INTERNATIONAL TELECOMMUNICATION UNION

# ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

# Q.1200

(03/93)

## GENERAL RECOMMENDATIONS ON TELEPHONE SWITCHING AND SIGNALLING

## INTELLIGENT NETWORK

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# Q-SERIES INTELLIGENT NETWORK RECOMMENDATION STRUCTURE

## ITU-T Recommendation Q.1200

(Previously "CCITT Recommendation")

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## FOREWORD

The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of the International Telecommunication Union. The ITU-T 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 World Telecommunication Standardization Conference (WTSC), which meets every four years, established the topics for study by the ITU-T Study Groups which, in their turn, produce Recommendations on these topics.

ITU-T Recommendation Q.1200 was prepared by the ITU-T Study Group XI (1988-1993) and was approved by the WTSC (Helsinki, March 1-12, 1993).

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NOTES

1 As a consequence of a reform process within the International Telecommunication Union (ITU), the CCITT ceased to exist as of 28 February 1993. In its place, the ITU Telecommunication Standardization Sector (ITU-T) was created as of 1 March 1993. Similarly, in this reform process, the CCIR and the IFRB have been replaced by the Radiocommunication Sector.

In order not to delay publication of this Recommendation, no change has been made in the text to references containing the acronyms "CCITT, CCIR or IFRB" or their associated entities such as Plenary Assembly, Secretariat, etc. Future editions of this Recommendation will contain the proper terminology related to the new ITU structure.

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

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# INTRODUCTION

A block of one hundred numbers has been set aside in the Q-Series for the development of intelligent network (IN) Recommendations. This Recommendation, the first in that series, has been developed to organize the Recommendations in a meaningful way to assists users in locating topics of interest. It defines the structure of the Q.1200-Series Recommendations and assigns blocks of numbers to the groupings of IN capabilities known as capability sets (CSs) and blocks of numbers for general and vocabulary sections. In addition, this Recommendation provides a structural overview of the content of each Recommendation.

This Recommendation has been developed with a long range view in mind. By assigning blocks of numbers to each capability set (CS-1, CS-2, CS-n), an organized, parallel structure across capability sets can be maintained; for example, CS-1 has been assigned the Q.121x block of numbers.

Associated work has been documented in the I-Series Recommendations. For the sake of consistency Recommendations Q.1201, Q.1202 and Q.1203 have been assigned numbers in the I-Series Recommendations (I.312, I.328 and I.329, respectively).

The text in this Recommendation is considered to be “stable”.

**Recommendation Q.1200**

# Q-SERIES INTELLIGENT NETWORK RECOMMENDATION STRUCTURE

*(Helsinki, 1993)*

## 1 General structure

Table 1 shows the overall Q.1200-Series intelligent network Recommendation structural distribution through the ten's digits (120<u>1</u>, 121<u>1</u>, 122<u>1</u>, etc.) and the ones digits (i.e., 120<u>1</u>, 121<u>1</u>, 122<u>1</u>, etc.).

TABLE 1/Q.1200

**Recommendation framework structure**

| | |
|---|---|
| 00 – General | |
| 10 – CS-1 | 1 – Principles introduction |
| 20 – CS-2 | 2 – Service plane (not included for CS-1) |
| 30 – CS-3 | 3 – Global functional plane |
| 40 – CS-4 | 4 – Distributed functional plane |
| 50 – CS-5 | 5 – Physical plane |
| 60 – CS-6 | 6 – For future use |
| 70 – CS-7 | 7 – For future use |
| 80 – CS-8 | 8 – Interface Recommendations |
| 90 – Glossary | 9 – Intelligent network user's guide |

NOTES

1 1200 is assigned as for the IN Recommendation framework structure.

2 1290-Series has been set aside for the glossary. Units numbering will reflect the glossary for the appropriate numbered CS version, i.e., 1291=CS-1, etc., and 1290 will be the General Glossary section.

## 2 Q-Series intelligent network Recommendation overview

**Q.1200 Q-Series intelligent network Recommendation structure**

1 General structure

2 Q-Series intelligent network Recommendation overview

**I.312/Q.1201 – Principles of intelligent network architecture**

1 Objectives and overall description

1.1 Motivation, objectives and scope of intelligent network

1.1.1 Motivation

1.1.2 Objectives of intelligent network

1.1.3 Scope of intelligent network

1.2 Definition of intelligent network
1.3 Evolution of intelligent network Recommendations
1.3.1 General considerations on the standardization process
1.3.2 Recommendation areas
1.3.3 Phased standardization and definition of capability sets
2 IN functional requirements
2.0 Introduction
2.1 Service requirements
2.1.1 Overall requirements
2.1.2 Service creation
2.1.3 Service management
2.1.4 Service processing
2.1.5 Service interworking
2.2 Network requirements
2.2.1 Overall requirements
2.2.2 Service creation
2.2.3 Service management
2.2.4 Network management
2.2.5 Service processing
2.2.6 Network interworking
3 IN architectural concept
3.1 The IN conceptual model (INCM)
3.1.1 The service plane
3.1.2 The global functional plane
3.1.3 The distributed functional plane
3.1.4 The physical plane
3.1.5 Relationship with the 3-stage method
3.1.6 Service logic
3.1.7 Application programming interface (API)
3.1.8 Relationships among different planes
3.1.9 Service interaction
3.1.10 Service and network interworking
3.1.11 Management functionality
4 Intelligent network (IN) long-term architecture framework
4.1 Introduction
4.2 Intelligent network conceptual model
4.3 Architecture structure
4.3.1 Logical architecture
4.3.2 Physical architecture
4.3.3 Open distributed processing view
4.4 Service considerations
4.4.1 Service/service feature interaction
4.5 Technology basis
4.5.1 Broadband capabilities
4.5.2 Distributed processing
4.5.3 Open system interconnection (OSI)
4.5.4 Object-oriented modelling
4.5.5 Information technology
4.5.6 Cooperative processing
4.5.7 Distributed control
4.5.8 Management of services and networks
4.5.9 Verification/validation
4.5.10 Artificial intelligence

**I.328/Q.1202 – Intelligent network service plane architecture**


1 General

2 Services plane architecture

- 2.0 General
- 2.1 Characterization of services and service capability requirements
- 2.2 Service and service feature interaction
- 2.3 Service plane modelling


**I.329/Q.1203 – Intelligent network global functional plane architecture**


1 Contents

- 1.0 General
- 2.0 Global functional plane modelling
- 3.0 Service independent building blocks
- 3.1 Definition of an SIB
- 3.2 Characteristics of an SIB
- 3.3 Data parameter for SIBs
- 3.4 Method to describe SIBs
- 3.5 Flowchart analysis
- 4.0 Basic call process
- 4.1 General
- 4.2 Basic call process functionality
- 5.0 Global service logic
- 5.1 General
- 5.2 Relationship between GSL and BCP
- 5.3 Relationship between global service logic and SIBs
- 6.0 Mapping of the service plane to the global functional plane


**Q.1204 – Intelligent network distributed functional plane architecture**


1 General

2 Distributed functional plane model

- 2.1 Explanation of diagram
  - 2.1.1 Functional Entities
  - 2.1.2 Relationships
- 2.2 IN Functional model
- 2.3 Definition of functional entities related to IN service execution
- 2.4 Definition of IN service creation management related functional entities

3 Functional entity call/service logic processing models

- 3.1 General
- 3.2 Modelling objectives/criteria
  - 3.2.1 Call modelling objectives/criteria
  - 3.2.2 Modelling service logic processing objectives/criteria
- 3.3 General assumptions
  - 3.3.1 Scope of functional entity call/service logic processing models
  - 3.3.2 Relationship to IN conceptual model
  - 3.3.3 Use of functional entity call/service logic processing models
  - 3.3.4 Other considerations
- 3.4 Overview of call/service logic processing related functional entities
- 3.5 Call/service logic processing functional entity models

4 Relationships between FEs
4.1 General
4.2 Relationships
4.3 Information flows between FEs
5 Mapping the global functional plane to the distributed functional plane
5.1 Mapping requirements
5.2 Relationship to IN Conceptual Model
5.3 An example of mapping some selected SIBs to FEs
Annex A – Example basic call state model (BCSM)
Annex B – Object-oriented finite state machine modelling
Annex C – Call segment model

**Q.1205 – Intelligent network physical plane architecture**

1 General
2 Requirements and assumptions
2.1 Requirements
2.2 Assumptions
3 Physical entities (PEs)
4 Mapping the distributed functional plane to the physical plane
4.1 Mapping functional entities to physical entities
4.2 Selection of underlying protocol platforms
5 User interfaces

**Q.1208 – General aspects of the intelligent network application protocol**

1 Introduction
2 Background
3 Definition of methodology
4 Evolution requirements

**Q.1211 – Introduction to intelligent network capability set 1**

1 Introduction
2 Phased standardization
3 General description and scope of CS-1
3.1 Criteria for CS-1
3.2 Evolution of CS-1
4 Overview of CS-1 Recommendations
5 Service aspects
5.1 Type A and B services
5.2 Target set of CS-1 service and service features
5.3 Network support of CS-1 services
6 Network aspects
6.1 Network functions
6.2 Control architecture principles
6.3 Feature interactions
6.4 Consistency among CS-1 supported service features
7 Functional relationships and interfaces
7.1 Reference points and identifiers for functional relationships
7.2 Control classes

7.3 Reference point identifiers of functional interfaces
7.4 CS-1 Non-IN connection and call control
7.5 CS-1 IN service control
7.6 Service management for CS-1
7.7 Network interworking in CS-1
7.8 Summary of CS-1 functional interfaces

Annex A – Examples of relationships and mappings between services and service features

Annex B – Short prose descriptions of targeted services and service features

**Q.1213 – Global functional plane for intelligent network CS-1**

1 General
1.1 Scope of IN global functional plane for capability set 1
1.2 Role of SIBs in the global functional plane
1.3 CS-1 global functional plane model
1.4 Terminology

2 CS-1 service independent building blocks (SIBs)
2.1 ALGORITHM
2.2 CHARGE
2.3 COMPARE
2.4 DISTRIBUTION
2.5 LIMIT
2.6 LOG CALL INFORMATION
2.7 QUEUE
2.8 SCREEN
2.9 SERVICE DATA MANAGEMENT
2.10 STATUS NOTIFICATION
2.11 TRANSLATE
2.12 USER INTERACTION
2.13 VERIFY

3 BASIC CALL PROCESS

4 Global service logic

5 Mapping of the service plane to the global functional plane

**Q.1214 – Distributed functional plane for intelligent network CS-1**

1 General

2 Scope of IN distributed functional plane for capability set 1
2.1 End user access
2.2 Service invocation and control
2.3 End user interaction
2.4 Service management

3 Distributed functional plane model for CS-1
3.1 Explanation of diagram
3.2 IN functional model
3.3 Definition of functional entities related to IN service execution

4 Functional entity call/service processing models
4.1 Overview
4.2 SSF/CCF model
4.2.1 General
4.2.2 Basic call manager (BCM)
4.2.3 IN-switching manager (IN-SM)

4.2.4 Feature interaction manager (FIM)/call manager (CM)
4.2.5 Relationship of SSF/CCF model components
4.2.6 Relationship of SSF/CCF to SCF
4.3 Specialized resource function (SRF) model
4.3.1 General
4.3.2 SRF components
4.3.3 SRF and other entity relationships
4.3.4 Objects of SRF management
4.4 Service control function (SCF) model
4.4.1 General
4.4.2 SCF components
4.4.3 Functional routine categories
4.5 Service data function (SDF) model
4.5.1 General
4.5.2 SDF components
4.5.3 Data types handled by the SDF
5 Stage 2 description of service independent building blocks (SIBs)
5.1 Introduction
5.1.1 Functional model
5.1.2 Description of functional entities
5.1.3 Relationship with clause 6 (Information flow descriptions)
5.1.4 Numbering of functional entity actions
5.1.5 Organization of clause 5
5.2 Service independent building blocks – stage 2 descriptions
5.2.1 ALGORITHM SIB
5.2.2 CHARGE SIB
5.2.3 COMPARE SIB
5.2.4 DISTRIBUTION SIB
5.2.5 LIMIT SIB
5.2.6 LOG CALL INFORMATION SIB
5.2.7 QUEUE SIB
5.2.8 SCREEN SIB
5.2.9 SERVICE DATA MANAGEMENT SIB
5.2.10 STATUS NOTIFICATION SIB
5.2.11 TRANSLATE SIB
5.2.12 USER INTERACTION SIB
5.2.13 VERIFY SIB
5.3 Stage 2 description of BASIC CALL PROCESS SIB
5.3.1 Description
5.3.2 Information flows
5.3.3 SDLs
5.3.4 Functional entity actions
5.4 Stage 2 description of other distributed functionality
5.4.1 Activity test functionality
5.4.2 Call gap capability
5.5 Mapping of the global functional plane to the distributed functional plane
5.5.1 Mapping of POIs and PORs to DPs and PICs
5.5.2 Relating the GFP to the DFP
6 Relationships between FEs
6.1 General
6.2 Relationships
6.3 Information flows between FEs

6.4 SCF-SSF relationship
6.4.1 General
6.4.2 Information flows between SCF and SSF
6.4.3 Call party handling information flows
6.5 SCF-SRF relationship
6.5.1 General
6.5.2 Information flows between the SCF and SRF
6.6 SCF-SDF relationship
6.6.1 General
6.6.2 Information flows between the SCF and SDF
6.7 Summary of information flows and related SIBs

Annex A – Communication between call segments

Annex B – SSF/CCF relationship scenarios

Appendix I – Aspects of the distributed functional plane identified as "for further study" (FFS) relative to CS-1

**Q.1215 – Physical plane for intelligent network CS-1**

1 General
2 Requirements and assumptions
2.1 Requirements
2.2 Assumptions
3 Physical entities (PEs)
4 Mapping requirements
5 Mapping the distributed functional plane to the physical plane
5.1 Mapping of functional entities to physical entities
5.2 Mapping FE-FE relationships to PE-PE relationships
5.3 Selection of underlying protocol platforms
5.3.1 SCP-SSP interface
5.3.2 AD-SSP interface
5.3.3 IP-SSP interface
5.3.4 SN-SSP interface
5.3.5 SCP-IP interface
5.3.6 AD-IP interface
5.3.7 SCP-SDP interface
5.3.8 User interfaces

**Q.1218 – Interface Recommendations for intelligent network CS-1**

0 Introduction
0.1 Definition methodology
0.2 Example physical scenarios
0.3 INAP Protocol architecture
0.4 INAP Addressing
1 SACF/MACF rules
1.1 Reflection of TCAP AC
1.2 Sequential/parallel execution of operations
2 Abstract syntax of the IN CS-1 application protocol
2.1 IN CS-1 operation types
2.2 IN CS-1 error types
2.3 IN CS-1 data types
2.4 IN CS-1 application protocol (operation and error codes)

3 Procedures

3.1 Definition of procedures at entities

3.1.1 SSP application entity procedures

3.1.2 SCF application entity procedures

3.1.3 SRF application entity procedures

3.1.4 SDF application entity procedures

Appendix I – Aspects of the intelligent network interface identified as "for further study" (FFS) relative to CS-1

**Q.1219 – Intelligent network users guide for capability set-1**

NOTE – Q.1219 is under development and will be approved subsequent to publication of this Recommendation.

**Q.1220 – Series intelligent network capability Set 2**

NOTE – Document structure is the same as CS-1

**Q.1230 – Series intelligent network capability Set 3**

NOTE – Document structure is the same as CS-1

**Q.1290 – Glossary of terms used in the definition of intelligent networks**

1 General

2 Terms and definitions (listed alphabetically)