

# TERESE - Telecommunications and REgional Development in SwEden

## Early Telecommunication Development in a Regional and Social Perspective

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**Abstract.** Public analysts in Sweden agreed in 1975 to investigate under what circumstances certain new types of communication services could be used in a regional and social perspective. Could new telecommunication services be successfully used for education, for local commercial services, regionally, and for social services? Would this possibly enhance regional functions, make distant regions more efficient, and possibly attractive? Local interest to participate was investigated in the North of Sweden. Economic and social empirical experiments of regional interest were then started. These experiments used computer conferencing based on computer terminals with acoustical modems. Video equipment was also tried. Software was acquired, adapted to Swedish form. The empirical social experiments continued until 1977. A separate evaluation was made. Conclusions indicated evident societal interest, but that user maturity for expansion would require time.

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## 1 Background

During the 1970s computing was making clear technological as well as structural progress. Systems structures were shifting from centralization to decentralization. Networks with increasing numbers of terminals were connected to ever larger computer centres. But what kind of social development was supported by this, and what type of steps were taken into the emerging information society?

Questions at the time included: would citizens accept an increasing dependence on technology for social services, would citizen-governed democracy survive, would centralization be implemented increasingly? In Sweden it was a question if regional development at large could be affected by communication development? Could networks be important for non-spontaneous regional development? What kind of effects would occur?

In 1975 a project group was formed, with representatives from public Swedish authorities, from research, from regional development, from technical expertise, and

from Future Studies. Creatively active in this organizational work, as well as for the complete Terese project, were Bertil Thorngren, then at Umeå University, and Tomas Ohlin, then at the National Swedish Board for Technical Development (STU). Public STU financing of the project group's planning and experiments was secured through work by Tomas Ohlin.

Discussions about possible social effects of telecommunication and computerization were initiated in industry, at organizations, at public authorities (including the National Swedish Board for Technical Development (STU) and the Expert Board for Regional Development (ERU)). The Public Telecommunication Authority (Televerket) participated with interest.

The Project group's activities were initiated with a study visit to USA and Canada. The concern was to note and analyze new communications technology, with emphasis on the balance between social need and technological possibilities, in a regional perspective. It was expressed by ERU that "regional needs should control technological development, and not the other way round".

Concerning policy for types of transport, the group was inspired by prof T Hågerstrand:

"A different type of transport philosophy could have led from the beginning to the introduction of a technology that did not segregate and which presumably could have given higher total efficiency than the one we have now, particularly in urban districts. Mobility, for instance, is a good means of combating unemployment" (1973).

It was noted that, up to the middle of the 1970s, use of telecommunications had often amplified tendencies towards centralization rather than contributed to regional spreading of employment, education, functions for distribution of information etc. The group asked:

"Can we reverse this pattern, and instead get telecommunication aids to promote a desirable regional development, an improved regional balance?"

An intentional caution in the efforts towards technical development should not be regarded as an expression of "animosity towards technology", it was noted. New technology can scarcely be regarded as automatically equivalent to "profits" for regional development – even if it were "profitable" from a more narrow economic perspective. It is equally important to make allowance for the possibility of the reverse, i.e., that currently "unprofitable" technology can be socially important. The final result of a critical technology assessment can very well be to expedite the introduction of certain parts of a new technology, a technology which otherwise would have been delayed or eliminated by market considerations of a more short-term nature.

## 2 Planning

An early task for the project group was to establish contact with interested local parties, county authorities, county councils and other organizations, in order to obtain views on priority between social and regional needs and technological possibilities. It was analyzed what types of services that could be tested practically. Analysis of new telecommunication possibilities should not be regarded as an isolated step, but rather as support for other measures related to regional policies.

Information and communication services can support many welfare components, e.g., employment, living conditions, transport, education, health, social services, culture, environment .... Possible effects and limitations concerning these components were discussed.

### 3 Local Contacts

A Contact Report was published in January 1976, with the analysis so far. This was done to make way for broad discussion and local responses to different early contacts. The report was disseminated to many regions, and contacts were taken.

It was decided to carry through an empirical social trial.

What regions were to be considered? After regional contacts – with questions about local interest - a region in the very North of Sweden was selected. This area was called the “Square”, because of the geographical shape of the space defined by the four cities Luleå, Piteå, Boden and Älvsjö.

### 4 Social Priorities

Regional development showed many social possibilities, a number of which were supported by communications systems of different kinds. At the time, in the middle of the 1970s, the role of technical support for social development was not clear and accepted by regions, especially not in the North of Sweden, an often snowy and icy part of the country. How could social needs and new technological solutions meet?

The project group organized a public seminar of one whole week, in the city of Luleå, where discussions were held concerning needs and possibilities. This week was future oriented, but it attracted a large number of attendants, from industry, from research, from authorities, and from socially interested citizens.

One type of constraint in the Swedish North was concern for geographical distance. Physical travel was resource demanding and irregular, and provision of social service was difficult. Could new communication technology shorten distances? Many types of service were dependant on practical possibilities to deliver. Large costs were concerned. Local industry was also dependant on communication and delivery of relevant information, and naturally not only on the possibilities to deliver goods. Education depended on access to human teachers. Support for the handicapped showed wide gaps of needs.

How could new technology help?

### 5 Technological Possibilities and Constraints

Certain economical concerns had to be observed. Communications technology was in a developing stage. After analysis, and to make trials practically possible, it was decided that widespread broadband services would be too expensive (this was in 1976), but that two-way communication services (mainly on narrowband) would be essential for many of the social services that could be considered.

However, certain point-to-point high speed services were available. Video could be tried.

These constraints were inspired by the project group's visit to USA in 1975. The Institute for the Future in California had carried through a number of social experiments with computer mediated communication, and Ericsson could provide video equipment.

The Swedish Public Telecommunication Authority, which at the time was a public monopoly, was naturally interested in trials with new and distributed computerized applications.

At the week-long Luleå seminar possible technology and applications had been shown, and discussed. It had been suggested to try:

- computer conferencing
- computer aided education
- social question/answering systems for:
  - health information and planning
  - psychiatric care
  - consumer information by demand
  - planning of employment
- telephone conferencing
- facsimile services
- video telephone

As economical resources were limited, certain restrictions had to be made for trials. It was decided that main social experiments would use “unintelligent” terminals connected to a main computer centre, through Televerket's ordinary telephone oriented network. As an addition, a limited number of point-to-point broadband equipments could be tried.

An important piece of technology turned out to be the software package that was to organize connection and flexible communication between terminals. This software was called Planet, and was implemented on DEC-10. It was bought (for 10 000 dollars) from Institute for the Future in California, USA. It was firstly implemented in Stockholm University –very far from the empirical sites up in the “Square”. Planet (later developed, then called Forum) was to play an important role in several of the practical experiments that were carried out. Planet/Forum was later replaced by a Swedish software system, called Termex, developed by Hans Wallberg at Umeå University.

For the practical trials 50 paper writing terminals were acquired from Texas Instruments, equipped with acoustical modems. They used light sensitive paper, which was easy to use at the time, but which degenerated over time, and as it turned out, made late analysis and empirical comparisons somewhat difficult.

## 6 Social Applications

The decision about what social systems should be tried, based on analysis concerning regional importance, was difficult. Several application candidates were suggested.

After contact with numerous organizations and local authorities, and based on the priorities that the week-long seminar had defined, a number of social applications were chosen to be tried empirically:

- Communication for small-scale business
- Planning over distance
- Communication in health care
- Distributed education
- Communication for the handicapped
- Communication and energy consumption

This family of applications may not look smooth and even in a later perspective, but it mirrored the needs that were expressed locally at the time. Naturally, economical and physical constraints made large-scale experiments impossible. But these social trials were taking place early. Very limited amounts of knowledge about social and regional effects in relation to new communication systems were available, during the 1970s.

## 7 Experiments

The experiments mentioned below (illustrated with creative drawings made 1977 by the artist Stina Eidem) were apparently of quite different nature. Some were fairly sharp and concise and hopefully with measurable results, others were – because of size – trials of only initial dimension. Several of the experiments turned out to be educationally interesting, in that they invited to demonstrations and discussion.

### 7.1 Promotion of Local Small-Scale Business

The following experiments were carried out: Increased interaction within and between certain small companies. Resource sharing, normally available only over distance and within urban centres, including a study of the effects of added capacity for exchange of qualitative interaction Fig. 1.

### 7.2 Joint Planning for Northern Nordic Regions

Experiments: Systems to tie together planning resources for the very Northern regions of Sweden, Norway and Finland (the so called Nordkalotten districts). Connection between responsible planning officers with each other and with a central planning node. Services containing culture, tourism, education, social service Fig. 2.

### 7.3 Health Care

Experiments: Local planning of mobile nurses, time dependent matching of demand and service supply for regional medical support. Resource pooling of medical specialist knowledge between regional hospitals. Treatment of time-critical medical problems, including psychiatric regional first-aid Fig. 3.

Fig. 1. Information for small industry

Fig. 2. Telecommunication over large distances

#### 7.4 Distributed Education

Experiments: Interactive pedagogical aids, distribution of English language education over large geographical distances. Comparison between individual access and group-wise contact. Development of a university course adapted for this application Fig. 4.

#### 7.5 Increased Communication for the Handicapped

Experiments: Communication between groups with impaired hearing to create new communication patterns. Possibility to enrich internal as well as external contact spaces. Access from outside social sources Fig. 5.

Fig. 3. Health service planning for the elderly

Fig. 4. Distributed education

## 7.6 Communication and Energy Consumption

Experiments: Study of possible energy reduction through use of telecommunication as substitute for travel. Replacement of certain physical travel. Study of the “paperless office” and its effects on business efficiency.

Narrowband technology was used for all computer conferencing and mail applications in all these projects. This turned out to be important for several of the experiments. On the contrary, video on broadband was a piece of technology that was used only to a limited extension.

Fig. 5. Communication aids for the handicapped

## 8 Resources

To collect financing for the Terese project a large number of contacts had to be taken. The project was considered unconventional. Within the National Swedish Board for Technical Development (STU), as well as within the Expert Board for Regional Development, it took time to create understanding for the need for this type of social/technical research. As it turned out, the main research amount that STU allocated consisted on 2 million Swedish Crowns (the rate then was sharply different from 2014 ...). However, there were also other sources of financing. Televerket supplied communication possibilities, and a number of researchers worked for free on applications.

Naturally, realization of this research also relied on voluntary activities, from established planners as well as from young and eager researchers. Several researchers later used the experiments as empiri for their own expanded research.

The project planning was carried out within the project group and did not use any of the project research fund.

As a result, the total resource amounts for the Terese project at large turned out to be higher than the actual economical amounts that were available from initial research funds.

Naturally, experiments of the type mentioned above “normally” consume substantial resources. Certain experiments in this case had to be made in very small scale. Also, certain applications demanded development work that only could be initiated during the time that was made available for the project.

## 9 Possible Continuation

Project analysis did raise the question if this type of development would be asked for in larger scale. During 1977 experiences and comments of different types were collected:

- Expanded support for regional development was considered important
- Information access and availability could be given priority
- Incremental project nature should be chosen, a form that can be expanded
- Certain social applications should be given priority
- Methods for social assessment should be observed
- Present government funding should be added with private economical sources

## 10 Evaluation

Certain experiences that were collected during the project time were of the aha-type “what evidently can be expanded in the near future”. It was evident that a separate evaluation was desirable. A limited amount of additional funding for this was made available, and independent personal resources were selected, mainly from university environment.

The evaluation was carried out at Umeå University, close to the geographical “Square”, where the actual practical experiments had been taking place. An evaluation group was created, under the lead of Leif Lindmark, an economist at Umeå University. An evaluation report was created, published in 1979.

Some practical experiments were – for different reasons – done in a small scale. The evaluation concerned:

- distance education
- medical communication
- communication within small-scale industry
- communication for people with impaired hearing

The evaluation touched on social, economical and technological concerns. For all of the evaluated experiments, educational interest and advantages were observed. Efficiency improvement was also observed, although of a new character. For certain projects, less time turned out to be needed to carry out “normal” activities. For other projects, new types of contacts were created, some of which concerned integration efficiency. For people with impaired hearing, much practical training was needed for increased educational contacts.

This type of social evaluation of communication systems was uncommon at the time.

The evaluation especially observed the usage character for the later developed mail communication system Termex, which after time replaced Planet/Forum.

## 11 Conclusion

The Terese project was unconventional, addressing societal concerns that until then mostly had been unobserved. As a consequence, it turned out to need time to define, find support for, and carry out the needed social experiments using new technology.

Terese meant a step towards the information society. Certain positive regional effects could be observed, especially of educational character. However, the time

available for Terese as a whole was short. With larger resources available sharper conclusions could have been noted.

The project was successful in that it encouraged local participants to open their eyes for new social and technical possibilities. However, and it can be repeated, the dimension of several of the Terese empirical experiments turned out to be too small for conclusions of desirable sharpness. Anyway, several types of research were supported within the empirical projects that were carried out. New technological network experiences were also observed.

For the Swedish society as a whole the use of computer conferencing including open and publically available electronic mail was new. This knowledge was spread slowly but efficiently for the times to come, starting in university circles.

Since the use of communication technology for regional and social development before 1975 had mostly been unobserved, it took time for Terese and its experiences to grow and be noticed in larger circles. One person who immediately noted the importance of this sociotechnological project, however, was the renowned professor Yoneji Masuda, who visited Sweden twice at the time, and who was kind enough to describe the project in some detail (with certain requested text support from this author) in his pioneering book "The Information Society as Post-Industrial Society" (first published 1980 in Japanese). Through the description in this book the project Terese reached a large audience.

All references below can be downloaded in full text from [www.telo.se](http://www.telo.se).

Drawings for the Terese experiments above were created by the artist Stina Eidem.

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