INTERNATIONAL TELECOMMUNICATION UNION

CCITT

I.328 / Q.1202

THE INTERNATIONAL
TELEGRAPH AND TELEPHONE
CONSULTATIVE COMMITTEE

INTEGRATED SERVICES
DIGITAL NETWORK (ISDN)
I.328 (10/92)

OVERAL NETWORK ASPECTS
AND FUNCTIONS,
ISDN USER-NETWORK INTERFACES
Q.1202 (10/92)

INTELLIGENT NETWORK – SERVICE PLANE ARCHITECTURE

Recommendation I.328 / Q.1202

FOREWORD

The CCITT (the International Telegraph and Telephone Consultative Committee) is a permanent organ of the International Telecommunication Union (ITU). CCITT is responsible for studying technical, operating and tariff questions and issuing Recommendations on them with a view to standardizing telecommunications on a worldwide basis.

The Plenary Assembly of CCITT which meets every four years, establishes the topics for study and approves Recommendations prepared by its Study Groups. The approval of Recommendations by the members of CCITT between Plenary Assemblies is covered by the procedure laid down in CCITT Resolution No. 2 (Melbourne, 1988).

Recommendation I.328/Q.1202 was prepared by Study Group XVIII and was approved under the Resolution No. 2 procedure on the 1st of October 1992.

CCITT NOTES

1) In this Recommendation, the expression "Administration" is used for conciseness to indicate both a telecommunication administration and a recognized private operating agency.

2) A list of abbreviations used in this Recommendation can be found in Annex A.

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INTELLIGENT NETWORK – SERVICE PLANE ARCHITECTURE

(1992)

1 General

Recommendation I.312/Q.1201 "Principles of intelligent network architecture" presents the Intelligent Network Conceptual Model (INCM), as based on a four-plane structure.

The objective of this Recommendation[1)] is to provide a general architecture of the IN service plane in a way that specific functionalities and their interactions can be identified and described in other Recommendations making reference to the IN service plane architecture contained in this Recommendation.

2 Service plane architecture

2.0 *General*

The service plane illustrates that IN-supported services can be described to the end user or subscriber by means of a set of generic blocks called "service features".

A service is a stand-alone commercial offering, characterized by one or more core service features, and can be optionally enhanced by other service features.

A service feature is a specific aspect of a service that can also be used in conjunction with other services/service features as part of commercial offering. It is either a core part of a service or an optional part offered as an enhancement to a service.

The service plane represents an exclusively service-oriented view. This view contains no information whatsoever regarding the implementation of the services in the network (for instance, an IN type of implementation is invisible). All that is perceived is the network's service-related behaviour as seen, for example, by a service user.

Furthermore, management services are contained in the service plane; they can be described to the end user by means of service management features.

2.1 *Characterization of services and service capability requirements*

Characterization of services and service features is to identify service independent capabilities that are required to construct and/or customize services by the users or network operators. Examples of service capabilities required from the user point of view are, call queueing, customized announcement, etc.

There is a need for a structured approach with which to classify service characteristics and identify service capabilities. The structured approach shown in Figure 1 below demonstrates a high level approach for analyzing services and decomposing services into service independent building blocks (SIBs). These reusable service independent building blocks (such as translation, user interaction or charging) will form the basis for input to global functional plane modelling and distributed functional plane modelling.

It is recommended that activities involving functional modelling make use of the results of such service analysis, based on the characterization of services for verification of their models, and to ensure a unified model for service processing.

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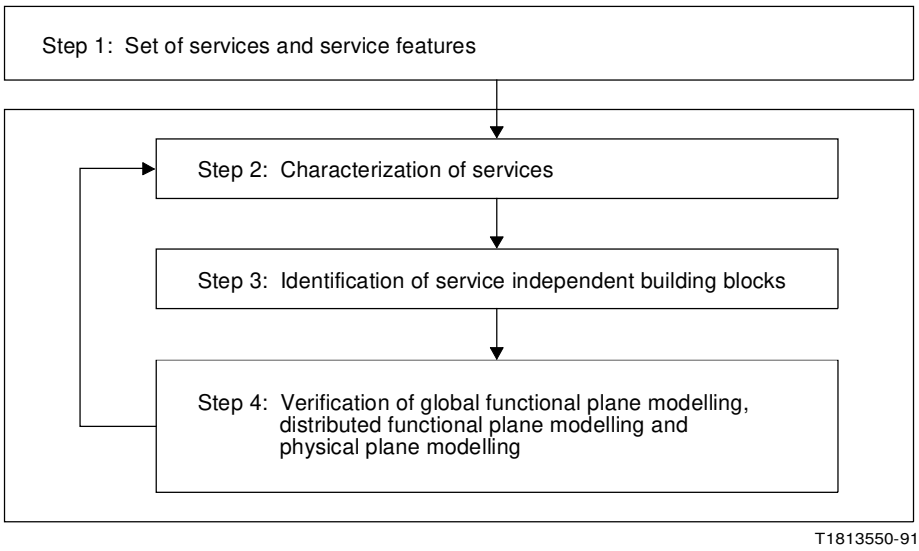
1) Some concepts introduced in this Recommendation may need reference to Recommendation I.312/Q.1201.



Step 1 Existing service descriptions (Stage 1, Service description) as well as emerging service descriptions are selected as candidates for analysis.

Step 2 These services are characterized based on the principle of decomposition of services into functions.

Step 3 The analysis in step 2 results in requirements in the form of service independent building blocks as the input to global functional plane modelling, distributed functional plane modelling and physical plane modelling.

Step 4 Verification of the global functional plane modelling, distributed functional plane modelling and physical plane modelling results in improved SIBs through feedback to step 2.

FIGURE 1

An approach for analyzing services

2.2 *Service and service feature interaction*

This subsection focuses on the interaction between IN supported services and other supplementary services and not between basic services. The service interactions are described from the customer and user point of view.

Service interaction applies to all interactions of the service being described with other services which have been already identified.

Service feature interactions may occur (for example):

1) among different features associated with the same service;

2) between features associated with a service for a given service-user and features associated with other services the same user may have requested or been assigned;

3) between features associated with a service for a given service-user and features associated with possible services related to the terminal/calling line that the user is currently using, e.g. in case terminal mobility and/or personal mobility are involved.

An IN structured network handles multiple services for the same call. The necessary interactions shall be defined for the processing of several services for the same call. When multiple services can be activated concurrently, some prioritization of services will be necessary. User specific requests may take priority over a group service request. Additionally, certain services may override or deactivate other services.

The service interaction is part of the specification of services, and should be dealt with in the service plane modelling. There are often many ways to deal with an interaction between two or more services. In an IN structured network, service interactions may be customized.

How service interactions are implemented is not visible in the service plane. The usage of the service independent mechanism in the IN architecture to handle service interactions will be visible in the global functional, the distributed functional plane and the physical planes.

The following issues need consideration when service interactions are specified:

– different phases of a call, i.e. originating, terminating, interrupt (active) and release phase of call processing.

– a service spans more than one network. This may impose additional requirements on service interaction, which need further study;

– service interaction may occur between services offered to a single user, as well as between services offered to different interacting users.

Example of service interactions are given below:

– Abbreviated Dialling and Number Screening;

– Freephone and Call Forwarding Unconditional;

– CLIR (Calling Line Identification Restriction) and CLIP (Calling Line Identification Presentation);

– Call Forwarding and Premium Rate Service;

– Call Waiting and Call Forwarding Busy;

– Conference Call and CUG (Closed User Group);

– "Meet me" Conference and CUG.

Examples of different ways to treat interactions between Freephone and Call Forwarding Unconditional are:

1) Freephone call attempts shall be forwarded like other terminating calls.

2) A freephone destination shall be selected for frephone calls, even if it has activated call forwarding unconditional.

3) A freephone destination, shall not be selected for freephone calls if it has activated call forwarding unconditional.

2.3 *Service plane modelling*

Services are comprised of one or more service features (SF). A service feature is the smallest part of a service that can be perceived by the service user. These SFs can also be used as building blocks in the specification and design of new, more complex services. SFs are comprised of one or more SIBs which are described in Recommendation I.329/Q.1203.

All individual telecommunication services identified in the service plane should be described as seen from the user's viewpoint without reference to how the services are implemented in the network.

In the service plane architecture, it is stressed that all capabilities experienced by a service user of the network represent telecommunication services (basic or supplementary). The service user may make use of the service for his own communication needs or may combine a number of services together and with perhaps additional capabilities, use the combination as a means of providing communications to other (third) parties.

ANNEX A

(to Recommendation I.328/Q1202)

Alphabetical list of abbreviations used in this Recommendation

CLIP	Calling line identification presentation
CLIR	Calling line identification restriction
CUG	Closed user group
IN	Intelligent network
INCM	Intelligent network conceptual model
SF	Service feature
SIB	Service independent building block