Länderübergreifender IN-Einsatz

In the European countries national IN-platforms were developed on which in 1994 four to ten services were running. The goal of the EURESCOM project 230 which had 14 partners including all the major telecom operators in Western Europe was enabling pan-European services by interconnecting the national IN-platforms. The vision of a pan-European IN (PEIN) or even a global one is that customers can access their network service from any location anywhere in the world. The national IN platforms vary in the way that they were aligned with the first IN standard CS-1, some according to and some similar to CS-1. Although the CS-1 supports limited network interworking with the SCF-SDF relationship, it was not developed for service independence across network boundaries.

Following four high-priority services were first chosen for the pan-European service provision: Freephone, Virtual Private Network, Premium Rate, and Virtual Card Calling. They were used as a basis for the development of the internetworking architecture. A pan-European service should have the properties: accessible from all European countries, same look-and-feel regardless of point of access and a single point of contact for subscription, billing, reporting etc. The EURESCOM was a response to the initiative for an increased competitive telecommunication market in Europe.

1. PEIN Architecture

The internetwork architecture should be a flexible platform for the creation and management of various services, make possible to introduce new services in a short time and provide a uniform operation of services. The question is how the different national IN by their Public Network Operators (PNO) should interact. As shown in Figure 1, apart from the home network two other networks are involved in an international IN-call. The originating network where a call is initiated and the terminating network where a call terminates. An important issue is the distribution of the intelligence, of the service data and service logic in the originating and home network. From a technical point of view the concentration of service data and service logic in the home network leads to a lower complexity concerning provisioning and management of service. But if service logic and data are deployed in the home network problems can arise in the real time execution of service due the fact that the home network has to control resources in the originating network. Figure 2 shows the internetworking architecture, which is modelled according to preliminary results in CS-2. The interworking functions (IWF) are only signalling gateways without service specific capabilities. The service interaction, overload control, accounting, charging etc. are part of the internal structure of a PNOs IN. The SCF contains service logic programs (SLPs), which are executed on top of a service independent platform. Locally a SLP may
perform all types of control but a SLP should not be able to control a remote network without certain restrictions. The PEIN architecture provides a signalling communication between two networks at the SCF-SDF and SCF-CSF relationship. Three basic ways for the execution of a pan-European service are proposed:

1. SLP is executed in the originating network (ON). The ON queries the home network (HN) for service and subscriber specific data.
2. Co-operating SLPs in the ON and the HN. Core service features are executed in the ON and the optional may be executed in the HN.
3. Co-operating SLPs in the ON and the HN. Core and optional service features are executed in the HN. The ON executes access service logic and the actions needed to control its resources based on requests received from the HN. The ON in this case checks the requests received from the HN and can reject them if the HN doesn’t follow agreed rules.

For providing a communication between the ON and the HN a protocol structure was identified in [1].

2. Security and Accounting

In pan-European service provision, the main security threats may occur at the internetworking relationships between network domains. It has been shown that a digital signature mechanism protects the involved network operator and customers against most of the threats.

Charging of a pan-European IN call can be divided into two components: a call connection component and an intelligent processing related (originating SCF processing, home SCF processing and home SDF access). A unique call identifier is needed to handle correct charging and billing.

3. Personal and Terminal Mobility in IN Environment

In the EURESCOM project 230 also the IN support of Digital European Cordless Telecommunications (DECT) was investigated. These led to a personal and terminal mobility service called European-Cordless Terminal Mobility (E-CTM) using Universal Personal Telecommunication procedures in combination with DECT radio access. This service supports full terminal and personal mobility in all DECT networks connected to the service. E-CTM links the cordless islands together, providing to the users a complete mobility among different DECT islands.

References:

DECT is a radio access system providing high quality communication services locally at home, in the office and in the street, with low-power cordless portables. (As opposed GSM supports much more users in a wide area.)