of employees from a single company*	*Work in co-located teams composed of employees from different companies*

Source: based on Huws & O'Regan (2001), Hanhike & Gareis (2004)

Furthermore, telework solutions may also allow for a more comfortable transition out of work life for ageing individuals through combinations of partial retirement and homework. However, related systems are still a challenge for technology designers and enterprises, as well.

To inquire the diffusion of ICT in the work domain, one has to identify the most important applications in field such as:

- ERP
- CRM
- Groupware
- KM systems

Although the concept of eWork is very broad and related empirical findings relatively vague, it does not cover all impacts of ICTs on work.

3.2.2 Work-supporting applications

Behind the interesting, but number-wise limited groupware applications another type invaded the work domain: work-supporting single-user applications. A lot of them substituted elder non-digital tools. Digitalization was often meant to widen the range of possible usages. Thus it could contribute to job enrichment and job satisfaction.

On the other hand, the appropriation of the new, more powerful tools demanded for new skills and knowledge. An early example was the introduction of CNC machines which formed

a mayor challenge for the elder mechanical lathe operators. Similar changes occurred, for instance, in design, where CAD replaced the old drawing board. In offices, labour became mediated by computers, too. This type of ICT-implementation affected a by far greater share of the work force than the more view eWork with its focus on collaboration. The work-supporting applications often had impact on the working environment and collaboration, as well. However, in their case this was due to second-order effects: these tools were not designed to change collaboration, but to change operation. Induced changes in collaboration were second-order effects – although these second-order effects could turn out to be more important than the anticipated effects for the individual user.

The share of this type of applications is further enlarged, as a part of such work-supporting applications remains invisible. For instance, ubiquitous computing has brought computing into everyday and work tools such as. ICTs have not only become part of cars, heaters, television, telephones, but of forklifts, traktors, taxi radio, medical instruments etc., too. The impact of this type of ICTs on the work domain is very important, but very complicated to be addressed by means of statistical analyses. Therefore, making use of the variety of related case studies remains a demanding task.

Further "invisible" applications fields of ICT in the work domain are discussed in field such as

- Ubiquitous, Pervasive and ambient computing (for e.g. wearable ICTs)

It is important to combine research and development in these domains with empirically-based inter-disciplinary design and participative implementation conceptions as outlined before.

3.2.3 *Analysis and perspectives*

On the one hand, the concept of eWork allows to structure many problems in the work domain. However, there are also problems with this concept, as it does not cover all social impacts of ICT on the work domain. For instance, the "invisible" forms of computing described above are not sufficiently covered. But is this a problem at all? If individual work is supported by invisible tools, there can be no social impacts – a nice argument! However, it is wrong.

Even when not meant to affect collaboration, changes in individual labor may influence the whole distribution of labor. One effect at stake is the emergence of a new branch, in which software is not a means of work, but a product: when tools become digitalized, production becomes directed to digital products. Besides this indirect effect, the environments of work can be affected directly by technological changes which are not meant to affect it, too.

This shows that single-user technologies may have immense social impacts, even on the distribution of labor. It is not what a technology is meant to be, what determines its social impact, but the inter-dependencies of its practical use. For example, GPS is not seen as a contribution to eWork, but its implementation on ships changes the navigation and may affect the distribution of labor there.

In this context, theories of the "information sociology" are often based on constructed visions and future scenarios, while work research generally uses established role differentiations. The notion of the "knowledge worker", which (following Drucker) guided many studies of the information society, represented an *ideal type*. Interpreting it as an empirical concept would have demanded to define an antonym (such as an "ignorance worker"). Although this would, of course, be absurd, it shows that until now established and new conceptualizations of work have not fully consistently been merged.

Therefore, it is necessary to attribute all tools supporting collaboration in a field as elements of a related *infrastructure*. Those ICTs among them, which were developed to function as a part of the infrastructure, then figure out as eWork supporting applications. However, aside

from this type of applications, there are others, which have not been developed for the given infrastructure, but which function as a part of it. If they consist of ICT, they are called work-supporting ICT applications, and may even be invisible applications.

The reason for this somehow counter-intuitive approach is that technology development is neither deterministic, uni-causal, nor thoroughly top-down. Conceptions such as eWork help to structure the complexity of social practices. However, sometimes such conceptions have to be re-adjusted or widened. In order to do so, we propose a practice-based focus on technical infrastructures, which generally have inter-individual (collaboration) as well as individual (work) features, even if they were designed only for one of them.

EWork is eWork, if its network technology has been designed as a contribution to collaboration. In contrast, infrastructures may have collaborative impacts, even if they were developed for individual use only. This change of focus makes it more complex to study the impact of ICT on the work domain, as it no longer may draw upon what was designed to have such an impact. On the other hand, the advantage of the related effort is a broader picture on social impacts of ICT in the work domain.

3.3 *Empirical evidences on supply and usage, as available*

3.3.1 Findings from Special Eurobarometer

The following topics, which were addressed by the special Eurobarometer analyses on internet use and social capital, will be introduced in relation to the work domain

- Digital divide issues in the work domain
- Differences in social capital and internet use by occupation
- Connections between ICTs and social resources
- Leisure time and work time
- Resource enhancing use of internet in the work domain
- Impacts of internet use at work

3.3.2 Complementary empirical evidences

- Eurofound Studies: Fourth European Working Conditions Survey (EWCS), report published in 2005 and the EWCS report on the theme *Use of technology and working conditions in the European Union*, published in 2008
- Eurobarometer Studies:
  - EB 62.1 (Oct-Dec 2004, ZA Nr. 4230). Special Topic: Information and communication technology at the workplace. The survey is a partial replication of the EB surveys 58.0, 56.0 and 54.0 which based on the same questionnaire.
  - EB 58.0 (Sep-Oct 2002, ZA Nr. 3692). Special topic: *Information and communication technologies: computer / Internet usage and teleworking*
  - EB 56.0 (Aug-Sep 2001, ZA Nr. 3625). Special topic: *Information and communication technologies: Computer / Internet usage and teleworking*
  - EB 54.0 (Oct-Nov 2000, ZA Nr. 3386). Special topic: *Information Technologies: Computer usage and teleworking*
- Eurostat indicators from the Information society database will be included

- Other sources:
  - ISSP 2005 "Work Orientations III"[1]
  - Pew Internet & American Life Project Report "Networked Workers" (Report published September 24, 2008)[2]
  - OECD and ILO will also included

4 Social Impacts analyses

4.1 *Rationalization*

- Substitution of work by machines
- Neo Taylorism
- The client as staff member
- Productivity paradox (Brynolfson)

4.2 *Networking*

- Service add-ons and complex products,
- product development,
- "breathing enterprise" and freelancers

Individualised collaboration

via ICTs, as is the case in traditional home-based tele-work, appears to have ambivalent impacts on job satisfaction. Workers who spend only a minor share of their working time at home (and the rest in co-located settings) tend to benefit from increased job satisfaction (Di Martino 2001; Cullen et al. 2003; Montreuil & Lippel 2003; Gareis et al. 2006), more permanent home-based eWork tends to have considerable negative effects resulting from social isolation and lack of access to social resources (Eichmann et al. 2002; Cullen et al. 2003; Dimitrova 2003; Treier 2003).

Variety of skill, significance of the task, autonomy and feedback – factors which have repeatedly been shown to be of central importance for the effectiveness of virtual collaboration – were found to be related to job satisfaction in a number of studies. This is hardly surprising since these factors contribute to job satisfaction in "real" collaboration as well.

[1] The ISSP Work Orientations module mainly deals with employment arrangements, job characteristics, subjective experience of job, outcome of work, work-life balance, work centrality, and solidarity and conflict in work relations. The module consists of three surveys from 1989, 1997 and 2005. The 2005 survey is a partial replication of the 1997 study and the 1997 survey a partial replication of the 1989 study.

[2] The Pew Internet & American Life Project report is based on the findings of a "daily tracking survey on Americans' use of the internet. All numerical data was gathered through telephone interviews conducted by Princeton Survey Research Associates between March 27 and April 14, 2008, among a nationally representative sample of 2,134 adults living in continental United States telephone households, including 1,000 self-identified full-time and part-time adult workers. For results based on the total sample, one can say with 95% confidence that the error attributable to sampling and other random effects is +/- 3%. For results based on workers (n=1,000), the margin of sampling error is +/- 4%.

Research by Dimitrova (2003) suggests that job autonomy almost never increases as a result of remote supervision, as here direct forms of control are replaced by more formalised interaction between superiors and remote workers. The author stresses, however, that remote management appears to benefit high-qualified workers in advanced job positions, while low-skilled workers carrying out, for example, clerical work, suffer from more formalised forms of control. She concludes that eWork "reproduced pre-existing social relations and inequalities" (ibid.: 191).

In contrast, research by Treier (2003) found the level of perceived stress to be greater for teleworkers who have a lot of task discretion, which may be explained by stronger difficulties to "switch off" after the end of the working day. Montreuil & Lippel (2003) and Richter et al. (2006) also found that more enriched working tasks and work in virtual teams subjectively yield more stress.

A key topic in the discussion of individualised forms of virtual collaboration is their impact on the balance between **work and family** commitments. Antila (2005) argues, relying on data from a representative survey of Finnish workers, that ICTs, in combination with new management practices, have enabled work to "slop over" into leisure time, to the possible detriment of the interests of the family. The question is whether this blurring of boundaries (which challenges the traditional "clear line" between work and private life) is perceived negatively by the individuals concerned. Antila's (2005) research showed that the large majority of knowledge workers who use ICTs (including mobile phones) to stay connected to their work during their leisure time do not mind. One explanation is that they realise the benefits they gain in exchange from the increasing flexibility in managing work- and leisure-time schedules. Cooper et al. (2002) find that knowledge workers use ICTs to extend their working hours, in particular by using spare time during commuting for work-related tasks, but this is not necessarily considered a problem by those concerned.

Richter et al. (2006) conducted two studies of virtual teams and comparable reference groups co-operating in traditional ways. They found that virtual teams "have more enriched job characteristics: In virtual teams more organisational tasks and functions are transferred to members, group work was, to a greater extent, organised by the group itself, members faced significantly more learning demands and responsibilities and were more involved in planning processes" (ibid.: 238). On the other hand, stronger symptoms of job-related stress were observed in virtual teams, which led the researchers to suggest that the relationship between job demands and stress (under conditions of high job autonomy) is curvilinear.

Most investigations of individualised virtual collaboration find **longer working hours** as a result of working remotely (Cullen et al. 2003; see Dimitrova 2003 for an overview). However, it remains unclear whether this is a result of eWorking itself or whether it can be explained by the criteria which determine the selection (or self-selection) of candidates for remote working (see Peters et al. 2004).

In their study on the **psycho-physiological effects** of individualised eWork Lundberg & Lindfors (2002: 363) found that remote workers are often unable to "shut off the stress response after the end of the work day" and that this "contributes to the wear and tear of the body." They conclude that "lack of time for rest and recovery from work could be an even more important health risk in modern society than the actual level of stress during work".

Mann & Holdsworth (2003) studied two groups of journalists, of which one was working from home. They found out that teleworkers suffered from more negative emotions and that they had higher levels of emotional ill-health than office workers carrying out the same job. Meanwhile, physical health scores did not differ significantly between both groups. Importantly, the study also ascertained more negative results for female than for male eWorkers. This appears plausible given the fact that "the work-family conflict is a source of stress and has been correlated with negative experiences of emotional and physical ill health

[...][as] female teleworkers usually retain responsibility for the majority of the domestic chores, which can lead to feelings of frustration, inadequacy and stress" (ibid.: 207).

Based on data from a comprehensive sample of the Swedish workforce, Johansson (2002) has shown that perceived work/life imbalances correlate with a higher probability of gastrointestinal and cardiac problems and a higher frequency of mood and sleep disturbances and headaches.

The problem of work/life balance also brings up the question of the relationship between job satisfaction and **overall life satisfaction**. Cullen et al. (2003) did in-depth interviews with fifty persons in flexible working patterns including home-based telework, mobile work and e-lancing. Their research focused on the consequences of flexible, ICT-supported ways of working for family life and for the balance between work and family in general. Their results suggest that high job satisfaction can indeed go in hand with risks to family life and, as a consequence, stagnant or even deteriorating life satisfaction, at least in the long term.

Virtual collaboration is essentially based on computer work. Hence, research concerning ICT-based workplaces and their effects on worker satisfaction and health are of relevance.

Most research suggests that ICTs are positively correlated with work quality. A 2001 communication from the Commission states, based on data from Eurobarometer surveys and the ECHP, that "new technology appears to have contributed to making jobs intrinsically more interesting and satisfying with greater autonomy, and there is some evidence that women are beginning to achieve better access to more highly qualified jobs with, for example, similar levels of participation in appropriate training" (CEC 2001: 10).

One has to keep in mind that the implementation of ICTs was fastest in innovative, well-off enterprises. Furthermore, in the long run computer work involves risks as well. A staff working paper of the Commission (CEC 2002a), therefore, lists a number of risk factors related to computer work in general:

- stress symptoms due to excessive working hours, workload and increasing complexity of tasks;
- negative side-effects in the form of information overload through email, difficulty in distinguishing significant and insignificant information, and being accessible all the time;
- stress of having constantly to upgrade skills;
- decrease in personal relationships; replaced by virtual contacts;
- physical impairments such as repetitive strain injuries and musculoskeletal illnesses due to inadequate or ergonomically insufficient equipment or due to forced postures, and the combined effects of both.

Research by Dhondt et al. (2002), which used data from the European Survey on Working Conditions (representative sample of EU15 working population), showed that:

- use of computers at work is negatively associated with musculoskeletal health problems and allergies/asthma, while the opposite is true for workers using machine technology;
- use of computers at work is positively correlated with skill development opportunities.
- use of computers at work is also positively correlated to satisfaction with working conditions.

4.3 *Empowerment &Participation*

- Bad practice / best practice examples

- Participation/self-organization/Individualization as part of European ICT engineering culture?
- Individual perceptions

4.4 *Social Capital*

- Social Capital – as a function of social relationships and network ties – is the fundamental source for inter-personal trust (Cohen/Prusak 2001, Fukuyama 1995; Huysman/Wulf 2004);
- Communities of Practice (CoP) as a crucial precondition for socio-cultural learning – in terms of competencies in practice (Brown/Duguid 1991; Duguid 2003; Osterlund/Carlile 2003; Wenger 1998; Wenger et al. 2002);
- Social Identity as a socio-psychological concept of group/organization membership perception and a strong mechanism for social inclusion/exclusion (Tajfel 1978, 1982, Tajfel/Turner 1986);
- Neo-institutional approaches of innovation clusters and knowledge networks (Powell et al. 1996, 2005).

The socio-cultural and neo-institutional approaches are very promising and significant for the analysis of the social impacts of ICT on newly emerging organizational structures (esp. virtual teams, social networks, industrial clusters and communities). However, problems remain to integrate such findings into decision making, as they are often derived from an ex-post evaluation. Instead, more effort would be beneficial to find ways, in which the reasoning of social impacts can become less an end-of-the-pipe (and "visioning") activity and more of an empirical contribution to socially inclusive product finding.

ICT diffusion processes are marked by little homogeneity: the increasing standardization of ICT features should not erroneously lead to the conclusion that related processes guarantee a very structured, well-known development path. Instead the relevant features and perspectives of the multi-facetted and far-scattered ICT diffusion remain to be identified case-by-case, generalizations to be developed only afterwards. Thus case studies must become a basis for a more comprehensive understanding of ICT and more detailed surveys. In particular, they allow for comparisons and the formation of *ideal types*. However, there is still little systematization of investigations into the field by means of case studies. Furthermore, in spite of the plenitude of case studies in certain areas, there is a lack of case studies especially in areas which appear to be "far away" from the ICT business (in contrast to scenarios and highly aggregated surveys).

In technological terms, the development of applications seems to become a more important issue (which is on no account covered by "*applications engineering*": the related concern about technological support for applications in general does not include support for the detection and development of any particular service application in practice).

4.5 *Information &Lifelong Learning*

- E-Learning technology in enterprises
- Necessity of "2nd-generation knowledge management (feature request data bases, feedback loops)
- ICT training & skills
- New challenges for training
- Reference on related domain report

4.6 *Discussion*

- ICT diffusion in the workplace
- Intensity of ICT work
- Qualification level, occupational status and ICT use; e-skills and employment
- ICT training and learning within companies
- Quality of work and ICT use (job satisfaction and enrichment, health and risks, privacy issues)
- ICT use for work by occupation, gender and age and ICT use by branches
- ICT products
- ICT automation vs. ICT expert support
- ICT appropriation and adaptability by workers
- Emergence of new working forms due to ICT
- Competence-oriented infrastructure development and engineering

Based on empirical evidence from the EWCS and Eurobarometer, both the European Commission (2003b) and the European Foundation (2005) observe that investments in ICT are not always supported by investments in company reorganisation and in staff retraining. Data from a 2002 Eurobarometer clearly shows that gains in quality and effectiveness, as perceived by workers, are significantly higher if combined with appropriate training: "Only about half of the workers at workplaces where ICT have been introduced (i.e. about a fourth of all EU workers) indicate that significant complementary changes have been made in their organisations, with still a lower proportion in smaller companies. Even less persons say that they had been consulted and/or had received training on new roles and tasks, missing important conditions for managing successful change". This appears to be of high importance because the data also confirms basic assumptions of work organisation theory: Workers that benefit from complementary measures, particularly an organisational change at the workplace, perceive the introduction of ICT much more satisfactorily, in terms of higher job quality.

5 Policy implications

Not yet completed

6 Literature

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[D] Consumption (incl. media and entertainment)

Oxford Internet Institute

Table of contents:

1 Introduction

Full participation in society is partly determined by an individual's ability to be informed and active consumers of goods. This consumption is 'instrumental' when consumption fulfils basic needs and acquires physical goods such as housing, food, health services, utilities and transport. However, consumption can also be 'emotional' used to improve quality of life beyond basic needs or provide relaxation and entertainment. This project focuses on both types of consumption. Since in the current ICT environment entertainment, instrumental consumption and information consumption have become ever more intertwined, it is seen as essential to include both instrumental and non-instrumental forms of consumption.

Three general areas of concern are especially reflected in this chapter, the first is the importance of collapsing/expanding space and time dimensions to consumer behaviour, the second is the boundaries between consumers and producers and the third is the role that new ICTs play in supplementing or substituting existing forms of consumption. It discusses these issues from the perspective of the consumer, while producers and intermediaries (ie. salespersons) are clearly part of the consumption process any significant developments will be discussed only in relation to how this affects consumer behaviour and perspectives.

The focus of this chapter will be on consumer goods, tangibles as well as intangibles, but will exclude services provided by the government and business to business interactions. This means that this domain reflects consumption of traditional physical products (eg. CDs and books) as well as the most recent consumer products that do not have a physical form (eg. music downloads and online magazines). Furthermore, this chapter will focus on the impact of ICTs on the consumer and not on the production process even though distinctions between consumption and production have become more difficult.

This chapter is divided into four sections which will first discuss the most important social trends that have taken place in Europe in relation to consumption, then the arrival of ICTs in this area. This is followed by a discussion of the more recent evolution of and the social impacts that this has had in the area of consumption. This section will also include a discussion of the barriers and enablers that the introduction of these ICTs encountered. This section finishes by discussing the possible impact of ICTs on policy initiatives in relation to consumption.

2 Epochal trends and the arrival of ICTs in consumption

This section will review the most important social trends in relation to instrumental and emotional consumption with minimal reference to ICTs in describing these trends. Roughly this section is divided into three subsections discussing changes and trends in the relations between consumers and producers, in the development of consumer behavior and in the roles of consumers in society.

2.1 Relations between consumers and producers

This section will discuss two main developments in the relationship between consumers and producers of instrumental and emotional products.

- Concentration of production in big global and multinational companies

Many have written about globalisation of consumption, the rise of large international cooperations that have taken consumption from the corner shop to large supermarkets and

megastore (Gorter et al. 2003, Pioch & Schmidt 1999, Wrigley 2002). The reliance on globally integrated production systems by multinational companies (Dicken 2007) is an important part of this trend (Henderson et al. 2002). Production is distributed and segmented over different countries and continent depending on where the knowledge and the cheapest labour is situated (Ernst & Kimb 2002). Not only production takes place in different parts of the world, consumers now expect produce and products from all over the world to be delivered at their door. This has naturally led to a concentration of economic power in those organisations and producers that can provide such a global production system and service (Sassen 1995). This means that the products consumers get in, for example, India are now very similar to those that can be bought in Europe and Latin America.

- Rise of local personalised services and socially responsible consumption

A counter trend to globalisation of consumption is the continued existence and increased awareness of locally produced goods (Nygård & Storstad 2002, Roberts 1996, Webster 1975). Responsible or conscious consumption is driven by a request for more information about products; organic food, fair-trade and other brands that guarantee origin of products have risen in popularity (Goodman & DuPuis 2002). Local shops with clear provenance which are able to tailor to the personalised needs of consumers have increased in popularity.

2.2 Developments in consumers

The developments described in section 1.1.1 can be seen at a smaller scale within the behaviors of consumers. Domestication of consumption, personalization and consumer professionalisation have all been on the increase in the latter half of the 20th century.

- Domestication

Domestication of consumption signifies the move towards consumption at home and its integration into other everyday activities. More and more activities that used to be (semi) public activities, such as consumption of entertainment products have moved inside the home or even more starkly, into the bedroom (Livingstone 1998). It is impossible to see this as separate from the rise of small sized, cheap technologies such as the television, the video recorder and stereo equipment that have made it possible to have music, video and literature within reach in the home. The word home-entertainment was one of the most important buzzwords in this area in the 20th century.

- Personalisation and the rise of niche markets

The customisation of the mass produced products discussed in section 1.1.1 is on the rise based on a consumer quest for personalised, individualised products tailored to personal needs to express identity through consumption (Laverie 2002). This relates to domestication where consumption goods are brought into the home and are 'on demand'. An area of importance here is the increased registration of consumer data to tailor products to the needs of the consumer. After a period of mass production of products it seems that there is room for niche markets within this trend of globalisation that responds to the need for personalisation. Economies of scale in combination with economies of scope have meant that in the last three decades very particular needs of individuals around the world can be met because these individuals combined form a large enough group to make a profitable market or have a strong voice as opinion leaders or trend setters. Mass production meant increased choice of product and lower prices for most products. Consumer organizations protection the right of the consumer and advocating market transparency came into existence during this same period.

- Professionalisation and consumer empowerment

In relation to the trends mentioned earlier there is a move towards empowerment of the individual consumer, consumer rights and (industry and government) regulation to protect the consumer from fraud and deception have all been stepped up in the second half of the 20th

century which saw the frequent mentioning and creation of words like second opinion, ombudsman, etc. Fraud and non-compliance (esp. in international transactions) have all become easier and have a larger reach with interlinked systems of commerce and trade.

In addition, consumers have become more conscious of the effect of consumption on the environment and other global issues, demanding more information and better, instant service. Thus consumption has become more global and more socially aware through the professionalisation and empowerment of consumers.

2.3 Changing role of the consumers

The relationships between consumers and producers have changed in the last half decade as well as our idea of where and when consumption takes place. This has seen the role of the consumer change. Personalisation and professionalisation of consumption means that certain distinctions in the consumption process, eg. between consumers and producers and between commerce, entertainment and learning, are more difficult to make.

- The blurring of the boundaries between consumption and production and the cult of the amateur

The continued integration of consumption into the domestic sphere means that individuals have started to appropriate the consumption process. Two trends can be observed since 1970, one is the commodification of consumption activities. Individuals are making money of consumption processes in which they used to be the paying party. In addition, consumers are said to often be producers of content at the same time as consuming content. Producers are asking for consumer or amateur input in their design and sales process. Focus groups, design your own and easy/cheap distribution of home produced products has led according to some to a blurring of consumer/producer boundaries. Consumers ask for goods tailored to their needs and this often means they want a greater say in the production process.

- The blurring of the boundaries between commerce, entertainment and learning

The latter half of the 20th century has also seen a continued blurring between consumption, entertainment and learning. Terms such as product placement, infotainment and more recently advergaming are all part of this trend. In this content the academic world has started emphasising consumer and media literacy as a necessary skill to understand producer intention and give consumers informed choices.

3 Applications of ICT in consumption

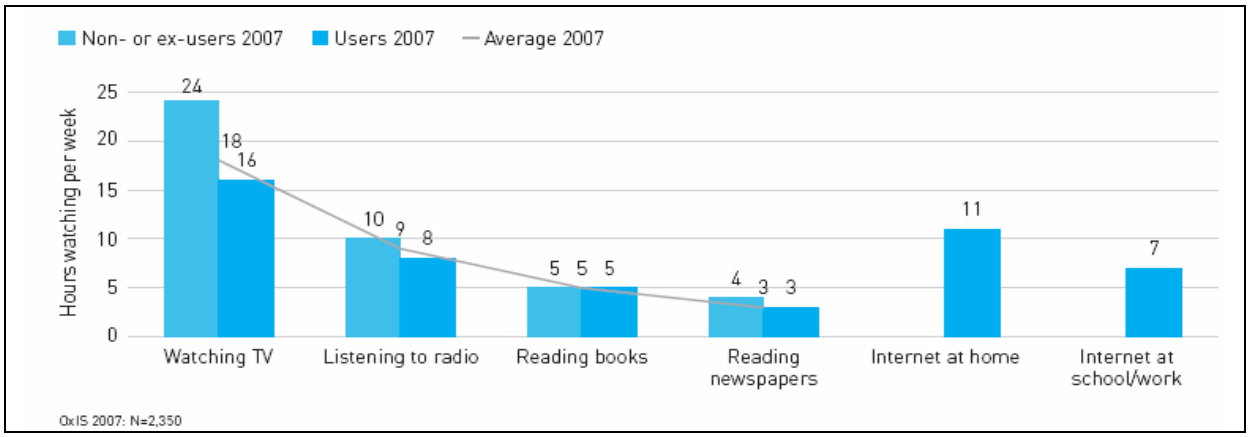
It is difficult to separate the social trends discussed in the previous section from technological and information and communication technology trends that have taken place alongside these social changes. Production in the 20th century was strongly linked to industrialization which in turn was based on technological developments, the latter half of the 20th century and in particular the last two decades were marked by a move away from heavy industrial production to a society labeled the information society. Instead of mechanics, bits and bites have become what makes the world go round and these bits and bites are based in Information and Communication Technologies (ICTs). Three areas have seen the most discussion of the impact of ICTs, this is the idea that new ICTs have substituted or supplemented older media and forms of interaction. The second is how ICTs have changed the significance of place and time in consumption and the rise of interactivity in consumption processes. All these ICT developments are related to the trends described in section 2.1.

3.1 Substitution and supplementation (of media and producers)

- Old versus new media

The use of new ICTs like the internet follows many of the same patterns as other more traditional media. Important in the impact that the introduction of new ICTs might have is that they change the way in which we interact with others whether these are individuals or organisations (Dutton et al. 2007). This will thus also influence our consumption habits. There are two arguments in this discussion about how new ICTs are introduced in the interaction between producers and consumers of entertainment / emotional products. The first is that traditional media are replaced by these new ICTs, for example, there is evidence that people who use the Internet tend to watch less television which impacts the way people are exposed to advertising and awareness campaigns and the way in which people consume entertainment and information (Owen 1999). Slogans such as 'video killed the radio star' and 'the death of cinema: movies on demand' are exemplify this type of thinking. The Internet was also early on 'accused' of replacing other types of consumption, the end of the shop, paper and television have all been predicted when the Internet first appeared as an interactive multi-platform medium.

Figure 1 Number of hours consuming different media by users and non-users in the UK



Source: Dutton & Helsper 2007

The second argument is that new ICTs fulfil functions that can not be filled by traditional media and that they exist alongside each other satisfying different needs (Athaus & Tewksbury 2000). There is evidence for both substitution and supplementation, new ICTs play a role alongside and as a replacement of traditional media. This is important partly because the big entertainment industries which sell emotional products to consumers are not always in control of the sales channels available on new ICTs and consumers have been very willing to share the products that they have acquired earlier with others through peer-to-peer, file sharing sites.

- Death of the traditional intermediary?

One important aspect of the consumption process from producers to consumers is the intermediary, the person who sells the goods of the producer to the consumer. ICTs, and especially the internet, seem to have had the largest impact here. Price comparison websites (eg.moneysupermarket.com, Confused.com), online travel websites (eg. Opodo.com, Travelocity.com, Lastminute.com) and consumer to consumer sales platforms (eg. eBay.com) have all been forecast as leading to the death of the traditional intermediary. The expectation has been that market power, based on the preference of the consumer for self-service, would shift from suppliers and intermediaries to consumers. Instant, 24 hour access to sales platforms through the internet is said to have undermined the dominance of large entertainment conglomerates in the music and movie industry. The possibility of selling

products without the traditional intermediaries could make agents obsolete since artists and entertainers have direct access to their market and cheap production lines. In addition, the exchange of products between consumers has been facilitated by the rise of peer to peer sharing websites (eg. Bittorent). There are ofcourse legal issues here as regards copyright and ownership. Another issue is the disappearance of expert intermediaries in consumption of products that might influence long term psychological, physical or economic wellbeing.The medical industry was one of the first to offer direct-to-consumer services and there have been concerns about the disappearance of the intermediary here (see Health domain chapter).

An important aspect in this area the rise of consumer self-service technologies (Voß & Rieder 2005). Meuter et al. (2000) define these as 'a wide range of technologies, including the Internet, to allow customers to produce and consume services electronically without direct contact from firm employees.' (p.899). This development requires a professionalisation of the consumer who needs to be an expert ICT user and have enough knowledge in the area to be an effective searcher and user of these types of services (Dabholkar 1996).

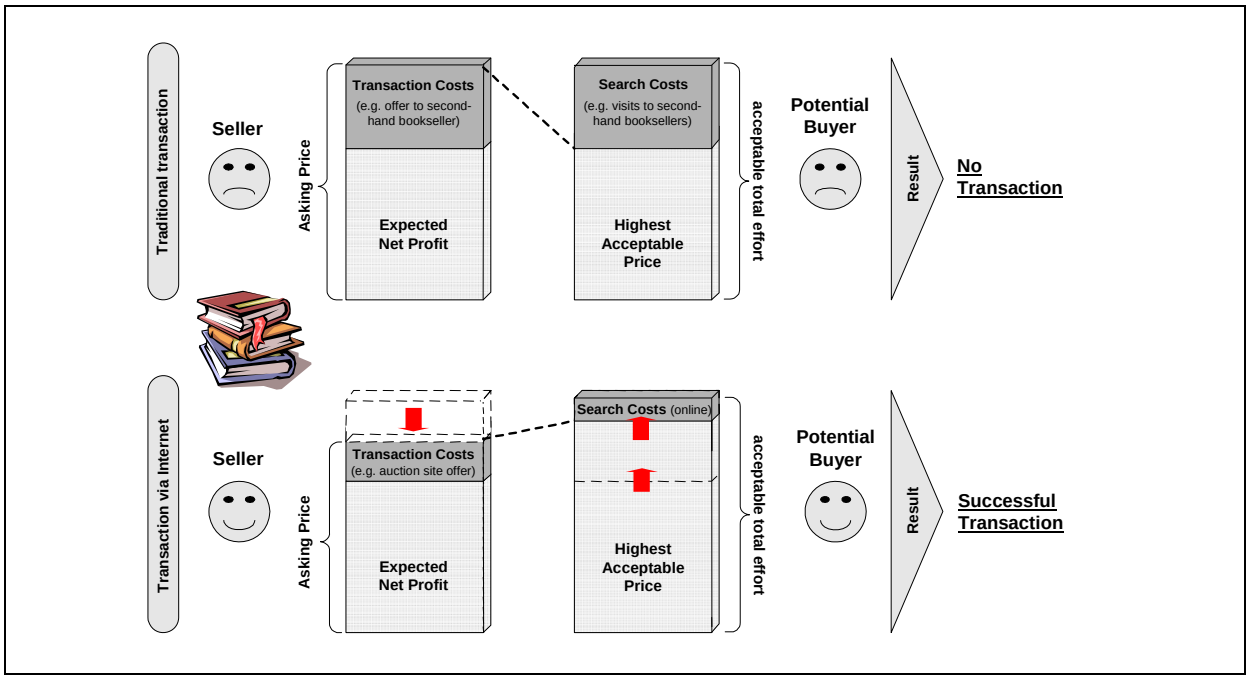
3.2 Time and place

- Costs of transactions

The Internet, together with other ICTs, has made a big impact on the ease and flexibility with which consumption can be carried out. The basic underlying reason can be found in transaction cost theory. Transaction cost theory was originally developed to explain the existence and boundaries of business enterprises. It suggests that there are marked differences in the costs of executing transactions inside of organisation as opposed to on the market. This leads to the theoretical finding that profit-maximising companies execute those transactions internally that would cost more to conduct through market contracts. As was noted by the early transaction cost theorists, transaction costs can be altered by technological progress. The expectation with ICTs that allows for consumer self-service was that costs would fall as a result of e-Commerce. ICTs in general, and the Internet, in particular, have been shown to reduce the costs of many types of transactions(Picot et al. 2003). An important component of the transaction costs that are incurred by activities for acquiring information are search costs. These arise when market participants have to invest in activities to find the information they need to decide how to behave on the market, e.g. to take part in the labour market or stay out. Search costs are determined by the nature, number and intensity of search activities, but also by the technique and technology used for investigating information. For this reason, ICTs are said to have a major influence on search costs, not only on their overall level, but also on their composition and the relative costs of different search techniques.

The Internet has enabled the emergence of new markets which have not been sustainable before, because transaction costs were prohibitive (see Figure 2) – a typical example of market failure which the Internet and other ICTs were able to abolish. By decreasing transactions costs (here: the costs for identifying a person interested in buying a used book on the one side, and the cost for finding a copy of a sought after book on the second hand market on the other side), Internet platforms such as eBay have created markets which ultimately lead to everybody being better off – with the possible exception of intermediaries who cashed in on the lack of market transparency in the situation before.

Figure 2: Emergence of new markets enabled by Internet related decreases is transaction costs



Source: Gareis et al. 2000

The availability products through ICTs with a relatively low investment in time and transport has made the 24 hour consumption economy possible, people are said not to rely on shops anymore.

- Domestication

Important besides time savings is further the possibility of ICTs to change our conception of consumer space. In theory it is now just as easy to buy something from a shop in the US or China as it is to buy something from the corner store. Home delivery of everyday goods such as groceries, books and clothes can take place anytime and anywhere (especially with the rise of mobile broadband technologies). One argument is that this leads to homebasedness of consumption, that is the consumption and entertainment process is moving more and more to the private sphere of the home where people can now get personalised products delivered to their doorstep (see section 1.1.2). ICTs as platforms for home entertainment and consumption have become more and more part of our home based, private everyday lives (Silverstone & Haddon 1996). ICTs have thus made it possible to move away from the hustle and bustle of the 'real life' high street and shopping mall.

- Mobilisation

However, there is also a trend towards the opposite, referring back to the supplementation/substitution hypotheses. Instead of replacing outdoor shopping, virtual or digital shopping could be taken to the high street. This means that people will take their mobile devices and 24 hour comparison sites with them when they go shopping. There are numerous anecdotes that people tell illustrating this mobilisation of consumption phenomena, eg. people talking on their mobile phones in supermarkets inquiring about what the family needs for dinner that evening or blackberry users figuring out if the price in the shop they are in is really the lowest by quickly looking up the price somewhere else. It is unlikely that the touch and feel and smell of 'real life' shopping will be completely replaced, supplementation in some areas (clothes and food shopping) and substitution in others (eg. trip, music and book buying) will occur in tandem.

3.3 Interactivity

- Consumer empowerment

An important and perhaps unforeseen effect of the introduction of the Internet was its capacity to bring consumers together in the production process through the increase of interactivity in what used to be broadcast (ie. one way) consumption messages from producers through mass media. Websites where feedback from the consumer to the producer is possible in Direct-to-Consumer contexts is one of the areas that can be directly linked to consumer empowerment. Niche markets of consumers with very particular consumption preferences have joined in discussion boards and on product specific websites to comment on products and vendors. In the entertainment industry the fanzines and websites dedicated to specific programs, bands, shows, have supplemented the existing professional critics' evaluation in more mainstream media. The cult of the amateur coined by Keen (Keen 2007) has placed power in the hand of the consumer of both emotional and instrumental products. Evaluations are available to all and professional or official representatives of consumer groups have seen their role diminished in consumer protection issues. If a costumer is unhappy they can not only feed this back directly to the producer but also to all potential future products. Consumption, especially in niche or specialized markets has become a way of gaining social and cultural capital that was out of reach of consumers when the Internet was not there.

- The rise of the prosumer

The easy access to selling and buying platforms and the interaction between consumers or peers has also led to a phenomenon in which the boundary between consumers and producers has become smaller. That is, it has become easier for consumers to sell as well as passively consume, the term that has been used to describe this phenomenon strongly linked to the rise of interactivity in ICTs is the 'prosumer' (Kotler 1986). While earlier trends existed in this area, mainly in the form of the personalization and customization of services and in the traditional classified adverts, the market for prosumers is now potentially much larger. Small producers of instrumental and emotional products sell to consumers directly who at the same time are likely to have sold products themselves as well, the rise of auction sites, such as ebay.com, have supported this trend. There is some indication that these consumer-to-consumer auction environments are more and more professionalized with small businesses and larger producers selling their products on these site, taking advantage of the dynamic pricing possibilities of the sites. Supply and demand can be closely managed and prices varied accordingly, this is true for amateur consumer/producers as well as the traditional producers.

In the emotional or entertainment products corners amateurs who have created their own artistic product have potential access to a global market without the need for the traditional agents and studios that might in the past have marketed and sold their product (See creation domain chapter).

- Registration of behavior and needs

Another important element of the possibilities of interactivity is that this allows not only a closer watch of the consumer over the producers' background and actions, but also the reverse. Most product and services websites and consumption in general seems to require an ever increasing amount of information about the consumer. The consumer's behavior is registered and there preferences noted, all this facilitated by ICTs with datamining and database combining powers that have slowly build up over the last decades. Privacy and data protection watch dogs have been concerned about this. When these powerful data gathering tools first became available producers seemed to suffer from a 'we do it because we can' phenomena where all kinds of information were gathered without a clear purpose and a type of 'consumer information overload' on the part of the producers can be observed. However, many direct-to-consumer websites have figured out ways to gather data with or

without the (conscious) permission of the consumer to tailor the product websites to the consumer needs. Good examples of these are websites like Amazon where based on past purchases and purchase patterns by other consumers the client/buyer gets recommendations. Grocery shopping online follows the same techniques where costumer loyalty (ie. Returning to the same service) is rewarded with an intelligent shopping cart that remembers what has been bought before, seasonal suggestions and announcements of offers that, based on analysis of consumer behavior, are likely to be of value to the costumer. While most consumers worry about the amount of information that is available about them online and the information that various organizations and companies are selecting, the reality is that to be able to reap the benefits (ie. Discounts, pre-sales etc) from online consumption it is necessary to sign up and give away personal information. The limits of what consumers are willing to give up to get a tailor made product are still unclear.

4 Social impacts and issues

The ICTs, in particular interactive Internet applications and large databases which have been mentioned in the previous section rolled out over a few decades and it has only recently become clear(er) who the winners and the losers might be when ICTs and consumption come together. It would be wrong to argue that everything changed dramatically the day the Internet came into the consumers' lives. Most of the changes in consumption patterns have been evolutionary rather than revolutionary.

This section discusses the social impacts of ICTs in the area of consumption the barriers that the uptake of ICTs for consumption has encountered in the last decades as well as those factors that facilitated and enabled the use of ICTs in consumption.

4.1 Rationalisation and Domestication

ICTs enable the transfer of all types of data across distance, which together with the trend towards informatisation of economic activity and digitisation of products and services means that it becomes increasingly possible to substitute the flow of data in networks for physical transport. Because physical transport is expensive and burdensome, distance has always exerted a strong influence on the types and levels of activities people carry out at a given place. Electronic transfer of data has the special characteristic that marginal costs for the transport of a unit of information, once the basic infrastructure is in place, are very small. This means that many activities that used to require physical transport, but can now be carried out with the help of electronic data flows, have become cheaper. In practice the distance-shrinking character of ICTs mean that more and more of everyday activities can now be carried out electronically from anywhere at the click of a mouse. This has opened up a whole range of new possibilities for people whose ability to take care of personal business and transactions used to be constrained – for example because of lack of time, because of individual functional restrictions, or because of geographical location in a peripheral or otherwise disadvantaged region of Europe.

- Emotional products

The arrival of social networking sites, such as facebook, and virtual worlds, such as second life, and the increase of the number of users and producers of content makes it possible to consume emotional products (ie. entertainment) from 'the couch'. A very considerable part of this type of consumption is now said to be taking place in the home due to the increase in broadband diffusion. Nevertheless, the improvements in data storage capacity mean that there is the possibility to mobilise consumption outside the home into traditional sites of consumptions (price comparison via mobile phones in the shop).

Concrete examples

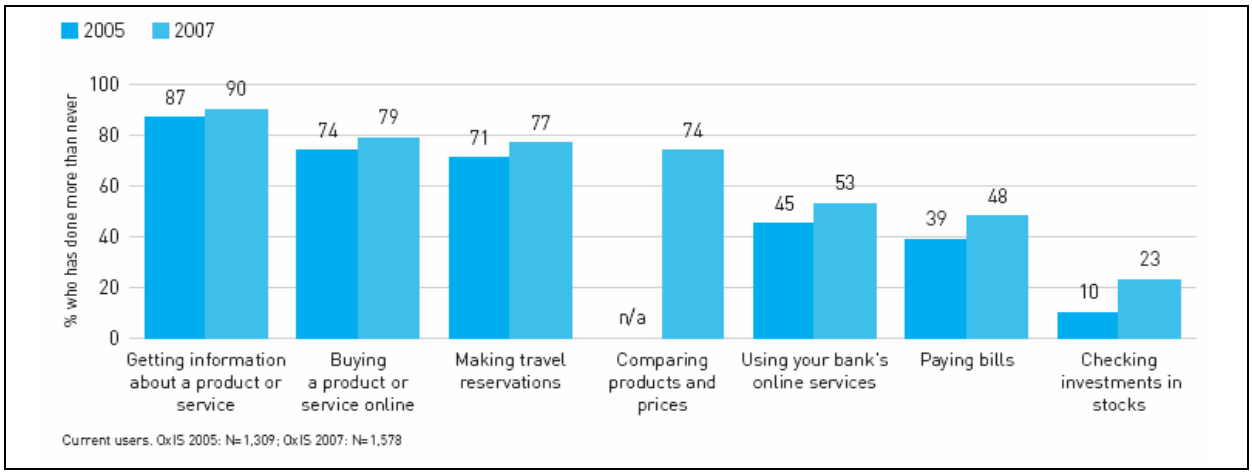
- 24 hour Home entertainment - BBC Iplayer, Bittorents, You Tube
- Second life and other virtual worlds – at home but with the world at your feet
- Online games – World of Warcraft

All these have developed their own (virtual) economies and markets.

- Instrumental products

Instrumental uses of ICTs in the private domain include transactions such as online banking, online ordering and reservations, as well as many e-government applications. One of the more fascinating effects of the Internet has been the evolution of online trading and selling between private households through the Internet, mainly by means of online auctions. The Oxford Internet Surveys show that amongst UK internet users eCommerce has been one of the most popular uses for over four years (see Dutton & Helsper 2007).

Figure 3: Percentage of UK internet users that have used eCommerce applications



Source: Dutton & Helsper 2007

- Online banking
- Home shopping and (second hand/classified) sales

Enabler: Easy access to the internet (in Northern Europe) – drops in prices

The Internet has made a huge difference to the accessibility of information. The cost of broadband and high quality mobile connections has dropped considerably which makes accessing these ICTs more affordable for groups that would previously not had the economic resources to do access this type of information. Policy in many European countries that stimulates digital inclusion has helped the spread of access to ICTs. People equipped with the adequate skills in identifying, selecting and processing information enjoy the benefits of almost instant access to an incredible wealth of data on the Internet. As opposed to the pre-Internet era when most mediated information was transmitted through the mass media, the Internet enables high degrees of personalisation of information retrieval. The huge leaps in performance which search engine technology have made in recent years have provided users with adequate tools to exploit this richness of information.

Barrier: Digital and Socio-economic exclusion (incl Media/Advertising literacy)

As for any other area where services and interactions are moving to digital media such as the Internet, a fundamental barrier is the relatively large proportion of people who are not able or choose not to engage with ICTs. There is evidence that the introduction of ICTs can solidify or increase existing gaps in economic participation (Helsper 2008). In Europe the

percentage of Internet non-users ranges from, for example, 24% in Sweden to over 50% of the population in Hungary (World Internet Project 2009). Since transaction costs are in general lower for buying on the Internet, the lack of access to the services that are offered online is a serious issue for full participation in society. However, in relation to transactions and interactions with producers (or prosumers) through ICTs other types of digital exclusion are important as well. Digital literacy, that is the skills to use, interpret and critically assess the intention of content produced through ICTs, is fundamental to a world in which consumption is completely free and equal.

The technical skills needed to operate ICTs often seem minimal to those who use these technologies extensively, but those who are new to this environment or who in general have no affinity with learning are at a great disadvantage when more and more products are sold cheaper or solely online and when the choice of goods over ICTs is greater than those in the offline world. Besides technical skills the importance of critical and interpretative skills has to be taken into consideration. Whenever things are sold, the consumer needs to evaluate whether the product is any good, whether it is useful (in an emotional or instrumental sense), and whether the price is right. Before the expansion of consumption through digital and mobile ICTs, media literacy was the general term used to describe these skills and, for the specific interpretation of sales messages, advertising literacy another. These types of critical skills are unequally distributed in the population by age, socio-economic and educational levels and widespread access to ICTs will not necessarily overcome this hurdle. This is especially true because the amount of information on the Internet and other interactive media is almost infinitely large and selection and interpretation are important skills to have in this environment. With the increased need for more complex critical evaluations it is unlikely that socio-economic inequalities will diminish as we start to rely more and more on ICTs for consumption processes.

4.2 Information and Life Long Learning: Disappearing and New intermediaries (substitution v. supplementation)

The area of the intermediary in the consumption process is probably where many observe the most radical recent changes due to evolutions in ICTs. Although the traditional shop has not disappeared and the music industry is not yet bankrupt, new applications and services have come into the picture and taken over some markets by storm through intelligent use of the internet. In some markets traditional intermediaries, ie. travel agents, seem to have completely disappeared and in others new intermediaries have appeared, ie. price comparison websites and information navigators (search engines). The final domain report aims to include a schematic overview of the products/services according to the degree their respective markets have been affected by disintermediation, drops in prices, (de)concentration, click's mortar strategies, etc. This would enable the reader to gauge in which markets consumers have seen what kind of benefits.

Concrete examples

- Googlisation- The increased dominance of search engines- combating information overload.
- Travel industry- Travelsupermarket.com and costumer feedback
- Price comparison websites – Moneysavingsexpert etc.
- 24 hour economy – amazon.com, etc.
- Consumer to consumer –eBay.com, Marketplaats.nl
- Anonymity – large datasets but also the possibility to consume products that would have otherwise undergone a lot of scrutiny and can now be done in relative anonymity – most of these are age old industries (pornography, gambling,
- Mobile phone – push and pull
- Cross platform integration (DigiTV)

Enabler/barrier: Information/Consumption overload

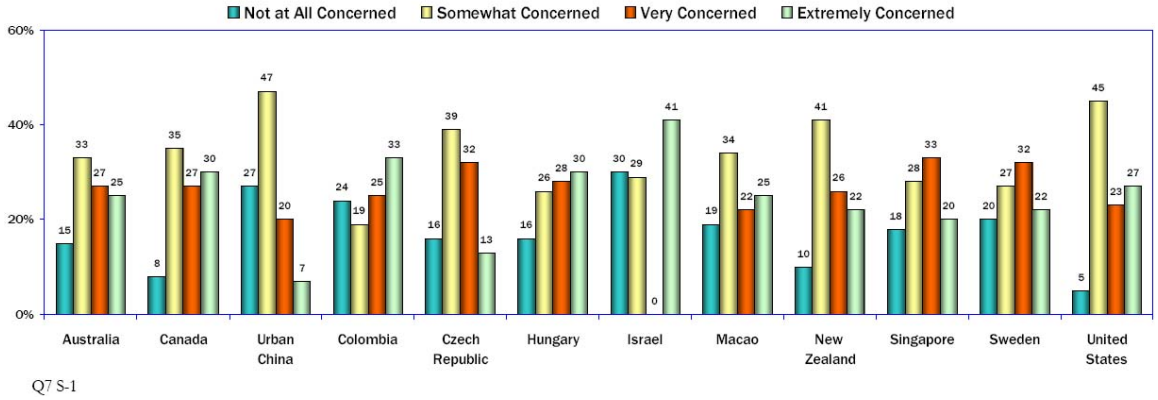
Notwithstanding the expansion and improvement of information searching and comparison tools, an important area of concern is related to so called 'information overload' in consumers (Lee & Lee 2004, Ho & Tang 2001). With the proliferation of information and sources critical consumer skills are required to be able to select and compare the best possible offers. These capabilities can be provided through the structuring and design of ICTs, through requirements posed by regulators and by training and growing experience of consumers in this area (Van Zandt 2004). Nevertheless, the question remains valid whether this development constitutes a transformation of previous practice, or simply an acceleration of existing trends.

It is certainly true that just enabling people from different backgrounds (e.g. different nations, cultures) to exchange information freely between each other will not necessarily yield meaningful outcomes. Many Internet users might be less interested in learning new things than in finding confirmation for opinions they already hold and in contacting people which they feel are "like them". This is especially true when there is such a wide variety of information sources available and people need to be selective to be able to cope with this sea of information. Researchers have argued that the possibility for personalising the information which one is exposed to may lead to narrow mindedness and social fragmentation (Katz & Rice 2002). Some researchers claim that "people go on-line to find out more information about a subject, not to be transformed" (Hill & Hughes 1998). Another argument that shows that too much information is a barrier to creating more informed consumers is that when many voices are shouting at the same time a few strong voices emerge and others are filtered out. Thus too much information might actually lead to a more narrowly informed instead of a well-informed consumer.

Barrier: Trust

For all types of consumption between businesses, service providers, producers and consumers one of the most important factors in any interaction is a mutual level of trust. Consumers need to trust the providers of products, information and entertainment to be reliable and deliver what is promised (Grabner-Kraeuter 2002). Trust explains partly why services such as eBay have been successful; they provide users with information about the providers by trustworthy sources, that is, consumers like themselves (Palmer et al. 2000). A learned level of trust, that is a level of trust appropriate to the risks and situation that interactions bring, comes through experience with ICTs (Dutton & Shepherd 2006). Similarly, producers need to trust consumers to provide payment and use products or services responsibly. It has been argued that the Internet and other technologies that provide interactive and anonymous platforms have transformed relationships of trust due to the lack of face to face interaction and proper instruments to check the identity (and reliability) of both consumers and producers. A fine balance needs to be struck in every transaction between the privacy and identification of partners in the interactions (Olivero & Lunt 2004). Levels of trust in the Internet are relatively high, but trust in credit card safety and in the ability to check the quality of products online is still low, Figure4 illustrates this with data from the world internet project.

Figure 4 Concerns about credit card security



Source: World Internet Project 2009 (p.190)[1]

This lack of trust and experience with online transactions is a hurdle that is especially problematic in the area of consumption. This might turn a specific group of people away from consumption through ICT creating a gap between eCommerce sceptics and enthusiasts in the product they consume and the costs of this consumption.

4.3 Empowerment and Participation: Consumer/producer and entertainment/information boundaries

The ease of access to consumption and (amateur) production through ICTs also means that advertising messages are taken into an ever more personalised and privatised sphere. Content on media such as the internet shows innovative ways of integrating entertainment, information and advertising and it seems that all our actions and activities can now be commoditised. That is our everyday consumption, learning and production activities all have value in a world where large scale producers are trying to reach an ever more dispersed and individualised consumer. Gaming and online worlds seem to be the latest areas in which commercialisation has found its footing. This is accompanied by a diversification of platforms through which we interact with ICTs, consumers are involved in the creation of the products that they are consuming through, for example, interactive television (eg. reality tv – voting). More recently Web 2.0 technology allows people to participate and create in constructing knowledge and products.

The consumption of information through the mass media remains one of the basic purposes of media consumption, including use of the Internet. Having said that, the progressive convergence between previously separated media spheres, strongly influenced by the further development of the Internet, has made traditional distinctions, such as mass media vs individual/personal media, somewhat meaningless. Today, most experts observe a gradual shift towards what is called "meso-media" (Feldmann, & Zerdick 2005), with mass media becoming more personalised (e.g. though increasing number of specialist channels, digital television with heightened interactivity) and personal media being opened up to larger numbers of the public (e.g. through online chats, discussion forums, blogging).

- Advertainment – Games like cadburry's online worlds
- YouTube/Facebook

[1] In the UK 88% of internet users agreed strongly or somewhat that people should be concerned about their credit card details on the internet.

- eBay
- Interactive TV
- Wikis

Enabler: User generated content

The creation of platforms on which consumers can upload their own products and sell them directly to others, social trends in which amateurs are motivated to participate with their product and reputation based (word of mouth) transactions are important further facilitate this. Web 2.0 technology and increased capacity of personal computers and laptops to create advanced, attractive and professional presentations of products are important in this aspect.

These are strongly linked with the networking aspects of consumption discussed in section 4.4 and it is difficult to separate consumer empowerment from participation since most often these networking capacities of web 2.0 technologies is what facilitates interaction and organisation (ie. empowerment) of consumers as well.

Barrier: Protection by big entertainment cooperations

The rise of ICT and empowerment of consumers through interactivity has run into opposition from large media and entertainment conglomerates who have seen their control over their products disappear. This might happen through the disappearance of their traditional role as intermediaries between the artists/creators and the consumers of these emotional products through direct-to-consumer selling, as well as, through the rise of prosumers where consumers buy and sell from each others. This is added to the concern about piracy mainly manifested in peer-to-peer networks which have become a vibrant exchange of amateur and professional products. The same is true for instrumental consumption, especially an issue in the travel industry where the internet has taken the market by storm. New intermediaries are coming up and in some industries consumer-to-consumer processes are taking over this has led to resistance from those who used to control these markets as well as from regulators who naturally prefer a clearly structured market with identifiable groups of producers and consumers and industries in which there are parties with whom to negotiate through, for example, self-regulation.

4.4 Networking: Web 2.0

There are signs of truly transformative practice in consumption. Online communities of practice are of particular importance in this regard. The experience of recent years certainly gives credibility to the claim of Castells et al. (2004) who state that virtual communities of practice are an expression of the latent existence of common interests and/or values between people who do not know each other, but who could derive personal utility from interaction. The rise of web 2.0 technologies and open source software have facilitated this type of collaboration which create products, services and information on relatively open platforms. Clearly interactivity and production through ICT are only available to those who have access to it and once access is achieved relatively high skill levels are needed for this type of participation. Nevertheless, web 2.0 technologies, such as Wikipedia, and open source software have made the merging of consumers and producers easier. These technologies are also important in the future of the intermediary discussed earlier.

Enabler: Social networking sites and costumer feedback

Barrier: Fraud and identity theft

4.5 Social capital- empowerment of consumers

"Users have a tendency to twist new technology to fulfil their interests or desires", as Manuel Castells (2001) writes. The Internet, mobile telephony and the other new ICTs are certainly no exceptions in this regard. The latest developments in interactive, direct access ICTs have been used by consumers and producers to go beyond their original 'mandates ', that is consumers have become producers and producers are creating information and entertainment products that sell their instrumental or emotional products at the same time. Social ICT and Web 2.0 technologies have also given consumers unprecedented opportunities to join into communities of interest and give direct feedback on products and create new products in collaboration which were previously the realm of experts. Beyond blurring boundaries between consumers and producers described in the previous section this has also meant a shift in the power balance in traditional consumption processes. Consumers have access to more information about producers and ICTs have facilitated the organisation of consumer groups on a national an international level. This refers to what Resnick (2005) called impersonal socio-technical capital. The interactions focus on developing products, knowledge, goods or services and not on relationships as such.

Concrete examples:

- Enhanced interactivity through e-mail, embedded voice mail etc.; and
- Mailinglists, blogs and wikis (winesociety, car society, celeb gossipetc)

The web 2.0 technology discussed earlier is a major enabler of consumer empowerment as well as of the possibility for consumers to become producers and the possibility of information, learning, consumption and entertainment to merge into one genre of technology use.

Enabler/barrier: Data collection and concentration of consumer data

One of the technical factors that has facilitated personalisation of consumption and the creation of niche markets is the exponential increase in server and memory capacity. Micro chips are now able to store a powerful computer processor on a surface as large as the tip of a needle. The prediction is that this trend is not about to stop (ref). This has facilitated the storage and analysis of consumer data as well as an increase in the capacity of mobile devices. The iPod and PDAs are probably the most famous example in this arena. The latter is said to facilitate both the integration of ICTs into all household appliances (intelligent furniture, such a fridge that tells us when the milk runs out) as well as the mobilisation of ICTs that were largely home based (internet computing). This means that ICTs are now available to aid us with consumption whenever and wherever we are.

4.6 Discussion: Social impacts of the domain and alternative scenarios

To understand what social impacts ICT has had, a useful exercise is to hypothesize about what might have happened if the developments in ICTs described in the earlier sections would not have occurred. In other words what the unique impact is that these ICTs have had in the domain of consumption.

- Classifieds still exist as important source of income for traditional media?
- Continued domestication, but perhaps less interactivity in traditional media? – mobile phone more important development here than internet probably.
- Continued existence of mass consumption instead of the personalisation of consumption – with the absence of data storage and mining capacities?
- Greater importance of the high street? Although there is not yet a sign that 'real' shops are being replaced by virtual shops for products for longer term consumption that require fit, feel and smell (clothes). However the electronics, travel and music markets would probably have looked different.

5 Policy implications

This section will discuss the implications of the social impact of ICT in policymaking related to consumption.

5.1 Digital inclusion

Policy as well as technological developments could steer the future of ICTs in consumption. An important area of government policy for economic participation through ICTs is the development of digital inclusion policies that focus not only on access but also on skills (identifying reliable sources, separating advertising from entertainment and information, knowing how to conduct a secure transactions).

5.2 Consumer protection and regulation

There is not much specific regulation for consumption and ICTs besides standard regulation that exists for offline transactions, since there is still a large issue of trust an online transaction ombudsman might be a way in which governments will regulate.

5.3 Copy right and ownership

Those who have become prosumers have up until now worked in a domain where copyright and ownership were not clearly defined. It is unclear if regulation is necessary, but if indeed larger producers are starting to commodotise the work of the prosumers then some type of regulation might be needed. Is there a need for a union of prosumers? – This is also covered in the creation domain chapter.

5.4 Future perspectives

It is likely that with the increased abilities of web 2.0 technologies and the greater accessibility of virtual world technology the online consumer experience will be further personalized and the shopping experience will be come more realistic. This might drive some markets that were not online to expand their online business.

Since shopping is more than instrumental buying and, since it is often a social experience, offline shops are unlikely to die out. In addition the increased capacities of mobile technologies will likely bring the ICTs to where the shopper wants to go and make the interaction between the 'real' and 'virtual' worlds stronger and stronger. A possible development is that physical/high street shops offer an experience and focus on trust and brand building while actual transactions take place online. For example, it is plausible that a person window shops and tries on a collection of pares of shoes while out with a friend and later buys them online where it is cheaper and delivery more convenient.

A possible medium term effect of the introductions of ICTs in the realm of consumption is that new ways are found to deal with information (and product) overload. Consumers are unlikely to scatter their consumption decisions among a wide variety of product and information sources. The googlisation discussed earlier will probably appear in other areas as well, that is a few key producers/intermediaries will emerge that people will start to rely on to surf the sea of available products and entertainment opportunities. This is already observable in the music and news industry where the big players are trying to regain control over content.

There is evidence for a consolidation of power in those who were traditionally powerful. Instead of a diversification of producers, people might start to rely more and more on a few, specific well established, trustworthy producers of well known brands. There might be a reshuffle in these relatively early days of interactive consumption through ICTs, but many

argue that the 'chaos' will settle at a certain point and that a number of strong actors will emerge that the big majority of consumers will listen to and buy from. Privacy concerns are bound to become more widespread and more serious in the future, in particular when mobile location-based services become integrated into online customer accounts and smart products and services register more and more consumer data (O'Hara & Shadbolt 2008). One could speculate that a sizeable minority of people will opt to shop offline in the future for fear of risks to privacy. This will, however, be costly.

Interactive technology will probably increase the participation of a certain group of people in creation of products, although it is unlikely that ICT users will start producing content and products en masse. High skills (and motivation and intuition) will still be needed in the future as they are now to create sophisticated or popular content that others will want to consume. Increased participation and production in terms of feedback is likely to increase and will be demanded by consumers more and more.

6 Literature

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[E]Health

Work Research Centre Introduction

Table of contents:

1 Introduction

The focus of this domain is on the application of ICTs in activities related to healthcare. This is a complex domain, where a range of players - payers, providers, practitioners, patients and product manufacturers - interact to deliver and avail of the public and commercial goods of 'healthcare'.

The various players have different perspectives and interests within the overall functioning of the 'system', even if these align to a greater or lesser extent within particular healthcare systems or parts of particular systems. ICT applications that support their core interests can be expected to be of particular importance and value for the respective stakeholders

Payers (e.g. insurers) are likely to be especially interested in demand management and cost containment. Providers (e.g. hospitals, clinics), in addition to their core function to deliver quality health services are also likely to be interested in cost containment, and both quality and cost-containment are closely linked to efficiency and effectiveness in the logistical aspects of their operations. Practitioners (e.g. clinic- and office-based doctors) need to deliver a quality service often in the face of heavy workloads, as well as maintain their medical knowledge and skills, and effectively manage their practices. The pharmaceutical and medical devices industries need to continually innovate and develop new products, as well as effectively market these. Patients need access to good quality services wherever they live and whenever needed and, increasingly, desire information to support them in actively engaging in the management of their own health.

The organisation of healthcare varies considerably across countries, including the extent to which a well-organised 'system' or more loosely organised 'market' is in place. Healthcare 'systems' are more or less 'generous' in the range and amount of services that are offered to patients and in the costs of these services for patients. The relevance, value and impacts of particular ICT applications can be expected to differ across systems that vary in these ways.

There are various lines of social tension within healthcare systems. One is the tension between cost containment and provision of sufficient, high quality services. Another is between economic and profit motivations versus the provision of public goods. Linked in part to these is the tension between system control of access/utilisation and patient- (or consumer-) driven choice. There is also the central issue of the changing power balance between professionals and the layman, implications for doctor-patient relationship, and definition of appropriate roles for each party. Increasingly, there is also the issue of where care should best be provided, with a growing movement towards moving healthcare from institutional settings, such as hospitals, to the community and especially to the home. Finally, there is the key issue of equity of access and the related issue of health inequalities across socioeconomic groups that persist to today. The role and impact of ICTs in relation to these tensions and issues seems especially relevant for our social impact analysis.

Apart from this, healthcare systems are faced with the challenge of demographic ageing. This is leading to a major increase in the numbers with chronic diseases and in need of long-term care. There is a new emphasis on provision of health and social care services to older people living in their own homes, and on supporting independent living. The role that ICTs could play in helping to address these challenges is another important dimension for the social impact analysis.

The report will aim to examine the social impacts of ICTs within this complex arena. This outline of the report elaborates on the perspectives that are proposed in order to focus and keep manageable the analysis, and on the core themes and data sources that will be employed in the development of that analysis.

2 General trends and the arrival/evolution of ICTs

2.1 Major social trends in the domain

It is not a straightforward task to identify major 'social' trends in healthcare as different perspectives (e.g. patient, professional, and payer) bring different sets of issues to the fore.

2.1.1 Three recent waves of reform

However, a simplified analysis of major policy foci oriented towards the general theme of healthcare 'reform' or improvement indicates three main recent waves of focus and activity (Mossialos and Le Grand, 1999; Smith, 2000; Institute of Medicine, 2001):

- cost containment, through demand management (1980s):
    - gatekeeping (access is controlled by those authorised to make referrals, especially GPs)
    - increasing requirement for co-payments
    - shift from institutional to community care
- introduction of competition and markets to promote efficiency (1990s)
    - provider (quasi-)markets established (separation of procurement from provision)
    - new payment mechanisms (DRGs for hospitals; varying arrangements/incentives for physicians)
    - purchaser market facilitation (e.g. consumer choice of sickness funds)
    - provision of comparative information (e.g. performance, provider ratings...)
    - emergence of the 'health consumer'
- focus on effectiveness, quality and equality (2000s).
    - professional improvement / evidence-based medicine (quality assurance, using clinical guidelines and protocols); technology assessment
    - patient empowerment (choice of provider and treatment - some countries aiming to increase, others to curtail; better informed patients; self-care)
    - increased focus on disease management / better care for chronic conditions (rather than episodic approach); integration of healthcare and health/social care
    - renewed focus on reducing health inequalities and 'divides' (especially those linked to socio-economic status)
    - cross-border healthcare / mobility of patients (in Europe).

2.1.2 Key challenges

Key challenges that remain and where ICTs may contribute have been identified (Whitehouse, 2004), including high costs, uncertain value, medical errors, variable quality, administrative inefficiencies, poor coordination. Of direct importance for efficient and quality healthcare delivery include:

- patient's information scattered across many places
- physicians keep most of their information/knowledge in memory

- medical orders and prescriptions are handwritten
- consumers lack access to useful, credible health information
- physicians do not always have the best information on treatments.

Informing and empowering patients

Some commentators suggest that better informing and empowering patients is the biggest potential source of change in healthcare today, with radical potential to redistribute responsibilities and power in access to healthcare and to increase people's ability to look after their health and thus to achieve substantial benefits in terms of improved health and reduced costs. It has come to be an important element of the healthcare policy rhetoric across Europe, with the view being articulated that citizens should take more responsibility for their own health to improve overall heath results and to moderate expenditure. In the context of the current study, the information/empowerment theme is the most visible one as regards applications of ICTs and direct social impacts.

Historically, some trends that have been linked to the emergence of the patient empowerment philosophy or movement include (Harris and Veinot, 2004):

- growth of *self-help and mutual aid groups* over the last three decades;
- emergence of *healthcare 'consumerism'*, where the passivity connotations of 'patient' are replaced by 'consumer' concepts of rights, power and empowerment (especially strong in the US) – includes ability to make choices (which should lead the healthcare market towards more personalised services and provision of more choice) and legal rights (where access to information and records has a key role to play)
- growth of *alternative medicine*
- growth of *patient organisations and activism* (have become relevant players in the political arena in some countries)
- cost-containment policies based on *shifting responsibility for much of healthcare to the consumer* (e.g. self-care, outpatient medication therapy for serious conditions...); also, the de facto *need for patients to act as the care integrator* under the typically fragmented systems in many countries
- the information and networking capacities of the *Internet*.

The concept of '**health literacy'** is closely linked to the empowerment theme. In the WHO's health promotion glossary the following definition is given (Nutbeam, 1986):

> *"Health literacy represents the cognitive and social skills which determine the motivation and ability of individuals to gain access to, understand and use information in ways which promote and maintain good health. Health literacy means more than being able to read pamphlets and successfully make appointments. By improving people's access to health information and their capacity to use it effectively, health literacy is crucial to empowerment"*

Health literacy in regard to traditional health information and communication media (doctor-patient communication, family health reference books, magazines, TV etc.) is an important factor in observed health inequalities (US department of Health and Human Services - http://www.health.gov/communication/literacy/quickguide/factsliteracy.htm#fifteen) and can be expected to become increasingly important with the explosion of online information and services in the healthcare (Wang and Schmid, 2007). In addition to its direct social (equality) importance, there is emerging quantitative evidence of the economic importance of health literacy. Health economists estimate that low health literacy costs the American healthcare

system US$73 billion per year and the Swiss healthcare system CHF 1.5 billion per year (cited in Wand and Schmid, 2007).

Major social impact dimensions

Overall, however, when the various changes and trends outlined above are considered, it is clear that there is no single 'social change' axis or trajectory running through the various health sector reforms and trends. All of the aspects have social impacts in the sense that they affect the very large number of people working within the healthcare systems and, especially, in that they affect everyone in society given the importance of health and of the healthcare system as a 'public good' (even if it is increasingly privatised and subject to market forces).

For purposes of this study, the perspective taken will be primarily from the point of view of the 'patient' or 'consumer', although relevant social issues in the context of the 'doctor-patient' relationship will also be addressed. From the patient's or consumer's point of view, the most direct social impact dimensions would seem to revolve around issues of:

- quality of healthcare services (accessibility and clinical dimensions)
- informing and empowering patients and consumers (to make choices, manage one's health)
- equality (of access to services and to benefits of innovations)
- changes in the location of healthcare.

2.1.3 Healthcare needs of an ageing society

Finally, it is important that the analysis gives attention to the ageing of the population and the social impacts of ICT applications in healthcare in relation to this. On the one hand, older people will comprise an increasingly large share of health service users and of health consumers more generally, so that issues of informing and empowering older people are of particular relevance. More generally, it has been suggested that particular applications of ICTs, especially telecare and home telehealth, may have a significant role to play in helping to meet the healthcare needs of an ageing population. This may prove to be a cost-effective approach but also raises questions about the possible social impacts, both positive and negative, of delivering healthcare in new ways and in new locations, especially the home.

2.2 ICT implementation in the domain: Common expectations and first practice

There seems to have been no single perspective or ‘vision’ on ICT implementation in the domain, which may not be so surprising when one considers the mix of players and interests that are involved, as discussed in the Introduction. More generally, as will be discussed in section 3.2, the evolution of the application of ICTs in healthcare has been very slow. Early expectations that ICTs would join-up and integrate the healthcare system, and be widely adopted to support clinical decision-making have been slow to become realized. Also, although there are signs that early expectations that consumer health informatics would flip over the health ‘power pyramid’ and change the paternalistic sentiment of modern medical practice (e.g. Ferguson, 1995) may now be beginning to be realised, at least in the US, the extent of consumer empowerment in reality varies considerably across countries and types of healthcare system.

Nowadays, the term eHealth has come to be used as an umbrella concept covering a wide range of applications of ICTs in the healthcare context. However, the meaning and scope of the term seems to vary quite widely and it has been variously used as a synonym for such

disparate applications as health informatics, telemedicine, consumer health informatics and e-business in the healthcare sector (Pagliari et al., 2004).

The most basic definition would be (Eng, 2001):

> *'use of emerging information and communications technology, especially the Internet, to improve or enable healthcare'*

However, other commentators (e.g. Eysenbach, 2001) suggest that the term characterizes not only a technical development, but also a new way of working, an attitude, and a commitment for networking (between all players and levels) supported by ICTs.

A review of definitions and perspectives suggests that mainly positive connotations/expectations have been associated with eHealth (Oh, 2005), such as 'benefits', 'improvement', 'enhancing', 'efficiency', 'enabling', even allowing patients and professionals to 'do the previously impossible'. Nevertheless, as will be discussed later, not all stakeholders have tended to view all applications in a completely positive light (e.g. concerns expressed by doctors about health information on the Internet and the ways that patients use this).

2.3 Evolution of ICT diffusion in the domain over the last 25 years

Some key themes / trends:

2.3.1 IT in healthcare organisations

One line of application of ICTs in healthcare began to emerge in the early 1970s through the use of shared systems, which then developed with the availability of minicomputers. Initial market penetration was mainly in two areas – hospital systems and physician practice management systems. The focus was first on billing and other financial applications, then automation of other administration functions emerged (laboratory, radiology, pharmacy). Developments were limited in the first 10 years because of insufficient file capacities and most systems were designed individually for a specific hospital or doctor's practice. Introduction to clinical processes was very slow, influenced by professional resistance and other factors. In general, the expected benefits were often not realized and there were many examples of system failure to deliver.

Only in the last 5 years has the emphasis shifted from applying ICT to hospital administration to applying it to the clinical process. The focus of healthcare ICT has been changing, from an emphasis on hardware, systems architectures and databases, to innovative uses of ICTs for facilitating communication and decision-making, and a growing recognition of the centrality of human and organizational factors in the healthcare ICT context (Pagliari et al, 2004).

2.3.2 IT for integration and coordination

For many years the application of ICTs in healthcare was mainly localised, with specific systems developed for each individual unit/player. This was a barrier to joining-up systems to support the integration and coordination of the different players that is necessary for efficient, quality healthcare services. More recently there has been the emergence of more integrated health networks at local, regional and national levels, although the extent of coordination and interworking is still limited in many instances. Linked to this has been the very slow development of the Electronic Patient Record (EPR) field, especially as regards comprehensive records with shared access across the relevant healthcare players. Only in recent years have some substantive applications emerged in this field. Other emerging applications with some level of implementation include ePrescription, eReferral/Booking, 'eLabresults' etc.

2.3.3 Telemedicine, telehealth and telecare

Another line of application was in the fields of remote health and social care provision.

On the one hand, telemedicine developments were driven especially by the desire to serve underserved populations in countries such as the US, Canada and Australia. The focus was on real-time or store-and-forward communications from local rural healthcare facilities to urban centres of expertise. Emergence of direct telehealth to the home was much slower, but now is on the verge of becoming a mainstream approach to the care of chronic conditions such as diabetes, heart disease and respiratory disease.

On the social care side, social alarm services emerged in the 1970s which provided basic tele-support to older people and those with chronic conditions in their own homes. For many years there was little real enhancement of the basic model of client-initiated alarms and voice links with a support centre. In recent times there has been quite rapid evolution of telecare systems, with second generation systems now providing a range of passive sensors and other functions to support independent living. Third generation systems are also being developed and tested, that will provide the capacity for continuous activity monitoring and interpretation.

As mentioned earlier, both telecare and home telehealth are now being viewed as important solutions to meeting the healthcare needs of an ageing population.

2.3.4 Patient-oriented / consumer-oriented systems

The 1990s saw the emergence of computer-mediated health promotion applications aimed at patients, initially based on PC applications, although these seem not to have been very widely implemented and used. Since the emergence and take-off of the internet and web, however, there has been an explosion of information and other online services aimed at patients/consumers. However, online patient-doctor communication has been slow to emerge and ICT-based access to one's own personal medical/health history is still in its infancy (ePHR).

3 Main current ICT applications

3.1 Conceptual framework / classification of applications

There are a very wide range of ICT applications in healthcare and many different ways that these can be classified.

One useful approach for this study is to organise the territory in terms of the applications that map to the core interests and needs of the various players - payers, providers, practitioners, patients and product (industries). Table 1 overleaf presents an initial version of such a framework. This will be refined in the next stage of the work.

As mentioned earlier, the main focus of the analysis is to be on ICTs with direct social impacts for patients/consumers. In fact, there are various ways that such applications can be classified, depending on the level of granularity desired and the social issues that are to be emphasised.

One approach would be to distinguish three main groups of application:

- communications with mainstream healthcare system (e.g. e-mail communication with own doctor/provider, eBooking, ePrescription, eReminders etc.)
- health on the web - more or less 'informal' web-based applications and usages that fall outside the traditional health service scope (online health information, virtual support groups, etc.) - include both web 1.0 ('Health 1.0') and web 2.0 ('Health 2.0')

- care delivery, including - personal, self-care systems/devices (computer-mediated health management tools, ePHRs etc.); remote health and social care (home telehealth and telecare); and (self-initiated) remote triage (implemented by healthcare providers to provide out-of-hours services, emergency services, and/or try to manage/direct appropriate health service utilisation).

Another way to organise the space is outlined in Figure 1 which emphasizes the roles of both the formal healthcare system and emerging informal system (especially the consumer/patient movements, driven both by individuals and organisations).

Figure 1: Applications involving formal and informal players/systems

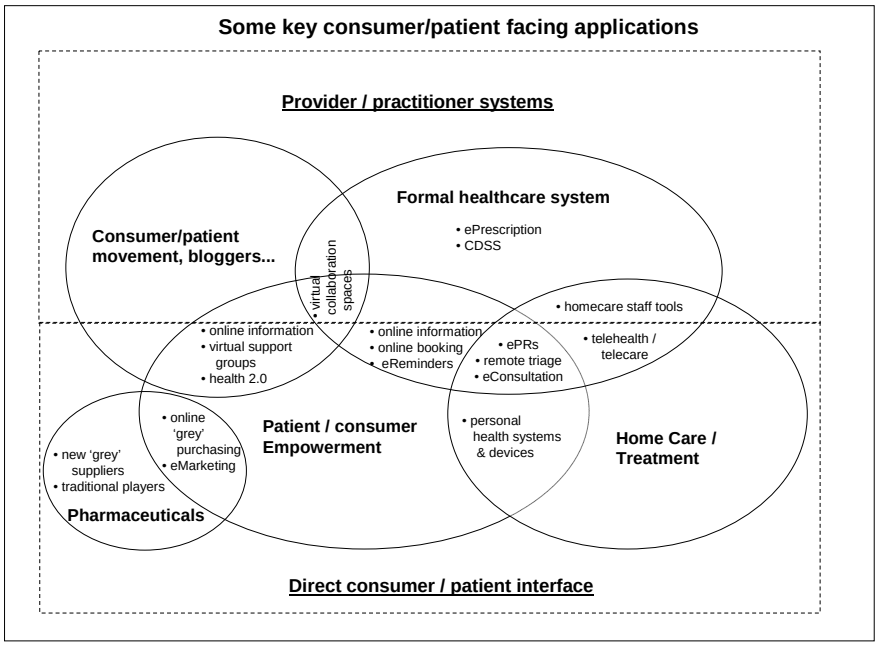

Table 1: Healthcare players and some exemplar ICTs and social issues

Players	Payers	Providers	Practitioners	Patients	Product industries (incl. drugs)
	e.g. public and private insurers	e.g. hospitals, laboratories, clinics, pharmacies, home care agencies, etc.	e.g. GPs, specialists, nurses, etc.	e.g. in roles as patients, consumers, clients, carers, etc.	e.g. medical devices, pharmaceutical industry, etc.
Some core interests / needs	• demand management • cost containment	• deliver quality health services • cost containment • supply chain management • scheduling / patient management • system integration (internal and external)	• continuing education / knowledge acquisition • practice administration • clinical support • income maximisation (in some systems)	• access to quality care when and where needed • information / knowledge acquistion • informed choice • self-care	• product innovation / development • marketing
Exemplar ICTs	• eReimburse-ment systems • eMarketing or other supports for monitoring / influencing supply / utilisation	• HIS • PACs • ePrescription • telehealth • EHRs • HIN • remote triage • etc.	• eLearning • practice automation • ePrescription • clinical decision support systems (CDSS) • eConsultation	• online health information • personal health systems • ePHRs • eConsultation • remote triage • telehealth	• bioinformatics • eMarketing
Exemplar social impact issues	• increased capacity to influence supply / utilisation	• <u>indirect</u>: efficiency gains leading to better quality services • <u>direct</u>: reduced medical error, new services etc.	• <u>indirect</u>: efficiency gains leading to better quality services • <u>direct</u>: better clinical decisions, reduced errors etc.	• empowered patients • better health / quality of life • possible negative impacts (on utilisation, outcomes..)	• new (beneficial) products • increased capacity to influence supply / utilisation
		• doctor-patient relationship			
	• self-care and moving care to the home				

3.2 Description of the applications

Following from the above, three main groups of application have been selected for detailed examination as regards social impacts:

- Health on the web
- ICTs in Care delivery
- ICT support for (traditional) communications with healthcare providers/professionals

3.2.1 Health on the web

Applications

Two main 'generations' of applications can be distinguished - 'Health 1.0' and 'Health 2.0'

Health 1.0

- mainly 'read only' health information, although some interactive / transactional services also, including online 'grey' purchasing of medications)
  - main focus is on websites providing health information - the wide range of 'official' and non-official sites providing:
    - health information
    - service (quality) information - hospital / doctor ratings etc.

Health 2.0

Heath 2.0 is seen by some as being transformational for the healthcare consumer. Incorporates 'Web 2.0'[1] and online social media more generally:

- Health 2/0 / Medicine 2.0 is use of a specific set of web tools (blogs, Podcasts, tagging, search, wikis etc.) by actors in healthcare including doctors, patients and scientists, using principles of open source and generation by users, and the power of networks in order to personalize healthcare, collaborate, and promote health education (Hughes et al, 2008)
- Also includes / overlaps with social media (California Healthcare Foundation, 2008), and the large number of virtual (self-help) support communities that are emerging in the healthcare area; based on this, definition of Health 2.0 as social software and its ability to promote collaboration between patients, their caregivers, medical professionals, and other stakeholders in health (positive network effects and harnessing of collective intelligence)

A key element in their attractiveness / growth seems to be trust – consumers tend to trust "a person like me" more than authority figures (2008, Edleman Trust Barometer); also, social networkers (those most likely to share opinions are also more likely to be more health-activated)

Impacts / benefits expected to come from 'wisdom of crowds' dimension (although also the possibility of 'stupid mobs') - not just for consumers / patients through people sharing their stories for emotional support and sharing of clinical knowledge, but also in other ways:

[1] essence of Web 2.0 is democratized collaborations – collaborations enabled by web technology that promotes learning and innovation; work by connecting participants to harness network effects and knowledge in an open and interactive manner; based on this:

through doctors meeting to share quandaries and solutions that work; researchers coming together with patients to learn about side-effects in real-time, etc; and new collaborations between patients, researchers (including drug clinical trials etc.) - real-time collation of clinical evidence, trial data, etc.

Example of specific applications / services will be provided (from both US and EU) and described in final report.

Supply and usage

Supply

- are now 1,000's of sites in the Health 1.0 and 2.0 areas
- majority are in main languages (especially English)
- EU has a Health 1.0 site for citizens
- extent of 'official' provision varies across Europe (source: eUSER, others?)

Demand/usage

General levels of usage

- EU: usage is growing - different levels apparent, depending on measure / survey (Eurostat - 34% of Internet users in last 3 months; Andreassen et al, 2007 - 71% of Internet users in 2007; eUSER, Eurobarometer etc. for other surveys / years)
- Levels even higher in US, as of January 2008 the Internet rivalled physicians as leading source of health information (iCrossing, 2008) – 59% of adults in past 12 months (vs, 55% for doctor...); one in three used some form of social media for this (other sources: PEW surveys over the years)

Sites / online tools and resources used:

- EU data (eUSER etc.); US data (iCrossing; also PEW)
- Main approaches used (general search engines (67%); health portals (46%); social media (34%); disease/condition association sites (25%); etc.

Types of information sought:

- sources: eUSER, Andreassen et al for EU; PEW for US
- dimensions: health issues, lifestyle, service information etc.; specific health issues addressed; etc.

Context / purpose

- sources: eUSER, Andreassen et al for EU; PEW for US
- dimensions: in relation to physical consultation with doctor; for second-opinion; etc.

Relative importance

- sources: eUSER, Andreassen et al for EU; PEW for US
- dimensions: importance of internet as source of information (now becoming most important source.....)

3.2.2 Care delivery

Applications

Three main groups of applications are distinguished:

- home telehealth / telecare

- (self-initiated) remote triage
- personal (self-care) health systems / devices

Will focus especially on home healthcare / telecare and give this most detailed treatment.

Home telehealth/telecare

Telehealth:

- Monitoring of chronic conditions (diabetes, heart, respiratory...)
- Earlier hospital discharge

Telecare (remote social care / support for independent living for older people):

- first generation (basic social alarms - active triggering, voice contact...)
- second generation (enhanced social alarms - passive, additional sensors in home etc.)
- third generation (continuous activity monitoring and interpretation - Ambient Assisted Living model)

(Self-initiated) remote triage

- telephone based (e.g. out-of-hours services; national systems like NHS Direct)
- online (e.g. NHS online)

Personal (self-care) health systems / devices

- computer-based systems - behaviour change, health management support (e.g. Health Buddy,....), etc.
- online systems for behaviour change, health management support etc.
- electronic Personal Health Record.

Supply / usage

Supply

Home telehealth/telecare

- data for 16 countries - 14 EU, plus US and JP from ICT and Ageing study, 2008)

(Self-initiated) remote triage

- telephone-based: well established in some countries (with varying objectives / scope), not in others
- online: well-established in UK, limited elsewhere?

Personal (self-care) health systems / devices

- supply emerging, but not really mainstream or widely offered yet
    - computer-based self-management etc. - many examples of small-scale initiatives
    - online / telephone-linked - emerging as part of home health care scenario (US, some EU countries, e.g. Health Buddy system...)

- ePHR - beginning to emerge in limited forms (public versions in UK, SE; commercial versions in US)

Demand / usage

Home telehealth/telecare

Home telehealth:

- still only a small percentage of the target populations (even in US)

Telecare:

- for first generation - up to 15% of population aged 65+, with wide variations across countries

(Self-initiated) remote triage

- high numbers of users in some countries (e.g. UK), not in others (cf. eUSER etc. for data)

Personal (self-care) health systems / devices

- numbers of users still very low.

3.2.3 ICT support for traditional healthcare communications

Applications

- Clinical: e-mail consultation with own doctor etc.
- Administrative: eBooking, eReminders, ePrescriptions etc.

Supply / usage

Online doctor-patient communication:

- remains uncommon (seems more preferred by patients than providers)
- EU data sources (eUser; empirica survey etc.)
- US data sources – Health Information National Trends surveys (HINTS, 2007) – 7% of internet users (2003); 10% (2005)

Administrative:

- are beginning to emerge, varying levels of evolution across countries

4 Social impacts of ICT in the domain

This section will look at the social impacts in accordance with the five common themes identified in the project's conceptual framework: rationalization, networking, empowerment and participation, social capital, information and lifelong learning. Table 2 presents an a priori mapping of these to the five major impact mechanisms / themes identified in the project's conceptual framework.

Table 2. Main impact mechanisms for key consumer/patient facing applications

	ICT-support for 'traditional' healthcare communications	Self-initiated 'Health on the web'		ICT-supported Care delivery		
		Health 1.0 (basic web)	Health 2.0 (social media)	Self-initiated remote triage	Remote health and social care	Self-care systems / devices
Rationalization (effectiveness, efficiency, innovation)	X			**X**	**X**	X
Networking	X		**X**	X	X	
Empowerment and participation		**X**	**X**	X		X
Social capital			**X**			
Information and lifelong learning		**X**	**X**	X	X	X

From this cursory, surface-level analysis the emergence of so-called Health 2.0 applications based on social media would appear to have the largest social impact, with strong potential to affect networking, empowerment/participation, social capital, and information / lifelong learning dimensions. The more basic information and transaction applications of Health 1.0 also are envisaged to have strong impacts on the empowerment/participation and information/lifelong learning dimensions. Remote health and social care is envisaged as having the strongest rationalization effects, given its potential to directly substitute home care for institutional care; remote triage is also seen as having a strong rationalization contribution.

The final version of the report will present and discuss the available evidence in relation to these impact dimensions.

4.1 Rationalization

As indicated in Table 2, the most obvious applications where rationalisation benefits may be expected are in self-initiated remote triage and remote health and social care. The full report will examine available evidence on:

- cost-benefits of remote triage (e.g. evaluations of NHS Direct in UK)
- cost-benefits of remote health and social care (telecare and home telehealth) (e.g. reviews of existing evidence base from the US (Litan, 2008), as well as available data from trials and other initiatives in EU countries.

This part of the analysis will give particular attention to the impacts of telecare and home telehealth in terms of meeting the health challenges of population ageing. It will draw on relevant sources and perspectives selected from those outlined in section 4.6.

4.2 Networking

As regards networking effects, the emergence of Health 2.0 seems to be the most significant development. The full report will examine available evidence on usage and impacts of Health 2.0 services for consumers/patients. It will draw on relevant sources and perspectives selected from those outlined in section 4.6.

4.3 Empowerment and participation

This is a core focus of the analysis, and both Health 1.0 and Health 2.0 applications have a key relevance. The full report will examine available evidence on usage and impacts of Health 1.0 and 2.0 services as regards empowerment and participation of consumers/patients. It will draw on relevant sources and perspectives selected from those outlined in section 4.6.

4.4 Social capital

This is again especially linked to the emergence of Health 2.0 services, whereby they provide new opportunities to draw on and interact with a wide range of sources of informational and social support. The full report will examine available evidence on usage and impacts of Health 2.0 services from the point of view of increasing the health-related social capital of consumers/patients. It will draw on relevant sources and perspectives selected from those outlined in section 4.6.

4.5 Information and lifelong learning

In the health field, this is closely linked to the empowerment/participation theme, with both Health 1.0 and Health 2.0 applications have a key relevance. The full report will examine available evidence on usage and impacts of Health 1.0 and 2.0 services as regards information and lifelong learning of consumers/patients. It will draw on relevant sources and perspectives selected from those outlined in section 4.6.

4.6 Issues and impacts for the key applications

This section will present and discuss evidence of concrete/substantive social impacts, including the ultimate health-related outcomes arising from the deployment and utilisation of the targeted applications. In this regard, relevant themes include: access, quality, cost-effectiveness, satisfaction, health outcomes, and equality.

The section will be organised in terms of the three patient- or consumer-facing applications identified above - health on the web, care delivery and communications with mainstream healthcare system

4.6.1 Health on the web

Themes to be addressed are outlined below.

<u>More informed / empowered patients / consumers</u>

Type of informing/empowering

- 'clinical'
- choice of providers

Differences in degree want to be informed/empowered and in what ways

- spectrum: just more information to having full control over medical-decision making
- varying patterns of usage according to health orientations, attitudes etc (empirical evidence: Porter Novelli Healthstyles database - annual US survey)

System / professional encouragement / resistance

- evidence on this to be presented and how it varies across stakeholders, countries etc.?

Practical impacts (empirical sources: PEW, eUSER etc.)

- on health behaviours, service utilisation, decisions about treatment, etc.

Quality of online information

- empirical sources (Greenberg, 2004; etc.):
    - 'expert' assessments of quality of supply
    - studies of user judgements, behaviours and skills
    - solutions (codes of practice, labels, ratings, guided search, user education...)

Negative impacts

- anxiety / cyberchondria (evidence suggests not necessarily a very big factor - e.g. Andreassen)
- inappropriate actions... (also may not be such a problem - evidence that searchers visit a number of sources and cross-reference.....)

Possibility of increased influence of parties with vested interest

- (e.g. advertising / infomercial by drug companies, commercial providers..)

Online 'grey' or black market purchasing of medications

- evidence on scale and impacts

<u>Doctor-patient relationship / power balance (reversed information asymmetry)</u>

Patient behaviours and experiences

- evidence of patients preparing for visit to doctor (e.g. eUSER..)
- evidence on changing patient expectations / behaviours?

Doctor perceptions (surveys of doctors on attitudes, experiences, actions - e.g. US survey of doctors)

- doctor-patient relationship (mainly neutral or beneficial)
- time efficiency (many felt this is reduced)
- quality of care (most felt impact was neutral)
- patient health outcome (most felt made no difference)

<u>New issues around Health 2.0 / social media</u>

- *Social* and *informational* support (e.g. role of virtual communities / support groups (Eysenbach, 2004))
- *Privacy / confidentiality* (user expectations / realities...) in relation to Health 2.0
- *Platforms that make health consumers and clinicians peers* – open source healthcare e.g. AmericanWell – some payers now reimburse for such consults)
- *Who is exerting the influence* (20 million online 'health champions' in US - Manahattan Research), is it desirable / beneficial....(evidence: e.g. Medical bloggers (Kovic.., 2008) – study of those who keep blogs and their blogs: motivations: sharing practical knowledge / skills; influencing the ways others think; expressing oneself creatively)
- *New spaces for collaboration* - Data aggregation, knowledge gaining and sharing: clinical trials and new product development; information about market interests/preferences; wisdom of crowds (AthenaHealth insurance rules engine that gets better as more clinicians use it; MedBillmanager – consumers enter real pricing and it gets more robust...)

Health (in)equalities

- In principle, existing health divides could be exacerbated or reduced - in access to services, in health-related behaviours, in health outcomes
- 'Inverse' laws (care and information) (Eysenbach, 2007) – access most difficult for those who need it most
- Socioeconomic differences in health orientations influence this; digital divides also influence this (sources; eUSER, Swiss health literacy studies; US health orientation studies etc.): systematic motivational differences in health orientations, linked to likelihood to seek online health information
- Second-order divides linked to health/eHealth literacy (those with better health and digital literacies gain most benefits - thus health inequalities likely to be exacerbated?) - sources: eUSER etc.
- Health literacy: the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions; recent study on health literacy (Institute of Medicine, 2004) – those with limited literacy skills have less knowledge of disease management and health promoting behaviours, report poorer health status, and are less likely to use preventative services; also Swiss study - 3% of total healthcare costs linked to poor health literacy...)
- eHealth literacy: ability to seek, find, understand, and appraise health information from electronic sources and apply the knowledge gained in addressing or solving a health problem; need to consider in relation to different media for health resources: interactive behaviour change tools; informational websites; telephone-assisted services; Norman (2006)
- Do ICTs offer (real) potential to reach and support disadvantaged groups (what evidence)?

4.6.2 Care delivery

Home telehealth/telecare

Themes to be addressed are outlined below.

Home telehealth

Patient benefits:

- (better?) health outcomes because of better monitoring and treatment tailoring
- patient satisfaction
- (better?) quality of life
- less disruption for patient, need to travel....
- reduced need for / time in hospital

Potential negatives:

- concerns about quality of care / outcomes
- concerns about privacy, confidentiality
- bringing medical / healthcare into the home environment / family
- shifting of responsibilities / burdens to patient and/or family
- inequalities of access

Telecare

Client benefits:

- can remain living in preferred (own home) environment)
- safety / security
- reassurance for family
- etc.

Potential negatives:

- concerns about de-humanisation of care
- concerns about privacy, confidentiality
- shifting of responsibilities / burdens to family
- inequalities of access

Ethical issues:

- monitoring
- etc.

(Self-initiated) remote triage

Consumer benefits

- access at any time to healthcare advice
- convenience
- etc.

Potential negatives:

- may replace other (desirable) services (e.g. home visits)
- concerns about quality of care / advice possible remotely
- etc.

Personal (self-care) health systems / devices

Consumer benefits

- better capacity to manage own health
- etc.

Potential negatives:

- questions about efficacy
- inequalities in access and capacity to use / benefit from

For ePHR:

- rights of access
- privacy / confidentiality
- etc.

4.6.3 ICT support for traditional healthcare communications

Themes to be addressed are outlined below.

eCommunication with own doctor

- Patient / Provider concerns:
    - Confidentiality
    - Appropriateness of the medium (for consultation....)
    - etc.

Administrative (especially ePrescription)

- Safety / reduced error
- Reduced transaction costs for consumer
- etc.

5 Policy implications

This will be organised into two sections - overview of the policy context and policy implications of the analysis and evidence in the previous Chapters.

5.1 Current policy context

5.1.1 Informed and empowered patients

This dimension is explicitly and implicitly an important part of the EU Health Strategy. For example, patient empowerment was an explicit element of the Commission document of 2004 “Enabling Good Health for all: a reflection process for a new EU Health Strategy. However, in general the approach seems more oriented towards a focus on actions to achieve better informed as opposed to more empowered patients. Specifically, the Programme of Community action in the field of public heath 2003-2008) included

- Actions on quality of health information websites
- Launching of EU health portal for citizens

The proposal for the next Programme for Community action in the field of Health (2007-2013) maintains these two objectives in the context of its three overall objectives: Improve citizen’s health security; Promote health for prosperity and solidarity; Generate and disseminate health knowledge.

The Council of Europe and WHO-Europe have also addressed various aspects of this theme.

Also on the agenda of citizens / patients / consumers movements.

Across the Member States the situation varies widely, even if the rhetoric is often the same. Some public systems are seeking to enhance patient choice (e.g. DK, NO, ES, UK), especially as regards choice of hospitals in relation to quality parameters such as waiting times. In some, such as the UK, more citizen choice and control is given a central place in the government's healthcare vision. In others, however, the social insurance systems are seeking to circumscribe patient choice (e.g. DE, FR), with encouragement of use of 'preferred providers' to improve quality and moderate costs. However, in France there is now also a legislative basis (Law No. 2002-303: Patients Rights and Quality of the Health Care System) for patient responsibility and control in relation to their own health (having been provided with extensive medical information leading to informed and free consent), whereby they become partners with health professionals

5.1.2 Care delivery

Policy context in this field will be elaborated in the final report. It will focus especially on issues relating to population ageing, especially telecare and home telehealth.

5.1.3 ICT support for traditional healthcare communications

Policy context in this field will be elaborated in the final report. It will focus especially on doctor-patient communications.

5.2 Policy implications of the evidence and analysis

This section will present policy implications based on the evidence and analysis in the previous Chapters.

6 Literature

An indicative listing of just some of the literature is provided below - this will be completed for the main report.

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[F] Community and Family

empirica

Table of contents:

1 Introduction

The focus of the "community and family" domain is the "impact"[1] of ICTs, in particular the Internet, mobile telephony and what has been termed "personal communication technology" (Katz & Aakhus, 2002), on **sociability** and **social interaction**. This refers to the **quality of individuals' social relations** within their social environment, including the family and the communities they belong to. The reason for choosing our focus lies in the interest which the question about ICT's impact on sociability has attracted in recent years not only among social researchers but also among policy-makers concerned with a wide range of topics including employment, social welfare and equality, economic competitiveness, education systems, and urban and regional development.

Social interaction was interpreted by structural functionalists merely as a subsystem of the social system (generally seen as the nation-state). The critique on this approach is that it did not allow to get a grip on any contingencies of interaction. For this reason, we suggest to follow Katz & Rice (2002, p. 5) who defined **social interaction (sociability)** as "focused on individual relations and goals", in contrast to civic and community involvement which is "participation in a jointly produced social, civic, or community activity". Social interaction "entails interaction with specific others whom one either knows initially or eventually comes to know. This interaction is likely to involve dyadic, familial, friendship, romantic, and group relations. It speaks less directly to the interests and goals of collectives" (ibid, p. 5).

The present domain does **not** deal explicitly with **social relations at the workplace**.

A special focus of the domain report lies on **social capital** because the growing interest in the notion of social capital, as reflected in the interest caused by Putnam's influential book "Bowling alone" from 2000, revolves in particular around the question whether modernity, and the technologies that go along with it, has a detrimental effect on the quality of social interaction and social cohesion. Indeed, a question which many recent research efforts have tried to answer concerns the **impact of ICT on social capital**. The original proposition (cf. Kraut et al., 1998; Putnam, 2000) was that communication through the Internet "inhibits interpersonal collaboration and trust" and, as such, would be detrimental for social capital building and maintenance. As Kraut and his team of researchers later admitted, however, most empirical evidence collected in the aftermath of their study found that the Internet tends to strengthen existing social capital (Kraut, 2002).

We define **social capital** as "... the sum of the actual and potential resources embedded within, available through, and derived from the network of relationships possessed by an individual or social unit. Social capital thus comprises both the network and the assets that may be mobilized through that network" (Nahapiet & Ghoshal 1998). The definition given presents social capital as an objective property of a situation, in contrast to Pierre Bourdieu´s conception, which describes it only as a habitualized perception of a situation among the actors, identified within the interaction. Our definition follows the use of the notion of social capital within European policy-making (see OECD, 2001; CEC, 2003; European Council, 2003).

See the Conceptual Framework for a discussion of social capital and how it is understood in the present study.

[1] Because of its association with deterministic views of societal and economic change, the use of the term 'impact' is criticised by many researchers, see Steinmueller (2003). While the term will be used in the domain report, it should be noted that mentioning of "social impacts" does not proclaim the existence of clear, unidirectional causal relationships.

We define **community** as a form of social organisation based on a network of individuals. These maintain relationships, which determine the extent of the community. The sense of community is created by a feeling of belonging together, whether that might be based on blood and destiny or on interest and conscious search for people alike. The founding fathers of social research into community, Tönnies and Durkheim, already stressed that social organisation is subject to a wider context of dynamics that lead to a transition in meaning of basic forms of social relationships. Community and society can not be seen as rigid institutions, they are permanently evolving and interrelated. For this reason, Barry Wellman suggests a working definition for communities which is detached from notions of community as being spatially bounded: "networks of interpersonal ties that provide sociability, support, information, a sense of belonging, and social identity" (Wellman, 2001, p.1).

The present domain report has its focus on individuals as members of communities, but it excludes analysis of political participation and policy participation. For definition of these terms, we refer to the classification suggested by Meijer & Bekkers (2009: 100-101):

- **Political participation** denotes "actions of citizens that aim to influence the selection and behaviour of political decision-makers". It "does not only refer to influencing decision-making processes but includes agenda setting". Well-known forms of political participation include "writing letters to representatives, writing newspaper articles and organizing protests".
- **Policy participation** focuses not on agenda setting and decision-making, but on policy implementation. This refers to an active role played by citizens in public service delivery and in regulation. Citizens need civic competence to be able to participate in this way.
- **Social participation** refers to interactions between citizens rather than relations between citizens and government. All types of groups in which people join together to interact but which do not pursue directly political goals fall under this category.

The subjects of political participation and policy participation will be dealt with in the domain report on "Participation in Policy-Making". In the "Community and Family" domain we will focus mainly on **social participation**, as defined above.

Another notion which is of direct relevance to our domain concerns the **domestication of technology**, here: of ICT (Brynin & Kraut, 2006).

2 Epochal Trends and the Arrival of ICTs in the Domain

2.1 Major social trends in the domain

In order to explain the main social trends with regard to sociability and community, it is necessary to briefly recall the most important developments over the last centuries.

"Gemeinschaft" und "Gesellschaft" – The transition from traditional to industrial societies

Ferdinand Tönnies' (1887) concept of differentiation between *Gemeinschaft* (community) and *Gesellschaft* (society) was based on his observation of a transition within social organisation: from traditional community based social environments into industrial societies. Communities in his view were characterised by moral unity, rootedness, intimacy and kinship (Broom and Selznick 1973) and thus were homogeneous in the sense of social conformity and local customs. He distinguishes between 'communities of blood', 'of locality' and 'of mind'. All three types can be seen as heavily interrelated and able to create a strong sense of community, which is one essential aspect for the personal identification with a community. His view on

the development towards an industrial society was pessimistic, as he has seen the values of communities going lost in more rational, impersonal urban societies.

The work of Emilé Durkheim concentrated on the meaning of solidarity and how it changed with the evolving industrial state. In his thesis from 1893 he introduced two basic types of solidarity: mechanical and organic solidarity. Mechanical solidarity is seen as an element of traditional social relationships, based on destiny and substantial similarities. Thus a strong feeling of belonging together is developed and the collective becomes a value, which might cause individuals to lose their own will and act mechanical in terms of solidarity. As societies become more complex and individual identities lose their fateful anchors, also the type of solidarity changes. Individuals have to search for people alike and become more focused on similar interest to orientate their choice of community on. Nevertheless, a sort of reciprocal dependency among members of a community is created. This demands an organic solidarity, which allows heterogenic elements work together as a single unit.

Like Tönnies, Durkheim also sees certain dangers evolving with the rapid transition from traditional to industrial society. The accelerated social change might lead to an ethical disorientation, where people lose their trust in social institutions and norms. Thus social bonds are eroding, before an organic form of solidarity can catch up. He later develops this thought in his work about suicide (1897), in which he looks at the social circumstances involved that provoke the act.

Both of these early works already stress two essential dimensions of community: the **social structure** and the **sense of community**. A community is a form of social organisation based on a network of individuals. These maintain relationships, which determine the extent of the community. The sense of community is created by a feeling of belonging together, whether that might be based on blood and destiny or on interest and conscious search for people alike. Tönnies as wells as Durkheim stress that social organisation is subject to a wider context of dynamics that lead to transition in meaning of basic forms of social relationships. Community and society can not be seen as rigid institutions, they are permanently evolving and interrelated.

Community in modern societies

Whether the community concept is still appropriate for understanding processes in modern societies can be best described by different concepts of whether community is ‘lost’, ‘saved’ or ‘liberated’ (Wellman, 1979).

The ‘community lost’ perspective is often connected to the loss of public space in urban areas (Wellman, 1979; Oldenburg, 1989; London, 1997). The argument follows Tönnies’ prediction that increasing urbanisation enhances rationalisation and impersonal social linkages. It is assumed that the physical space still holds an important role for developing a collective identity. The lack of public space, especially in modern suburbs, makes people become strangers, as they are increasingly separated in their interests and activities. Projected on the impact of ICT, it is concluded that the significance of place and thus the physical basis for communities is likely to be threatened (Meyrowitz 1985).

Nevertheless, arguments can be found that modernisation has taken place, but communities can still be found in urban areas and are thus saved from progressing rationalisation. Crow & Allan (1994) argue that community life, in its local manifestation, still plays a vital role in our social existence. It frames activities such as shopping, working or meeting neighbours. Local communities hold the role of a mediator between households and macro-scale social structures.

Reflecting changes within social organisation in modern societies, Barry Wellman (1979) developed the ‘community liberated’ argument. This perspective sees community from a network analysis point of view and is thus able to imply more heterogeneous and disperse

types of communities. Timm (1972) describes the urban world as a mosaic of social worlds with increasing mobility and a weakening meaning of location. Hence, people's sense of community is less limited by physical boundaries and kinship. Modern 'personal communities' (Wellman, 1996) do not depend on spatial density and are marked by specialisation, "…with different ties providing different types of resources." (Wellman, 1997). People do not belong to one community only, but are member of different types of specialized communities, which can be described as a set of personal communities. Social organisation takes the form of 'networked individualism': networks have become so differentiated that the individual case cannot be seen as the lowest level of a clear-cut, group-based social system, but as a field of overlapping individualized networks (Castells, 1998; Wellman, 2001). People are involved in sets of narrowly defined relationships with changing network members – there is no single community as the only source for identity.

Another position is taken by Cultural Studies, which interpret individualization as a growing choice for individual to select role models, on the one hand, and a change of the public sphere on the other. The related diversity of frames of reference for the individual allows for the articulation of new ways of life. Wellman points at the necessity to identify and analyse such processes in light of possible inclusion/exclusion processes. Lave & Wenger (1991) address their impact on learning.

The trend towards network individualisation

As Castells (2001) reminds us, the Internet and the community-building which takes place in cyberspace need to be interpreted as exacerbating a well-established trend in western industrialised countries, i.e. "a historical process of separation between locality and sociability in the formation of communities: new, selective patterns of social relations substitute for spatially bound forms of human interaction" (ibid., p. 116). The change in the types of social capital which are sought, certainly enabled by the Internet and other ICTs, has its root in a growing diversity of sociability patterns which are themselves not caused (primarily) by any technologies.

Social researchers agree that individualisation has for many decades been the dominant trend in the evolution of social relationships. Against this background it has been suggested to describe the evolving patterns of sociability in the network society as "network individualism" (Wellman, 2001) or "networked individualism" (Castells, 2001) with the nuclear family in the household at its core, "from where networks of selective ties were built according to the interests and values of each member of the household" (ibid, p. 116). Van Dijk (2006) prefers the term "network individualisation", which means "that the individual is becoming the most important node in the network society and not a particular place, group or organization. The social and cultural process of individualization, which appeared long before the Internet, particularly in western societies, is strongly supported by the rise of social and media networks. Networks are the social counterpart of individualization" (ibid., p. 168).

With regard to national (or even regional) differences concerning the social impacts of ICT, it is worth noting that the long-term social process of individualisation does not occur in the same way and at the same speed in all countries of Europe. Different theories exist with which to explain such cultural differences between countries and how these change in time. Geert Hofstede (2001) considers "national culture" as a set of collective beliefs and values that distinguishes people of one nationality from those of another. His view perceives national cultures as extremely stable, which "can be explained from the reinforcement of culture patterns by the institutions that themselves are products of the dominant cultural value systems" (Hofstede, 2001, p. 255). Even if cultures shift in the log run, "they shift in formation, so that the differences between them remain intact" (ibid.). In Hofstede's theory, one of the main dimensions of national culture is individualism, which he then set out to measure using a by now well-established set of variables to be applied in structured personal interviews.

A different view is held by Inglehart (1997; Inglehart & Welzel, 2005) and his followers, who use data mainly from the World Value Survey. As opposed to Hofstede's approach, which is informed by cultural theory and stress on path dependency, Inglehart is more indebted to modernization theory, which argues that processes of economic and social development lead to cultural convergence (Kerr, 1983). This would imply that the "human development sequence" (Inglehart & Welzel, 2005) logically leads to increasing individualisation in all countries, with a tendency towards convergence.

2.2 ICT implementation in the domain: Common expectations and first practice

We can distinguish between two basic points of view concerning the impact of computer networks and other ICTs on sociability and social interaction:

The **dystopian view** is represented by Putnam's work on the presumed collapse of the community in post-war United States. While his influential book "Bowling alone" does not deal with ICTs in depth, Putnam (1998) still expresses his belief that the Internet "inhibits interpersonal collaboration and trust" and, as such, would be detrimental for social capital building and maintenance. Statements such as this are based on the assumption that ICT-mediated communication is substituting for face-to-face communication, a development which would necessarily lead to the impoverishment of social interaction since "mediated communication always involve particular restrictions" (van Dijk, 2006, p. 211). Indeed, for a long time research of computer-mediated communication (CMC) was based on such deficit approaches (Thurlow et al., 2004), which where themselves grounded on social presence theory, reduced social context cues theory and media richness theory (van Dijk, 2006, pp. 13-16). All of these appear to support claims that ICT-mediated communication is necessarily inferior to face-to-face interaction, which "was considered to be the norm and [provide] the best quality of communication" (ibid., p. 226).

In contrast to the dystopian approach, the **utopian** view as represented by McLuhan (1966), Toffler (1980), de Sola Pol (1983) and Negroponte (1995) claims that, by enabling the creation of network connections between an increasing number of individuals and organisations, ICTs bring people together and improve social cohesion, ultimately leading to McLuhan's famous 'global village'.

In the academic sphere, in the second half of the 1980s – in reaction to the claims of the classical research on CMC which had been based on the deficit approach – "a more social-cultural or sociological approach emphasizing (inter)subjective social construction processes has appeared" (van Dijk, 2006, p. 14). The theoretical foundation was supplied in form of the 'social information processing model' (for an overview see Fulk & Steinfield, 1990). As a reflection of the emerging evidence on how computer networks, e-mail and the Internet are actually used by people, researchers began to notice that "media are used differently in relation to particular functions (tasks, goals) and contexts (van Dijk, 2006, p. 14). In fact, the research of Walther (1996) suggested that "after some time the quality of CMC approaches that of face-to-face communications. This conclusion is diametrically opposed to the claims of the social presence and reduced social cues approaches" (van Dijk, 2006, p. 14).

Both views have continued to be present in the public debate about ICTs' influence on sociability, with variations across time depending on the common preconceptions of every given period. With the arrival of online social networking platforms and other so-called Web 2.0 applications, recent years have seen an increasing interest in the ability of ICTs to create fundamentally new possibilities for socialising, which has had the result that today most participants in the public debate (again) tend to hold optimistic views about the impact of the Internet and personal mobile communication on social capital.

3 Applications of ICT in the Domain

One of ICT's killer applications has been, without doubt, **e-mail**: It drives people online just to be able to participate in electronic communication. The reasons are, of course, well established. First of all, e-mails are fast and easy to send compared to the more laborious regular mail or fax. Transmission times are (mostly) extremely short, which enables almost synchronous communication. Costs for sending e-mails are very low. Equally important, due to full digitisation e-mail allows unprecedented levels of reusability, documentation and integration with other communication channels (e.g. copy-pasting text to other applications; multiple recipients; message forwarding; free text search in e-mail archives). By the use of file-attachments, not only messages but also every other kind of digitised information (data files) can be transmitted through the same channel. Last but not least, as an Internet application, e-mail accounts can in principle be accessed from any location where there is an Internet connection.

In a similar way, the diffusion of **mobile telephony** has exceeded all expectations as users have quickly grasped the possibilities which it offers them to do things they value highly, but could not do before (Feldmann 2005; MobileLife 2006). Most importantly, users of mobile phones are independent from stationary connections, i.e. they can make phone calls and send text messages from practically anywhere. The implication is that people enjoy considerably enhanced control over the communication process. But this is far from the only major transformative effect which is ascribed to wireless communication systems.

The arrival of the third generation of mobile telephony, especially of fast UMTS-connections and the increasing functionality of mobile phones (integrating features of personal information managers, cameras, digital music players etc.) will also open up new possibilities and further heighten the transformative potential of this kind of applications. We need to be careful, however, lest we take for granted that "unfettered communication (a utopian attribute of the Internet) necessarily fosters healthy and socially beneficial communities" (Katz & Rice 2002: 110). Just enabling people from different backgrounds (e.g. different nations, cultures) to communicate freely with each other will not necessarily yield positive outcomes.

Apart from e-mail, other applications of the Internet were in the first 10 years or so after the arrival of the World Wide Web mainly used by private persons in ways which focus on information retrieval and on transactions, e.g. for e-commerce and e-banking. This has changed with the arrival, in the last 5 years, of so-called **Web 2.0** technologies, which include social networking platforms, blogs and wikis. **Online social networks** are websites where members can store information about themselves, typically in the form of profiles, and make links to other members they know, thus creating a network of personal connections. In addition, users can upload own content, such as texts, photos, music files and video clips, which often act as the centre for interaction within the network (e.g. YouTube, MySpace). Social networking may take place anonymous or with real personal data. Members of social networking sites maybe identified by their real names and data, but this is not the norm. Information provided often includes photographs and CVs. Members' networks of connections are displayed as an integral piece of their self-presentation.

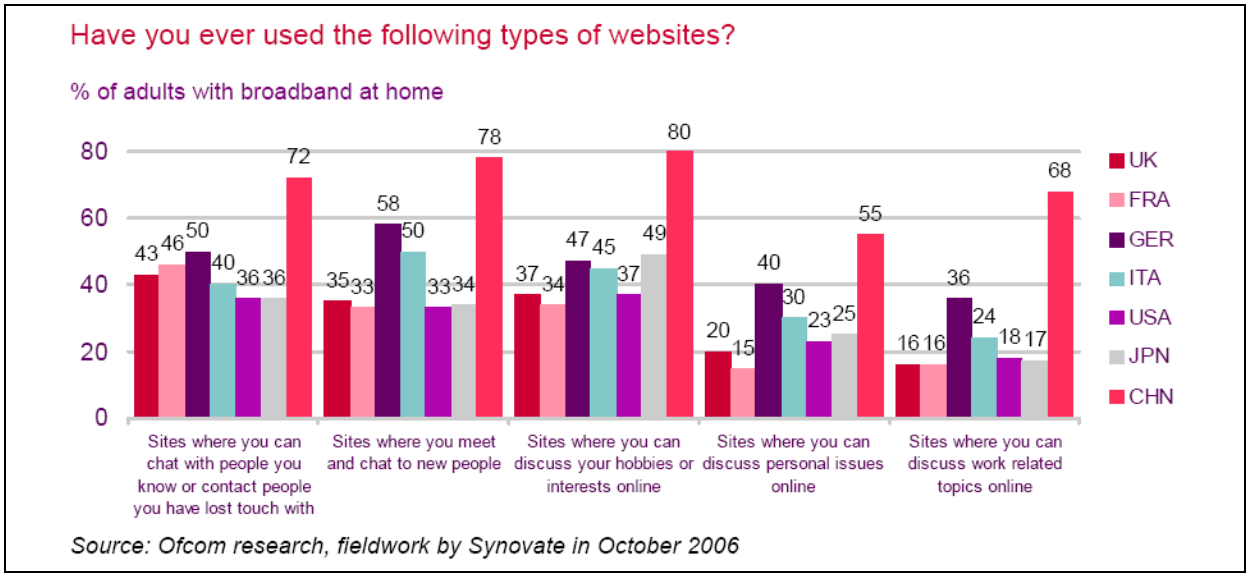
Social networking forums also include **virtual environments** such as SecondLife. SecondLife provides a virtual representation of real-life artifacts and events in which people can perform similar activities as in real life. The rules of the SecondLife are corresponding to its real-world counterparts and the events may be (on-line) representations of the real events like a conference or a panel discussion that can be followed either in real life or in virtual.

The uptake of online social networking in recent years has been very rapid, in spite of the fact that some services seem to have lost their appeal after users have passed an initial period of experimentation. The share of Internet users who have subscribed to a social networking platform by creating a profile is estimated to be between 20% and 30% (Fisch &

Gscheidle, 2008). While the number of active users, i.e. those who use social networking services frequently, contribute content, etc, is certainly much smaller, these numbers still suggest that Web 2.0 applications provide significant added value for a large share of Europeans. This implies that Web 2.0 services are of big relevance for an analysis of the Internet's implications on sociability in Europe.

Figure 1, which is based on data from a survey undertaken on behalf of Ofcom, the U.K. telecoms regulator, shows what type of social networking sites broadband Internet users are making use of. Data are available for four EU Member States plus USA, Japan and urban China only.

Figure 1: Use of social networking websites in selected countries, 2006



Source: OFCOM, 2006

4 Social Impacts of ICT in the Domain

4.1 Rationalization: The easing of social interaction

There is clear evidence that ICT makes involvement in the community easier (Katz & Rice, 2002; Robinson & Alvarez, 2005). One way in which they do this is by allowing people to negotiate time-space-pressures facing the modern family (Turkle, 2008).

Moreover, traditional social networks increasingly evolve into ICT-supported social networks, which Jan van Dijk (2006) calls "community online" (as opposed to the purely ICT-based "online communities", see below. Katz & Rice (2002) agree that available evidence suggests that the Internet makes it easier and more effective to engage in all traditional forms of social capital building, including maintenance of weak as well as strong relationships to other people. ICT appears to be of special value for maintaining those ties which are in some ways inhibited by physical distance: "The Internet is effective in maintaining weak ties, which otherwise would be lost in the trade-off between the effort to engage in physical interaction (including telephone interaction) and the value of the communication" (Castells, 2001).

In a recent study by Pew Internet & American Life Project (Boase et al., 2006), the focus was on whether Internet users derive a personal benefit from the social contact-enabling characteristics of ICTs. The main results suggest that this is indeed the case, see Table 1.

Table 1: The Strength of Internet Ties: Summary of Findings from Pew Internet Study

- The Internet plays socially beneficial roles in a world moving towards "networked individualism."
- E-mail allows people to get help from their social networks and the web lets them gather information and find support and information as they face important decisions.
- The Internet supports social networks.
- E-mail is more capable than in-person or phone communication of facilitating regular contact with large networks.
- E-mail is a tool of "glocalization". It connects distant friends and relatives, yet it also connects those who live nearby.
- E-mail does not seduce people away from in-person and phone contact.
- People use the Internet to put their social networks into motion when they need help with important issues in their lives.
- The Internet's role is important in explaining the greater likelihood of online users getting help as compared to non-users.
- Americans' use of a range of information technologies smooths their paths to getting help.
- Those with many significant ties and access to people with a variety of different occupations are more likely to get help from their networks.
- Internet users have somewhat larger social networks than non-users. The median size of an American's network of core and significant ties is 35. For Internet users, the median network size is 37; for non-users it is 30.
- About 60 million Americans say the Internet has played an important or crucial role in helping them deal with at least one major life decision in the past two years.
- The number of Americans relying on the Internet for major life decisions has increased by one-third since 2002.
- At major moments, some people say the Internet helps them connect with other people and experts who help them make choices. Others say that the web helps them get information and compare options as they face decisions.

Source: Boase et al. 2006.

The TRANSFORM project (2008) produced evidence, based on a representative survey in 12 NUTS2 regions across Europe, that the key findings from this Pew Internet study also apply in Europe. For a discussion, see Deliverable 3.

4.2 Networking and Social Capital

The interrelation between use of the Internet and social interaction has been researched comprehensively in recent years (see Robinson & Alvarez, 2005 and van Dijk, 2006 for an overview). Castells (2001: 128) describes the evolving patterns of sociability, enabled by the Internet, mobile telephony and other ICTs, as "networked individualism". In fact, the community as a social construct – based primarily on face-to-face interaction and as such bound to a limited geographical territory, such as a neighbourhood – has lost much of its relevance long before the advent of ICTs and the Internet (Wellman 2001). It still far from clear, however, what influence the increasing practice of networked individualism, heavily based on ICTs, has on society.

In their influential book from 2002, Katz and Rice summarise the findings from available research as follows:

- The Internet makes it easier not only to participate in all the traditional forms of social capital, but also contributes to overall levels of social capital. This is done often by people acting in self-interest, which as a result of network effects creates both individual-level and collective-level social capital – intentionally or not. "The Internet provides more opportunities to activate resources and create new knowledge for oneself and others" (Katz & Rice, p. 334). Internet users were found to be significantly

more likely to have a sense of belonging to a social group than non-users (after controlling for demographics).

- More surprisingly, the Internet also builds new forms of social capital, at least in so far as "computer-mediated communication is not included in definitions of the social-capital processes of community, interaction, or participation". For example, the researchers found that "those who tend to be introverted find their social contacts expanded via the information relative to their non-surfing counterparts.[...] This means that "being an Internet user is itself a source of online sociability".
- Moreover, the Internet offers immense potential for identifying and interacting with people who have common interests, as suggested for example by the proponents of the "virtual communities" idea . The current debate about what has been termed "Web 2.0" , which is being taken up enthusiastically by users , as well as likely future developments in mobile applications ; point towards an increasing range of possibilities for Internet-based social innovations to transform patterns of sociability.

These results were upheld after controlling for the degree of offline sociability and for a number of personal characteristics which can be expected to affect the dependent variable.

While Katz and Rice (Katz & Rice, 2002: p. 353) are positive about the possibility that "innovative uses of the Internet build what is commonly thought of as social capital", this opinion is still very much debated. Many still think that Putnam was correct when he stated that "anyone who thinks the Internet could restore social capital lost through other means is a wild-eyed optimist". In fact, quite some empirical research (e.g. Millard & Christensen, 2004) suggests that ICTs are unlikely to create social capital and a sense of regional identity where these are undersupplied in the first place. Analysis of a major local ICT initiative, the Blacksburg Electronic Village, made Kavanaugh & Patterson (2002) conclude that "social capital may turn out to be a pre-requisite for, rather than a consequence of, computer mediated communication". Van Dijk (2006: p. 169) puts it more bluntly: According to him the Internet "supports those already strong in social contact, civic engagement and sense of community and it enables those weak in these things to further isolate themselves and to be excluded from the many opportunities the new media have to offer". If this was found to be true, it would be hard to sustain the claim that ICTs can have a positive 'impact' on societies with regard to the quality of social relations and the production of social capital.

Evidence collected by Katz & Rice (2002) suggests otherwise. They claim that the Internet also **builds new forms** of social capital "that are in many ways different and more powerful than the local, physical means of earlier areas". This mainly refers to the new types of sociability enabled by the Internet as well as by mobile ICTs. Among these new forms, there is also what some scholars call **sociotechnical capital**: "productive resources that inhere in patterns of [impersonal] social relations that are maintained with the support of ICTs" (Resnick, 2005). This comprises automatic taste matching, recommender and reputation systems which are being applied not only for commercial purposes (cf. eBay, Amazon), but also for helping users identify relevant news and form their opinion.

The original perception of the Internet being detrimental to social capital may have been the result of a lack of contextualisation: "Any analysis of the relationship between new media or technologies such as the Internet and changes in the nature of and involvement in communities is naturally confounded with the changing conceptualization and reality of community itself" (Katz & Rice, 2002, p. 117). Indeed, Castells (2001) reminds us that the Internet, and the community-building which takes place in cyberspace, need to be interpreted as exacerbating a well-established trend in western industrialised countries, i.e. "a historical process of separation between locality and sociability in the formation of communities: new, selective patterns of social relations substitute for spatially bound forms of human interaction" (ibid., p. 116). The change in the types of social capital which are sought, certainly enabled

by the Internet and other ICTs, has its root in a growing diversity of sociability patterns which are themselves not caused (primarily) by any technologies.

As Ferlander (2003) notes, "community" is frequently used in the public debate as a buzzword "when what exists is actually solely a network with no feelings of attachment". She argues that in order to exist there also has to be a sense of community within the network – which is hard to find within a very loosely knit social network.

We can conclude with Castells (2001) that, since individualism is the currently "dominant trend in the evolution of social relationships", the evolving patterns of sociability could be best described as "networked individualism" ("network individualization" according to van Dijk, 2006) with the nuclear family in the household at its core, "from where networks of selective ties were built according to the interests and values of each member of the household".

4.3 Empowerment and participation

As the discussion in the previous section has shown, the issue of empowerment is in many ways directly related to ICT-induced changes in the structure of social relationships and social networks. The notion of "networked individualism" refers directly to the increasing degrees of freedom which ICTs give people with respect to making choices about the structure of their social networks and the type of their social relationships.

Among the ICTs which have become widely diffused in recent years, individual empowerment has been most often discussed in relation to the mobile phone, and mobile applications in more general. Castells and colleagues (2004; 2007) identified a number of essential impacts of mobile phone use on patterns of social interaction:

- Autonomy and "mobile intimacy": This means the extension of personal links through a "technology closely associated with the body" (MobileLife, 2006: p. 45) rather than with the physical location of the household or the workplace. Users of mobile telephony significantly enhance their autonomy – "vis-à-vis spatial location, time constraints, and to a large extent, social and cultural norms".
- Networks of choice: Shifts in the ways people organise their life through the mobile phone and also in the types of networks which are being created and maintained: "Mobile communication has greatly enhanced the chances, opportunities, and reach of interpersonal sociability and shared practice".
- Instant communities of practice: "The emergence of unplanned, largely spontaneous communities of practice in instant time, by transforming an initiative to do something together in a message that is responded from multiple sources by convergent wills to share the practice". This practice, dubbed "smart mobs" by Rheingold (2002), has been observed in a number of cases from all around the world in which – within a very short time – a critical mass of political protesters was called to action by means of text messaging (cp. Benkler 2006).
- Blurring of established boundaries: Mobile communication takes place in a spatial context and a new time which is chosen by the communicating subject (in interaction, of course, with the communication partner). Castells et al. interpret this as "an extraordinary strengthening of the culture of individualism (meaning, the primacy of individual projects and interests over the norms of society or reference groups) in material terms".
- Users as producers of content and services: The ready availability of camera-phones which allow users to take photos and record short videos, together with the ability to instantly share self-generated content with others over mobile networks, means that consumers are being empowered to become producers and distributors of content themselves. The possible social consequences of this are, however, far from uniquely

beneficial, as the MobileLife report (2006: p. 45) points out when he warns that the general public may turn "into a mass of 'little sisters' reporting any activity deemed inappropriate".

- Safety and surveillance: As survey data have repeatedly shown (e.g. MobileLife 2006), the mobile phone makes people feel safer at the same time then it makes them enjoy greater autonomy. There are also threats, though: Because mobile networks register the geographical location of devices, this is a technology which makes near-ubiquitous surveillance possible, as a number of scholars including Rheingold (2002) have powerfully argued.
- Fashion, culture and language: Mobile phones are powerful purveyors of meaning. They are being adopted as part of the process of individual expression, of "the construction of identity by appropriating a new technological environment and still feeling oneself". As such, the technology may also have transformed the use of language, for example in the form of texting-oriented vocabularies which are optimally tailored to the 160 character limit of SMS messages.

The topic of ICT-enabled empowerment brings up a number of issues with regard to social exclusion. Does the increasing spread of ICTs which are used for social interaction imply that people who do not have access, or people who make inadequate use of ICTs, are at risk of social exclusion? Indeed, the evidence compiled by Dutton (2005), van Dijk (2005) and Helsper (2008) suggests that differences in access to and use of the Internet exacerbates processes which are associated with social disparities.

4.4 Information & lifelong learning

Online sociability and social networking play an important role in current debates about the way people acquire the skills which are required in the knowledge-based society and economy. While the relevance of ICT for learning within the formal education system is being dealt with in the Domain Report "Education and Lifelong Learning", the present Domain Report will briefly describe developments in the area of incidental and experential learning based on ICTs.

in recent years, a number of authors have suggested that rather than these, it is incidental (experiential) learning which is the most important way in which people acquire skills, thereby implying that such learning is capable in theory to fulfil a similar function as more formal learning activities e.g. in courses (Tuomi 2006).

Focusing on the skills needed for mastering ICTs such as computers and the Internet, available evidence certainly confirms the significance of informal learning as opposed to formal, structured learning. The findings from the representative TRANSFORM 12-region survey (2008) suggest that social ties including family and friends, but also interaction with more remote acquaintances, play a powerful role in the exchange of ICT skills (see Table 2). A high level of social capital, if defined as existence of extensive networks of strong and weak ties, can therefore be expected to make it easier for a person to acquire the skills necessary for making full use of the potential of ICTs.

Table 2: Perceived importance of sources for ICT skills

	Percent for which this was of *essential* importance[2]	**Percent for which this was of great *importance*[3]**	**Importance: Mean on 10-point scale**
School, college, university	15.3	31.9	5.75
Attending a training course provided by an employer*	12.3	25.6	6.44
Attending a training course provided by (or on behalf of) a public agency	9.7	21.0	6.97
Learning on the job*	28.1	52.6	4.32
Help from friends and/or relatives	22.3	49.3	4.29
Self-study and trial & error	43.9	70.4	3.06

** = Respondents in employment only. Source: TRANSFORM (2008)*

According to Table 2, initial education (at school, college or university) and formal training courses play an important role for a much smaller share of respondents compared to learning on the job (for those in employment), help from friends or relatives and, in particular, self-study and trial & error. The latter finding indicates that the ability to self-learn and the degree of learning self-efficacy (eUser, 2006) are likely to be of key importance for skill acquisition. Still, the role of friends and relatives for transfer of skills deserves a closer look.

The same survey also asked Internet users whether they *get help* from others – friends and family, people at work or place of education, people at public places such as libraries, people at Internet cafés, or a formal trainer in a computer course – for using computers and the Internet. Moreover, the survey asked whether respondents give help to any of these groups. The data reproduced in Table 3 suggest that regular Internet users are indeed an important source of support for their friends and family, with 71% stating that they give help to this group. But the transfer of skills is not limited to this group, as 61% also state that they give help to other groups of people – especially colleagues and co-students, respectively. Support in how to use computers and the Internet is, of course, not unidirectional – indeed, the largest group of respondents declare that they give as well as receive help from many of the groups listed.

Table 3: Transfer of ICT skills within the population

	Percent who *give* help for using computers / the Internet to ...	**Percent who *get* help for using computers / the Internet from ...**
Friends and/or family	71.0	60.0
Others besides friends/family	60.7	66.5

[2] Value “1” on 10-point scale (1 = essential, 10 = not important at all)

[3] Values “1” to “3” on 10-point scale (1 = essential, 10 = not important at all)

Source: TRANSFORM (2008)

These findings indicate that learning within social networks represents a vital source of skills. The Domain Report will therefore explore evidence about the degree to which people make use of their ICT-based social networks to acquire knowledge and skills.

5 Policy perspectives

This section of the Domain Report will look at the different ways in which EU Member States and the EU itself have tried to promote uses of ICT which are believed to foster social capital by exploiting the technology's potential for enabling easier communication and social networking.

In this decade, the notion of social capital has already attracted much interest among policy-makers, in particular with regard to strategies for fostering economic and social development in the knowledge-based society. The OECD (2001) suggested a direct link between human capital and social capital, and asked for policies which address both in an integrated way. This notion was welcomed by the European Communities, which in 2003 published a working paper on "Building the Knowledge Society: Social and Human Capital Interactions". This became the basis for a subsequent resolution of the European Council "on Social and Human Capital", passed later in the same year (European Council, 2003).

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[G] Creation and distributed innovation

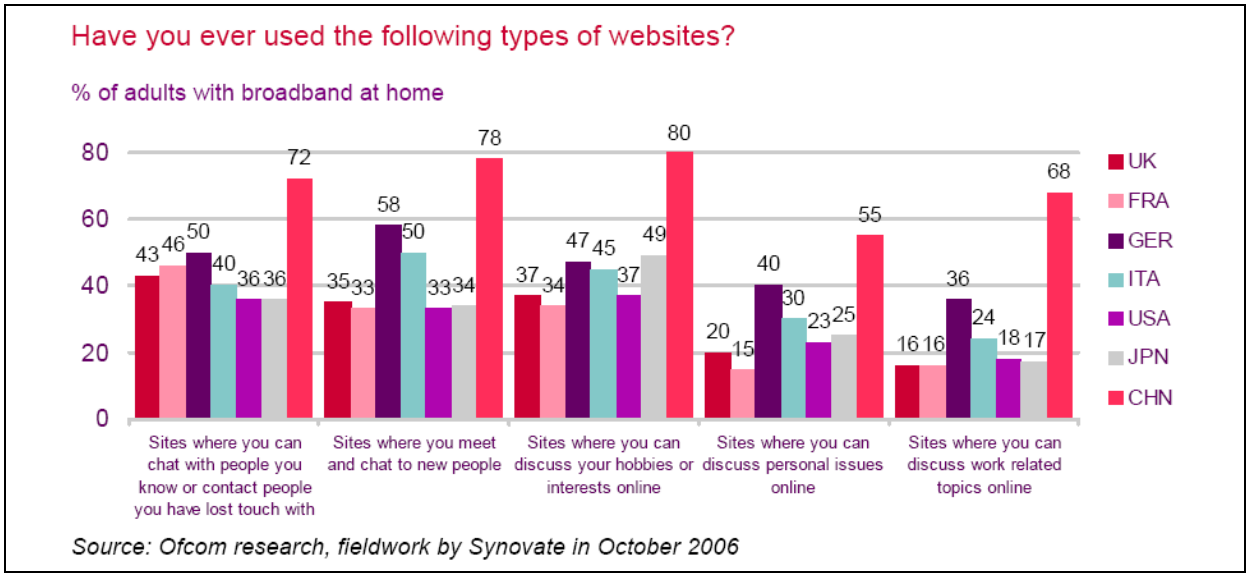
Oxford Internet Institute

Table of contents:

1 Introduction

The Internet and mobile networks offer unprecedented possibilities for average users to widely distribute content they have created. This user-created content appears – in contrast to other uses of the Internet such as information retrieval and one-to-many entertainment – to represent a fundamentally new way for people to interact with public media. In 2004, a Finnish study on the topic came to the conclusion that "the need now is for various kinds of forums where citizens could build up the courage they need to put up their own production on display"[1]. Since then, the success of Internet services such as MySpace, YouTube and Flickr [numbers for Europe will go here] has confirmed that there is considerable interest from users in using the Internet to publish self-created content[2]. This also shows in the empirical data collected on behalf of UK's national regulator OFCOM in a survey covering the UK, France, Germany, Italy, USA, Japan and China, see Figure 1[3].

Figure 1: Use of social networking sites on the Internet



Source: OFCOM 2006

Manuel Castells argued in 2001 that "the most important latent demand [is] for interactive free expression and autonomous creation – nowadays largely stymied by the sclerotic vision of the traditional media industry." Examples include "open source, free posting, decentralised broadcasting, serendipitous interaction, purpose-oriented communication, and shared creation"[4]. In this context, Katz and Rice[5] apply the term "Internet enabled expression" which "refers to the material that is created by individuals or groups to reflect their views, interests, or talents. These materials are produced for the observation, interest, or response of their

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1 Nurmela, J., Parjo, L. and Sirkiä T. (2004b) 'From Citizen to eCitizen. Results from Statistical Surveys about Finns Use of ICT 1996-2005', Reviews 2006/3, Helsinki: Statistics Finland.

2 Benkler, Y. (2006)

3 Office of Communications (OFCOM)(2006) 'Consumer Engagement with Digital Communications Services – Report on research findings', London: Ofcom.

4 Castells, M. (2001), p. 200.

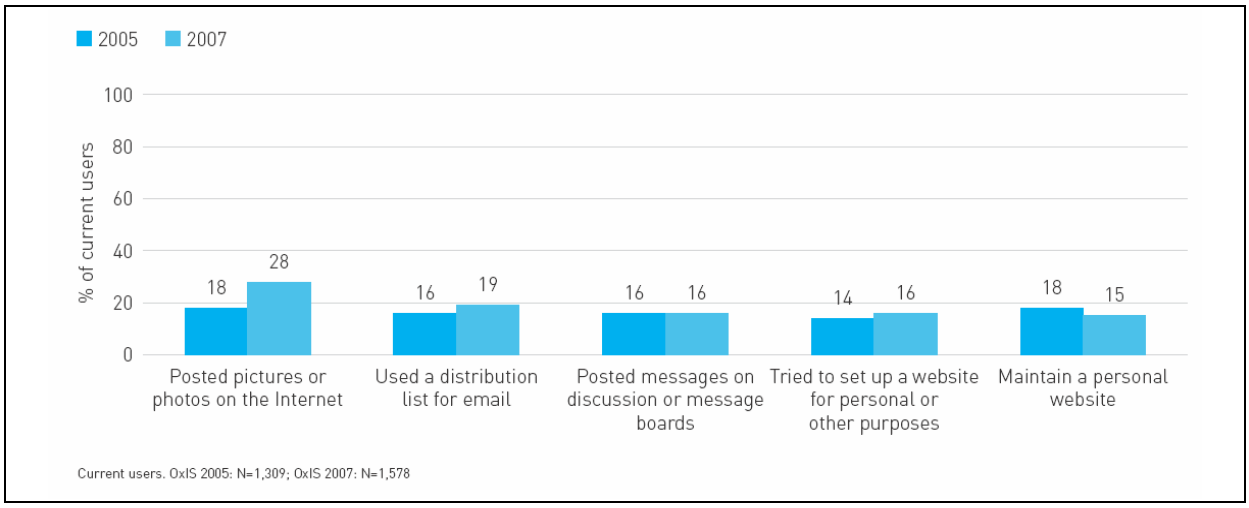
5 Katz & Rice (2002), p. 5.

creators and, usually, others". This definition clearly points towards the overlap between self-generated content and civic and political participation.

The OxIS 2007 study produced at the Oxford Internet Institute examined content production and concluded that online content production is still relatively rare among users, although it is growing in some areas. Figure 2 shows recent data for various types of the creative production of online content. The most popular creative activity online is posting photographs, an activity reported by nearly one third (28%) of users in 2007, up from 18% in 2005[6].

A recent study of YouTube found that new (at least to YouTube) content creators generate a significant portion of the videos posted: "in over 1 million users' data, we found that 58% of the users have no [YouTube] friends"[7]. That newcomers to that site are deciding to create and post content indicates that compelling new sites such as YouTube are helping users overcome the barriers set up by traditional media that Castells referred to above. YouTube, MySpace, Fotolog and Flickr are all sites for sharing user-created content, and all are in the top 30 websites in terms of traffic reported by Alexa.com (as of 12 Nov 2007). Other popular sites, such as Wikipedia (#8 on Alexa) are also arguably allowing people much easier access to becoming creators of content. Users with a particular interest in a subject can go to Wikipedia and update entries for which they feel they have particular expertise, even if they aren't credentialed experts in the traditional sense. If their contributions are valuable, they will persist through later edits by other users. In addition, Wikipedia allows the creation of content on topics that users may find extremely interesting or valuable, but that fall outside the realm of traditional reference sources.

Figure 2: Creativity and production on the Internet in the UK



Source: Dutton & Helsper 2007

When discussing creative content online, it is often an underlying assumption that user-created content refers to amateur content, as opposed to websites designed for sharing the professional creative content of organizations. There is, however, a grey area in between these two that is less discussed, but is also an important source of user-created content: the creation of content by users who may be expert in one area (music, art, writing) but are not

6 Dutton, W. H. and Helsper, E. J. (2007) Oxford Internet Survey 2007 Report: The Internet in Britain (Oxford Internet Institute). Available online at http://www.oii.ox.ac.uk/research/oxis/OxIS2007_Report.pdf.

7 Cheng, X., Dale, C. & Liu, J. (2007) 'Understanding the Characteristics of Internet Short Video Sharing: YouTube as a Case Study', Technical Report arXiv:0707.3670v1 [cs.NI], Cornell University.

expert web-designers nor affiliated with professional content distributors. The growing number of websites that enable these less technical users to create and share content online also represent an important source of creative activity and distributed innovation. For instance, there have been recent changes in the stock photography industry as purchasers of stock photography have become less willing to pay high prices to professional stock agencies such as Corbis or Getty, and instead are buying inexpensive rights to photos on Flickr or stock websites like iStockphoto.com that allow small-scale photography operations or individual photographers to contribute content. Similarly for music, iTunes and mySpace have provided outlets for smaller independent bands to distribute their music to a wider audience without needing to become computer programmers to do it. This democratization of the content creation domain has important implications across the arts as traditional gatekeepers are bypassed and creators are able to connect directly with their audiences.

Creative expression can take many forms, and only some of these are currently well represented on the Internet. For instance video (YouTube), music (MySpace), and photography (Fotolog, Flickr) are all well represented online, and these online instantiations appear to be having and influence on how video, music and photography are used generally in the offline world as well. Other types of creativity such as dance, drama, and poetry are not yet a large part of the mainstream creative community online, and may never be. Additional forms of creativity, such as art and creative writing, lie somewhere in between. While digital arts and animation are becoming more prevalent, there is less evidence that traditional forms of art such as painting, drawing, and sculpture are being influenced by ICTs. Likewise, while some creative writing appears online, most literary output still appears to be primarily in more traditional forms. Whether this is likely to change in the future is something that is of great interest.

Creative expression online also raises a number of potentially contentious issues. While few would argue that posting a photograph of a flower garden is problematic, when one person's definition of creative expression includes posting something more controversial such as nude photography, additional issues arise regarding the ethical and legal issues surrounding the use of ICTs. Ethical and legal dilemmas can arise in many artistic domains. For instance, sharing music created by one's own garage band is perfectly legal, but is creating a 'mash-up' using someone else's band's music combined with additional elements such as new video content infringing on the other band's intellectual property? Posting videos of yourself on YouTube can be non-controversial (particularly since YouTube is monitored for non-complying uses), but what if adults choose to post explicit videos of themselves on X-rated video websites? Is that form of creative expression equally valid, and who determines that? Flickr has made posting photographs very easy, but it has also made photographs very easy to steal; this raises the issue of how creators can keep track of the ways their content may be 'repurposed' without their knowledge.

The forms of content creation discussed here are not yet adequately understood and represent a potentially valuable source of data for understanding the ways in which people express creativity, types of creative expression that have been enhanced by ICTs and which types have not begun to engage ICTs, and what sorts of people choose to generate content and how this varies by age, gender, ethnicity, geographic location, and other characteristics. Artistic expression is one of the elements of self-actualization perched atop Maslow's hierarchy of needs, and the ability of ICTs to help people realize their artistic capabilities can represent an important impact on a person's overall quality of life. Understanding how this is happening and is developing for the future thus is an important component to assessing the social impact of ICTs.

2 Epochal trends in creativity and the arrival of ICTs

This chapter is structured, as the others, to first consider the major epochal trends in the area of creativity and distributed innovation without regard to ICTs before turning our attention to the applications of ICTs in the domain, and the evidence for the social impact of these innovations. The chapter will end with a discussion of the policy implications of these trends.

Creative expression and distributed innovation covers a huge range of human activity. Music, art, drama, dance, creative writing, film, crafts, hobbies, play, and various forms of social engagement all allow people to express their creative urges. In many ways, this domain is one of the easier to imagine how it would have developed without ICT since to a large extent, there has been remarkably little encroachment of ICTs into many areas of this domain. There is an active literature on creativity and creative expression, but relatively little of that work has focused on how creative expression has seen the impacts of ICTs.

Note for outline: This section will next include a brief summative literature review on the creativity literature. Sample resources include:

- Amabile (1983) *The social psychology of creativity.*
- Cliche, D., Mitchell, R., Wiesand, A. J., & Ericarts Network of European Foundations for Innovative Cooperation. (2002). *Creative Europe: On Governance and Management of Artistic Creativity in Europe: an ERICarts Report, Presented to the Network of European Foundations for Innovative Co-operation (NEF): with Contributions to the Project from Researchers Throughout Europe*: Arcult.
- Florida (2002) *The rise of the creative class and how it's transforming work, leisure, community and everyday life.*
- Florida, R., & Tinagli, I. (2004). *Europe in the Creative Age*. Pittsburgh, PA: Carnegie Mellon Software Industry Center.
- Sternberg (Ed., 1999) *Handbook of creativity.*
- Sternberg, Kaufman, Pretz (2002) *The creativity conundrum.*

In order to discuss major societal trends in the expression of creativity, it will help to sub-divide our discussion into several different, but related, sub-domains. Each sub-domain will be briefly surveyed to discuss the major societal trends over the course of the last several decades. [

Note for outline: For the purposes of this outline, the major trends to be included in the report in more detail have been identified in brief here. This section, and that which follows, will cover a wide range of creative subdomains, and will take constitute a major portion of the final report.

Subdomains to be considered in final report

1. Music
    a. Rock, Pop: Centralization and corporatization of the production of music, Eurovision
    b. Less common genres (Indie, Folk, World, etc.): Difficulties of distribution, attracting audiences, financing

2. Film & video: The studio system, the fall of major studios, the influence of European art and mainstream cinema, and the rise of the independent film maker, spread of television culture
3. Photography: Popularization of photography, spread of Instamatics and single-use cameras, death of *Life* and other sources of visual literacy
4. Non-mainstream art and fantasy: rising of gaming culture, spread of cartooning/graphic novels, writing of fan fic, spread of urban graffiti
5. Writing and information sharing: encyclopaedias; rise of 'zines and newsletters for creative writing and poetry; the impact of the Xerox machine
6. Counter examples not much changed by ICTs, but discussed here to demonstrate how they have developed without ICTs
    a. Theatre & dance: Changing audience demographics, economics of the professional arts
    b. Classical music: Probably one of the most stable of sub-domains for decades
    c. Sculpture, painting: Relatively stable other than massive increases in speculative investment in art as measured by auction prices, relationship between the artist and the market

EU trends such as European Capital of Culture cities and their effect

Segue to arrival of ICTs in domain

3 Applications of ICT in the domain

Even though there is considerable work on creativity, as we have seen, there has been much less work focused on understanding the impact of ICTs on the practice of creativity. Compared to democracy or commerce, for instance, where the societal and economic benefits of ICTs have been the focus of intense scrutiny for decades, many work and leisure activities focussed on creativity have, we suspect, been seen as peripheral, or frivolous, or an accidental side-benefit, but certainly not of central concern to most academic analysts. There haven't been massive funding efforts directed at ICTs in the arts, such as those aimed at achieving cost savings in health care or efficiency and productivity enhancements in industry. Thus, many of the impacts of ICTs in the creative domain have been either small scale or accidental.

Unlike some of the domains under discussion in this report, ICTs were fairly late arrivals (or, as mentioned above, even non-arrivals) in many of the sub-domains involving creative expression. Whereas business users were incorporating computer systems into their daily practices even before the arrival of the PC, it wasn't until the arrival of the Apple computer in the late 1980s that there was even a suggestion that computers could be actively harnessed for creative expression. The perception of this divide between Apple inspiring creativity and the PC being harnessed for business purposes has persisted until the current day. The evidence for this is clear: witness Microsoft's 'I'm a PC' campaign aimed at trying to convince people that, contrary to perceptions, Windows PCs are also used in creative ways.

In each of the subdomains discussed above, ICTs have entered the subdomain at varying times and at varying rates. Some, as mentioned, have remained relatively uninvolved with ICTs. The following section will discuss the same subdomains as above, paying particular attention to the introduction of ICTs into the subdomain and the key applications of ICT with regard to creativity.

Subdomains

1. Music
    a. Rock, Pop: Media format changes, downloading, piracy and GEMA / RIAA / other rights organizations
    b. Less common genres (Indie, Folk, World, etc.): New distribution channels like MySpace, iTunes
2. Film & video: Special effects, democratization of video, rise of YouTube, differences between frivolous amateur, serious independent, and professional production, television that has remained centralized and mostly unidirectional even though heavily invested in ICT
3. Photography: End of film and rise of digital, ubiquitous cameras and mobiles, rise of Flickr and other sources of visual literacy
4. Non-mainstream art and fantasy: spread of video gaming, cartooning/graphic novels moving online, fan fic distribution via the formation of online communities instead of by disconnected individuals
5. Writing and information sharing: Wikipedia; blogs as replacement for 'zines and newsletters for creative writing and poetry, Google as gateway to information
6. Counter examples not much changed by ICTs, but discussed here to demonstrate how they have developed without ICTs
    a. Theatre & dance: Limited to impact of ticketing practices and minor elaborations such as lighting and sound control systems
    b. Classical music: Few changes
    c. Sculpture, painting: Few changes outside media installations and other minor changes

Data will be compiled from existing sources to support the extent to which these ICT innovations have diffused throughout Europe.

4 Social impacts of ICT in the domain: Summary of empirical evidence so far

In this section, we will discuss the common themes and questions that have been identified in the conceptual framework for this report. Current empirical evidence from Europe and the rest of the world will be used where available to better show the extent to which ICT is having a current impact on the domain.

4.1 Rationalization (effectiveness, efficiency, innovation)

Rationalization has played less of a role in the area of creativity and distributed innovation than in other domains where efficiency is considered a key criteria. The main issue to be discussed in the first portion of this section, then, has to do with the concept of innovation and the relationship between innovation in the creative domain and other forms of innovation. To do this, we will focus on understanding the official view of innovation as expressed in the Lisbon agenda and alternative views of innovation based on available evidence and existing literature.

Next, our attention turns to a related area of concern here, the blurring of the amateur – professional boundary. In a number of the subdomains detailed above (or will be in the final report), there have been shifts, tensions and changing relationships between professional and amateur producers of creative content. The extent to which this has allowed amateurs to professionalize their output, and possibly to begin to earn income from their creative activity as a result, has also been shown to potentially threaten the ability of existing professional outlets to continue to earn income from their activities. Two examples come from the music industry and stock photography industry.

MySpace has proven to be a boon for musicians in a variety of situations: bands interesting in expanding their fan base, bands wanting to get a start, musicians hoping to market their material by building a market outside the traditional distribution channels, and musicians wanting to communicate with their existing fans. This new channel for distribution of music came at a time when music production had been consolidating for decades, with production centralized into the hands of major labels and distribution done mainly by large chain music stores. These channels were built on economies of scale that was heavily biased in favour of the few acts that could sell large numbers of singles and albums. The long tail (Anderson 2006) of music, that which appealed to much smaller audiences, was largely frozen out in this model. Beyond the ability of club acts to break out into a larger market, such as the Britpop phenomenon of the early 1990s, non-mainstream music had difficulty accessing anything other than local markets. MySpace, however, eliminated most of the cost associated with accessing a distribution channel. By posting a profile and a batch of audio files, a band could provide potential fans with a way to hear and sample their music. This disintermediation of the music distribution process means that those bands in the long tail, those which are unlikely to ever fill Wembley Stadium, could nevertheless start to reach growing audiences and as a result, sell more tickets and CDs.

Photographers have been sharing millions of photographs online, increasingly distributed under Creative Commons licenses that allow for sharing, re-mixing and re-use for non-commercial purposes. Before the availability of services such as Flickr and Fotolog, however, very little high-quality photography was available to the SME or individual who wanted a photograph as an illustration. Much of the activity in this area was then centred at stock photography companies, that would sell photographs for re-use. With the advent of Creative Commons sharable photographs and microstock websites, however, there was suddenly a huge supply of photographs available to anyone with an Internet connection. This sudden increase in supply without a comparable increase in commercial demand led huge price cuts at Getty and Corbis, the world's largest stock photography companies. A new creative opportunity, however, now exists for photographers throughout Europe and elsewhere in the world: marketing their photographs through microstock agencies.

Both these examples demonstrate the blurring boundary between amateur and professional artists. There are signs that increasing numbers of domains have seen ICTs enabling growing numbers of participants who are engaged in what Stebbins (1992) calls *serious leisure*. In this notion, participants in a domain who are deeply engaged in an set of activities, belong to a unique ethos and social world, and have a social identity connected to the activities beyond that associated with a casual amateur may be engaged in serious leisure. ICTs such as MySpace and Flickr are enabling more people to transition from pure amateur to hobbyist/volunteer roles marked by these serious leisure characteristics, and a small number to further transition to more professional roles in a subdomain. While this is somewhat different than the sorts of rationalization discussed in professional or managerial organizations, it is nevertheless still a form of rationalization in the sense that it promotes professionalism, and a bias towards effectiveness if not efficiency per se.

4.2 Networking

When considering the extent to which the creative domain is already networked, the answer is highly variable. In this section, we will discuss the extent to which those subdomains that are increasingly networked (music, photography, writing and information sharing, video) are seeing major changes in the organizational structures supporting the subdomain. *Examples for final report: YouTube, Blogging.*

For at least some portions of this domain, we will argue that a critical mass of online connectivity has already been reached. This domain is quite interesting, however, because even though it is involved with creating outputs, in terms of technology itself it is largely a consumer of off-the-shelf applications bent towards particular creative uses. We will argue that relatively little software or network infrastructure has been built specifically to support this domain, but that there are numerous examples of existing software and network infrastructure being tweaked, re-purposed, and enrolled into new uses. This re-purposing, of course, is itself a form of creativity.

4.3 Empowerment and participation

Recent developments of Web 2.0 applications on the Internet have greatly enhanced the ability of citizens of Europe and elsewhere to participation in the creation of content and ideas for public consumption and discussion. This has been somewhat of a surprise, particularly in light of some arguments in the late 1990s that came out of the digital divide debate. In short, it was suggested that even if countries were able to lessen the digital divide in terms of access to technology, there would still be a strong divide between those who had the skills and resources needed to create content and those who remained passive consumers. Barriers to creating content were relatively high at the time: designing a web page required knowledge of HTML coding and access to hosting services, and bandwidth was relatively expensive so a popular site could quickly become unaffordable. Web 2.0 services, on the other hand, allow users to create blogs, photo sharing pages, music sites, and any number of other complex contributions to the Web with no knowledge of obscure technical codes. As a result, we have seen participation in the creation of content growing rapidly.

[Data will be used to illustrate]

4.4 Social capital

The issue of social capital is clearly demonstrated in this domain, although many participants would likely find the notion that expressing creativity is necessarily increasing their social capital. This is due in part to the fact that most personal payoffs from the expression of creativity are indirect. Unlike domains where high social capital can be translated into making money or finding treatments for disease, having a popular blog that is written for free and given away for free has less concrete rewards.

The ties that predominate in this domain are likely those representing bridging capital, building weak ties of similar but distant people. A shared interest in a band, an author, or a style of photography are not the strong ties that create bonds that can be relied upon in different settings, but ICTs do allow people with these shared interests to connect in ways that would not have been possible otherwise.

In the final report, we will discuss how this bridging capital due in part to the availability of ICTs has led to more social cohesion among people with shared creative interests.

4.5 Information and lifelong learning

Learning in the creativity domain is largely informal, and the result of either self-teaching or peer-to-peer support. This theme of informality is also one of the elements of this domain that make it particularly potentially valuable for engagement of adults in lifelong learning. Within the creativity domain, as we have seen above, the sharp divisions between amateurs and professionals are blurring, which in turn allows for serious amateurs with aspirations to be able to contribute to the growth in user-generated creative output.

In the final report, we will detail specific examples of how informal learning occurs in this domain, how peer-to-peer networking has allowing a flowering of creative opportunities, and how the recent success of widely popular interfaces such as YouTube and Flickr have supported the creative process and in turn have led to enhanced personal development.

4.6 Discussion of alternative scenarios: What would have happened in this domain without the introduction of ICTs?

In some ways, as mentioned above, this domain has been more resistant to ICTs that others, so scenarios in which ICTs did not develop are reasonably easy to imagine. In this section of the final report, we will focus on two main areas. First, for those subdomains which have become heavily engaged with ICTs, would there have been much less public engagement with the subdomain overall without the ICTs? Secondly, for those subdomains which have largely not engaged with ICTs, what are the common features that have contributed to this lack of engagement, and what will be the consequences (positive or negative) if the subdomain continues to stay unengaged? Are there costs for disengagement? Are there sound reasons for avoiding entanglement with ICTs?

5 Policy implications

Outline note: In the final report, this relatively brief section will focus on current trends and discuss short, medium and long-term impacts and policy implications. Among the major conclusions, we expect to focus on the high likelihood that the act of producing creative content will continue to get easier, lowering the technical barriers to creating output. While it would be an overstatement to argue that this alone would likely lead to a flowering of creativity across Europe and the rest of the world, it is reasonable to expect to see additional novel applications and infrastructures spring up to support new kinds of creativity online and offline but enabled by ICTs. The production of creative content will never become a focus of the majority of population, but increasing numbers of young people will grow up thinking that generating creative content is a normal activity, that then contributes to their being a more well-rounded citizen who is also more likely to engage in the consumption of cultural and artistic opportunities throughout their lives, even if they no longer engage in creating these sorts of outputs themselves.

6 Literature

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[H] Social Impacts of ICT: Comparison between Europe and other parts of the world

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Table of contents:

1 Introduction

The objective of the "horizontal domain report" is to compare developments concerning social impacts of ICT between Europe and selected other parts of the world. By the very nature of the enterprise, our analysis needs to be selective, i.e. we will **not** attempt a comprehensive overview of social uses of ICT, and their effects on the people concerned, across all types of countries and regions in the world. Instead, the domain report will highlight selected examples from countries which in some respect differ strongly from the EU mainstream, but from developments in which important insights can be gathered in relation to ICTs' potential social impact and the policy implications which these may have. The special emphasis will be on developments in two specific areas, firstly **high-speed broadband access to the Internet** (e.g. via "fibre to the curb") and secondly applications of the **mobile Internet**.

The following countries have been selected as the main focus of our analysis: the **United States**, **Japan**, **South Korea**, **Australia** and **Canada**.

This will allow us to cover experience with mobile applications and high-speed broadband in Asia, as both South Korea and Japan are very advanced in terms of take-up of both.

The Domain Report of the horizontal domain will build on the findings from the vertical domain research, and complement the analysis by looking in exploring to what extent the situation in Europe differs from international developments. In order to do so, statistics will be used highlighting the relative position of the EU Member States in relation to non-European countries.

The main differences between these countries in terms of overall economic development stage, ICT uptake and policy approaches towards the role of ICTs in society can, based on van Dijk (2006) and Venturelli (1998; 2002), be described as follows:

- The **USA** is an example of a "**liberal market model**" with state intervention limited to legal and market regulation for guaranteeing contractual and property rights in the market place. The development of the information society is largely left to the dynamics of the free market, with competitive forces expected to lead to the most efficient and user friendly ICT infrastructure and applications.
- Van Dijk (2006) considers **Canada** to be much more geared towards a "**public interest model**" which aims to balance the interests of citizens/consumers with those of private industry. Market imperfections are being corrected by use of pro-active regulation, e.g. consumer protection policy and universal service obligations. To a lesser extent, the same appears to apply to **Australia**. Both countries show a similarity to the information society policy models prevalent in Europe (Venturelli 2002).
- In **South-East and East Asia**, the role of the state in information society development is significantly stronger than in Europe and North America. This applies to **South Korea**, where large-scale public investments in ICT guided by a comprehensive development strategy based on the establishment of the information society and a strong focus on spending on education have lead to impressive performance with respect to information society indicators (Castells, 1998). As van Dijk (2006: 251) observes, in South-East Asian countries (including South-Korea) ICT are mainly being seen as agents of economic development, whereas applications for strengthening civil society are all but absent. Individuals' information and communication freedoms are often curtailed.
- **Japan** shares some of the cultural traditions with its South-East Asian neighbours, but has developed earlier economically and also has a more firmly established

democratic system. The development of the Information society in Japan was also dominated by economic priorities, manifested by the strong role of the Ministry of International Trade and Industry (MITI) and its successor, the Ministry of Economy, Trade, and Industry (METI). However, users have to a stronger extent than elsewhere in Asia been involved in processes of the 'social construction' of ICT applications in Japan, especially in their role as consumers.

The Domain Report will mainly (although not exclusively) refer to these countries in the presentation of evidence on social impacts of ICTs.

The rest of this outline report will be structured as follows: In chapter 0, some of the key international developments of interest will be highlighted. For this purpose the section presents some statistics which show how European countries compare against non-European countries with respect to key information society indicators. Chapter 5 is structured according to the seven domains used by the study for analysing social impacts of ICT. For each of these domains, we briefly discuss the main social uses of ICTs and the direct social impact categories in non-European countries, with a focus on differences between the groups of countries mentioned above and the EU mainstream. Chapter **Fehler! Verweisquelle konnte nicht gefunden werden.** contains the bibliographical references.

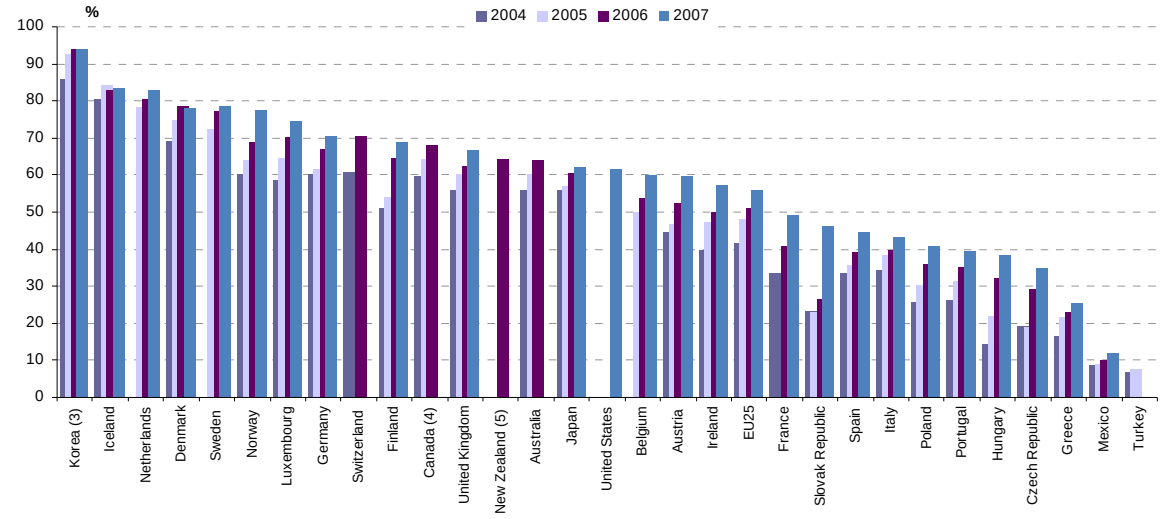
2 Uptake of ICTs: An International Comparison

Researchers of the social impacts of ICTs need to stay alert of the big variety in the way these technologies are being taken up and integrated in everyday life across the globe. As has been argued powerfully by many scholars, "there is no one model of information society, ultimately represented by the United States and California, that serves as the standard of modernity for the rest of the world. The significance of the Information Age is, precisely, that it is a global, diverse, multicultural reality" (Castells & Himanen, 2002, p. 3). Of course, there are types of national social contexts which show a big similarity (in Europe, a good example is the Nordic countries) and as such allow for a certain degree of generalisation.

This chapter of the Domain Report will discuss some of the big trends in information society development around the world, thereby emphasizing the most important differences between Europe and other countries of the world.

Readers should note that indirect (second order) impacts of ICTs will not be discussed explicitly in the Domain Report. One needs to remember, however, that indirect effects may indeed be the more fundamental ones. ICTs can play an essential role in altering the given social setup of a place, region or countries, for example with regard to parent-children relationships. It is, indeed, "essential to understand and exploit possible catalytic 'effects' of ICT. Many important changes in social relations may come from the human interaction that surrounds the technological process rather than from the operation of computers or use of the Internet" (Warschauer, 2003, p. 212) or, for that matter, the application of mobile phones.

Figure 1: Households with access to the Internet[1,2] 2004-07 in OECD countries (% of all households)



1. Generally, data from the EU Community Survey on household use of ICT, which covers EU countries plus Iceland, Norway and Turkey, relate to the first quarter of the reference year. For the Czech Republic, data relate to the fourth quarter of the reference year.

2. Internet access is via any device (desktop computer, portable computer, TV, mobile phone etc.).

3. For 2000 to 2003, data include Internet access only via computer. As of 2004, Internet access through mobile phone, TV and game consoles are also included.

4. Statistics for 2001 and every other year thereafter include the territories (Northwest Territories, Yukon Territory and Nunavut). For the even years, statistics include the ten provinces only.

5. The information is based on households in private occupied dwellings. Visitor-only dwellings, such as hotels, are excluded.

Source: OECD, 2009

Between 2004 and 2007, the percentage of households with access to the Internet has increased substantially across all OECD countries, as Figure 1 shows. By far the highest rate of uptake is found in **South Korea**, which is a spectacular achievement when considering the overall state of economic development of the country. Next up are the Nordic countries, the Netherlands and Luxembourg, all of which have reached 70% of penetration already a few years ago. **Canada**, for which 2007 data are missing in the chart, belongs to this group as well. On the other end of the ranking a number of South-European and East-European Member States with less than 40% of uptake can be found (Portugal, Hungary, the Czech Republic and Greece), together with Mexico and Turkey, two of the OECD countries with the lowest GDP per head. **Australia**, the **USA** and **Japan** have figures only slightly above the EU25 average.

The figure also shows that growth rates have been particularly high in some (but not all) of the countries with below-average rates of uptake, including the OECD member countries from East Europe.

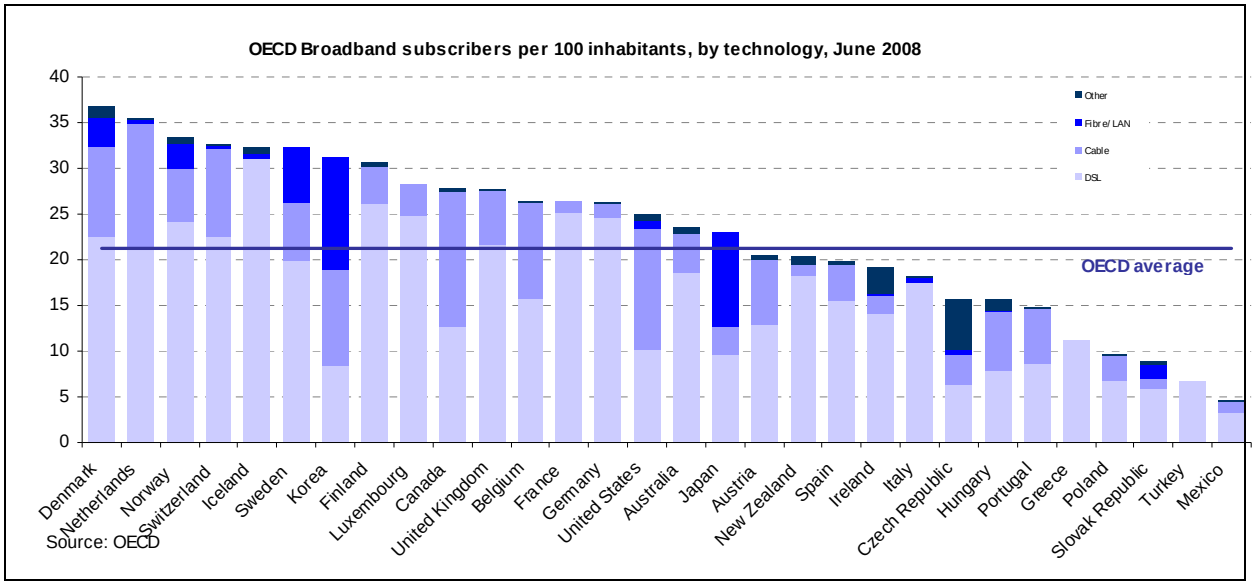
3

4 Annex: Additional Statistics

Table 1 and Table 2 in the annex present data for a larger number of countries, including many developing countries, and also containing figures on access to radio, television, terrestrial and mobile telephony, personal computers, and electricity. The data indicate that in most developing countries, penetration rates are considerably higher for mobile telephony than for Internet access.

With regard to broadband Internet, the latest data from the OECD (Figure 2, Figure 3) suggest that the forerunner countries within the EU (the Nordic Member States plus the Netherlands), also represent the leaders on the international rank tables, together with Norway, Switzerland, Iceland and South Korea. Both **Japan** and **South Korea** are special in so far as they have very high shares of broadband users who avail of high-speed connections, e.g. via "fibre to the curb" – in Japan, almost every second broadband Internet user has access to such a high-speed connection.

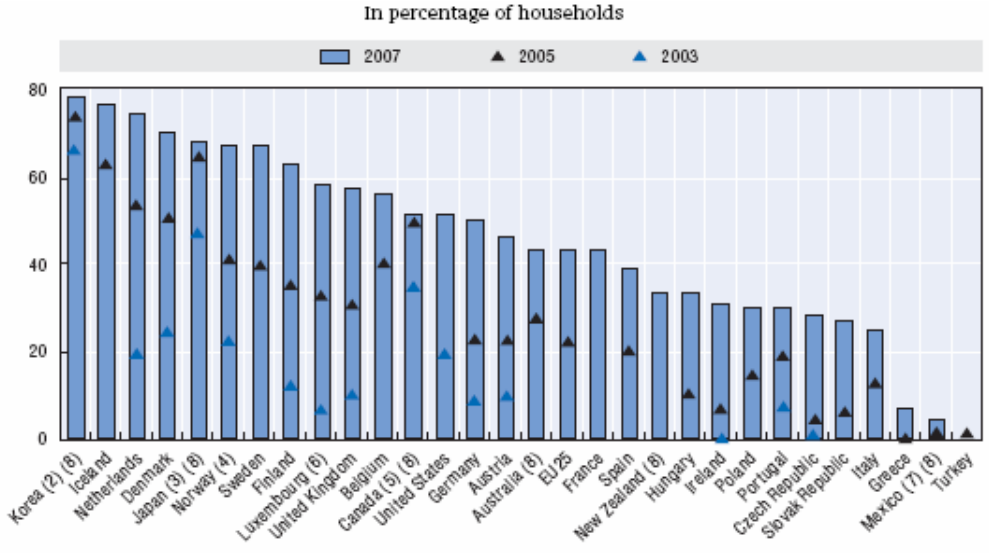
Figure 2: Broadband uptake in OECD countries, June 2008



Data source: OECD, 2009 (online database)

Non-European countries with rates of broadband uptake above the OECD average also include **Canada**, the **USA**, and **Australia**.

Figure 3: Households with broadband access in OECD countries, 2003-2007



StatLink http://dx.doi.org/10.1787/474870203772

1. Generally, data from the EU Community Survey on household use of ICT, which covers EU countries plus Iceland, Norway and Turkey, relate to the first quarter of the reference year. For the Czech Republic, data relate to the fourth quarter of the reference year.
2. For 2003, data included broadband access modes such as xDSL, cable and other fixed and wireless broadband via computers.
3. Only broadband access via a computer.
4. For 2003, data include LAN (wireless or cable).
5. Statistics for 2003 and every other year thereafter include the territories (Northwest Territories, Yukon Territory and Nunavut). For the even years, statistics include the 10 provinces only.
6. For 2004, data include wireless access.
7. Households with Internet access via cable, ADSL or fixed wireless.
8. No 2007 data available, 2006 data used instead, 2006-07 data for Australia.

Source: OECD ICT database; Eurostat Community Survey on ICT usage in households and by individuals; Australian Bureau of Statistics; Japan MIC, Communications Usage Trend Survey; Korean National Information Society Agency.

Source: OECD, 2008: 197

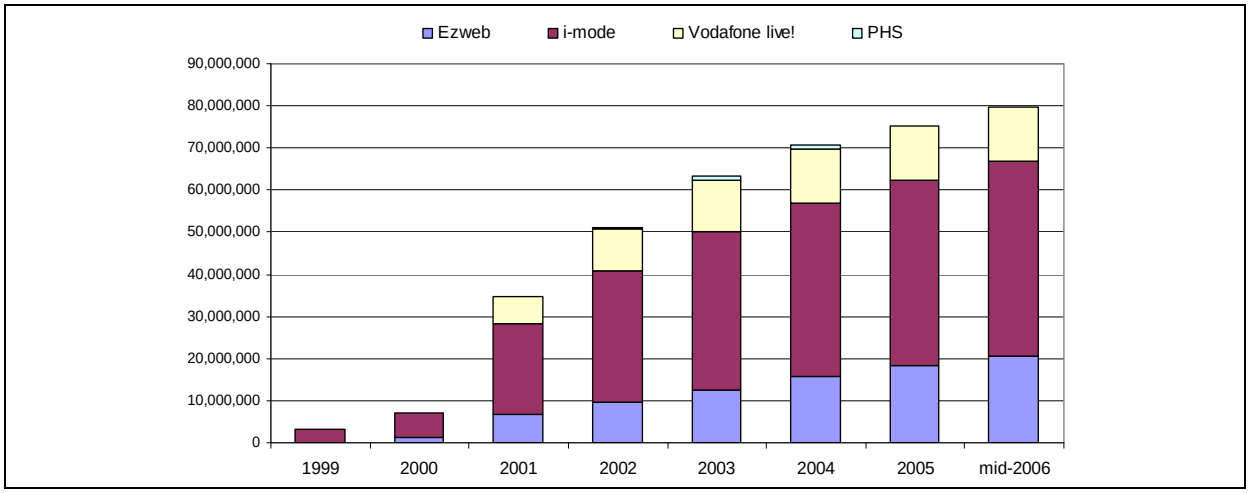
Plenty of evidence suggests that the switch from narrowband to broadband use is associated with an expanding range of acitivities carried out online and with more time spent online. The OECD (2008: 205) summarises findings of their own cross-country analysis as follows: " Broadband increases the frequency of Internet use as well as the share of the online population conducting various activities. Daily access increased more via broadband than via narrowband in all 21 European countries surveyed in 2006 and again 2007. Having broadband clearly increases the frequency of Internet use, and there are shifts to higher use among users who previously accessed the Internet less frequently (at least once a week, but not every day, or at least once a month but not every week).

With regard to mobile ICTs, there can be little doubt that "Asia's position as the epicenter of mobile communication is undeniable" (Srivastava, 2008, p. 19). For this reason, "much can be learned from tech-savvy economies such as **Japan** and **South Korea** that are at the cutting edge of new services and applications, having turned a once simple device into a universal and multipurpose portal" (ibid., p. 27). The significance of the situation in countries including Japan, South Korea and Singapore is that they have embraced mobile Internet access much earlier and much more full-heartedly compared to most of the rest of the world. In 1999, mobile browsing services were introduced in Japan, and have developed rapidly since then (see Figure 4). In 2000, South Korea was the first country to in introduce a 3G mobile network. In both countries, mobile handsets today have roughly the same weight as PCs for providing Internet access. Typically, users access the Internet both via their mobile and at home via a PC – both have become fully integrated (Miyata et al., 2008).

An analysis of the social impacts of ICTs in the advanced capitalist and emerging economies of Asia can, therefore, be useful for pointing out how the upcoming full integration of mobile

telephony with Internet access, and the new applications which are being developed for exploiting this process of convergence (e.g. location-based data services), may impact on social structures and process in Europe in the years to come.

Figure 4: Mobile Internet services in Japan, number of subscribers, 1999-2006



Source: OECD. Compiled from company reports

There are, of course, considerable cultural differences between Asian and European countries. A number of theoretical approaches are available for making sense of these differences (e.g. Hofstede & Hofstede, 2005; Inglehardt & Welzel, 2005). Without the possibility to go into any detail, a major difference can be found in the position of the individual vis-à-vis the collective/group, e.g. family, community (Hofstede & Hofstede, 2005, pp. 73-114). Because of their more collectivist culture, Asian countries have had a lot of public debate about the effects of ICT use on social cohesion and sociability (Castells et al., 2007; Katz, 2006). Pessimistic accounts have zoomed in on the forces which allegedly drive apart families and undermine people's commitment to the groups they belong to. Optimistic accounts have focused on the potential capability of ICTs to foster social networks while allowing for more individual expression, thereby also increasing accountability. Both are topics which, albeit in a different social context, are much discussed in Europe as well.

We therefore assume that Europe can strongly benefit from the results of research undertaken in Asia, in spite of differences in national culture and in the market and regulatory environment.

5 Selected International Developments per Domain

Below we briefly outline some of the international developments which seem most relevant for the present study. The discussion here makes use of selected examples, whereas the Domain Report will contextualise these examples in an attempt to arrive at a number of generalisable statements about the key social impacts of ICTs in the groups of countries identified in section 0.

5.1 Participation in Policy-Making

Examples of what has been dubbed "**smart mobs**" (Rheingold, 2002), which here means the spontaneous mobilization of large groups of citizens who are enabled by ICTs to join together for political action, have tended to come from non-European countries which have political systems with a strong authoritarian tradition. The most widely quoted example is the "**People Power II**" movement in the Philippines. In 2001, a movement against President

Estrada was organized mainly through text messages that were circulated through a snowball system and through which thousands of people could be mobilised in very short time periods to come to the streets and protest against the government. The movement benefited from the fact that text messaging is extraordinary popular in the Philippines, with every adult citizen sending about 2000 such messages per year (Sinha, 2005, p. 12). This, combined with a weakened State and a high level of dissatisfaction in large parts of the society, lead to the success of the action. The impact of mobile data communication was to make possible a type of protest which would have been inconceivable without ICTs (Castells et al., 2004, pp. 179–206). The example demonstrates the relevance of instant, personalised communication enabled by mobile ICTs (see also Rheingold, 2008).

In spite of success stories such as this, which suggests that ICTs have a "revolutionary" impact on policy-making, the overall effect of the Internet, mobile telephony and other ICTs on political participation is likely to be more subtle. Two spheres need to be distinguished: The formal political process and grassroots movements, which can give rise to spontaneous collective action (Rheingold, 2008).

With regard to the formal political process, the biggest impact is likely to be on the transparency of decision-making structures and processes. ICTs make it easier to monitor the State's operations, to spread what has been observed and to discuss implications. The governments of authoritarian states such as China need to devote enormous resources to keep control of online political expressions which may be harmful to their ability to cling to power. Still, even they may be forced to gradually accept more freedom of expression in the online sphere.

The usefulness of ICTs for political mobilisation has also been exploited in more firmly established democracies such as the USA, where Barack Obama's campaign owned part of its success to the innovative use of ICTs, e.g. for collecting small-scale donations from supporters who would normally not contribute due to their low income (The Economist, 23 Oct, 2008).

An example of effective ICT use for political participation in developing countries is provided by an Indian women rights group which successfully used ICT for networking and raising support from all over the world in order to have their voice heard in a parliamentary decision making process (Kenny, 2006). India has also seen a number of successful **e-participation projects**. Through her studies in the Arab World, Wheeler (2006) has found evidence that the Internet opens up new possibilities for forming and expressing (political) opinions in cases where society tends to suppress or even prohibits individuals, especially the young and women, to have their voice heard in the public (ibid., pp. 12-15).

It is necessary, however, to realise that application of ICTs will not automatically lead to improved participation neither in the formal political process: "If the poor institutions associated with poverty are determinative, than even buying the best ICT technology off the shelf and shipping it to Accra or Dacca is not going to produce sustainable institutional or structural reforms" (Wilson, 2004, pp. 396–397). Kenny (2006) stresses that ICT-driven attempts to improve political participation will only work if the political and social environment is supportive.

With regard to grassroots movements, applications of ICT can lead to changes in power structures to the benefit of citizens. Such an effect can be expected in cases where people traditionally suffer from exploitation made possible by **information asymmetries**. For example, labourers in Chinese factories found that mobile phone use contributed to their empowerment as it has become easier to obtain, via private social networks, information about job vacancies and wage levels: "Now, mobile phones have strengthened the bargaining power of migrant workers with their factory proprietors. […] Another factory proprietor, whose business is producing garments, told us that he was very afraid of the use of mobile phones among the workers in his factory. He said that, for instance, during lunch

break workers can use SMSs to share information about salaries, benefits, promotion opportunities, and working conditions of other factories. Once they discover that any of these conditions are better at another factory, they will quit their jobs immediately. They will introduce their relatives and fellow villagers to this factory as well. Usually, there will be a chain effect“ (Law & Peng, 2008, p. 59).

On the other hand, it should not be forgotten that ICTs can be powerful tools for monitoring citizens' conduct. **Surveillance** using ICTs is becoming widespread. Authoritarian states are already making extensive use of digital tools for improving their ability to identify political opponents and to suppress freedom of expression. This implies that increases in transparency affect both the political system and citizens. Especially in countries in which the state's activities for surveillance of citizens are not subject to democratic control, applications of ICT might do more harm than good with regard to levels of political participation.

5.2 Education and Lifelong Learning

Cultural differences between countries are often reflected in widely diverging attitudes to education and huge differences in the way education systems are designed and made to work. As a consequence, the social impacts of ICT in the education and lifelong learning domain differ strongly between Europe and many parts of the rest of the world.

In general, two separate trends need to be looked at. The first trend concerns the **academic world**, where there are improved possibilities for researchers from remote and poor countries to access academic research from scientific communities from all over the world, and also to have their voice heard beyond their immediate geographical horizon. ICTs have “one of the most profound effects [...] in the area of scholarship. [...] This exchange – which can take place via personal e-mail, specialized online scholarly forums, the online posting and archiving of works in progress and prepublication offprints, and electronic journals with much faster manuscript-to-published-document turn-arounds than paper journals – is speeding up and democratizing the means of production of knowledge. A century ago, a scientific breakthrough might have gone relatively unnoticed for months or years. Today, the same discovery can be known all over the world in a short time, and other scientists can ground their own existing and future research in these new findings without having to wait for the study to be written up and published in a print journal” (Warschauer, 2003, p. 26). In order to benefit from international networking, however, researchers need to be able and willing to communicate in the language of international scientific discourse, i.e. in English – which brings with it issues of (loss of) cultural identity.

The second trend belongs to **basic (primary and secondary) education** where distance learning has exerted a great appeal considering the fact that many countries, especially in the developing world, suffer from a highly dispersed population and weak infrastructure. In this area, discussions about the potential of ICT revolve not so much about school education but rather about adult learners and **lifelong learning**. The UNESCO published numerous project references and success stories about computer television and radio assisted learning that were targeted on promoting literacy among adults. Distance learning, however, faces many challenges and has been shown to be successful only if supported by a “community of practice” which is almost always represented through a physically existent social network (Warschauer, 2003, pp. 120–122), which may account for the high rate of failure experienced in practice.

As far as **school education** in concerned, one of the most heavily discussed recent educational projects for the developing world is the so called “One Laptop per Child” (OLPC) or “$100 Laptop” project. The project aims to manufacture a low cost laptop specially designed for the needs of school children in developing countries. This means that the laptop should be durable, light-weight, with little energy requirements (and/or can be charged from alternative sources of energy), contain educational software and be easy to use. Furthermore

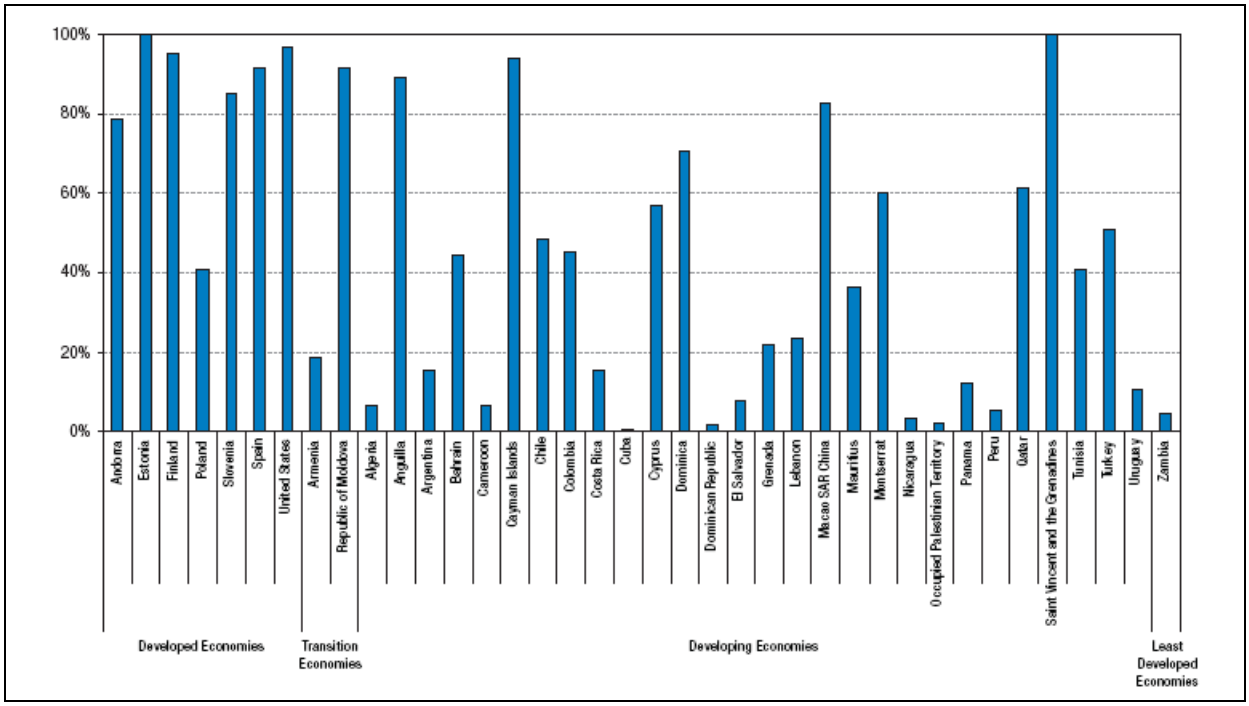
it is supposed enhance cooperative learning as the laptops automatically connect with each other through a "mesh network" and are Wifi-enabled. Some of the main criticisms made is, that the OLPC is technically not up to date and would mean giving away a, even if highly innovative, but still not competitive device to the third world. Furthermore it can be criticised that, for most developing countries even $100 Laptops would be too expensive to purchase in large quantities, so most countries/projects would have to rely on donors in order to participate in this program. But as there is yet no reported midterm experience with these laptops (first ones were handed out in December 2007) and we have to wait whether the advocates or the critics prove right.

Figure 5 below presents the latest available comparative data on the share of schools which are connected to the Internet in selected countries across the world, grouped by developmental stage.

The OECD has carried out research using the 2003 data from the PISA (Programme for International Student Assessment) survey. The main focus of the 2003 survey was on mathematics. The authors found that, "for all countries in the survey, the mathematics performance of students without access to computers at home was significantly below that of those with home access. Importantly, in 23 out of the 31 countries in the study, a performance advantage remained even after accounting for different socio-economic backgrounds of students" (United Nations, 2008, p. 93).

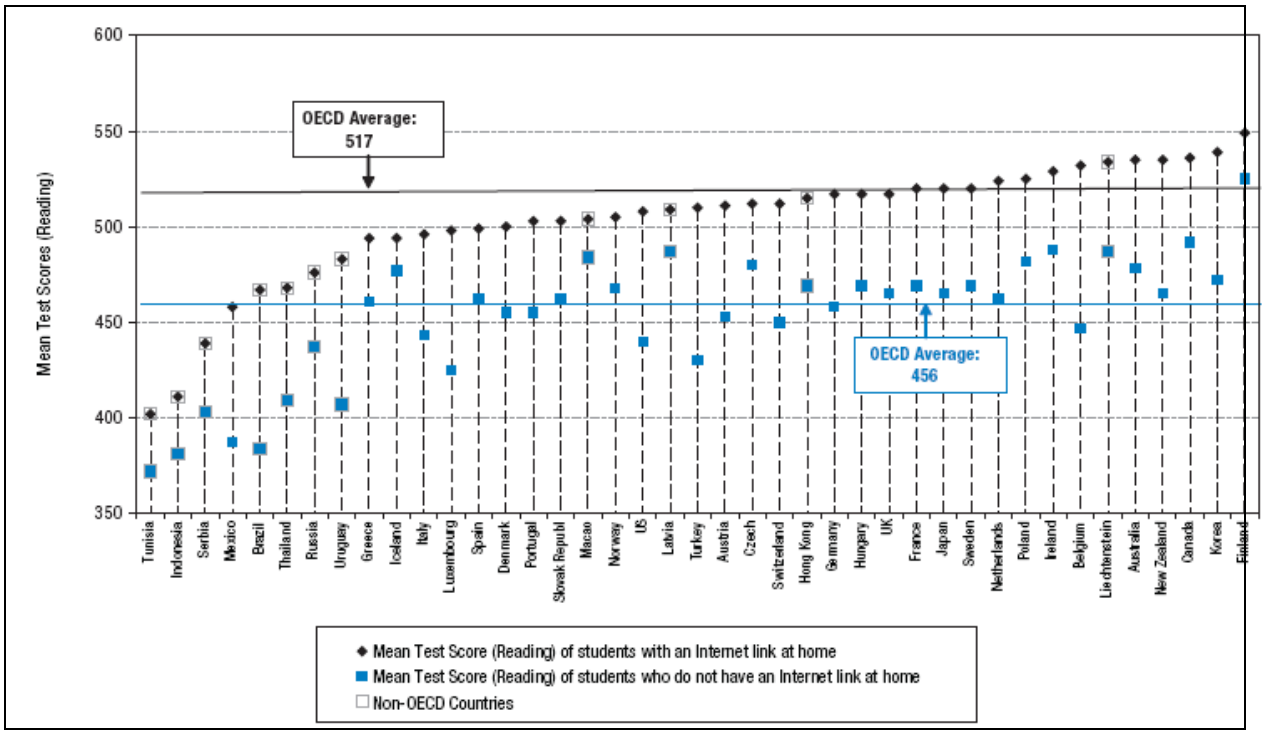
The study also established that the "highest performances in both mathematics and reading tended to be from students with a medium level of computer use, which suggests that excessive computer use could have a negative impact on school performance" (OECD, 2005). Figure 6 shows how reading proficiency differs between Internet and non-Internet users in the 2003 PISA dataset.

Figure 5: Percentage of schools with an Internet connection, latest year available



Date source: UNESCO Institute for Statistics (UIS). Source: United Nations, 2008, p. 86

Figure 6: Link between Internet access at home and student proficiency in reading



Date source: UNESCO Institute for Statistics (UIS). Source: United Nations, 2008, p. 94

5.3 Work

Telework and other forms of ICT-enabled flexible ways of working have exerted a strong fascination on policy-makers and the wider public in most parts of the world.

In Japan, **telework** has for many years been promoted in the context of efforts to decentralise both population and jobs, which tend to concentrate highly in big urban agglomerations, with important implications, for example, for the fragility of the nation state in the case of a major earthquake in the capital region. Telework is also seen as a way to better combine work obligations with family life, an area where – as most Japanese agree – the current situation is neither productive nor socially sustainable. Uptake of home-based telework, however, has been comparatively low (Spinks, 2005), for mainly two reasons: First, Japanese work culture strongly relies on face-to-face interaction. Workers who want to advance career-wise are well advised to stay in sight of their supervisor. Second, Japanese homes tend to be small and crowded due to the very high population density in the main agglomerations. This means that workers often lack the space at home for setting up a (tele-)workplace.

As a consequence, in Japan telework (excluding mobile types of ICT-based work) is usually practised by people who do not belong to the core workforce of companies, but by SOHO[1]-based self-employed workers and by part-time workers. In addition, large employers have started to experiment with telework centres, which are branch offices at locations in the

[1] SOHO = Small offices, home offices

vicinity of employees' homes. The actual social impacts of home-based telework in Japan are therefore strongly conditioned by unfavourable attitudes towards working at home, in spite of the fact that individual teleworkers may indeed benefit from much improved work/family balance and from increases in personal flexibility.

As in other developed economies, the form of telework which has spread fastest and furthest is **mobile telework** (Spinks, 2005). Surprisingly, very little evidence is available so far on the implications of mobile ICT-based work on workers and their social environment (Andriessen & Vartiainen, 2006).

In the discussion around work-related uses of ICT in poorer countries, applications which help small businesses and entrepreneurs have attracted particular interest. In a study on small and medium-sized enterprises (SMEs) in Botswana, Duncombe and Heeks (2001) found that the most important barriers for entrepreneurs are lack of qualified staff and lack of access to information. This "information needs" gap includes information about current market prices, suppliers and conditions for bank loans (see also Donner, 2008; Overå, 2008). Traders spend enormous amounts of time and money for travel to make orders, ask for credit, collect debts, inquire about whether goods are ready, etc. A number of studies have provided evidence that ICTs substantially lower the costs for obtaining such work-related information, by offering more effective communication channels, but also by enabling the codification of information which until has been provided exclusively through informal structures (e.g. public information systems). Taking into account that "social capital may be an even more important concept for developing countries than developed, as in many cases people in the former have less access to formalised structures of support such as the legal system or the financial system, and may rely on informal networks instead" (Godman, 2005, p. 54), ICTs could help traders escape from an overly cohesive community by reducing their need to rely exclusively on personal social capital.

Obviously, ICT has strong advantages in countries with an inefficient postal service, as it can cheapen and fasten communication of market participants and making the communication process (including inquiries to suppliers, sending orders or bills) more predictable and effective. ICT usage has been found to be especially beneficial for long distance communication, e.g. with non-local suppliers.

Insofar as ICTs are concerned, the PC and computer networks are of much less relevance for entrepreneurs than mobile phones, which have become part of the essential business infrastructure for SMEs in developing countries (Kundi & Shah, 2009, pp. 8–10; cf. Donner, 2008). While PCs and the Internet have a great *potential* for business development, actual diffusion is limited by the high costs (for set-up, maintenance and Internet access) and infrastructural difficulties. Mobile phones, meanwhile, have diffused widely and at enormous speed in most developing countries (Srivastva, 2008). Since many entrepreneurs in the developing world have never had a terrestrial telephone connection, mobile telephony for them provides access to personal telephony for the first time. We know from long-term studies on the economical impact of terrestrial telephony that being connected by phone is likely to substantially improve business performance (Katz, 2006, pp. 115-131). The additional features mobile phones offer (mobility, text message info services, telephone banking, possibly Internet and e-mail access) will increase their positive impact on small-scale businesses (The Economist, 6.9.2008).

Both telework in developed countries and the use of mobile telephony by small-scale businessmen in developing countries provide examples of direct social impacts of ICT applications in work settings. Arguably, the indirect social impacts (second-order effects) of applications of ICT as part of production systems are more profound than the direct effects discussed above. For example, changes in the international division of labour, in which ICT play a vital role, result in changes in the types of jobs available and in the working conditions for a large share of the global workforce. These indirect impacts will, however, not be discussed in the present study.

5.4 Consumption (incl. media and entertainment)

Providers of consumer goods and services have shown to be endlessly creative in tailoring their products to the needs and preferences of consumers, which of course differ markedly between national (and sometimes even local/regional) cultures and contexts. As a consequence, the shape and evolution of e-commerce is manifold and often specific to individual countries or groups of countries.

The Domain Report will look into applications of e-commerce, online media and ICT-based entertainment which have not (yet) been taken up by a significant number of users in Europe, but from which we may be able to gain insight into upcoming patterns of consumption and their social impacts on consumers.

5.5 Health

In the present study, the health domain does not look into all types of ICT applications within the health care system but focuses on patient-facing eHealth applications.

The main difference between developed and developing countries in terms of health care settings is “a focus on chronic diseases such as cancer and heart disease in developed countries and infectious diseases in developing countries” (Mechael, 2008, p. 92). Health care systems also differ, of course, in the quality of the infrastructure, with developing countries typically having only a fraction of the doctors, health staff, hospital beds, etc. per head that can be found developed countries.

In most of the poorer countries, patient-facing eHealth applications are not well documented, which may be explained by the general low development status of health and ICT infrastructures and by the absence of telecare/telehealth applications outside some heavily subsidized development projects (Smith et al., 2008, p. 2). Many of the existing eHealth applications are aiming at providing better health-related information to remote (typically rural) areas in an attempt to overcome the negative effects of low doctor per head ratios. In India, for example, Internet-connected village knowledge centres are used to deliver health-related information to rural areas. This information includes topics such as prenatal care, postnatal care, child immunization, tropical diseases, and local and regional health care resources (Warschauer, 2003, p. 85). Good experiences were also made with so-called ‘Telecenters’ in Jamaica, where visitors can obtain information on health issues including HIV/AIDS and discuss anonymously with experts located remotely (Bailey, 2009).

Another example on ICT usage in health is to collect, evaluate and digitally store local/ingenious knowledge about illnesses and traditional curing methods (e.g. locally grown medical herbs or medicine preparation) in order to spread personally sourced knowledge to a whole community.

As modern medicine recognizes the vital importance of trust in both medical personal and the treatment process as determinants of success, one has to ask the question about the cultural acceptance of telemedicine and eHealth applications. This is especially significant for more traditional societies which have a more holistic approach to questions of illness and health and where the direct interaction with the medical personal is an essential part of the healing process. Therefore every ICT application needs to be carefully designed with the respective social framework in mind.

Unfortunately, many of the more ambitious eHealth projects rely on development aid exclusively and, once the financial support is discontinued, grind to a halt (Kenny, 2006). Average costs for maintaining ICT systems are typically higher in the developing world than in developed countries, while health sector wages are as little as one tenth of Western figures (ibid., p. 88). This demonstrates the importance of identifying low-cost/high-impact applications of health-related ICTs for widespread deployment in developing countries.

5.6 Community and family

In developing countries, private use of ICTs is usually mainly for communication within wider family networks. Mobile telephony and text messaging are both very popular in close to all countries of the world.

ICT ownership has achieved symbolic significance as mobile phones have become a status symbol (Donner, 2008, p. 32; Katz, 2006, pp. 65-86). In medium income countries with a very traditional society and higher Internet penetration (e.g. large parts of the Arab world) usage of Instant Messaging services is particularly popular as the application allows a maximum of individual and anonymous usage.

The social impacts of ICTs on community life are subject of a heated discussion in many parts of the world, especially in those where cultural traditions and religion play a strong role in everyday life. Fears are being voiced that traditional family structures and ways of communication might fall apart (Castells et al., 2004; Ibahrine, 2008). Such concerns are not, however, genuine for Arab or Asian countries – same or similar phenomena can be observed in parts of Europe and the USA, for example.

Mobile telephony has been widely adopted in Arab countries, but particular features of cellular phones are being disapproved of, such as the in-built camera. Religious authorities have voiced there concern that human images, especially of women, might have a corrosive influence on people (Katz, 2006: pp. 15-37). Camera phones were banned by law until 2005 in Saudi Arabia, and their use is still considered improper. Demand for mobile phones is strong, which lead to the development of a 'fully Islamic mobile phone' (the Ilkone-Tel), which is being marketed since 2004 by a company based in the United Arab Emirates (ibid.).

Concerns about potential negative impacts of ICTs are widespread even among the younger, more technology-savvy generation. Indeed, a "2005 survey among one hundred undergraduate and graduate students from both the American University in Cairo and Cairo University [found] that 79 [...] believed that the mobile camera phone is a new medium that unravels their privacy. For them, the mobile phone can invade their privacy by other people's misuse as in the circulation of photos of people captured in embarrassing and inappropriate situations […] 96 percent believed that a new law is needed to regulate the mobile phone in public spaces" (Ibahrine, 2008, p. 262). This indicates a feeling of discomfort towards the mingling of public and private spaces enabled by ICTs, especially in cultures where private and public life are mostly separated.

Societies are in the process of establishing new codes of behaviour, regulating public usage of ICT according to general norms of behaviour, but also including the possibility of a slight shift in norms.

In general, the mobile telephony owns its success to it being a welcome device to find out about the safety and well being of relatives and friends, as researchers found in studies among the well-off as well as among poor individuals all over the world. "A mobile handset simultaneously signifies individuality and autonomy as well as family security and cohesiveness" (Donner et al., 2008, p. 334). While individuality and autonomy are topics which interest individual users (especially the younger generations), the usefulness of the mobile phone with regard to security-related aspects has contributed to it being accepted by large parts of the population even in traditionally minded societies and communities such as the Amish (Katz, 2006).

Mobile phones provide considerable added value for people who are constantly on the move, including refugees from war or from natural hazards, people without an own home, migrant workers and day labourers etc.: It offers them a 'fixed identity point' (Bhavnani et al., 2008, p. 19) with the help of which they are able to maintain existing networks of family and kinship in expanded socio-spatial contexts (cf. Law & Peng, 2008). In addition, access to work for many workers in poor countries depends on being reachable.

Several researchers (Ibahrine, 2008; Wheeler, 2006; Mesch & Talmud, 2008) have suggested that ICT can help overcome gender segregation in countries where cultural traditions and religion exert a strong influence on everyday life, which includes Japan and South Korea. Especially in countries where male and female worlds are often separated outside the family, men and women may gain the possibility to communicate via Internet without the fear of public sanctions (Ibahrine, 2008). Young people, in particular, use ICT (e.g. Instant Messaging and Internet forums) to escape control by their family and to discuss sensitive topics in anonymity. In many societies, access to radio/television as well as the terrestrial telephone is still mainly controlled by male family members. Personal communication technologies are therefore used by women to gain control over individual media usage.

This suggests that under certain conditions, applications of ICT can act as powerful tools for individualisation (Inglehart & Welzel, 2005). Of course, such trends are contested and will not be accepted by all parts of society.

Castells et al. (2004; 2007) summarise the main findings of their global study of the social impacts of mobile telephony as follows:

- **Autonomy and "mobile intimacy"**: This means the extension of personal links through a "technology closely associated with the body" (Sørensen 2006: 45) rather than with the physical location of the household or the workplace. Users of mobile telephony significantly enhance their autonomy – "vis-à-vis spatial location, time constraints, and to a large extent, social and cultural norms".
- **Networks of choice**: Shifts in the ways people organise their life through the mobile phone and also in the types of networks which are being created and maintained: "Mobile communication has greatly enhanced the chances, opportunities, and reach of interpersonal sociability and shared practice".
- **Instant communities of practice**: "The emergence of unplanned, largely spontaneous communities of practice in instant time, by transforming an initiative to do something together in a message that is responded from multiple sources by convergent wills to share the practice". This practice, dubbed "smart mobs" by Rheingold (2002), has been observed in a number of cases from all around the world in which – within a very short time – a critical mass of political protesters was called to action by means of text messaging (cp. Benkler 2006).
- **Blurring of established boundaries**: Mobile communication takes place in a spatial context and a new time which is chosen by the communicating subject (in interaction, of course, with the communication partner). Castells et al. interpret this as "an extraordinary strengthening of the culture of individualism (meaning, the primacy of individual projects and interests over the norms of society or reference groups) in material terms".
- **Users as producers of content and services**: The ready availability of camera-phones which allow users to take photos and record short videos, together with the ability to instantly share self-generated content with others over mobile networks, means that consumers are being empowered to become producers and distributors of content themselves. The possible social consequences of this are, however, far from uniquely beneficial, as Sørensen (2006: 45) points out when he warns that the general public may turn "into a mass of 'little sisters' reporting any activity deemed inappropriate".
- **Safety and surveillance**: As survey data have repeatedly shown (e.g. MobiLife 2006), the mobile phone makes people feel safer at the same time then it makes them enjoy greater autonomy. There are also threats, though: Because mobile networks register the geographical location of devices, this is a technology which

makes near-ubiquitous surveillance possible, as a number of scholars including Rheingold (2002) have powerfully argued.

- **Fashion, culture and language**: Mobile phones are powerful purveyors of meaning. They are being adopted as part of the process of individual expression, of "the construction of identity by appropriating a new technological environment and still feeling oneself". As such, the technology may also have transformed the use of language, for example in the form of texting-oriented vocabularies which are optimally tailored to the 160 character limit of SMS messages.

6 Literature

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7 Annex: Additional Statistics

Table 1: Household ICT access core indicators, proportion of households, latest year available

Level of development and region[10]	Economy[11]	HH1 (radio)	HH2 (TV)	HH3 (fixed phone)	HH4 (mobile phone)	HH5 (computer)	HH7 (Internet)	HR1 (electricity)
Developed economies								
Asia	Japan		99%	91%	90%	81%	61%	
Europe	Croatia	50%	94%	88%		28%		99%
Europe	Iceland		93%	94%	98%	89%	84%	
Europe	Monaco		96%	93%	81%	56%	32%	100%
Europe	Norway		95%	67%	95%	82%	78%	
Europe	San Marino					83%		
Europe	Switzerland					71%	77%	
Europe	EU25[7]		97%	82%	87%	66%	56%	
N. America	Bermuda	73%	96%	91%	74%	66%	57%	100%
N. America	Canada		99%	99%	64%	72%	64%	
N. America	United States	99%				62%	55%	100%
Oceania	Australia					73%	64%	
Oceania	New Zealand		98%	93%	86%	72%	65%	95%
Transition economies								
Asia	Armenia		93%	72%	5%	4%	2%	99%
Asia	Azerbaijan	99%	69%		26%	9%	0%	100%
Asia	Georgia	19%	89%	33%		2%		100%
Europe	Belarus		93%	81%		16%	9%	100%
Europe	Bulgaria		98%	73%	64%	23%	19%	
Europe	Rep. Moldova		82%	55%		2%		
Europe	Romania		97%	52%	58%	34%	22%	
Europe	Serbia					34%	26%	
Europe	TFYR Macedonia	39%	99%	84%	71%	25%	14%	
Developing economies								
Africa	Botswana	70%		22%		6%	1%	
Africa	Cameroon	63%	23%	2%	22%		1%	
Africa	Congo	57%	25%	1%				
Africa	Egypt	85%	93%	56%		14%		
Africa	Ghana	71%	26%	7%	5%			
Africa	Kenya	74%	19%	13%				
Africa	Mauritius		96%	77%	69%	24%	17%	99%
Africa	Morocco	79%	77%	18%	59%	13%	4%	
Africa	Nigeria	77%	25%	6%				
Africa	Réunion					55%	39%	
Africa	Saint Helena					25%		
Africa	Seychelles		92%			12%		
Africa	South Africa	81%	59%	55%	50%			80%
Africa	Tunisia			36%				
Africa	Zimbabwe					24%		
Asia	Cyprus[12]		100%	92%	91%	53%	39%	
Asia	Hong Kong SAR China					72%	67%	
Asia	India	33%	45%		1%	0%		
Asia	Indonesia	70%	65%	14%		3%		91%
Asia	Iran, Islamic Republic of					26%		
Asia	Israel		93%	87%	84%	59%	41%	
Asia	Lebanon		97%	37%	43%	24%		100%
Asia	Macao SAR China					56%	32%	100%
Asia	Malaysia					28%		
Asia	Mongolia	25%	86%	20%	28%	6%	9%	86%
Asia	Occ. Palestinian Terr.		93%	8%	30%	26%	9%	

Latest year available is generally 2005 or 2006. While data for 2007 are available for many EU countries, 2006 data have been used for EU25 because the 2006 aggregates include more EU countries than the 2007 aggregates. Data from 2002 or earlier have been excluded. See United Nations (2008).

Source:United Nations, 2008, p. 36

Table 2: Household ICT access core indicators, proportion of households, latest year available (ctd.)

Level of development and region[10]	Economy[11]	HH1 (radio)	HH2 (TV)	HH3 (fixed phone)	HH4 (mobile phone)	HH5 (computer)	HH7 (Internet)	HR1 (electricity)
Asia	Oman	69%	84%	44%	72%	24%	14%	98%
Asia	Philippines	71%	63%	12%	36%	7%		77%
Asia	Republic of Korea[13]					79%	94%	
Asia	Singapore		99%			78%	71%	
Asia	Sri Lanka					4%	1%	
Asia	Taiwan, China		100%	98%		65%	87%	
Asia	Thailand			27%		16%	6%	99%
Asia	Turkey		98%		73%	12%	9%	
Asia	Viet Nam			56%	87%			
LAC	Bolivia	67%	63%	19%	39%	12%	4%	67%
LAC	Brazil[14]	88%	91%	48%	59%	19%	14%	97%
LAC	Chile		27%	47%	84%	33%	19%	
LAC	Colombia	71%	85%	56%			8%	
LAC	Costa Rica	85%	91%	65%	50%	27%	10%	97%
LAC	Cuba	38%	88%	17%	1%	2%	0%	100%
LAC	Dominican Republic	62%	76%	26%	44%	9%	3%	95%
LAC	Ecuador	73%	87%	36%	64%	18%	3%	96%
LAC	El Salvador	58%	78%	41%	35%	7%	2%	
LAC	Falkland Islands					72%		
LAC	Honduras	65%	64%	30%	41%	8%	2%	70%
LAC	Martinique					50%	26%	
LAC	Mexico	88%	93%	49%	47%	21%	10%	
LAC	Panama	80%	83%	40%	64%	16%	8%	88%
LAC	Paraguay	80%	82%	17%	64%	6%	3%	97%
LAC	Peru	84%	69%	28%	28%	10%	5%	77%
LAC	Suriname			46%	23%			96%
LAC	Trinidad and Tobago				60%	31%	17%	
LAC	Uruguay	94%	91%	70%	49%	24%	14%	
LAC	Venezuela	83%	91%	34%	25%	10%	2%	99%
Oceania	French Polynesia					45%		
Oceania	New Caledonia			43%	44%			
Oceania	N. Mariana Islands	79%		71%		40%	31%	
Least developed economies								
Africa	Burkina Faso	63%	12%	4%		3%		
Africa	Chad	37%	3%	1%				
Africa	Eritrea					0%		
Africa	Ethiopia	34%	5%	4%			0%	
Africa	Guinea	64%	11%	6%				
Africa	Lesotho	54%	13%	18%				
Africa	Madagascar	59%	18%	5%		9%	1%	
Africa	Malawi	62%	5%	5%				
Africa	Mozambique	53%	9%	2%				
Africa	Rwanda	46%	2%	1%				
Africa	Senegal	87%	40%	16%				
Africa	Sudan	39%	16%			16%		
Africa	Uganda					6%		
Africa	U. Rep. of Tanzania	58%	6%	9%				11%
Asia	Bangladesh	30%	23%	5%				41%
Asia	Bhutan	77%	58%			5%	0%	
Asia	Lao People's Dem. Rep.					0%		
Asia	Maldives	72%	85%	67%	83%	28%	8%	
Asia	Nepal			6%				37%

Source:United Nations, 2008, p. 37

Table 3: Internet activities undertaken by individuals, proportion of Internet users, latest year available

Level of development and region[10]	Economy[11]	Age	Getting information				Commu-nication	Purchasing or ordering goods or services	Internet banking	Education or learning activities	Dealing with government	Leisure activities
			About goods and services	Related to health/ health services	From govern-ment	Other						
Developed economies												
Asia	Japan	6+	67%				69%	41%	10%	2%	5%	
Europe	Iceland	16-74	87%	49%	60%		92%	36%	80%			
Europe	Norway	16-74	89%	43%	65%		91%	56%	83%			
Europe	EU25[28]	16-74	82%	42%	48%		87%	41%	45%	16%	31%	
N. America	Bermuda	16-65	71%	56%		13%	92%		42%	24%	31%	
N. America	Canada	18+		35%		51%	56%		35%	26%		
N. America	United States	3+	69%	35%	30%		82%	45%	23%	25%		
Oceania	Australia	15+						61%		53%		
Oceania	New Zealand	15+	65%	28%	56%	84%	91%	41%	11%	54%	31%	
Transition economies												
Asia	Azerbaijan	15+	10%	8%	5%	78%	38%		1%	8%	2%	
Europe	Bulgaria	16-74	56%	16%	14%		90%	6%	5%			
Europe	Romania	16-74	51%	26%	16%		87%	6%	7%			
Europe	Serbia	16-74	65%	16%	12%		80%	4%	14%			
Europe	TFYR Macedonia	15-74	43%	12%	46%		83%	4%	1%	22%	19%	
Developing economies												
Africa	Morocco	12-65					7%				1%	5%
Africa	Mauritius[26]	12+					68%	3%		9%		27%
Asia	China	6+					56%	24%				
Asia	Hong Kong SAR China	10+	15%	14%	42%	84%	85%	30%		17%	11%	76%
Asia	Macao SAR China	3+					40%					
Asia	Occ. Palestinian Terr.	10+		1%		46%	9%	0%	1%	19%	0%	23%
Asia	Republic of Korea	6+					85%	50%		47%		86%
Asia	Singapore	15+					84%	27%	33%	30%	36%	56%
LAC	Brazil[29]	10+					69%	14%	19%	72%	27%	
LAC	Chile	5+					59%	6%	6%	12%	9%	53%
LAC	Costa Rica	5+					70%	8%	19%	59%		45%
LAC	Cuba	5-65		2%	16%	10%	10%			39%	3%	
LAC	Dominican Republic	12+	31%	21%			58%	8%	13%	70%	11%	
LAC	Honduras	15+					34%	2%				18%
LAC	Mexico	6+	8%	10%	6%	42%	49%	4%	2%	35%	5%	20%
LAC	Paraguay	10+					65%	1%		22%		21%
LAC	Uruguay	6+					80%	4%	4%		12%	42%

Source: ITU, UNECLAC, national statistical sources and Eurostat (30 November 2007).

Source:United Nations, 2008, p. 45