Harmonisation/Integration of B-ISDN and IN:
EURESCOM project P506
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1 Introduction
The EURESCOM project P506 "Harmonisation/Integration of B-ISDN and IN" was started in the beginning of 1995 and was running for 2 years. 13 Public Network Operators (PNOs) were participating in the project: Finnet Group (Finland), British Telecommunications, Swiss Telecom PTT, Tele Danmark, Deutsche Telekom, France Télécom, CSELT (Italy), Koninklijke PTT Nederland, Portugal Telecom, Telia (Sweden), Telefónica de España, Telecom Finland and Telecom Eireann. The purpose of the project was to study the issues involved in the integration and harmonisation of B-ISDN and IN needed for the IN Capability Set 3 (CS3). More specifically the project should develop a functional model of an integrated B-ISDN/IN architecture, study the possibility for harmonisation between the signalling protocols for B-ISDN and the INAP protocol and propose an extended Basic Call State Model (BCSM) able to exploit the new functionalities supported by B-ISDN and the demands coming from future sophisticated services (e.g. Multimedia services). Needed extensions to the IN functional entities should also be investigated.

In this paper the working method of the project is presented shortly. Then an integrated and harmonised reference architecture for B-ISDN and IN is presented. After this the main results of the project: The enhanced BCSM and the proposed changes to the Call Party Handling defined IN CS2 are presented. The enhancements to B-ISDN signalling and the INAP are not presented here.

2 Method
At first four benchmark services were selected to be representative for four different service categories: Multimedia conversational service (including multiparty features), multimedia distribution services, multimedia retrieval services and B-VPN facilities. It was also intended that mobility aspects should be taken into account, but mobility aspects were for various reasons only treated to a limited extent in the project. For the selected services the ITU-T service description methodology described in ITU-T Recommendations I.130, I.140 and I.210 was used. The selected services were described in details, and introduction scenarios were developed for the same services. Then, based on these service descriptions and scenarios, the network requirements to support the selected services were identified. Requirements were identified for transport, management, signalling capabilities and various communication configurations. Furthermore the applicability of supplementary services to the selected services were identified.

After studying the identified requirements a reference architecture was proposed and verified against the chosen benchmark services. The functionalities needed in the different IN Functional Entities (FEs), SSF, SCF and SRF, were described. The existing IN BCSM had to be modified (extended) since it only supports simple call configurations with point-to-point connections that Public Switched Telephone Networks (PSTNs) and N-ISDN can provide. In contrast B-ISDN provides (or will provide) the support of general multiparty calls with the possibility of multiple connections between parties, and the individual connections can be unidirectional or bi-directional (symmetric or asymmetric) point-to-point connections or point-to-
multipoint connections. Furthermore B-ISDN supports modifications to connections and call configurations. B-ISDN has addressed these complications by introducing the concept of call and bearer separation. A similar concept was applied to the BCSM. Information flows and functional entity actions were described for the benchmark services to be able to give a dynamic description of the Harmonised Functional Model. At the beginning of the project it was the intention to produce an SDL description of the different FEs. This was later dropped because of delay in standards, which threatened to make this work obsolete. Due to late decisions in ITU especially concerning Call Party Handling (CPH) modifications to already produced flows and the proposed BCSM were performed by the end of the project to maintain alignment and backward compatibility with standards. Parallel to the development of a new reference architecture common for B-ISDN and IN and a new BCSM for IN CS3 an investigation was made of possible extensions for B-ISDN signalling protocols needed for B-ISDN/IN integration. Finally proposals were made for updating the CPH defined for CS2.

3 The Benchmark Services

The following benchmark services were selected:
- Broadband Video Conference Service
- Broadband TV Distribution Service
- Video on Demand

Two versions of the Broadband Video Conference Service were considered:
1. Add-on Broadband Video Conference Service
2. Meet-me Broadband Video Conference Service

B-VPN was considered but this topic is at a very early stage and it was not studied in the same depth that the other services were. So the influence from this service on the rest of the work in the project was limited. The same was true for the Mobility Aspects.

4 The reference IN/B-ISDN architecture

![Figure 1](image_url)