Are computers going to solve urban problems? On ICTs and social inclusion

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Abstract

Social exclusion of parts of the urban population has come to be seen as one of the key roots of this interrelated set of urban problems. Currently, a new optimism can be observed about the possibilities to relieve these problems, mainly based on the endless possibilities of information and communications technology (ICT). ICT is believed to contribute to economic, social and political dimensions of inclusion. Closer inspection leads to the conclusion that policymakers' expectations of ICT as solution for social exclusion need downsizing. However, a number of opportunities remain, particularly in the long run. ICT should be seen as a new instrument, alongside many others, to fight processes of exclusion. The degree to which the new opportunities of ICTs can be capitalised depends to a large extent on the capacity of urban management to influence the population's uptake and application of ICTs, and to supply useful electronic content.

1. Introduction

In the 1970s and 1980s, many cities in Europe experienced a severe crisis. They lost population and their economic base weakened. Families left the cores of larger cities for suburban dwellings or smaller communities. Increasing congestion and inner city deterioration made cities less an attractive place; The much better mobility of citizens –thanks to increased car ownership and improved public transport- allowed people to live further away from their work, in larger houses. The cores of many of Europe's cities became less and less attractive; the quality of housing deteriorated, and low-skilled immigrants moved in. Shopping functions suffered from the loss of purchasing power in the city, and faced heavy competition from new suburban shopping malls. For Western Europe, many observe a turning point in the downward spiral by the end of the 1980s (van den Berg, 1987; Cheshire and Hay, 1989). In some European cities, population losses came to an end; some cities were managing to transform their industrial base and developed new economic growth sectors; this trend was confirmed in the 1990s, when a number of European cities experienced a remarkable revival. In time, this "turning point" coincides with the start of a set of developments that is commonly described under the heading of "the information revolution". This container-term refers to economic, societal and institutional changes that are driven and/or strongly supported the revolutionary innovations in information and communication technologies (ICTs), and their widespread adoption by companies and citizens (Castells, 1996). Despite signs of recovery, most large European cities still have high levels of unemployment, crime, drug abuse, and physical degradation in certain urban quarters. In the last decade, social exclusion of parts of the urban population has come to be seen as one of the key roots of this interrelated set of urban problems. Currently, a new optimism can be observed about the possibilities to relieve these problems, mainly based on the endless possibilities of information technology. ICT is regarded as catalyst for new social cohesion, improved safety, higher labour market participation, improved political participation, and better urban governance.

In this paper, we will critically asses the contribution of ICT to social inclusion in urban regions, particularly in deprived neighbourhoods. We will describe and analyse what policymakers believe ICT can do in this respect and what policies they design to face the new challenges. The paper is based on an explorative international comparative analysis of the way European cities deploy ICTs (Van den Berg and Van Winden, 2000). It aims to contribute to the fundamental discussion on how the information revolution affects urban development and how policymakers can respond strategically. Although there is a large and rapidly extending literature on this general issue (Hall, 1998, Sassen, 1994; Graham and Marvin, 1996; Graham, 1998, 1999; Gibbs, 2001 and many more), to our knowledge there is no systematic analysis of the contribution of ICT to social inclusion in urban areas.

This paper is organised as follows. We will start in section 2 with a brief discussion about the issue of social exclusion in European cities. Then, in section 3, we asses how and to which extent policymakers and scientists believe that ICTs can contribute to social inclusion. We also present some anecdotal evidence from cities in the UK (Manchester) and the Netherlands (The Hague and Rotterdam). These countries were selected because, compared to other countries, they expect a lot from ICT as solution for a

number of exclusion-related problems, and invest heavily in it. In section 4 we turn to a policy challenge that many urban managers face: how to get all the citizens connected, in order to fully reap the benefits of ICTs. We critically assess a number of ICT adoption promotion policies in the UK and the Netherlands. Finally, in section 5, we draw some conclusions.

2. Social exclusion in European cities

There are many different definitions and approaches to social exclusion (see Mingione, 1996; Levitas, 1998; Byrne, 1999). In most accounts, social exclusion does not refer primarily to material deprivation, but rather to the degree of access and use of a wide range of services and participation in society (Bhalla and Lapeyre, 1997; Liebfried, 1993). Bhalla and Lapeyre (1997) distinguish between exclusion from social networks, from economic life, and from political life. Economic exclusion is associated with questions of employment, income and access to goods and services from which some people are excluded. Political exclusion is concerned with the denial of particular human and political rights to certain groups of the population and the lack of political participation of social groups. The social dimension is described as the access to social services and opportunities for social participation. In a later section, we will use the distinction between economic, social and political exclusion to discuss the contribution of new information and communication technologies are believed to relieve social exclusion.

Most approaches to social exclusion are process-oriented and place particular emphasis on the role of employment and the impact on this on incomes (economic exclusion) and social participation (exclusion from social networks). Lack of employment crucially involves loss of income and bargaining power in other situations, but also relates to exclusion from social and occupational milieus: many believe that there is a strong causal link between exclusion from work and exclusion from services, resources and social networks. Particularly long-term employment is believed to entail exclusion in other respects: it entails poorer social networks (Clasen, Gould and Vincent, 1997); it often leads to stigma and discouragement (Layard, Nickell and Jackman, 1994); there is a temptation to cope by resorting to drink, drugs or crime (Morris and Irwin, 1992; Clasen, Gould and Vincent, 1997). From this perspective, integration into paid work is considered the key to social inclusion policies. Levitas (1998) stresses that approaches which refer solely to the integration of people through the labour market fail to recognise the value of unpaid work, or the exclusion which stems from low-paid employment.

Evidently, social exclusion in not exclusively an urban phenomenon. However, in the EU and the US, the related problems manifest themselves relatively strongly in the larger cities, particularly in some neighbourhoods. Several analyses suggest that problems of social exclusion tend be spatially concentrated in certain areas (Madanipour, 1998, Byrne, 1999). Hall(1999) points at the vicious circle of low education levels, unemployment and crime in many deprived areas of Europe's cities. Power (1997) observes a concentration of poor and unemployed in large public housing estates. Wacquant (1993) and Zuckin (1998) mention the concentration of problems in neighbourhoods with large migrant/ethnic populations. A widely held view is that a concentration of low income or unemployed people leads to a further spiral of decline, reinforcing the disadvantage faced by households in deprived estates or areas (Tailor, 1995).

Households with choice will choose to live elsewhere, and the new residents are those without choice. Concentrations of deprivation are seen as weakening networks. This is detrimental, as networks are crucial in providing information about jobs (Scottish Council Foundation, 1998 p 14), but also in providing care and support in a variety of other contexts (Young and Lemos, 1997). In this context, it is argued that strong internal networks are less effective in combating social exclusion than networks which are more widely connected externally. At the same time, it is recognised that neighbourhoods with severe problems of unemployment and low income are less likely to have strong external networks (Perri, 1997).

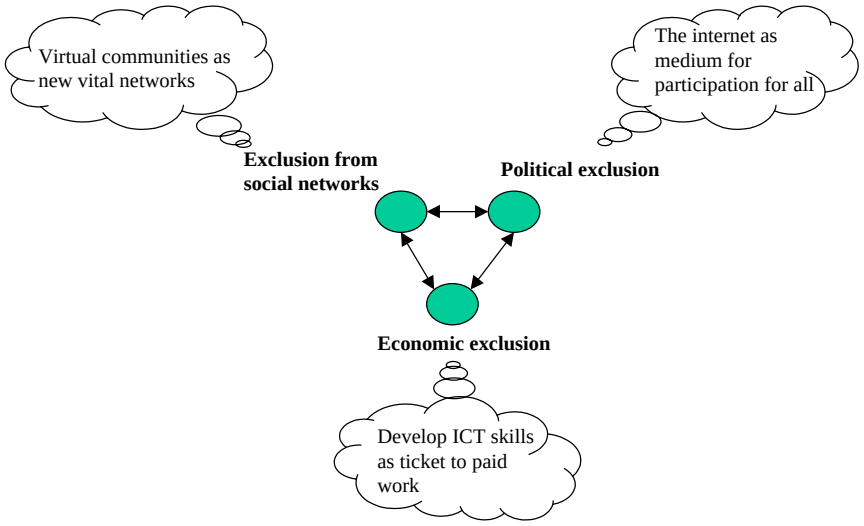
In the last decades, social exclusion in urban areas has been persistent. Some believe that the problem will worsen in the years to come, due to globalisation ad technological change. Graham and Marvin (1996) argue that the information revolution will entail an increased power of elites, widening gaps between rich and poor, and an increased social and spatial polarization and fragmentation of cities. Castells (1999), Hall (1998) and Handy (1994) believe that rapid technological change may lead to increased exclusion of weaker social groups, because they lack qualifications to keep up with the changes. These groups will remain unemployed, or will be reduced to a flexible manual workforce ("working poor") to serve the needs of the urban rich. Castells (1997) predicts further social exclusion and fragmentation tendencies as a result of the weakening of traditional family ties and the crisis of the welfare state. Others have a more optimistic view. In the next section, we will discuss a new optimism that can be observed in policy circles regarding the possibilities to fight processes of social exclusion. These expectations are predominantly based on the potential of new information and communication technologies. They are related to the economic, social and political dimensions of exclusion.

3. ICT as magic box?

European cities have a very long tradition in fighting social exclusion. For decades already, urban governments throughout Europe have developed strategies and policies to fight poverty and social exclusion, ranging from economic development policies, education policies, improvement of housing conditions, subsidised labour projects, etc. There is considerable variation as to the way problems are tackled; every country has its own tradition in fighting poverty and exclusion. In the 1990s, there seems to be a little bit of convergence in the approach: policy integration and local partnership are the key concepts (Geddes, 2000).

In recent years, a new "techno-optimism" can be observed, related to the new possibilities of ICTs to fight social exclusion. In the scientific literature and policy documents, we found the opinion that ICT can contribute to the three dimensions of social inclusion. Regarding the social dimension, ICT is depicted as catalyst for social cohesion: it enables people to engage in social networks in new ways. Concerning the political dimension of exclusion, ICT is seen as instrument to enhance or renew civil participation in local decision and policy making. Concerning the economic dimension, ICT is regarded as a means to get unemployed people back into the labour market. Figure 1 is a graphical representation of the dimensions of exclusion and the contribution that ICT is believed to make. In this section, we elaborate on present policymakers' and (scientific) analyst views on these issues; Also, we present anecdotal evidence from the case studies on ICTs contribution to the above mentioned aspects.

Figure 1. Dimensions of social exclusion and the potential contribution of ICT



ICT as catalyst for social networks

Many believe that ICT can be a catalyst for improved social relations of excluded people or in deprived neighbourhoods, because email and internet enable easy social interaction among people. We interviewed a rather idealistic minister in the deprived neighbourhood of East Manchester who runs an ICT project. In his vision of the "wired future" of this deprived area, the people in the neighbourhood will use email and internet to chat with each other; Handicapped or elderly people will ask children to go shopping, and provide a list of items on line; the elderly will help children with their homework. A Dutch State Commission on ICT and the City is more moderate but still optimistic: "On the one hand, existing social relationships will be expressed in digital form; But, also new virtual communities come into being, without "real-world" predecessors. These virtual communities may contribute to the social integration in cities, as counter force against the negative effects of individualisation. Virtual communities enable a more diverse contact between people" (commission report, p 20). This commission also believes that ICT can stimulate the integration of ethnic minorities. "The integration and participation of ethnic minorities can be enhanced by offering educational software with video animations, or audio visual programs, through a broadband network". The president of the commission, in an interview, regards large investments in ICT as solution for many big city problems: "the computer can become social magic oil in deprived neighbourhoods: getting people online enables citizens to go shopping, find peers with similar problems, make connections, and link up with neighbours with similar interests; community-feeling, social cohesion and commitment will be strengthened" (De Volkskrant, 12-12-2000). In the UK, a national commission on social exclusion believes that access to ICTs can make a substantial difference and contribute to neighbourhood renewal; it helps people to develop self confidence and self-esteem, and enables citizens to publish and broadcast their opinions and ideas (DTI 2000). Some believe that ICT can reduce loneliness and social isolation. "With a webcam, elderly can better survive in the current society. They can communicate more easily with other people, which reduces their sense of loneliness. At the

same time, it enables them to be monitored by care-providers, improving their sense of security" (Commision ICT and the City, 2000). Likewise, internet could reduce the isolation less mobile groups, for instance some Muslim immigrant females or single mothers. With email they can communicate with the rest of the world (EVH, 1999).

Others have a sceptic view on the role of ICT regarding social inclusion, and believe that virtual reality will contribute to further social fragmentation. Sunstein (2001), for instance, argues that increasingly, people will use the net to filter out the wealth of human diversity and isolate themselves. The internet might drive the individual back into his cave, where he can bar entrance to all but the most ideologically congenial visitors.

Is there any evidence that ICT leads to improved social cohesion and new types of social networks? In The Hague, local government actively promotes the formation of digital "streets", "neighbourhoods", or "squares". These can be virtual communities of real streets and neighbourhoods, but also internet-only communities. The City of The Hague's virtual portal –digitalehofstad.nl- enables citizens to discuss with each other in forums, and makes it very easy to create new ones. Many local-interest forums have been created, some about developments in specific neighbourhoods, but not specifically in problem neighbourhoods. In Rotterdam, a "bricks and mortar" street has been given a virtual pendant by an enthusiastic inhabitant. Interestingly, the formation of the digital street has contributed to social cohesion in the street. People know each other better, and use the website to communicate about all kind of neighbourhood issues. It has even led to the institution of a monthly "street drink" in the pub around the corner (www.graaffloristraat.nl). Although the street is situated in a problem area, its inhabitants are well-to-do and far from "excluded".

We encountererd several more websites that aim to create "virtual neighborhoods" on the internet. One of the most ambitious is Buurtonline.nl, a government sponsored site that claims to cover the entire country. Visitors can type in a postal code to get messages and postings from people that live nearby, about supply and demand of 2nd hand products, personal services, requests for contact, etc. The number of postings, however, is very limited. Especially the response from poor neighbourhoods in Rotterdam and The Hague is very low.

One of the predictions of ICT prophets is that ICT will lead to more contacts between immigrants and autochthonous population groups and thus contributes to integration. We found little support for this thesis in the Netherlands. Rather, an increasing popularity of ethnic virtual communities can be observed. Young Marrocans –the children and grandchildren of 1st generation immigrants- meet virtually at Maghreb.nl, and other immigrants have their own forums. This would support Sunstein's conclusion that internet does not promote the formation of more diverse social networks, but rather leads to specialised networks of peers.

ICT as catalyst for civil and political participation

One of the dimensions of social exclusion is a low level of civil and political participation. Socially excluded groups generally have little influence in local decision making processes; low voting turnouts, and low levels of participation in the civil society. Many politicians and policy makers now believe that ICT can be a catalyst to improve this situation. To cite the Dutch State Commission on ICT and the City (2000), "Virtual communities can be a source of opinion building and discussion, articulate the interests and policy preferences of groups of citizens; as such, ICT can build new bridges between citizens and urban management". The UK Policy Action Team on social inclusion and ICT holds a similar view: "people using ICT will be empowered to campaign and participate in the democratic process; they will influence the decision making processes which affect them" (DTI, 2000) Others are more sceptical about the participation-stimulating role of ICT; Sorkin(1992) believes that ICTs distance-shrinking capacity will erode the role of traditional territory-bound political processes.

The case cities in our study seek to stimulate citizen participation through the Internet; In the Hague and Rotterdam, local political parties have a website with discussion forums; Eldermen have opened their own websites. The digital street in Rotterdam shows that a virtual street can help to articulate the very specific demands and wishes of the inhabitants; the website clearly serves as discussion platform, and very probably influences municipal decision making. The City of The Hague, on its city portal, operates a web-forum on political and urban management matters where everyone can comment on political issues. We counted some 50 postings per month, but a substantial number of them are aggressive and/or racist. The Hague also experiments with citizen participation in a large redevelopment project; citizens can bring in their ideas in the planning process of the project, and citizens wishes are to be incorporated in the final design where possible. The city has set up an "observatory" with Leiden University to monitor the participation process and learn for the future.

Although all these initiatives in our case cities may help to promote civil participation in decision processes *in general*, we found no evidence that socially excluded groups also make use of these facilities. Rather, the expectation is justified that these people fail to grasp the new possibilities, for often, they have no access to the internet. If this is true, it can be argued that new ICT-powered participation will decrease the *relative* levels of participation of socially excluded groups. We will turn to the issue of access in a later section.

ICT and economic inclusion: computer skills as ticket to the labour market

Thirdly, ICT is believed to contribute to the economic dimension of inclusion. Social exclusion is related to structural unemployment (see section 2). It is now widely believed that teaching excluded people ICT skills can strongly improve their chances of re-integration into the labour market, given the shortages of ICT-killed staff in many cities (Hall, 1998) in the information industry. If people can be learnt even basic ICT skills –word processing, spreadsheets- their chances on the labour market would be considerably improved. Others argue that learning ICT skills is not enough. In a recent study, the SCP(2000) shows the overwhelming importance of cognitive and social capabilities to successfully re-enter the labour market.

Thus, labour market policies should address the lack of these capabilities as well. ICT could also provide paid work for less mobile groups (physically handicapped people, single mothers, some categories of immigrant women), through teleworking. This would have a positive impact on these people's income, self esteem, and may ultimately reduce their immobility and increase their social networks.

In The Netherlands and the UK, we found a lot of optimism on the new opportunities and substantial efforts to improve the e-literacy in deprived neighbourhoods. The UKs "IT for all" initiative provides for 3,000 centres throughout the country where people can try out computers; The ICT learning centre project aims to open 700 ICT learning centres in disadvantaged communities by 2002. The Brittish government has committed £ 252 million to create this network (Silcock, 2001). The Dutch minister for Big Cities launched a similar project in 2000, baptised "Digital Playgrounds", ICT learning centres in deprived neighbourhoods. Given the recent date of these initiatives, it is difficult to show results. The city of Manchester, that started 10 years ago with ICT learning centres, already boasts some success. We interviewed several people that had found their way back to the labour market, thanks to the new skills they developed.

4. Obstacle number one: the digital divide

In the last section, we have listed a number of potential "goods" that ICTs can do for deprived neighbourhoods and socially excluded people. However, the benefits of the new ICTs bring can only be reaped if the excluded population has access to ICT and the internet. And this is a key problem: Many of them have no access to a computer, or lack the skills to use it. Table 1 shows the overall levels of ICT adoption in a number of countries. PC ownership is generally very modest. Mobile phone penetration is much higher (and increased very rapidly during the last few years). The table also shows some figures on Internet use. Only in the Scandinavian countries and the US, Internet adoption exceeds 50% of population. Further, the table indicates that of the Internet users, only a small minority uses interactive online services such as electronic shopping and e-banking.

Table 1. ICT adoption in several countries, 2000

	UK	France	Italy	Germany	Sweden	USA
PC ownership (% of population)	33.4	24	13.25	32.5	44.7	56.2
PC based internet use (% of population)	29	14	11	13	56	46
Internet access from home PC only (% of internet users)	26	11	13	12	11	18
Internet access from work/other PC only (% of internet users)	11	5	8	7	14	21
Internet usage by gender (% male/female)	61/39	67/33	62/38	64/36	56/44	52/48
Mobile phone penetration (% of population)	50.3	40.3	48.1	39.2	63.1	29.0
Mobile internet access(% of internet users)	14	17	2	10	22	16
Digital TV penetration (% of households)	29	15	15	5	5	24
Online shoppers (% of internet users)	2	22	8	20	37	38

E-banking users (% of population)	5	2	3	6	27	18

Connectis Magazine, 2000

Empirical studies reveal that notably weaker social groups (unemployed, ethnic minorities, low-income groups, the elderly) have low levels of ICT adoption (SCP, 2000). A UK study of DTI(1999) shows that lower social classes (D and E in the UK) are less likely to have ever used a PC or the internet than for the population as a whole; 38 and 14 % compared with 58 and 29%. Only 9% of all DEs used the internet in the last 12 months, compared with 43% of ABs (the highest social classes). Given the high representation of lower social classes in deprived neighbourhoods, it is reasonable to assume low adoption rates. Dedicated studies on access to ICTs in deprived neighbourhoods are very scarce. For the UK, Foley (2000) did a survey on ICT uptake in UK deprived neighbourhoods: he found a much below average take up. Quirk (1999) found very low levels of ICT ownership for the London Borough of Lewisham. Governments on many levels have developed initiatives to fight this digital divide. In our case cities, we identified three type of policies to improve the take-up of ICTs by less favoured groups: The creation of ICT centres in deprived areas, the provision of internet access in public buildings, and the provision of free home internet access for citizens.

Several cities have taken (or supported) initiatives to open special ICT centres, with the aim to help groups with low levels of ICT adoption to make the shift towards the information society, by offering ICT-related education and training and access to PCs and the Internet. Manchester for instance has its "electronic village halls" (EVH's), where the Internet can be accessed for free, and numerous ICT training and education programs are offered at low fees. Manchester counts three EVH's: one of them is area based, and functions in the deprived borough of east Manchester; the other two are directed towards specific groups, namely immigrants ("the Bangladesh house") and women (Women's electronic Village hall). The initiative dates from the early 1990s, and was one the first of its kind in a European city. The concept is largely based on the Scandinavian model of rural community teleservice centers. (see http://www.mmu.ac.uk/h-ss/sis/evh.htm). The Manchester City Council regards its ICT adoption policy not only as an instrument to fight social exclusion, unemployment and under-education, but also as a means to reduce emerging labour shortages the local ICT sector. Thus, it combines the social with the economic perspective. According to the manager of the centres, several people that take courses in the EVHs find a job in the rapid expanding ICT sector, but also in traditional sectors. The Netherlands has recently launched a similar initiative.

A second type of ICT adoption policy is the provision of Internet access in public buildings. In Manchester, Rotterdam and The Hague, public libraries are equipped with Internet terminals. However, the majority of users are students that benefit of the free provision of computer facilities. The target groups, people with low ICT skills, are hardly reached. The question can be raised to what extent offering free Internet access is a government task: it might evoke unfair competition with commercial Internet cafés that have sprung up in every large European city.

A third type of ICT adoption policy is to offer all citizens access to the Internet at their homes. In The Hague, "Every citizen of The Hague connected!" is the central slogan of the municipal strategy for the

information society. A vast majority of the population is still not "online". To increase the use of the new media and prepare its citizens for the information society, the city of The Hague has started the Residentie.net project, in co-operation with Casema (cable operator) and KPN (a telecom provider). Every inhabitant of the city gets free access to the Internet. To reach the citizens without a computer as well, a solution has been developed that allows Internet access via interactive teletext, for which only a telephone and a TV set are required.

All these actions reflect the ideal of access to ICTs and internet for all citizens. Similar policies are now in vogue in many European cities, and undoubtedly contribute to the closing of the digital divide and the opening of new opportunities for excluded groups. However, other tendencies point at the opposite direction. First, the speed of innovation in software, hardware and networks makes it very difficult for people without sufficient social, cognitive and material resources to keep up; from a dynamic perspective, their backward position may even worsen. Second, ongoing privatisation and deregulation of Europe's telecom markets may lead to growing qualitative differences in infrastructure provision between rich and poor neighbourhoods, because much more than their state-owned predecessors, private telecom companies invest where the market is. Within cities, "switched off" territories may emerge (Castells, 1997). In the deprived borough of East Manchester, for instance, we found very low levels of private investment in telecom infrastructure compared to the richer suburbs.

5. Conclusions

Fighting social exclusion and regenerating deprived neighbourhoods is a key priority for most European cities. In recent years, information and communication technologies have come to be seen as important catalyst for the solution of many urban problems related to deprived areas. Policymakers on European, national and local levels believe that ICT policy can help to solve exclusion-related issues in the economic, social and political spheres.

- ICT can strengthen social networks, through the formation of virtual communities in which people will communicate with each other
- ICT is a tool to improve participation in local decision making and political processes
- ICT may lead to higher levels of participation in economic life. Teaching people ICT skills will strengthen their position on the labour market;

Expectations are very high, witness the various policy documents that we studied. However, in our case cities, we found little evidence of the beneficial contributions of ICTs in these three fields. We found no convincing evidence that social networks of excluded groups are being strengthened; nor did we find signs of increased political participation and influence of deprived groups in our case studies. Regarding the economic dimension of exclusion, we found some indications that ICT may lead to reintegration in the economic process.

What explains the wide gap between dream and reality? For one thing, it may simply be too early to expect miracles from ICTs regarding social inclusion. Most of the policy initiatives have been set up only

very recently, and many are in an experimental stage. For another, levels of ICT adoption among socially excluded groups are still very low.

Despite this, policy makers' expectations may be overoptimistic or even expressions of technological utopism. In many instances, ICT is seen as the direct cause or trigger of beneficial social and economic change. This denies the complexity of the issue: social exclusion is a multi-dimensional phenomenon, connected with interfering social, economic and cultural factors. Therefore, the provision of a new technology can not be expected to change the world into a paradise. Graham (1999) argues that technology is not an autonomous force: rather, social, institutional, and political processes influence the way technology is developed and applied. This perspective is fruitful to understand why, despite all the possibilities of internet to reduce social exclusion, problems of social exclusion are still persistent.

A key obstacle hampering the beneficial impact of ICTs on social exclusion, evidently, is the very low adoption level of ICTs in deprived neighbourhoods and among excluded groups. As long as socially excluded people have no access to the new technologies, their relative position in society will even worsen. New technologies will extend the economic, social and political power of the people who use them, implying relative deprivation of those who don't. Furthermore, telecom market liberalisation may well lead to under investment in electronic infrastructure in deprived areas. Policymakers seem to be aware of this problem and push hard to speed up the adoption of ICTs. Particularly the erection of "ICT learning centres" in deprived areas is in vogue. The risk of such a technology centred approach is that the importance of cognitive and social skills and networks is easily overlooked; these skills are not only key for integration in the labour market, but also to be able to keep up with technological innovation. Besides, there are more possibilities to ensure better access, for instance by allowing tax breaks for workers on low incomes buying PCs from their employees. Another issue is that many citizens are still not aware that they can access the internet for free at many points.

We conclude that policymakers' expectations of ICT as solution for social exclusion need downsizing, but a number of opportunities remain, particularly in the long run. ICT should be seen as a new instrument, alongside many others, to fight processes of exclusion. The degree to which the new opportunities of ICTs can be capitalised depends to a large extent on the capacity of urban management to influence the population's uptake and application of ICTs, and to supply useful electronic content. The provision of interactive services to the population requires high levels of local organising capacity, and asks for a de-fragmentation of existing policy efforts. Currently, in many cities, civil officers lack awareness and feeling with information and communications technologies. Cities need highly qualified people that understand the way technology can support urban development.

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