

Information Flows within a Region

The Information Networks of SMEs; Implications for the Use of Information and Communications Technologies, particularly Enhanced Services

Joachim Hemer

Fraunhofer Institute for Systems and Innovation Research (FhG-ISI),
Karlsruhe (FRG), Tel. 49 721 6809 139

A contribution to the European Conference on Information, held in Madrid
on the 26th to 27th of May 1988

Abstract

Information flows in formal and informal communications networks which might not necessarily be telecoms networks. Both formal and informal communication of SMEs exist with partners within the region as well as with partners outside. It is hard to determine which kind of communication is most important for the SME: the intra-regional or the extra-regional, the formal or the informal communication? Anyway, all kinds are to be supported by technical or organizational means. There are some new and old telecoms services like videoconferencing or telephone which better meet the requirements of informal relations (e.g. spontaneity and flexibility) than the more standardized services like Teletex, Videotex or packet switched data transmission which fit best to formal communications relations. Speaking of telecoms, particularly as support media for the formal communication, there is -in principle- no necessity to distinguish between regional and outside communication because telecommunication bridges long distances as well as short ones.

Telecoms users need a new understanding of telecoms services and a new attitude towards service providers. The public PTTs and the private telecoms service providers are interested in standardized services rather than in individual problem solving because of economies of scale. The professional user is more interested in an individual solution of his communication problems; he has a specific application of telecoms. We make a distinction between standardized services and services that support individual applications. PTT-customers would apply for a service without having any influence on its performance or its features. Since the customer needs individual problem solving he should rather articulate his requirements and give orders to the service provider. Modern telecoms and IT make possible tailor-made solutions!

And the market has changed to a demand driven market after having been a suppliers market for years. There does no longer exist just one (standard) solution for somebody's communication problems but many different services might be able to offer solutions. This is a fact that should encourage the customer to more selfconfidence and that gives him a better bargaining position. The telecoms user is asked to participate in the design of new communication services. It is the wrong position to inactively wait for the new standard services like ISDN or even IBC (Integrated Broadband Communication) to come. These are only "bare" bearer services. They need to be "loaded" by user oriented applications which may even develop towards enhanced services later. Enhanced services comprise more than transmission, switching, packeting, billing, network maintenance, conversion, coding or decoding and the like; they can also include complementary business services such as management of certain functions, organization of certain tasks, accounting of subscribers, cash management, administration of databases, editorial tasks in information flow, personal office services and a lot more. Enhanced telecoms services can add a new quality to the (international) work division. Thus telecoms open new opportunities for novel businesses: the provision of tailormade enhanced telecoms services. This is another attractive aspect for some entrepreneurs (even of SMEs) who want to enter new markets. And this leads us back again to the regional aspect of communication: a local enterprise can develop and provide enhanced telecoms services specific to the needs of the regional economy! In Germany and other European countries we already see the emergence of regional or local initiatives for the development and provision of enhanced telecommunications services dedicated to specific regional requirements (e.g. Telehouses, Telecottages, Teleports, local information services via videotex, local teleshopping networks, consultancy via networks, consultancy on I&C technologies, interactive teleeducation etc).

1. Some Critical Remarks to Regional Information Flows

One of the subjects of this conference is the information flow within a region, another is the support of information supply by means of IT.

The question arises whether there is a difference to be made between communication within a region and communication between a region and the outside. We all know from our own experience and from the various studies that have been conducted on this subject that a lot of the information needed by SMEs is gathered via or provided by an **informal** regional

network. This is of high importance, and these networks should not be replaced by others (e.g. technical ones). Certainly informal relations do also exist with the outside, i.e. external to the region. It is relatively hard and affords a lot of time, travel and communication costs to maintain them.

Can these informal relations at least be supported by I&C technologies? They can - the best by media which are flexible, which do not require standardized or formatted communication, i.e. which fit best to the informal character of the relation to be supported (e.g. telephone). Even videotelephony and videoconferencing can be attractive for SMEs because they make communication very similar to the natural person-to-person conversation. You might be surprised to hear me promoting the use of such services by SMEs. I do it because the recent developments both in terms of equipment, service performance and prices are encouraging even for small budgets. However, those services should be no more than supplements to the existing informal networks, and experiences show that the use of these services even increases the number of informal contacts instead of replacing them.

The more formal communication is not limited that much to a region: in principle it does not matter whether you send a letter, a telex or telefax or some printed matter to a partner within the region or outside of it, provided the traditional postal or telecoms services work satisfactory (which is not always the case, I know).

Who at all are the participants of information exchange in- and outside a region? I suggest it happens between SMEs and the following partners. (I want to add some comments about the nature of the information exchanged nowadays):

- **SEM/customers, clients:** The main entrepreneurial chance of SMEs is to cross the boundaries of the regional market. Extra-regional communication is one precondition for this. Extra-regional markets are important also for the sale of services and partly also for crafts.

- **SME/other SMEs of the same business:** Because of the competition on this level communication is limited to either formal relations (partly indirectly through associations and chambers) or to very personal informal relations.
- **SME/subcontractors, suppliers, (local) services:** From my point of view these are the most important regional relationships. Although subcontracts and orders are also given to firms outside the region, the region is still the main resource for supply and services. Therefore a technical support of the corresponding communications is essential for the development of the regional economy.
- **SME/consultants, accounting firms, lawyers:** Same as above with an emphasis on personal contacts which require an adequate technical support (e.g. interpersonal message transfer, comfort features for telephony, video-telephony, telefax).
- **SME/chambers and/or professional or industrial associations:** At least for Germany it can be said that although some bilateral interactions occur, the major part of the exchanged information is of a more formal character and not specific to the region: **central** offices of chambers and associations collect specialized information and prepare, publish and disseminate it to the member firms.
- **SME/researchers, R&D establishments:** Normally the scientific disciplines needed are not available within the region, so that the corresponding relations are often extra-regional. If there is a choice the SMEs prefer the regional contact and because of the personal and informal character of this kind of relations similar measures could be helpful as with the consultants etc (see above).
- **SME/banks:** SMEs tend to co-operate with local banks or local branches of big banks. Telebanking, POS systems, financial information systems etc are already being introduced (although not yet widely used). Further developments in this direction will be carried out by the banks themselves;

but these applications will be central ones and not specific to a certain region.

- **SME/authorities, public bodies, courts:** There is very little usage of I&C technologies within and among them. I only see very few points where technical support of communication between such institutions and SMEs would make sense.
- **SME/specialized information providers:** These are certainly of high relevance for the SMEs, although not yet sufficiently used. A main issue of this conference is the question how to improve this. There is a great number of specialized databases in the world, most of them accessible via a telecommunication network. Within SMEs there exist various kinds of acceptance barriers but there is also a lack of appropriate databases with regional or local reference.
- **SME/travel industry and transport:** The access to and the booking of any kind of transport means for both goods and persons is a local problem which includes a relatively large amount of formal and personal interaction with transport services and their agencies as well as with hotels, travel agents and other intermediaries.
- **SME/institutions for education, professional formation, training and instruction:** Improvement of the qualification level of the local or regional labour force is certainly one of the most crucial measures that have to be taken in order to raise the economic competitiveness of the region. Therefore the problem of making available some of the high number of good teachers, training or instructing personnel, teachware and training programmes etc. is mainly a regional one.
Apparently this is one of the fields where the biggest efforts are being made in order to introduce IT, and they are very promising since a wide range of appropriate technologies and concepts are available today.

As a result you can see that in fact a lot of the existing formal and informal information flows have a regional aspect.

However, the question is which information or which relations are more important than others. Is regional communication more crucial for the competitiveness of SMEs than communication outside? We do not know the answer yet. But I think we all agree on the fact that - at least for the manufacturing industry and for some service sectors like transport, trade and distribution - relations with outside the region (i.e. external communication) is essential for the competition on non-regional markets, for the knowledge and technology transfer, for co-operation etc. To leave the outside unregarded would be risky. (A trivial remark, I admit).

Therefore - with your permission - I would like to speak about formal information networks in general regardless of the regional aspect.

Another result of the past studies is that it is not enough to provide the right information at the right time and via the best media but that it should be our task **to support old relations** and contacts between humans **and** institutions or machines and **to enable new contacts**. Thus the subject of today is also communication (not necessarily telecommunication) and not only information provision as the conference programme suggests.

2. Attitudes towards telecoms services are to change

What is new about these remarks? What I said is in no way new to you. In our institute ISI we are convinced that we need new kinds of information and telecoms services both intra-regional and extra-regional.

The usual answer to this hypotheses is: Don't we have enough of these things, especially those fabulous new integrated telecoms services like ISDN, which is said to solve all our problems?

We believe that we do not have what we really need. And we will not get it unless we develop a new understanding of what is a user oriented telecoms service and a new attitude towards the service providers.

The German language makes a difference between the notions "Dienst" and "Dienstleistung". Most other languages only use one expression for this subject: "service". This distinction is quite useful in the field of telecommunication, because it makes clear the different interests of the main actors in telecoms: Public network operators and service providers on one hand and users on the other.

PTTs and Public Telephones Operators (PTOs) operate networks and provide more or less basic telecoms services. For economies of scale they ought to be more interested in standardized services, i.e. in services for as many users as possible. In most cases the public operators are obliged by law to supply the basic services to everybody and everywhere. Therefore these services provide applications with only limited features; at least in the past there was no space for differentiation between particular user groups. On the other hand the user has very individual communication problems for which he seeks individual solutions. He is only interested in his particular telecoms application and he looks for the appropriate services to support his application. Normally he won't find such services within the range of PTT's or PTO's standard programmes. He needs other service providers, consultants, software developers and own skills and phantasy to design a solution which meets his requirements the best. **In German words: He needs "Dienstleistungen" instead of "Dienste" to realize his particular telecoms application.** In English I would suggest to use the term "enhanced service" in order to distinguish this from the mere basic services provided by public operators .

Enhanced services are built on one or several basic services (telephony, telex, circuit switched or packet switched data transmission, leased line service etc.) and are completed by accompanying services necessary to fulfill the tasks required (e.g. billing, administration of the user group, messaging, equipment maintenance and user service, installation and testing, help desk, systems recovery etc.). There are even services which have nothing to do with IT or telecoms but are necessary to make an enhanced service work: e.g. consultancy in organizational, legal, and technical aspects, training and instruction of users and their staff, printing of manuals and directories etc.

Different from basic telecoms services the enhanced services are problem and application oriented.

Enhanced services may become basic services after a while, when it is being used widely and when it has become a "quasi-standard". The best known example for this is the packet switched data service which started as an enhanced service in the USA.

Enhanced telecoms services require telecoms networks and basic services. Since today's requirements to telecommunications are increasingly complex, not only one specific network or service meets these requirements. Several different networks and services may be capable to meet them and nowadays applications often demand integration of different services (e.g. integration of voice, text, data, graphics, photographs and even moving images).

Now, I think, it would be necessary to illustrate my rather theoretical observations with concrete examples of enhanced services which serve individual applications. Unfortunately there is too little time to go into depth. I could easily fill an entire seminar with this but today I simply want to drop some notions of which I hope they will mean something to you:

- Electronic Mail, (if possible according to the CCITT recommendation X.400) including gateways to the international telex and telefax community. Even systems with regional or sector applications are possible.
- EDI, Electronic Data Interchange, for the international exchange of formatted documents used in trade, transport, customs, distribution, ordering, etc.
- Interactive booking, reservation and ordering systems.
- Tele-education, instruction and teletraining systems via various audiovisual services for professional training.
- Telecontrol, telemetry or telesurveillance systems via telephone network.
- Audiotex, premium rate services (supply of recorded specialized information via telephone).

Today the I&C technologies offer a wide range of opportunities but not even half of their potential is being exploited. Users do not dispose of the necessary experience nor of the necessary information, and sometimes they do not have the phantasy to articulate and design their particular telecommunication concepts. And it is most surprising that professional users, even big companies, do not have enough selfconfidence to articulate what they require from telecoms and to communicate this to the PTT.

A German user would apply to the PTT for a service or an installation with the PTT instead of giving an order. The more companies become selfconfident toward their business partners in other fields the more surprising is that.

Our plea is that the telecoms user should take a more active part in the design of enhanced telecoms services, that he should also promote the provision of tailormade services by capable private vendors or at least order the PTT to provide such a service to him. We also want to create awareness that the range of existing telecoms services (including those supplied by the PTTs) do already allow a lot more application-oriented and individual solutions of communication problems without great development efforts than it is known from the public debate and the image brochures of the PTTs. It is the wrong strategy to wait for the advent of ISDN or even broadband ISDN and in the meantime do nothing. ISDN or fiber optical networks are "naked" technology or mere basic services. As such they do not solve modern individual communication problems, if the users have not yet developed concepts for appropriate enhanced telecommunication services.

Comparative international studies have convinced us that tailormade, user oriented enhanced telecommunication services bear a large economic potential for both possible providers as well as for users of such services.

It is a really fascinating idea to think that the demand for such services also yields a need for adequate service providers. As it could be witnessed in the past these services are often too specialized and maybe too complicated to be

developed and provided exclusively by the big telecoms industries. Specialized service providers are needed who have an insider's knowledge about the concerned business and who are familiar with the needs of the users. This is a big opportunity for new business activities.

Let me finally come back to the regional aspects of such telecoms services. I said that they can be designed according to individual need, or at least according to the needs of a specific user group. If this is the case it is also possible to design fulfilling regional requirements. **That means that regionally specialized telecommunications services can be envisaged, and that on a regional scale we discover new business perspectives.**