Project Descriptions

The Design of Future Telematic Systems for Private Customers

Our societies are faced with a phenomenon called 'information age'. Among other things, this means important and basic changes in the relationship between the people within an economy. The information and communication technology (ICT) is the driving force of socio-economic progress. After discussing some impacts of future telematic systems, the author develops a conceptual framework for the design of future telematic systems. Also, three prototypes are outlined that show new ways for the realization of modern telematic systems for private customers.

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Our societies are faced with a phenomenon called 'information age'. Among other things, this means important and basic changes in the relationship between the people within an economy. Information and communication technology (ICT) has been the driving force of socio-economic progress and gave this age its name. The impact of the information age has to be compared - concerning their relevance - with the changes from the agricultural to the industrial society. The emerging global telecommunication structures will affect the societies in an elementary way. For example, the boundaries within and between the commercial and the private sector are no longer valid. New forms of virtual organizations will arise [1]. The utilization of these new technologies in our society can be compared with the invention of the steam engine or the electric motor in the past. The new role of private households within these changing relationships has received very little attention yet. So what are the changes that have to be noticed?

We recognize new forms of coordination in changing markets. More and more hierarchical relationships are being replaced by market mechanisms or networked organizations. Thus the market forces are changing and business processes between market partners have to be redesigned. In these changing processes of market coordination, the role of the households has to be reconsidered. They have to be regarded not only as consumers, but also as producers of goods and services, and therefore, as important actors in a market system. The use of ICT enables new forms of production processes to be considered and alters household boundaries [2].

Implications for Telematic Systems

If we take a look at present telematic systems offered in Europe for the private customer, we find that many of these systems treat the household in the traditional way as a consumer at the end of the value chain. Systems like telebanking- or teleshopping systems are often only the extension of the 'electronic workbench' into the household. The consumer carries out tasks, such as the data entry for electronic payment transactions.

The Electronic Marketplace

A future telematic system should support the new emerging role of the households within the market. In this sense, a modern telematic system corresponds to the Greek term 'agora'. Agora means a marketplace where people come together to sell and buy goods and services (doing business), use entertainment applications, meet people and talk to each other as well. We still find this kind of marketplace in some areas in southern Europe. So we identify two major functions of the marketplace: 1. providing market facilities to do business in an economic sense and 2. serving as an entertainment and communication platform for people. Supported by ICT, the first function we call *electronic markets*, in the second case, we will use the term *telematic mediated communication*.

The development of a concept for the design of a modern telematic system in the sense of the open marketplace was a major objective of the research project 'Competence Center TeleCounter' at the Institute for Information Management of the University of St. Gallen. The concept is outlined in the following. Parts of the ideas were realized in the form of prototypes. They are described at the end of this article [3].

The Home-oriented Interactive Telematic System (HITS)

A Home-oriented Interactive Telematic System (HITS) is considered as an information system to set up an electronic marketplace that enables a private user to

- initiate, transact, and complete a market transaction,
- to communicate with all other participants in the market,
- from his place (home, office, etc.),
- via telematic systems.

The fundamental requirements of a modern and future-oriented telematic system are openness, standardization, interconnection of different telematic systems, integration of E-mail, user-friendly human interface and security (for details see [4]).

Regarding the design of an electronic marketplace, the applications have to be clearly distinguised from the underlying transport media, the *information highways*. The communication services may not be seen as an end in itself, but as an infrastructure to provide the applications and to implement the electronic agora. The concept of a HITS tries to provide a conceptual framework for the design of telematic systems in that sense [4]. The main elements of the HITS concept are the layer model and the organizational model. Both reflect different views of a HITS and will be briefly outlined below.

The Layer Model

The essential characteristic of the layer model is the clear separation between applications and services. The different developing speeds of the two main layers - technology-driven network services and business-driven applications - can be considered accordingly by this clear separation. The HITS-layer model is designed to guarantee the 'balance' between the market needs (which determine the purpose of the system), on the one hand, and the possibilities and restraints of the ICT (the available 'building material'), on the other hand. The model gives a holistic view and permits a discussion and definition of single functions without losing the whole focus. The proposed layer model consists of four layers: Layer 1 and 2 represent the transport services which define a set of communication functions associated with specific implementations. They are determined predominantly by network characteristics and are thus technology-driven. The network service platform (layer 2) offers value added network services (VANS), which are set up on available transport media (layer 1). We distinguish three generic types of VANS:

- *Message Handling System (MHS):* Provides a standardized infrastructure for the message exchange between participants on the marketplace.
- *Forum service:* A library for information objects allows users to access information objects (such as documents).