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ITU-T M.3000

TELECOMMUNICATION
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OF ITU

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MAINTENANCE

TELECOMMUNICATIONS MANAGEMENT NETWORK

OVERVIEW OF TMN RECOMMENDATIONS

ITU-T Recommendation M.3000

(Previously “CCITT Recommendation”)

FOREWORD

The ITU-T (Telecommunication Standardization Sector) is a permanent organ of the International Telecommunication Union (ITU). 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, establishes the topics for study by the ITU-T Study Groups which, in their turn, produce Recommendations on these topics.

The approval of Recommendations by the Members of the ITU-T is covered by the procedure laid down in WTSC Resolution No. 1 (Helsinki, March 1-12, 1993).

ITU-T Recommendation M.3000 was prepared by ITU-T Study Group 4 (1993-1996) and was approved under the WTSC Resolution No. 1 procedure on the 15th of October 1994.

NOTE

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

CONTENTS

ABSTRACT

This overview of TMN Recommendations describes the aim, subject areas and the range of TMN-related Recommendations developed or to be developed within the ITU-T. The annexes to this Recommendation contain the current lists of TMN-related Recommendations.

Keywords

Telecommunications Management Network (TMN), overview of TMN Recommendations, subject areas of TMN Recommendations, TMN-referenced Recommendations, list of TMN Recommendations.

Recommendation M.3000

OVERVIEW OF TMN RECOMMENDATIONS

(Geneva, 1994)

Abbreviations

ACSE	Association Control Service Element
AOM	Application OSI Management (profile)
ASN.1	Abstract Syntax Notation One
CCSS 7	Common Channel Signalling System No. 7
CMIP	Common Management Information Protocol
CMISE	Common Management Information Service Element
DCN	Data Communication Network
FTAM	File Transfer, Access and Management
ISDN	Integrated Services Digital Network
ISO/IEC	International Standards Organization/International Electrotechnical Commission
ISP	International Standardized Profile
JCG	Joint Coordination Group
MOCS	Managed Object Conformance Statements
NSAP	Network Service Access Point
OAM&P	Operations, Administration, Maintenance & Provisioning
OS	Operation System
OSI	Open Systems Interconnection
PICS	Protocol Implementation Conformance Statements
ROA	Recognized Operating Agency
ROSE	Remote Operation Service Element
SDH	Synchronous Digital Hierarchy
SG/WP	Study Group/Working Party
TIB	Task Information Base
TMN	Telecommunications Management Network

1 Introduction

The study of TMN requires various expertise and TMN Recommendations are being developed in various Study Groups within ITU-T. A stable framework in the form of an umbrella Recommendation is therefore necessary as a guide to all relevant development activities during the period of development.

2 Scope

The purpose of this Recommendation is to serve as an umbrella Recommendation for the development and use of TMN Recommendations within ITU-T. TMN Recommendations describe principles, architecture, definitions and specifications necessary to implement all types of TMNs.

The contents of this Recommendation are the fields of application of TMN, areas to be studied (subject areas) in TMN Recommendations and areas of Recommendations that are referenced by TMN Recommendations (TMN-referenced Recommendations).

The annexes list the current TMN-related Recommendations.

The development of this overview was based on mutual understanding, achieved through the coordination activities of the JCG on TMN, among the relevant Study Groups within ITU-T. The users of this Recommendation are expected to be the experts who develop individual TMN-related Recommendations, those who utilize TMNs to manage telecommunication networks, and vendors and suppliers who implement TMNs.

3 Fields of application

TMNs provide the means used to transport, store and process information used to support the management of telecommunication networks and services.

TMNs can be used for the management of telecommunication networks operated by Administrations, ROAs, customers, or other organizations and individuals. When these telecommunication networks are connected with each other, their TMNs provide the means of exchanging information required to manage end-to-end telecommunication services.

All types of telecommunication networks and network elements-such as analogue networks, digital networks, public networks, private networks, switching systems, transmission systems, telecommunication software, and logical resources of the network (such as a circuit, path, or telecommunication services supported by these resources) are candidates for management by a TMN.

There is in principle no limit to the fields of application. Since TMN Recommendations are still being developed, however, there is currently a practical limit to the variety of application fields that can be implemented.

4 Definitions

TMN-specific technical terms are defined in clause 2/M.60 or in Recommendations dedicated to specific areas of technology.

5 Subject areas of TMN Recommendations

5.1 Evolution of TMN

The study of TMN within ITU-T originated in the definition of interfaces and the specification of interface protocols between OSs and transmission terminals. The concept of TMN was soon established to include the development of Recommendations for the information network operating in support of the management of all telecommunication networks and services.

TMN Recommendations are thus expected to be developed over a long period, to suit the growing demands resulting from continuously evolving telecommunication networks and services.

To avoid inconsistency and duplication in different telecommunication domains, TMN Recommendations are developed in a planned order and with an organized structure. The subject areas of TMN Recommendations are introduced to help understand the purpose of individual Recommendations and to make the assessment of Recommendations easier from the viewpoint of avoiding inconsistencies and duplications.

TMN subject areas identified through the coordination activities in the JCG are:

TMN subject areas

- Architecture;
- Interface specification methodology;
- Management services;
- Management functions (protocol independent);
- Management information models and catalogue;
- Management information registration;
- Communication protocols;
- Systems management services and management messages (protocol specific);
- Conformance requirements;
- International standard profiles;
- Terminology.

To derive TMN requirements or introduce specifications as a tool to develop a TMN, TMN Recommendations reference other Recommendations and/or Standards. The areas of TMN-referenced Recommendations/Standards are:

Referenced areas

- Telecommunication services;
- Telecommunication network architecture;
- Telecommunication network management for traffic;
- Telecommunication network maintenance;
- Telecommunication network security;
- Telecommunication network components;
- Telecommunication network provisioning;
- Communication protocols;
- OSI systems management services;
- ISPs or implementation requirements;
- Managed object naming and addressing.

The relationships between TMN subject areas as well as TMN and referenced areas are shown in Figure 1.

When an individual TMN Recommendation is developed, the subject area(s) to which it contributes is/are identified and to avoid overlap the contents of the Recommendation are compared with those of the other Recommendations concerned with the same area(s). Depending on the users' convenience, the documentation of TMN Recommendations may or may not follow the classification of subject areas.

5.2 TMN subject areas

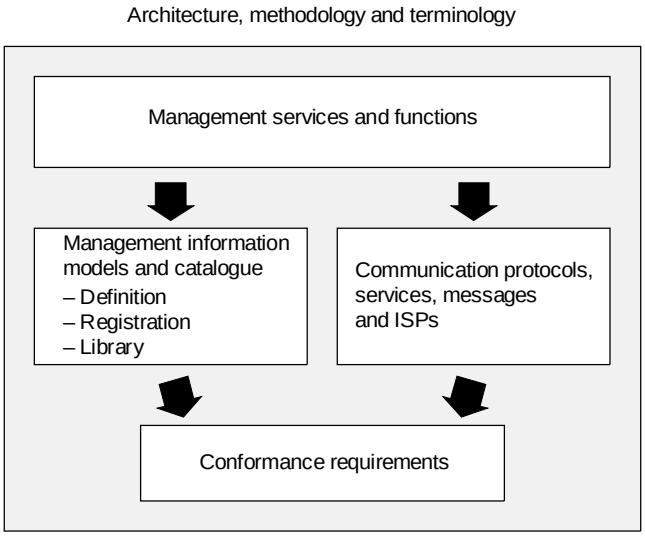
TMN subject areas are explained in this clause as a guide for the further development of TMN Recommendations.

5.2.1 Architecture

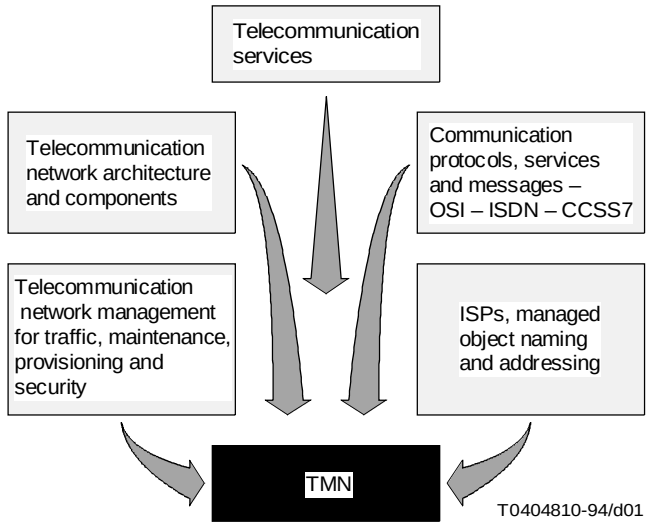
The TMN architecture is described in Recommendation M.3010, "Principles for a TMN". Three basic aspects are included in the TMN architecture.

These are:

- the TMN functional architecture;
- the TMN information architecture; and
- the TMN physical architecture.



a) Subject areas of TMN Recommendations



b) Areas of TMN-referenced Recommendations

FIGURE 1/M.3000

The TMN functional architecture describes the appropriate distribution of functionality within the TMN, appropriate in the sense of allowing for the creation of function blocks from which a TMN of any complexity can be implemented. The definition of function blocks and reference points between them leads to the requirements for the TMN-recommended interface specifications.

The TMN information architecture, based on an object-oriented approach, gives the rationale for the application of OSI systems management principles to the TMN principles. The OSI systems management principles are mapped onto the TMN principles and, where necessary, are expanded to fit the TMN environment.

The TMN physical architecture describes interfaces that can actually be implemented and examples of physical components that make up the TMN.

5.2.2 Interface specification methodology

This methodology is described in Recommendation M.3020 and shows the precise steps in determining the individual items needed for the complete specification of TMN interfaces. Definitions and specifications made at each step are important in maximizing the multiple use of the individual items of Recommendations. The TMN methodology shall therefore be followed when ITU-T Study Groups develop TMN Recommendations.

5.2.3 TMN management services

Described from the user's viewpoint of Operation, Administration, Maintenance and Provisioning (OAM&P) requirements, the TMN management service addresses an area of management activity that provides for the support of an aspect of OAM&P of a telecommunication network.

The management services are used as a mechanism to capture the management requirements and document them in a uniform way. The management services are the subject of Recommendations.

5.2.4 TMN management functions

TMN management functions are used by the TMN management service to implement their functionality when communicating with other functional entities across the TMN interfaces. TMN management functions that logically belong together are grouped to increase their usability.

TMN management functions are the collection of the functional requirements for the TMN interface specifications. These functions are also described from the user's perspective and are protocol independent.

5.2.5 Management information models and catalogue

TMN information models that are abstractions of managed telecommunication resources include:

a) generic network information model;

b) technology-specific models, e.g. for SDH.

Support information models are defined as abstractions of processes by which specific functional aspects of management are achieved. Examples of the latter are included in the Q.820-Series Recommendations.

Management is carried out across the TMN standards interfaces using standard communication protocols and management-aspect protocols, the latter transporting management information defined in TMN management information models.

Object-oriented tools developed for OSI systems management in the X.700-Series Recommendations are used for the definition of management information. In particular, management information model (see Recommendation X.720), the Guidelines for the Definition of Managed Objects (see Recommendation X.722) and Abstract Syntax Notation One (see Recommendation X.208), Specification of ASN.1, Recommendation X.209, Specification of basic encoding rules for ASN.1 are used.

5.2.6 Management information registration

The assignment of object identifiers for TMN management information is structured in a fashion similar to the assignment of identifiers to OSI systems management information and is described in Recommendation X.722. Properly defined management information is given a globally unique object identifier and, with the approval of the defining Recommendation, is registered automatically.

The development of a computerized database library of TMN management information is under study within the ITU-T.

5.2.7 Communication protocols

Communication and management-aspect protocols in ITU-T Recommendations and ISO standards are selected for the transfer of management information across TMN interfaces. Communication protocols include standard OSI protocols, ISDN and Signalling System No. 7 protocols. Management-aspect protocols include the Common Management Information Protocol (CMIP) (see Recommendation X.711) and the File Transfer, Access and Management protocol (FTAM) (see ISO 8571). Selected protocols are organized into protocol suites or profiles for specific TMN interfaces. The transfer syntax employed is described in the binary encoding rules (see Recommendation X.209).

5.2.8 Systems management services and management messages

TMN utilizes the OSI systems management services defined in the X.730-Series Recommendations and also provides additional management application functionality by means of TMN management messages in Q.820-Series Recommendations. This management functionality is made available for use across TMN interfaces by including it in a TMN-defined systems management application service element.

5.2.9 Conformance

TMN conformance requirements are a set of statements for protocols and information models to which TMN implementations must conform. These conformance statements are the basis upon which conformance testing tools for TMN are developed and then applied to products claiming conformance to TMN Recommendations.

5.2.10 International standardized profiles

The need for TMN ISPs has been recognized and will be addressed in the future.

5.2.11 Terminology

Most of the TMN specific terms are defined and described in clause 2/M.60 which is dedicated to the terminology used in the management of telecommunication network.

5.3 Referenced areas

The areas of TMN-referenced Recommendations are explained here as a guide to selecting the Recommendations to be referenced.

5.3.1 Telecommunication services

Telecommunication services are defined in ITU-T Recommendations and TMN Recommendations will reference those Recommendations as basis for developing TMN Recommendations that deal with management of telecommunication services.

5.3.2 Telecommunication network architecture

Telecommunication network architecture gives the fundamental structure of a telecommunication network. A typical example is the SDH network architecture described in Recommendation G.803. The telecommunication network architecture may mainly be referenced by Recommendations covering the area of network management information modelling in order to give the fundamental idea of the abstraction of the telecommunication network.

5.3.3 Telecommunication network management for traffic

Traffic management of telecommunication network is one of the important application areas of TMN, and Recommendations dealing with traffic management will be referenced by TMN requirements Recommendations.

5.3.4 Telecommunication network maintenance

Maintenance is one of the main categories of TMN management services, and Recommendations concerning this subject will be referenced while developing TMN management requirements Recommendations.

5.3.5 Telecommunication network security

There are two aspects for security, i.e. security of management and management of security. Recommendations concerning network security will be taken into account when TMN security is studied. Those Recommendations will also be referenced when TMN requirements Recommendations are developed for management of telecommunication network security.

5.3.6 Telecommunication network components

Telecommunication network components Recommendations, such as transmission systems and switching systems, describe the functions of components that provide a basis for developing network or components management information models.

5.3.7 Telecommunication network provisioning

Recommendations concerning telecommunication network provisioning describe the mechanisms to provide telecommunication network services to the customer. TMN Recommendations will reference Recommendations of this area when developing TMN management requirements Recommendations.

5.3.8 Communication protocols

TMN interface protocols are selected from communication protocols Recommendations, such as OSI, ISDN, and Signalling System No. 7 Recommendations (see 5.2.7).

5.3.9 OSI systems management services

OSI systems management services defined in X.730/740-Series Recommendations are referenced by TMN Recommendations (see 5.2.8).

5.3.10 ISP and implementation requirements

A profile specifies a set of protocols, including available PICS, or managed objects, including available MOCS, combined to provide a specific functionality while minimizing optionality. Internationally recognized profiles are organized into ISPs which may add additional conformance statements. ISPs form the basis for the preparation of conformance testing.

5.3.11 Managed object naming and addressing

To define the TMN managed object, TMN management information Recommendations will reference Recommendations concerning managed object naming and addressing.

6 Range of Recommendations

TMN-related Recommendations are being developed within ITU-T. Some examples were mapped on the TMN subject areas as shown in Figure 2.

6.1 TMN Recommendations

Recommendations that cover subject area(s) described in 5.2 are classified into the category of TMN Recommendations, which are listed in Annex A.

6.2 TMN-referenced Recommendations

Recommendations that are referenced by TMN Recommendations are classified as TMN-referenced Recommendations.

Typical TMN-referenced Recommendations are those of communication protocols used in the TMN protocol suites. Some Recommendations concerning telecommunication network architecture, telecommunication network management, telecommunication network maintenance, etc., may be referenced implicitly. A Recommendation referenced explicitly will be listed in Annex B.

Introduction for the annexes

The annexes contain the lists of TMN-related Recommendations developed within ITU-T. Recommendations are interdependent. Figure A.1 shows some examples of the dependencies among TMN-related Recommendations. These relations need to be taken into account when developing Recommendations.

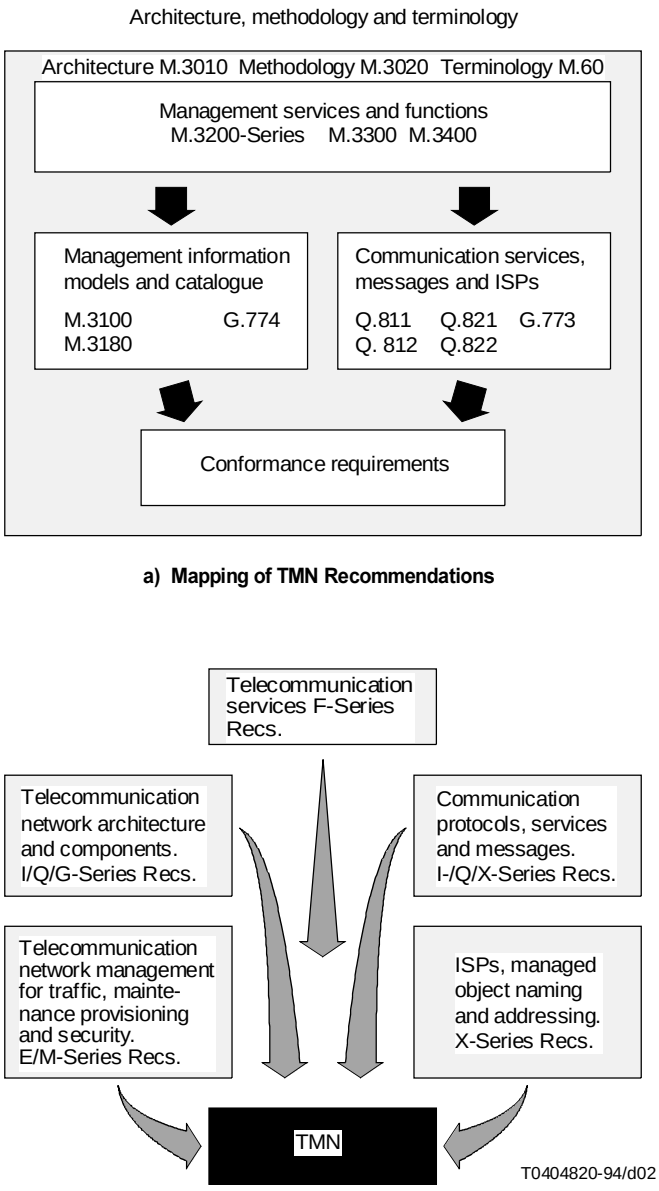


FIGURE 2/M.3000

Annex A

List of TMN Recommendations

(This annex forms an integral part of this Recommendation)

TMN Recommendations developed within ITU-T are listed here.

The TMN subject areas are denoted as follows:

SA-1 Architecture

SA-2 Interface specification methodology

SA-3 Management services

SA-4 Management functions

SA-5 Management information models and catalogue

SA-6 Management information registration

SA-7 Communication protocols

SA-8 Systems management services and management messages

SA-9 International standardized profiles

SA-10 Conformance

SA-11 Terminology

Some Recommendations provide contributions to more than one area. For these, all significant areas of contribution are shown in order of that contribution.

M-Series

REC/STD: M.3000

TITLE: OVERVIEW OF TMN Recommendations (present Recommendation)

REC/STD: M.3010

TITLE: PRINCIPLES FOR A TMN

ABSTRACT: The TMN supports management activities associated with telecommunication networks. This Recommendation introduces the TMN concept, defines its scope, describes the functional and information architecture, and gives examples of physical architecture. It also provides a functional reference model and identifies concepts necessary for supporting the TMN architecture.

KEYWORDs: TMN/Architecture/Reference Model/Telecommunications Management Network/Interfaces/Principles.

QUESTION: 23/4

SUBJECT AREA(S): SA-1

AVAILABILITY: Available (Revision planned)

REC/STD: M.3020

TITLE: TMN INTERFACE SPECIFICATION METHODOLOGY

ABSTRACT: This Recommendation provides a methodology for describing functional specifications and protocol specifications for TMN interfaces. Emphasis is placed on multiple applications of the methodology and on building specifications by re-using previous results.

KEYWORDs: User requirements/Management Services/Management Functions/Information Model/Managed Objects/ Messages/Protocols/Tasks/Task Information Base.

QUESTION: 23/4

SUBJECT AREA(S): SA-2

AVAILABILITY: Available (Revision planned)

REC/STD: M.3100

TITLE: GENERIC NETWORK INFORMATION MODEL

ABSTRACT: This Recommendation provides a generic information model. The model describes managed object classes and their properties that are generic and useful in describing information exchanged across all interfaces defined in M.3010 TMN architecture. These generic managed object classes are intended to be applicable across different technologies, architectures and services. The managed object classes in this Recommendation may be specialized to support the management of various telecommunications networks.

KEYWORDs: Generic Network Information Model/Managed Object Class/Attributes/Notifications/Actions.

QUESTION: 23/4

SUBJECT AREA(S): SA-5

AVAILABILITY: Available (Revision planned)

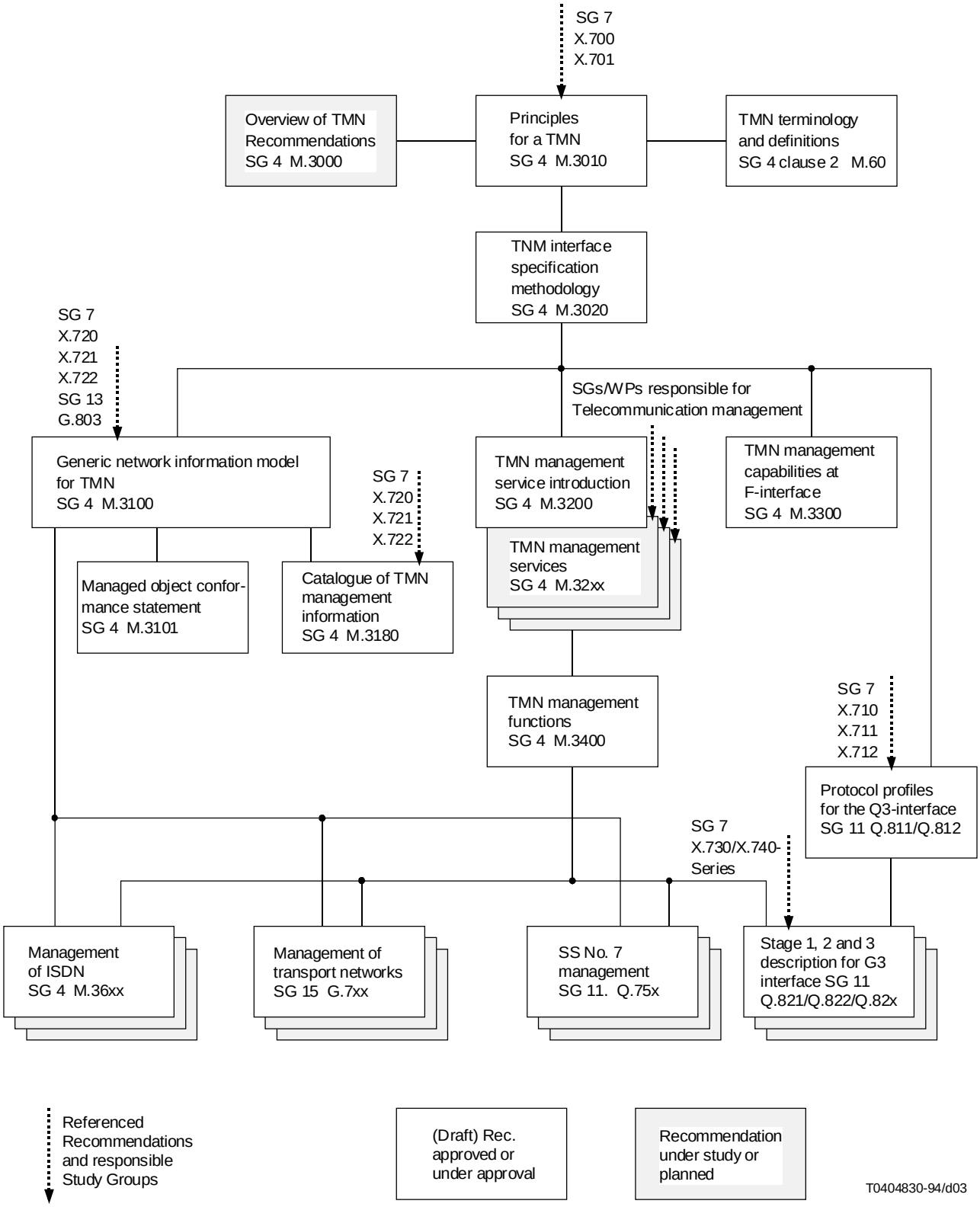


FIGURE A. 1/M.3000

Examples of relations between TMN-related Recommendations

REC/STD: M.3101

TITLE: CONFORMANCE STATEMENT PROFORMAS FOR RECOMMENDATION M.3100 "GENERIC NETWORK INFORMATION MODEL"

ABSTRACT: This Recommendation provides implementation conformance statement proformas for mamagement information defined in ITU-T Recommendation M.3100.

KEYWORDs: Conformance, MRCS, MOCS, MCS.

QUESTION: 23/4

SUBJECT AREA(S): SA-10, SA-5

AVAILABILITY: Available

REC/STD: M.3180

TITLE: CATALOGUE OF TMN MANAGEMENT INFORMATION

ABSTRACT: This Recommendation defines the scope of TMN management information, identifies specification techniques, describes the relationships between ITU-T documents defining management information and references definitions of currently available management information.

KEYWORDs: Catalogue/managed object/resources/models/fragments/OSI Systems Management.

QUESTION: 23/4

SUBJECT AREA(S): SA-5

AVAILABILITY: Available (Revision planned)

REC/STD: M.3200

TITLE: TMN MANAGEMENT SERVICES: OVERVIEW

ABSTRACT: This Recommendation contains information resulting from task information bases (TIBs) A and B of the ITU-T Recommendation M.3020. The information will be used by the object modelling teams to provide a basis to the ITU-T Recommendation M.3100 and specific network models. It therefore provides a link between the TMN Methodology and TMN Management Information Models. This information may also provide a basis on which an Administration compiles its own telecommunications management services.

KEYWORDs: Telecommunications Management Network/Management Service/Object Modelling/Task Information Base/Mediation Device.

QUESTION: 23/4

SUBJECT AREA(S): SA-3

AVAILABILITY: Available (Revision planned)

REC/STD: M.3300

TITLE: TMN MANAGEMENT CAPABILITIES PRESENTED AT F INTERFACE

ABSTRACT: This Recommendation provides an overview of the TMN management capabilities presented for human information or intervention or both. This Recommendation describes the human-machine supporting functions in the five OSI functional areas and the management capabilities from the perspective of TMN application services.

KEYWORDs: TMN, Management Capabilities/Human-machine interaction/Interface

QUESTION: 2/4

SUBJECT AREA(S): SA-3

AVAILABILITY: Available (Revision planned)

REC/STD: M.3400

TITLE: TMN MANAGEMENT FUNCTIONS

ABSTRACT: A TMN management function is the smallest part of the TMN management service as perceived by the user of the service. In reality it will generally consist of a sequence of actions on a defined managed object or objects. The TMN Management Functions specified in this Recommendation provide the generic and specialized functionalities needed for all telecommunications activities (identified at this time) such as circuit testing, alarm surveillance, traffic management, etc.

KEYWORDs: TMN Management Function/OSI Systems Management Function

QUESTION: 2/4

SUBJECT AREA(S): SA-4

AVAILABILITY: Available (Revision planned)

REC/STD: M.3640

TITLE: MANAGEMENT OF THE D-CHANNEL DATA LINK AND NETWORK LAYER

ABSTRACT: This Recommendation contains a prose description of the management aspects of the data link and network layer of the access to ISDNs.

KEYWORDs: Management of ISDN D-channel/Fault Management/Management of ISDN/Performance Management

QUESTION: 21/4

SUBJECT AREA(S): SA-3

AVAILABILITY: Available

REC/STD: M.3641

TITLE: MANAGEMENT INFORMATION MODEL FOR THE MANAGEMENT OF THE DATA LINK AND NETWORK LAYER OF THE ISDN D-CHANNEL

ABSTRACT: This Recommendation provides the management information model of the Q3-interface in a TMN for the management of the D-channel in an ISDN switch. In particular it focuses on the fault and performance management of the data link and network layer of ISDN D-channels. Managed objects are specified by using OSI-management templates of Recommendation X.722. These specifications are based on the prose description of the D-channel management aspects as provided by Recommendation M.3640.

KEYWORDs: Management of ISDN D-channel/Fault Management/Performance Management.

QUESTION: 21/4

SUBJECT AREA(S): SA-5, SA-6, SA-8

AVAILABILITY: Available

G-Series

REC/STD: G.773

TITLE: PROTOCOL SUITE FOR Q-INTERFACE FOR MANAGEMENT FOR TRANSMISSION SYSTEMS

ABSTRACT: This Recommendation defines the characteristics of protocol suites for Q-interfaces used to connect transmission systems/equipment, defined in Recommendation M.3010. Protocol suites for the Q-interfaces of other systems/equipment will be specified in other Recommendations. The interfaces will support bidirectional data transfer for the management of telecommunications systems.

This Recommendation defines:

- the layer services;
- the layer protocols;
- the application service elements and protocols;
- the conformance requirements to be met by an implementation of these interfaces.

KEYWORDs: Not provided

QUESTION: 9/15 (1993-96 study period)

SUBJECT AREA(S): SA-7

AVAILABILITY: Available

REC/STD: G.774

TITLE: SDH MANAGEMENT INFORMATION MODEL FOR THE NETWORK ELEMENT VIEW

ABSTRACT: This Recommendation provides an information model for the Synchronous Digital Hierarchy (SDH). This model describes the managed object classes and their properties that are useful to describe information exchanged across the interfaces defined in the TMN architecture in Recommendation M.3010. This Recommendation specializes the generic object classes of Recommendation M.3100 to provide management information specifically for the SDH.

KEYWORDs: Synchronous Digital Hierarchy/Information Model/Managed Object Class/Attribute/Notification/Action/ GDMO/ASN.1.

QUESTION: 29/15 (EN to be replaced by real number)

SUBJECT AREA(S): SA-5

AVAILABILITY: Available

Q-Series

REC/STD: Q.811

TITLE: LOWER LAYER PROTOCOL PROFILES FOR THE Q3-INTERFACE

ABSTRACT: This Recommendation provides the lower-layer protocol profiles for the Q3-interface defined in Recommendation M.3010. It also provides a method for interworking.

KEYWORDs: Q3-Interface/TMN/Protocol Profiles/DCN/ISDN/X.25/NSAP/Interworking.

QUESTION: 11/11

SUBJECT AREA(S): SA-7

AVAILABILITY: Available

REC/STD: Q.812

TITLE: UPPER LAYER PROTOCOL PROFILES FOR THE Q3-INTERFACE

ABSTRACT: This Recommendation provides the upper-layer (4-7) protocol profiles for the Q3-interface defined in Recommendation M.3010.

KEYWORDs: Q3-Interface/TMN/Protocol Profiles/CMISE/FTAM/ACSE/ASN.1

QUESTION: 11/11

SUBJECT AREA(S): SA-7

AVAILABILITY: Available

REC/STD: Q.821

TITLE: STAGE 2 AND STAGE 3 DESCRIPTION FOR THE Q3-INTERFACE-ALARM SURVEILLANCE

ABSTRACT: This Recommendation provides Stage 2 and Stage 3 Descriptions for the Q3-Interface in a TMN. Its focus is on Alarm Surveillance. Included in this Description are specifications of the functions, management information, services, functional units and protocols related to Alarm Surveillance. Significant reuse of OSI Systems Management specifications in the X.700-Series Recommendations are described. Because of the desirability of providing common TMN solutions, this Recommendation is expected to be applicable to other TMN interfaces and TMN-related interfaces.

KEYWORDs: Performance Management/Performance monitoring/Function/Object class/Attribute/Parameter/Service/ Functional unit/Protocol/ASN.1.

QUESTION: 26/11

SUBJECT AREA(S): SA-8

AVAILABILITY: Available

REC/STD: Q.822

TITLE: STAGE 1, STAGE 2 AND STAGE 3 DESCRIPTIONS FOR THE Q3-INTERFACE-PERFORMANCE MANAGEMENT

ABSTRACT: This Recommendation provides Stage 1, Stage 2 and Stage 3 Descriptions for the Q3-Interface in a Telecommunication Management Network. Its focus is on the parameter collection and storage aspects and the thresholding aspects of Performance Management as they apply to the areas of performance monitoring, traffic management, and quality of service. Included in this Description are specifications of the functions, management information services, functional units and protocols related to Performance Management. Significant reuse of OSI Management protocols in the X.700-Series Recommendations is described.

Because of the desirability of providing common TMN solutions, this Recommendation is expected to be applicable to other TMN interfaces and TMN-related interfaces.

KEYWORDs: Performance Management/Performance monitoring/Function/Object class/Attribute/Parameter/Service/ Functional unit/Protocol/ASN.1.

QUESTION: 26/11

SUBJECT AREA(S): SA-8

AVAILABILITY: Available

Annex B

List of TMN-related Recommendations

(This annex forms an integral part of this Recommendation)

Recommendations that are referenced by TMN Recommendations are listed here.

Telecommunication network architecture area

REC/STD: G.803

TITLE: ARCHITECTURE OF TRANSPORT NETWORK BASED ON THE SDH DESCRIPTION:

Recommendation G.803 is referenced by Recommendations M.3100 and G.774 to develop TMN Network Information Models.

Communication protocols area

NOTE – For referenced Protocol Recommendations other than OSI Systems Management protocols or management-specific protocols, see Recommendations Q.811, Q.812 and G.733.

REC/STD: X.700

TITLE: MANAGEMENT FRAMEWORK

DESCRIPTION: This Recommendation describes the general organization of OSI Systems Management from the perspective of managing OSI protocol suites.

This Recommendation is referenced by Recommendations dealing with TMN Protocols.

REC/STD: X.701

TITLE: SYSTEM MANAGEMENT OVERVIEW

DESCRIPTION: This Recommendation provides an overview of the family of System Management Recommendations and outlines the relationships between the documents. It establishes the model for manager-to-managed-system interaction, managed objects, Systems Management Functional Units and Application context.

This Recommendation is referenced by Recommendations concerning TMN Protocols.

REC/STD: X.710

TITLE: COMMON MANAGEMENT INFORMATION SERVICE DEFINITION

DESCRIPTION: This Recommendation defines the management services provided to a management information service user.

This Recommendation is referenced by TMN Protocol Recommendations such as Q.811, Q.812 and G.773.

REC/STD: X.711

TITLE: COMMON MANAGEMENT INFORMATION PROTOCOL SPECIFICATION

DESCRIPTION: This Recommendation specifies the protocol (using ASN.1) to support the Common Management Information Service, i.e. the protocol to be carried by ACSE and ROSE in support of CMIS. This Recommendation also specifies the use of the underlying Presentation Layer Services.

This Recommendation is referenced by Recommendations Q.811, Q.812 and G.773.

OSI system management services area

REC/STD: X.720-Series

DESCRIPTION: This series of Recommendations define common aspects of OSI Systems Management for the understanding and specification of management information.

REC/STD: X.720

TITLE: MANAGEMENT INFORMATION MODEL

DESCRIPTION: This Recommendation defines the structure of a managed object, the generic aspects of operations and notifications pertaining to managed objects, the use of inheritance for managed object class relationships, managed object naming, and the containment organization of managed objects into a tree structure.

This Recommendation is referenced by Recommendations dealing with TMN Management Information.

REC/STD: X.721

TITLE: DEFINITION OF MANAGEMENT INFORMATION

DESCRIPTION: This Recommendation provides a library of management information pertaining to the currently approved set of Systems Management Function documents. Information is partitioned into managed object class definitions, attribute types, and attribute syntax. Later function documents [such as Test Management (see Recommendation X.745)] will include this information in the body of their documents instead of using a single library document.

This Recommendation is referenced by Recommendations dealing with TMN Systems Management Services and Management Messages.

REC/STD: X.722

TITLE: GUIDELINE FOR THE DEFINITION OF MANAGED OBJECT

DESCRIPTION: This Recommendation defines, using the concept of template structures, the notational method to be used for specifying management information and provides a registration structure for Systems Management beneath the joint-ITU-T-ISO/IEC object identifier node.

This Recommendation is referenced by Recommendations concerning TMN Management Information Models and Catalogue.

REC/STD: X.724

TITLE: REQUIREMENTS AND GUIDELINES FOR IMPLEMENTATION CONFORMANCE STATEMENT PROFORMAS

DESCRIPTION: Provides guidance for the production of conformance statements for management information including managed objects. Proformas to document these statements are included.

REC/STD: X.730/740-Series

DESCRIPTION: This series of Recommendations defines OSI Systems Management Services, which are utilized by TMN System Management Services.

ISP and implementation requirements area

REC/STD: ISP 11183

DESCRIPTION: This three-part standard specifies two network management profiles. ISP 11183 Part 1 identifies the requirements (including values in some cases) of parameters in session, presentations and ACSE protocol data units and functional units. ISP 11183 Part 2 specifies requirements on ROSE and CMIP with all the functional units of CMIP except the extended functional unit. ISP 11183 Parts 1 and 2 are referred to as the AOM 12 profile. ISP 11183 Part 3 specifies the requirements on ROSE and CMIP with only the CMIP kernel functional unit. ISP 11183 Parts 1 and 3 are referred to as the AOM 11 profile.