THE PHILOSOPHY OF TELEPORTS IN GERMANY

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## 1. Local Initiatives promoting Telematics (Computer and Communication) spring up all over the World

All over the world there are local and regional initiatives set up to promote telematics. The New York Teleport model has triggered off similar ideas in Germany. However, transferring the lew York model to Germany is not reasonable for two reasons:

The technical communication infrastructure planned with the New York Teleport is already being created in many big cities in Germany.

The dominant points of departure of local initiatives differ. The tree different main starting points are urban and industrial development, development of technical communication infrastructure, and the promotion of telematics applications. American Teleport originate from deficits in technical communication infrastructure. London and Yokohama are the biggest projects of urban renewal currently pursued in Europe and in Japan, which make deliberate use of the new telecommunication facilities without these having initiated the projects. Amsterdam and the Japanese Teletopia cities begin by promoting the application of telematics; Amsterdam in addition pursues the objective of attracting international firms. The terminology used varies accordingly, always in attempts to coin new words: Teletopia, Technoport, Teleport, Teelecenter, report within an Telecenter.

The projects studied differ in terms of their main points of departure. One important point of departure obviously is urban and industrial development. However, a closer look is indicated so as not to mix up causes and effects. London and Yokohama ar faced with the problem of renewing port areas with outdated industrial structures, which are several square kilometers in size and located outside the city in the case of London and two square kilometers within the central business district, respectively, in Yokohama. The new urban quarters with industries, shops, housing areas, leisure centers, and cultural institutions will be equipped with the necessary technical telecommunication infrastructure. As the telematics market grows, especially firms of this growth industry are to be attracted to the new environments, both hardware manufacturers and service companies. Yokohama tries to get firms to move out of overcrowded Tokyo while London Dockland attempts to attract firms situated in the City of London, especially printing and publishing houses. The telecommunication facilities are used as an argument in favor of industrial development and also as an image symbol. They would not have been able to initiate these plans by themselves. Also Amsterdam regards the expansion of telecommunication systems as a measure supporting its policy of industrial development attemption to attract international firms.

The main bottleneck in Germany is not technical infrastructure nor is it urban development; it is applications.

The first precondition for promoting telematics is political will and the existence of suitable institutions acting as promotors.

## 2. Triggers for Local Inititatives: Telematics

Connections:	Copper twin wire, Copper coaxial cable, glass fibre, satellite, etc.
Networks:	telephone network, IDN, ISDN, broad-band network, etc.
Services:	<pre>telephone, telex, teletex, telefax, Datex-P/L, telebox, etc.</pre>
Terminals:	text automate, personal computer, measuring instru- ment, telecopier, etc.
Technical- organizational solutions:	numerous applications
Communication duties derived from duties:	numerous communication duties

Information and communication technologies grow together to form telematics. Telematics means the growing integration of information and communication technologien which can be used for a great number of applications. The term stands for the fact that information and communication technologies must increasingly be considered a unity and that separate handling of this technologies will furnish a new tool to solve problems and for its part cause problems. Telematics includes:

- the connections to be interlinked to form physical networks,
- networks of different features on the basis of the physical networks,
- services really enabling the communication in open communication networks,
- appliances suitable for being used as terminals,
- technical-organizational solutions found by the aid of the appliances and services,
- and finally the communication tasks technical--organizational solutions are looked for.

The market of telecommunication services is just undergoing a radical change. The change is characterized by the following trends:

- from telephone to a great variety of products,
- from separate to integrated communication,
- from technical services to solutions of problems,
- from a seller market to a buyer market,
- from self-explaining products to products requiring explanations.

Such a change is something usual in the history of the economy. The banks have experienced it and so did the car industry.

In close cooperation with the manufacturers the PTTs rapidly developed a series of new services. According to Schumpeter the technical introduction of a new product is an invention, it is only the successful introduction on the market which he calls an innovation. Whether the inventions of the potential sellers of the techniques will get innovations in that sense of the term depends on whether the new communication services including the necessary terminals can make contributions to solutions of problems. If the potential sellers of information and communication techniques want to be successful on the market, they will have to adopt the view of their customers more strongly than in the past and to proceed from the communication tasks. The view of a potential seller of techniques has to be supplemented by the view of the user of the techniques, see figure 2.

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Connections: direction preferred by the Networks: sellers of techniques Services: Terminals: Technicalorganizational solutions: Communication direction preferred duties derived by the user of from duties: techniques

Figure 2: Supplementation of the Sellers' View by the Users' View

The telecommunication services market is on the above-described motion. PTT's and manufacturers are changing their habits. This manifests itself in the PTT's projects on the marketing sector. It also gets evident by the organizational changes at the manufacturers' themselves, combining information and communication techniques which so far had separate sales organization. However, the nececcary change will only be a real success if also the users and their organizations become aware of their possibilities and act.

The question, therfore, is: Are there also new tasks in store for the cities?

3. The Teleport Movement originating from New York

The first city considering it necessary to take actions was New York. New York's and New Jersey's harbor authorities took the initiative to make sure that New York continues to be a firstrate communication center. In view of the increasing importance of telematics the following Manhattan problems gained in significance: interference, electrical energy supply not being entirely secured, demand for low-cost broad-band connections, and inadequately high prices of office space. The bottlenecks ended in the concept of the teleport being under development and giving its name to the worldwide movement: a location for office working places outside Manhattan, technical communication infrastructure to use satellite communication, and a glass fibre cable to connect the Manhattan firms and other locations in the region. An office park of some thousands of working places is supposed to be developed. All sorts of communication services shall be offered from there.

The New York Teleport and other US Teleports such as the San Francisco Bay Area Teleport originate from a local deficit in technical communication infrastructure and a lack of a monopoly which as the German PTT is obliged to make a covering offer of services at uniform prices at all places. Due to the deficits the infrastructure of the network gets a location factor which may influence the decision of firms. Therefore, in the United States telematics is with good reason considered a trigger for modern city development. For the city of New York it is in fact very important to direct its main ambition to the extension of the network; see upper part of figure 3:

Connections:	provision of modern		
Networks:	by PTT administra-		
	tions and/or private		
Services:	enterprises		
	]		
Terminals:			
Technical-	services offered by		
organizational	private enterprises,		
soutions:	public institutions,		
	and PTT administra-		
Communication	tions		
duties derived			
from duties:			
and the second se			

Figure 3: Division of Labour between PTT Administrations and Private Enterprises

The New York model cannot simply be transferred to Germany. The Deutsche Bundespost (German PTT) is responsible for the extension of the network and the services offered. Taking for example the covering extension of ISDN and the envisaged connection of some dozens of cities to the glass fibre network, the German PTT does on principle develop teleports in the American sense of the word without using that term. Nevertheless, the idea of cities being able to exert influence on telematics to the benefit of their economies, be it on the infrastructure of the network as in New York or on the location of new service enterprises as at Hamburg and Cologne, did fall on fertile ground worldwide and in our country alike. The term of teleport obviously has the same effect as a match lighting different fires. The term of teleport seems to win recognition as the programmatic name of varying local projects in which the communication infrastructure for both local and worldwide narrow- and broad-band communication is connected with exonomic development. To promote the exchange of information the World Teleport Asso-( :iation (WTA) has been founded:

Figure 4: Word Teleport Conferences

New York

4. New Tasks for German Cities

Are there new tasks in store for the cities? Fi-Jure 3 'Division of Labour between PTT's and Privates Firms' shall serve as a basis for the consideration of this question. While in New York the most important task is the provision of modern networks and services, the tasks in Europe rather concentrate on the 'Communication services offered by pricate enterprieses, public institutions, and PTTs'. This includes the marketing of private value-added-services rendered by agents outside closed user groups; this will in future be possible due to the full application of the German PPT's concept of tariff harmonization.

4.1 Provision of Modern Telecommunication Networks and Services by the German PTT

As compared with foreign countries the German PTT offers covering new communication services rather speedily. This also applies for the services within the envisaged ISDN (Integrated Services Digital Network); this network shall be tried out in technical operating tests at Mannheim and Stuttgart in 1986/86, introduced in 1988, and enable covering service of modern comfort by 1993, though the technical change of all switching functions will take longer. The reali-zation of a covering supply of broad-band services will take somewhat longer since it requires glass fibre cables to be laid. It is true, however, that the German PTT is planning to connect some dothens of cities to the glass fibre network by the 90es and thus to be able to offer the services to a large part of the expected broad-band customers. The PTT is on the point to connect the big cities between Kiel and Munich by a long-distance glass fibre networt. Along that route it just started to lay local glass fibre networks. Figure 5 shows the places which shall be connected and in which local networks shall be laid by the end of 1987:

1986		1987	
Berlin Bonn Bremen Dortmund Düssedorf Essen Frankfurt	Hamburg Hannover Cologne Mannheim Munich Nuremberg Stuttgart	Augsburg Brunswick Darmstadt Duisburg Freiburg Karlsruhe Kiel Koblenz	Mainz Münster Oldenburg Saarbrücken Ulm Wiesbaden Wiesbaden

Figure 5: Cities connected to the Glass Fibre Network

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So, as far as ISDN is concerned, the cities need not get active. Nevertheless, it may be reasonable for the municipalities to enter into discussions with their Postal Directorates (OPD) when in the transition period up to the full implementation it will be the point to decide on the sequence in which provisional solutions (flexible network elements) shall be provided for important locations within a region. As it cannot yet be decided on how important glass fibre cabling will really be for the economic development, it is impossible to give recommendations before the current and envisaged tests are concluded.

## 4.2 Communication Services offered by Private Enterprises, Public Institutions, and the German PTT

We need use-oriented information, advanced education, and counselling.

The technical side of telematics is like the tip of the iceberg below the water. Telematics is an organizational technique, a technique requiring and bringing about considerable organizational changes. Firms and authorities need support, advice, information, and exchange of experiences. It is use-oriented information aiming at solving problems and not primarilay at applying techniques which is required. In their own interest the potential sellers of techniques must adopt the view of the users of techniques (see Figure 2 above).

The PTT is obviously taking steps into the suggested direction. The plans for 'tomorrow's communication office (Fernmeldeamt)' intend to improve the services for the customers by integrating the handling of applications, trouble reports, terminal defects, etc. in an serviceoverlapping way in one single field of activities. Within the PTT measures are taken to advance marketing. This development is supported by the pilot advisory institutions of the PTT in North Rhine-Westfalia and Baden-Wurttemberg (Mannheim, Stuttgart und Freiburg). The PTT placed additional positions for marketing duties at the disposal of their Postal Direktorates. Some Postal Directorates also offered seminars to the management of enterprises and authorities already. Here, new services are coming into being,

which are not only in the interest of the PTT, but also in that of trade and industry and cities. The PTT and its individual Postal Directorates will be able to continue that development the more decisively the more they are supported by the representatives of local trad and industry and by the cities.

Not only firms but also administrations, such as city halls, need advice as regards the development of communication concepts. The manufacturers of information and communication techniques offer both their products and advice. Since this advice, however, is supposed to lead to the sale of the products it cannot be absolutely objective, i.e. cannot deal with the communication problem without referring to a certain product. But it just is the manufacturer-independent advice which is asked for by many firms and authorities still having too little experience. Neutral advice should enable the user to negotiate with various manufacturers in order to find the optimum answer to his problems. Taking decisions on the communication system in a firm belongs to the executive functions. Therefore, it is above all the management which has to be trained to acquire expert knowledge. The concept developed by the Gesellschaft für Mathematik und Datenverarbeitung (Society of Mathematics and Data Processing) and the Cologne municipality is along that line. In cooperation with banks, chambers and others, the city of Cologne has founded a consulting center which has been offering enutral information, advice, and advanced training since 1986. At present, several other cities such as Hamburg and Karlsruhe, are also going to found such centers.

Medium-sized enterprises face a problem which must not be underestimated, that is, the lack of efficient and at the same time low-cost consulting instruments. Instruments to carry out communication analyses and to develop communication concepts are personnel-intensive. The instruments have to be developped in such centres.

Examples of additional communication services

The transmission of video conferences is the duty of the German PTT. It is the duty of the private service enterprises to render the in a way naked video conference service of the PTT into a service accepted by the customer. Success will depend on how the customer is addressed, on how he is prepared for the conference, and on how is assisted at the conference.

<u>Cities</u> which have encouraged their convention centers to set up such video conference chambers should urge them to cooperate when developing the video conference service; only if this is done, is this investment worthwhile.

In 11 cities, the PTT is at present testing Temex, a service which is supposed to enable lowcost tele-measuring and controlling. This service could be suitable for security functions being carried out by security guards, for fire alarms, for the monitoring of escalators and elevators and for the remote control of energy consumption. Temex uses the existing telephone network. The PTT cannot implement this service without the assistance of organizations, such as the security guards or the fire brigades, which are willing to use Temex for their special purposes. So, apart from the customer wanting an object to be guarded and the PTT making Temex available it takes a third acting party to turn Temex into a useful service. Mannheim and Hamburg are cities committing themselves to the Temex project so as to create useful applications for trade and industry.

The new telecommunications order and the tariff harmonization also paves the way for services which used to be unlawful: the so-called smart or intelligent buildings. The basic idea behind the intelligent buildings is to let all the firms in the building use the technical communication equipment and to be able because of economices of scale to offer services the individual could not afford. In the United States, such inteligent buildings have hitherto achieved differing success. There remain a number of questions to be answered. It is pilot projects in which the idea is further developed and advanced, which are missing. City halls, Regional Postal Directorates, chambers, banks, investors, and manufacturers could initiate such projects together.

Intelligent Building is one important activity in Teleports. The same is true for Intelligent Building as for Teleports: the offered service are more important than the architecture.

If tariff harmonization is actually reached, the resale problem will also be solved: an liberal policy does not need to draw a dividing line towards resale and can also allow private VAN services to be marketed through agencies for other than closed user groups. Here are new markets:

In addition to the telebox service of the PTT, numerous firms offering mailboxes already offer their services in such different applications the PTT alone could never make available. Modern industry location could mean that cities try to win such firms in the first place.

It has been the aim of the first German Teleport Confrence at Karlsruhe in November 1986 to find out where local initiatives should set in to promote user-oriented telematics.

## 5. Cooperation all over Europe

We need Promotion of a speedy information about developments which up to now have hardly been reflected in literature.

Throughout Germany and Europe, it is absolutely necessary that experiences are exchanged between the various institutions which did hitherto rarely meet and people intending to get something moving. Local initiatives also develop because of intermunicipal competition for new working places; this fact, however, should not be overestimated. As projects of which we got to know show that a city always makes a start at its own chances and problems first, this being rather a matter of development of its own regional potential than of redistribution. Secondly, communication takes place between locations and not only within a location; this fact should simplify the exchange of experiences. Mistakes should only be made once and should not be repeated several locations. So, it would certainly be short-sighted if convention centers intending

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- to offer video conferences with the aim to turn the service of the PTT into an attractive service would not cooperate with each other.

Discussion groups must be set up on a community level to deal with local problems. These groups should promote the spirit of cooperation which is so important especially in telematics projects. Telematics in particular demands cooperative innovation. The discussion groups should produce ideas for joint projects which could then be taken up and pursued further by small teams and implemented also with the support of the local administration, if necessary.

The discussion groups should be composed of experts, potential investors, and promotors, thus concentrating all the expertise available in the region. This may include firms, public authorities, chambers, universities, polytechnical schools, the Regional Postal Directorates and telecommunication authorities, telematics manufacturers, Fraunhofer Institutes, vendors of communication services, such as computer centers, and the like. A discussion cuture must be generated. The initial attitude of wanting to be in so as not to miss what the others are planning must give way to a constructive attitude. Confidence must be created.

In order to hear different proposals ideas should be exchanged with other cities, regions and countries, France and Germany. The development of the applications of telematics can be followed in publications only to an insufficient extent. Personal exchanges of experience are indispensable.