Teknillinen korkekoulu/Tietoliikenneohjelmistojen ja multimedian laboratorio Project: Toimialaverkot Professor Olli Martikainen 16.9.1997

## 1. Background

Interactive broadband service developed by the network operators and the service providers demand that the underlying telecommunications network supports decentralization and is scaleable. The control functions related to the network and the services should the partly controlled by the user and the service applications. This raises the questions about how the control functions will be defined, what are their interfaces and what security issues are related to the use of these functions.

Many companies have decentralized their operations in order to maintain competitiveness and to react more quickly to market changes. This demands efficient presentation and transfer of information. A decentralized information system that contains various types of information could be implemented by using hypermedia techniques. The information could be accessed via a uniform user interface that could be used in, for example, video conferencing, transferring product and business information, and controlling production and marketing.

## 2. Project description

The TOVE (Toimialaverkot) project is divided to two sub-projects, to applications part and to communications platform part. The objectives, resources and results of these sub-projects are described separately.

The objective of the applications part is to research information publishing in the world wide web, find out what the textile industry corporate communications needs are and to develop groupware software for textile industry companies.

The objective of the communications platform part is to create highly adaptable ITU-T and ATM Forum standards compliant platform to study and develop distributed call-control software compatible with B-ISDN (Broadband-Integrated Services Digital Network) networks.

## 3. Resources and budget (1996-1997)

The project resources and budget are in the following table. The project resources and budged are divided half and half between the applications part and the communications platform part.

	1996	1997	Total
Man months	55	68	123
FIM (thousands)	1460	1826	3286

## 4. Results

The results of the applications part are Reima-Tutta world wide web pages, a survey of the customer reactions on the pages, master of science thesis of Elina Kalli "Organizational Publishing Process on the World Wide Web", report of CSCW tools (in Finnish), and a seminar. Also, a method for blocking and capacity requirement calculation for TV or radio delivery in an ATM network has been developed.

The results of the communications platform part are the following. Pilot platform for ATM call-control including the following protocol software (based on ITU-T specifications unless otherwise noted): Q.2931, ATM Forum UNI (User-Network Interface) 3.1, UNI-SSCF (Service Specific Coordination Function for User-Network Interface), TCAP (Transaction Capabilities Application Part), BISUP (Broadband ISDN User Part), SCCP, MTP3 (Message Transfer Part Level 3), NNI-SSCF (Service Specific Coordination Function for Network-Network Interface), SSCOP (Service Specific Connection Oriented Protocol) and Internet RFC 1987 based GSMP (General Switch Management Protocol). The call-control platform includes support for point-to-point and point-to-multipoint SVCs (Switched Virtual Circuits) and BINAP (Broadband Intelligent Network Application Part ) interface using generic TCAP-CORBA (Common Object Request Broker) gateway specified in OMG (Object Management Group) white paper.

The main objective in the software has been the signalling. Routing issues has not been addressed. The protocols are working prototypes with simplified routing parts. The protocol software is created using adaptable C++ and Java frameworks. Linux operating system and standard PC hardware has been used. The ATM switch fabric control is based on GSMP. In this project GSMP controllable FSR (Frame Synchronized Ring) switching fabric from VTT (Valtion Teknillinen Tutkimuskeskus, Technical Research Center of Finland) is used. Intangible results are the experience of building adaptable and reusable network software frameworks. The results of the project are used by other projects including Calypso, coming Mediapoli and SCOMS (Software Configurable Multidiscipline Switch) projects. The industry partners have plans to use the results as well as part of their products.