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Occasional Paper

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**Virtual Cities?! – Telematics and Spatial Development**

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The short title of the lecture in the conference programme „virtual city“ may be vague, inexpressive or confusing for the audience. To confuse you a bit more I added a question mark. Just to complete confusion an exclamation mark should be useful. But you can see: there is doubt in a concept like the virtual city and the wish to work out a concept of virtual cities that has strong connections to daily life and the material cities we live in. What I like to talk about today is:

- the invisibility of telematics in our urban environments and
- the importance – or better lack of importance – of telematics in the official planning documents and procedures,
- the development of the virtual and material city and its interweaving,
- possible consequences for industrial, commercial and residential areas in our cities,
- projects of German cities to promote telematic applications and
- the need for municipal actions to build an integrated local information and communication technology policy as part of a modern urban development model.

Technological changes in the field of ICT, the broader diffusion of its applications and its daily use, greatly influence spatial development. As a cross-section technology ICT has impacts on nearly all parts of the economy and daily life in general. This becomes most obvious in cities and towns, which are not only the places of highest information density where most of the ICT users live, but also the hubs in telematic networks. The relation between urban development and telematics is determined by invisibility. Invisibility of the infrastructure and the social, economical and political structures that determine technological development. Michael Batty states that „our observation of the way cities work is becoming increasingly more difficult. Cities are becoming invisible to us in certain important ways and it seems that this invisibility is increasing at a faster rate than our ability to adapt our research methods to these new circumstances.“

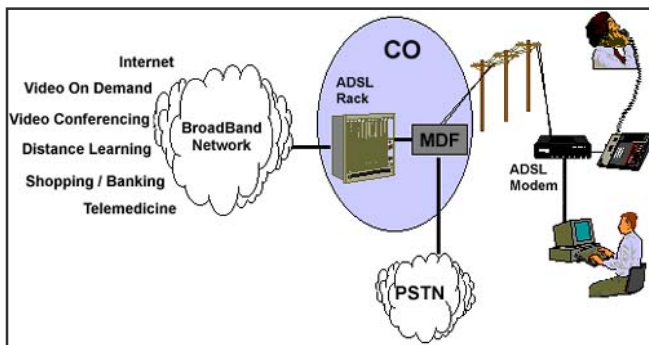
An interdependent pattern of material and virtual space is generated . This pattern will have an impact on the development of cities and towns in the information society. The type and manner of interlacing material and virtual space will determine the the future of urban life. For urbanists and planners the analysis of this interdependent pattern becomes difficult because of the abstract idea that is added to the spatial dimension. Mark Hepworth sees the „electronic network geography ... mapped on abstract space“. Explaining this new abstract part of the city's geography and how it's interwoven with our common picture of the city is often simplified by using linear „cause-effect-relations“ in a technology deterministic manner, not considering that technology is originated and developed in a specific social context. ICT is no exogenous variable to which society and individuals must adapt. One key element of ICT development therefore has to be the social embeddedness of the technology. Thinking that „telematics“ in general influence all „urban development“ is an over-simplification. There is a diversity of technologies, applications and patterns of using these facilities behind the term „telematics“. The impact of telematic applications in the office is surely different from telematics use in transportation. Mobile phones transform spatial relations in a different way from the „plain old telephone“. The common broadband networks as distribution networks – like most of the existing cable tv

networks in Germany – and internet-based structures produce different effects. And the impact on several cities and towns will differ.

One of the main changes is the increase of flexibility in using space and the quickening pace of change in land-use patterns. Edward Soja sees the main problem in treating „space as domain of the dead, the fixed, the undialectic, the immobile – a world of passivity and measurement rather than action and meaning“.

What about the role of that „invisible infrastructure“ in the planning process in Germany? On the federal level up to now in the official spatial planning documents like the „Raumordnungsbericht“ the invisibility is nearly perfect mirrored. Whereas traditional highways and other transportation infrastructure are fully discussed, the information highways – not speaking of the simple „information streets“ in cities – are merely mentioned. The insufficient data base on telematics infrastructures – a problem that will gain importance under the condition of a private telecom sector where nearly all information is a business secret – is only one reason for neglecting telematics in planning documents.

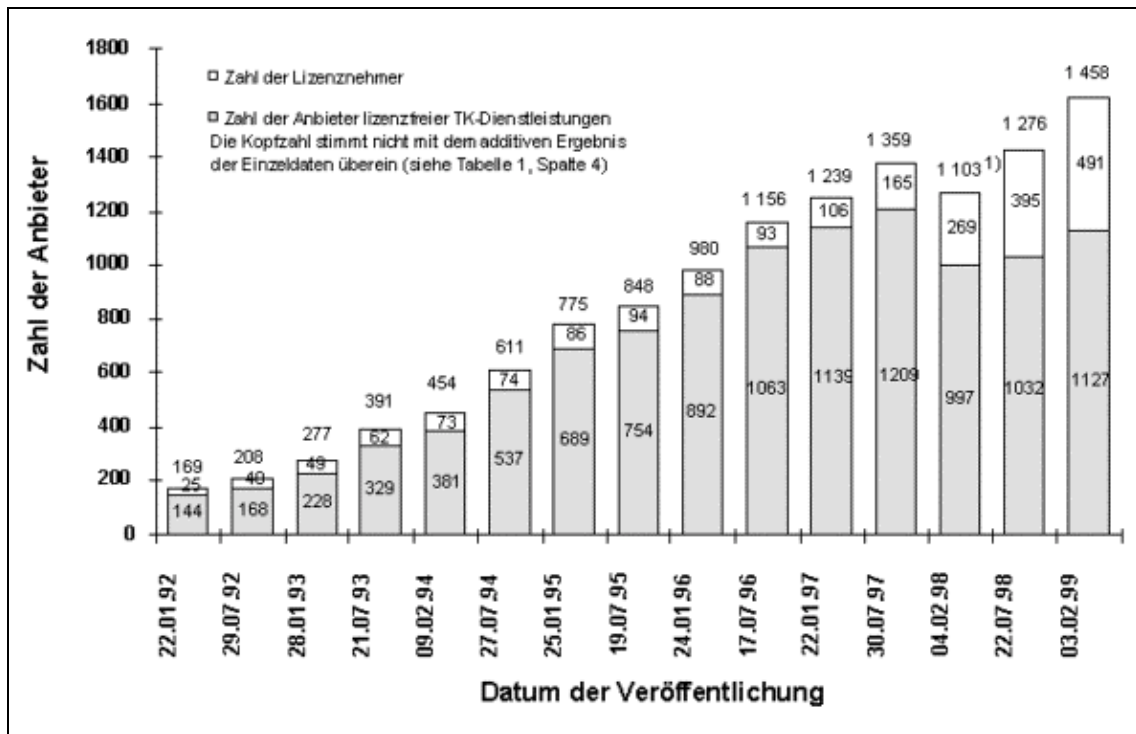
### ADSL Service Structure



Source: [http://www.orckit.com/fr\\_newsa.html?/how\\_does\\_ads\\_works.html](http://www.orckit.com/fr_newsa.html?/how_does_ads_works.html)

Another reason is the supposed ubiquitous access to the network of information streets and highways. This diagnosis is right for Germany as far as plain old telephones are concerned. Even mobile phones can be used nearly everywhere. But looking at more sophisticated ICT like the asynchrone digital subscriber lines (ADSL) for highspeed data transport, this diagnosis fails. And this is only one step on the way to a more diverse telecommunication situation in Germany after liberalization and privatization of the infrastructure. New telecom carriers focus their services on regions with high telecommunication potentials. In some regions an „explosion“ of telecom services is now the result. Especially the urban areas and greater cities are the winners of this restructuring. Even on the spatial micro-level we will have differentiations: Improving the telecom infrastructure in CBDs does not automatically imply offering services at the urban fringes, connecting office areas in the suburbs does not mean unlimited access in the living quarters in their neighborhood. „Cherry-picking“ will be one of the favorite jobs of telecom carriers.

## Telecommunication Services Supplier



Source: [www.regtp.de](http://www.regtp.de)

The mentioned invisibility phenomenon exists not only concerning the infrastructure, it is also discussed focussing on the city as a physical location. Recent discussions on virtual cities draw different conclusions:

- Villem Flusser states that cities origins are specific functions and that these functions are not needed anymore because of virtual services. He sums up that we do not know what it will look like in virtual space but it will not look urban.
- And William Mitchell describes in his „City of Bits“ that „the Net’s despatialization of interaction destroys the geocode’s key. There is no such thing as a better address“.
- Saskia Sassen focuses on the still existing importance of centrality and proclaims the renaissance of the location.
- And Paul Virilio asks if we face the development of a virtual city, a city of cities, a true center of the world, a hyper center, not the capital of a nation, but a capital of all capitals.

## Homepage of De Digitale Stad Amsterdam



Source: <http://www.dds.nl/>

Today you can find nearly every part of daily life mirrored in cyberspace: Shopping in cybermalls, meeting in chat rooms, teleworking are only examples. The city is often used as a synonym for a conglomerate of these functions, with known addresses rebuilt in cyberspace, like streets, places, cafes, newsstands, playgrounds etc.. In cyberspace locations like „de digitale stad Amsterdam“ some ten thousand people „live“ in some thousand houses. But the people eat, work and sleep in real houses and even protagonists of the digital city like Geert Lovink are often guests in real meetings and conferences to report what is going on in digital cities. We meet on a boat to discuss cyberspace. To sum it up: face to face contacts are not abolished by e-mail and distance communication but completed. There are no and will be no virtual cities as substitute for all functions of traditional cities. But urban form will change according to new demands of the people who live and work in cities. ICT will play an important role in that transforming process but not necessarily the most important if we take into account the polarization processes in urban societies or the future of work.

Concerning the spatial consequences of telematics there is a theoretical model already discussed since the 1980s:

- telematics may lead to a decrease of agglomeration advantages and therefore to spatial deconcentration,
- existing spatial disparities may still be strengthened by telematics,
- distribution of control functions may change, resulting in advantages or disadvantages for specific regions,
- telematics will not change spatial trends of development fundamentally but prolong already existing trends.

There are only few empirical studies about the relations between telematics and urban development. You may find studies about special elements as teleworking, teleshopping

or telebanking, but there is little research about the interdependent influence of these elements on the alternative uses of space.

Despite this lack of detailed empirical information informed guessing leads to some scenarios of possible futures of specific city functions.

I like to draw some hypothesis for what are possible developments in

- corporate location decisions and connected urban land-use patterns,
- shopping, electronic commerce and the impact on urban commercial areas,
- telework and the influence on residential areas and public transport.

Access to telematic networks and applications and the transformation of traditional locational factors by these technologies have an impact on corporate locational decision-making. Especially industries that have to deal with information gain an advantage by using ICT. Compared to traditional locational factors like access to transportation infrastructure or workforce potentials, access to ICT is after all less important for corporate locational decisions (with the exception of the mentioned most favored industries). Nevertheless telematic networks support a change in corporate locational patterns. Enterprises gain more flexibility for spatial deconcentration of production facilities and back-office functions whereas control function can be concentrated in strategic hubs. Access to a global market is much easier using ICT. This is true especially for products that can be distributed via internet like computer software, electronic books, music etc. Drawing a conclusion: corporate decision-making becomes more footloose. That does not automatically imply less importance of regional and urban locational qualities. The contrary is true: Specific regional qualities gain importance when global players can locate their facilities nearly everywhere.

The next step of „despatialization“ seems to be the virtual enterprise: flexible production and service cooperations of small and medium sized enterprises with locations all over the world.

There are impacts of these corporate development on the city system like:

- the increasing concentration of highly specialised corporate functions in „global cities“, at least in cities that play an important role in international transactions,
- the persistent broad distribution of functions between cities and towns including the present form of „division of labour“,
- deconcentration processes giving rural areas more importance but can not turn around the present trends of less favored regions.

Despite the increasing number of footloose enterprises, there is a strong persistence in the present spatial structures. Today one half of telecom carriers turnover concentrates on three percent of their customers. Most new carriers focus on these customers, mainly business clients. Especially the cities that are home of these anchor customers will benefit from new telematic services.

Altogether more flexible corporate decision-making implies less potentials for planning in cities and towns and less time to answer to corporate locational demands.

More flexible corporate locational decisions even have an impact on several cities and their boroughs like:

- the disparate development of CBDs with some CBDs gaining importance by attracting corporate control functions and widening the controlled area and some will loose because of office jobs that will move to suburbia or to offshore teleworking facilities,
- deconcentration of jobs and their scattering in suburbia as well as the development of new suburban centers,
- more potentials for mixed-use structures with combined living and working facilities using telework but with only marginal effects in the next years.

Our existing regulations and building codes are in many ways not compatibel to these flexible structures.

E-Commerce is the new buzzword of the cyberworld. Despite the fact that the general turnover of online-shopping, even on an international scale, is relatively low, in Germany marginal, a diffusion of commercial online-transaction applications will have enormous impacts on the traditional locational patterns of retail and wholesale facilities. The locational „revolution“ can be viewed today in the banking sector in Germany, where online-banking leads to a complete redesign of locational structures with specialised branch-offices for standard customers, wealthy customers and business clients or facilities where only automatic teller machines do their service or online-bankers with no branch-offices. New forms of direct merchants appear on the market. The internet seems to be an huge real time laboratory for new forms of retail, wholesale and its mixtures with the customers as guinea-pigs. Increasing e-commerce will have different impacts on the development of cities and their boroughs:

- inner cities and CBDs with higher environmental and architectural qualities where shopping is more than just to buy something and where people like to stay even after shopping or working, don't have to worry about losing significant numbers of customers;
- people like to link shopping and leisure time activities; locations that offer facilities for these linked activities will benefit from this trend; this is possible for integrated inner-city locations as well as for suburban malls;
- locations with no such amenities are the losers of the restructuring;
- especially retail stores offering products that can be distributed via internet will close; as consequence we will have a totally different mix of retail stores in our cities;
- the spatial division of goods presentation and delivery seems to be possible not only for traditional showroom products like furniture; that implies a change in the demand of retail space; switching from cash-and-carry-retail to a combination of service-orientated retail and home delivery of goods offers new opportunities for public transit;



- increasing direct merchants activities and online shopping invigorate typical logistic locations at the urban fringe or in suburbia; linked to that is an increase in goods transport with all the negative environmental effects.

One of the common ideas of future telematic use is the increase of home-centered activities. There are often futuristic pictures of „electronic cottages“. Already in the early 1980s Alvin Toffler predicted „a return to cottage industry on a new, higher, electronic basis, and with it a new emphasis on the home as center of society“. The computer home should enable a life which is „exhilarating and mind expanding, thanks to worldwide networks of electronic communication“. Mason and Jennings stated with pathos that „it will provide a new focus for human life – a twenty century version of the hearth that was so long an essential feature of the home in every age and civilisation“.

Many of these consideration have a deeply anti-urban impetus. Nevertheless the serious changes in retail and corporate locational structure and in daily use of telematics are connected to changes in residential areas like:

- the weakening of public urban areas by concentrating activities at home using telework, online-services etc.;
- the more flexible commuter patterns in time and space are incompatible with existing public transport infrastructures; whereas homes, shopping malls, workplaces etc. are scattered in suburbia, public transit especially via rail still focuses on radial routes from the CBD to the outskirts;
- integrating residential, commercial, working and leisure time facilities offers new opportunities for mixed-use developments, with the chance to diminish transportation; at the same time new strains are introduced due to new transportation demands as well as the close proximity of several functions etc.

The above mentioned scenarios show the uncertainties of telematics impacts on urban development. Uncertainty also means that there are undecided questions and that cities do not have to undergo inevitable paths of technological development. Technology is no benefit in and of itself but has to be used to reach specific goals in urban development.

Many German cities have realised the importance of ICT as a significant area of action. In a range of fields German cities have already developed projects to promote telematics in urban areas. The focus is on city information systems, internal administrative applications, applications in the cultural and education sectors, and the improvement of the urban telecommunications infrastructures. There is less activity in areas such as citizen participation or social affairs. To mention only some good practices:

- Almost every larger city in Germany has an internet-based city information system. For example Bremen offers information for different points of view such as for residents, tourists, business people etc.; Mannheim undertook one of the first attempts to build an electronic town hall, offering not only information but communication and electronic transactions with the city's administration; Muenster uses a bottom-up approach to develop a citizens network.

- There are a variety of administrative applications. 136 municipalities have been involved in a federal competition to develop municipal online applications using digital signatures for citizen- and business-to-administration transactions.
- Education is an important field of action. There are for example municipal databases for further education or kindergartens.
- There are virtual marketplaces and regional economic information warehouses such as the Lake Constance Electronic Mall or the Business Information System Berlin/Brandenburg.
- New telecommunication infrastructure on local and regional level has been developed such as NetCologne's city network in Cologne.
- Environmental information systems like the Berlin air quality measuring net offer current information on air pollution
- City planning information is not yet very developed on the net. But there are some good examples like the planning informations of Dusseldorfs city planning department.

To conclude: There are different levels of municipal actions needed in the field of local information and communication technology policy in order to develop the information society on a local scale:

- We need models and pilot schemes to demonstrate the use of telematics for urban development. Only talking of telematics or reading about it will not help in understanding the daily use of it. The experience of using these technologies is needed. But we do not need to invent the wheel twice: Pilot schemes therefore have to consider user demands, social effects, economic viability of applications and not only technical feasibility.
- The integration of all key actors is necessary to secure conclusive actions. Because of the cross-sectional character of ICT its development is not only the business of technicians and computer freaks.
- There is a lack of information exchange on what is going on in urban telematics. That implies a loss of synergies.
- Raising local awareness of ICT is a priority. In particular, we have to bridge the knowledge gap of decision makers. Even if there are dedicated actors in the administrations they often have to fight against windmills because of the missing support of decision makers.
- Actions have to focus on local problem solving and local applications. We do not need the same reinvented hypertechnological application that only serves the needs of middle-aged, upper middle-class males who surf the internet. What we need are applications with an added value for all people living in cities.
- Because of the high development and investment costs of ICT and in order to improve the usability of applications, we need public private partnerships not so as to make

profits private and leave the costs to the public, but rather to create win-win-situations.

- Interurban cooperation in the field of ICT is essential in developing compatible solutions. There is no reason to invent different online resident- or car-registration applications, dog tax online payment applications or electronic order forms for garbage cans in each city again and again.
- Most of the recent pilot schemes are technologically driven but we need social instead of technological models.
- To speed the diffusion of telematics applications we have to improve the media competence of users and increase the access to telematics.
- There is a need to develop an integrated, focused and comprehensive ICT strategy.

The cities have to work on concepts that interlace the virtual and the material cities because they will not escape the information society and the changes that are linked to the use of information and communication technology (ICT). To say it with the lyrics of an older Eagles song: they can check out any time they like, but they can never leave.