

## Лекция

### Общая структура рекомендаций F.700 ITU

#### **F.700-F.799 : Audiovisual services**

##### **F.700: Framework Recommendation for multimedia services**

F.701: Guideline Recommendation for identifying multimedia service requirements

F.702: Multimedia conference services

F.703: Multimedia conversational services

F.720: Videotelephony services – General

F.721: Videotelephony teleservice for ISDN

F.723: Videophone service in the Public Switched Telephone Network (PSTN)

F.724: Service description and requirements for videotelephony services over IP networks

##### **F.731: Multimedia Conference Services in the ISDN**

##### **F.732: Multimedia conference services in the B-ISDN**

##### **F.733: Service description and requirements for multimedia conference services over IP networks**

##### **F.740: Audiovisual interactive services**

F.741: Service description and requirements for audiovisual on-demand services

F.742: Service description and requirements for distance learning services

F.743: Requirements and service description for visual surveillance

F.744: Service description and requirements for ubiquitous sensor network middleware

F.745: Functional requirements for network-based speech-to-speech translation services

F.750: Metadata framework

F.761: Service-oriented requirements for telewriting applications

F.771: Service description and requirements for multimedia information access triggered by tag-based identification

##### **F.790: Telecommunications accessibility guidelines for older persons and persons with disabilities**

# Framework Recommendation for audiovisual/multimedia services

## 1 Introduction

### 1.1 Scope

This Recommendation provides a methodology for constructing multimedia services which is timely and responsive to the needs of both the End-User and Service Provider. This methodology links generic End-User application requirements with the established set of network independent building blocks or other communications capabilities being developed within ITU-T.

The procedures described in this Recommendation are intended for use in developing a series of General Service Recommendations which combine the required communication tasks and media components into an architecture for generic services (e.g. for Multimedia Conferencing Service, Multimedia Distribution Service, etc.). Where applicable Recommendations are not yet available, this methodology can be used as the basis for a structured dialogue between End-Users and Service Providers in arriving at a responsive service solution.

### 1.2 Definitions

Information in brackets indicates source of definitions when other than F.700. Additional information is contained in Annex D.

**1.2.1 application:** An Application is a **set of activities** performed to respond to the needs of the users in a given situation for purposes such as business, education, personal communication or entertainment. It implies software and hardware utilization could be performed in a fully or partially automatic way and could be accessed locally or remotely. In the last case, it requests use of telecommunication services.

**1.2.2 communication task:** A communication task is a **functional entity of a multimedia service** that performs communication features. It handles a set of media components in a synchronized way in order to convey and control complex information types.

**1.2.3 media component:** Media components are those **parts of a communication service** which provide the communication capabilities related to a single information type. They provide the necessary functions for user information handling, such as information capture, presentation, storage, transfer and post-processing. As the information types differ considerably in their basic elements, the specific functions also differ from information type to information type.

**1.2.4 medium (Plural Media) {MHEG}:** A means by which information is perceived, expressed, stored or transmitted. **The term is to be avoided in its stand-alone form.** To be

unambiguous it should only be used in expressions such as perception medium, representation medium, presentation medium, storage medium, transmission medium, etc.

**1.2.5 multimedia** : The term multimedia is an adjective and must be attached to a noun which provides the context. For example, multimedia service or application, multimedia terminal, multimedia network and multimedia presentation.

**1.2.6 multimedia application**: A Multimedia Application is an application that requests the handling of two or more representation media (information types) simultaneously. Examples are cooperative document editing, long distance meetings, remote surveillance, medical document remote analysis and teletraining.

**1.2.7 multimedia representation {MHEG}**: The property of handling several types of representation media.

**1.2.8 multimedia service**: Multimedia services are services that handle several types of media in a synchronized way from the user's point of view. A multimedia service may involve multiple parties, multiple connections, and the addition or deletion of resources and users within a single communication session.

**1.2.9 presentation {MHEG}**: A state which is ready for human perception.

**1.2.10 presentation medium**: The means for presenting information to the user, commonly known as an output device, such as a screen, printer or loudspeaker.

NOTE – Presentation is not to be confused with the OSI Presentation Layer.

**1.2.11 representation**: The process of reproducing information for human perception.

**1.2.12 representation medium**: The type of the information in its coded form, ready for transmission. Examples of representation media are:

<i>Nature of information</i>	<i>Possible coded forms</i>
characters or text	ASCII, EBCDIC
graphics	CEPT, NAPLPS or CAPTAIN videotex, CGM
audio	TSS, G.711, MIDI, future MPEG/Audio standard
still picture	Fax Group 3/4, JPEG standard
audiovisual sequence	RSS Recommendation 601 + associated audio, MPEG standard

NOTE – The representation medium is defined independently of the direction of transmission (i.e. to or from the user or between equipment). Each representation medium may be used both for input or output. For example, character representation may be used both for text display and for text input from a keyboard; graphics may be used both for graphic display and graphic input; audio or pictures may be used both for reproduction and for capture.

**1.2.13 telecommunication service:** A telecommunication service is a **set of telecommunication capabilities** that works in a complementary and cooperative way in order to let users perform applications.

## MM by ITU Reference model

### 1.4 Multimedia services reference model

Following a modular approach the reference model is organized in four levels. Figure 2 shows the application level on top of the three service platform levels.

1) *Application level*

The level at which the essential functional characteristics of an end-user application are described from the end user's point of view irrespective of the underlying technical aspects of the services or particular network solution.

2) *Service level*

The level at which the basic set of communication services or support tools required to satisfy the functional requirements of the application layer are identified. The overall service principles (for performance, quality of service, security, charging, intercommunication) are defined and described (see Annex C for further study).

A service is built up by combining communication tasks and organizing their interaction. The service level may contain a description of how to find where end-users and terminals are located.

3) *Communication task level*

The level at which the specific communication tasks required to build the services are defined and described. A communication task is a functional entity of a multimedia service which performs its communication features. It handles a set of media components in a synchronized way, in order to convey and control complex information types.

4) *Media component level*

The level at which the multimedia aspects of the services are made apparent through the identification and description of the individual monomedia components.

Media components are those parts of a telecommunication service which provide the communication capabilities related to a single information type, such as audio, video, etc.

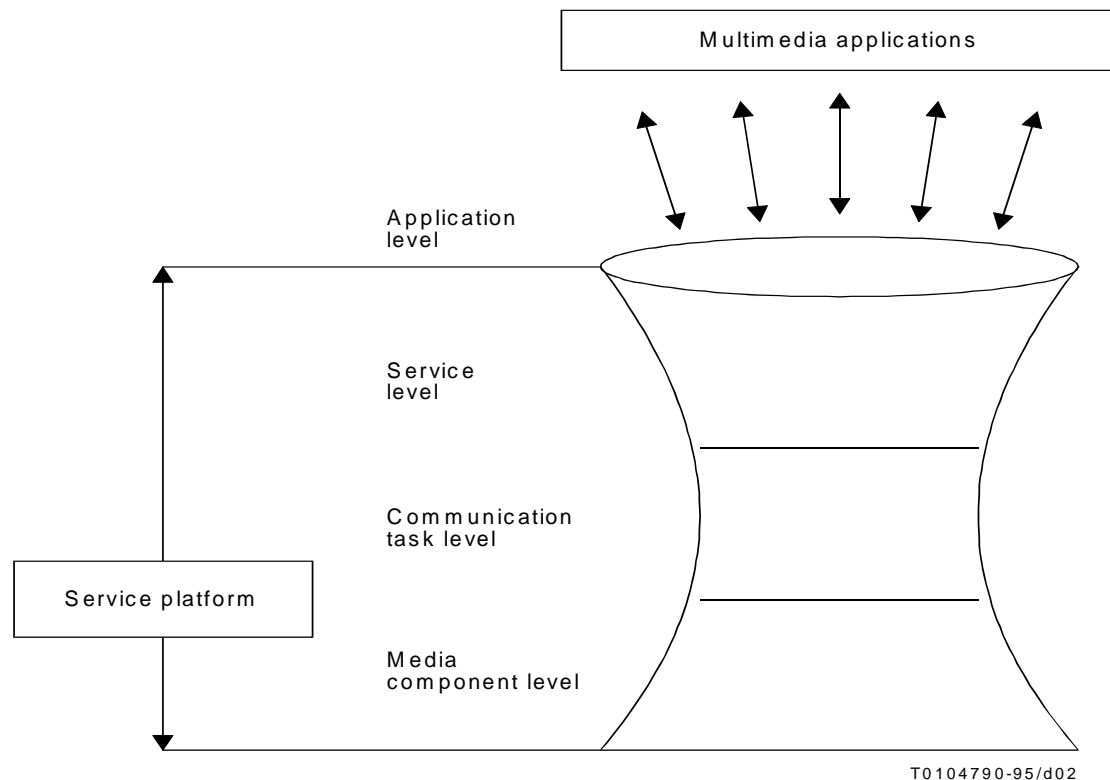


FIGURE 2/F.700  
Multimedia service reference model

### 1.5 Application of the model to the service description

Services call upon tasks for acting on the various media components, in order to handle them and combine them in specific ways appropriate for the application. The functions required by a service are distributed between the 3 levels according to the following principles. The relationship between the services, the communication tasks and the media components is illustrated in Figure 4 of clause 3:

- at the service level, the general functions related to the call and to the type of service, such as call establishment, intercommunication, charging, security;
- at the task level, the functions related to the configuration, the time aspects, the linking of media components, e.g. transfer, storage, multipoint aspects, procedures, chair control, facility control, switching or combining signals, editing, processing;
- at the component level, the functions related to each independent medium, such as capture, coding, presentation, quality aspects.

## **2 Application Scripts**

### **2.1 Introduction**

An application script describes the essential characteristics of an end-user application in a manner designed to facilitate identification and evaluation of the required multimedia communications support capabilities. This is accomplished by first describing the application from the end user's point of view and then translating this description into a form more useful for technical evaluation. The procedures for constructing an application script are described in 2.2 through 2.4.

Ideally, an application selected for the scripting process should represent a broad grouping of individual end-user applications which have the same essential functional characteristics and for which there appears to be a need for the development of a new multimedia service, service arrangement or enhanced service capability.

Differences between specific applications within this broad grouping can be represented by the specific values assigned to a particular requirement attribute. Examples are shown in 2.4. The procedures for validating the results of the scripting process are described in 2.5.

### **2.2 Prose description**

The prose description of an application provides a comprehensive statement of its scope and functional characteristics, together with the user's expectations for the quality of service. This description is written in a language understandable to the end user, who need not be aware of the technical aspects of the underlying service or supporting communications networks.

The prose description may be augmented by an application scenario and a set of implementation notes which further describe the application, highlighting those aspects which might otherwise remain unclear. A sample prose description, with associated application scenario and implementation notes, is provided in Appendix I.

### **2.3 Functional model of an application**

The functional model provides a pictorial representation of the essential functional elements identified in the prose description. This representation is presented from the perspective of the application, rather than from the supporting service or network, and contains only those elements visible to the end user. Figure 3 provides the functional model for the prose description contained in Appendix I.

The principle characteristics to be depicted in the model are:

- the shared information space in which the interaction takes place;
- the functional role of the major participants;
- the required supporting information resources;

- the type and configuration of the various interactions; and
- the need to interface associated application processes.

While there is no standard symbology for constructing the functional model, care should be taken to select a form of presentation that reflects the essential functional elements of the application in a clear and concise way.

## 2.4 Application matrix

An application matrix maps user requirements onto technical functionalities. The principles for developing attribute tables are the following:

- 1) Application matrices are intended to facilitate the mapping of user needs with technical functionalities in an easily understandable form.
- 2) Application matrices enable the evaluation of service functionalities in a systematic and compact form.
- 3) Application matrices facilitate assessing the importance of functionalities in regard to user needs.

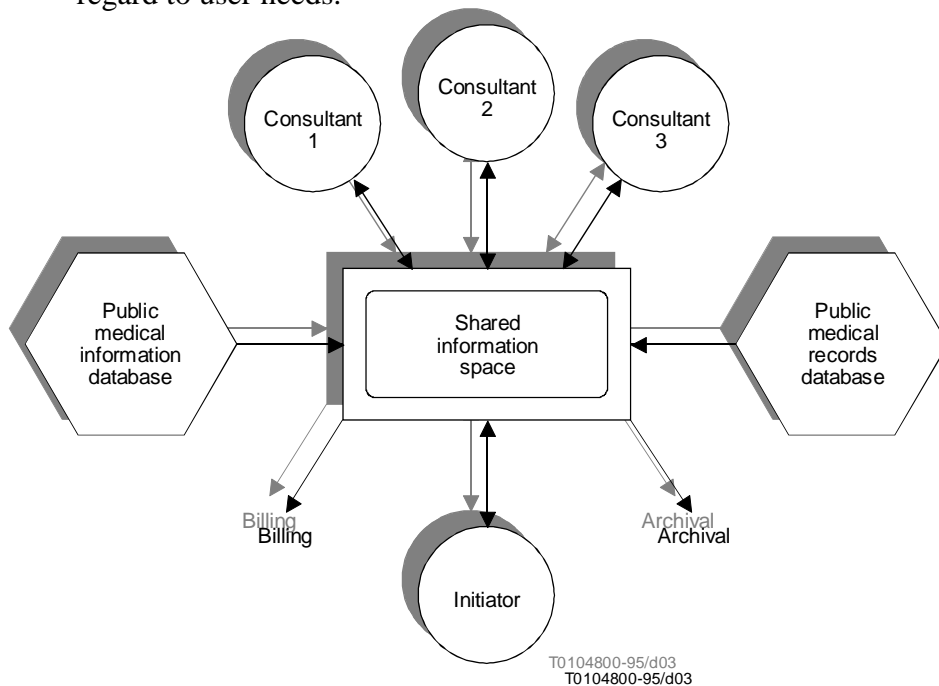


FIGURE 3/F.700  
FIGURE 3/F.700

A sample functional model of an application (medical consultation)  
A sample functional model of an application (medical consultation)

Table 1 is a template for attribute tables:

**Application matrix template      TABLE 1/F.700**

User needs	Technical functionalities		

The following are examples of user needs:

- discussion of a jointly viewed document;
- the need to move around;
- the need to scrutinize fine details of a presented object.

The following are examples of functionalities the applications may require:

- shared viewing space for images;
- cordless communication access;
- high resolution image transfer more.

### **3      Communication Capabilities**

The multimedia services reference model (Figure 2) shows the applications on top of the service platform. It further indicates that the service platform can be decomposed into three levels: the service level describing the overall aspects, the communication task level describing the communication related aspects, and the media component level dealing with the user information handling (multimedia) aspects. Each of these levels has different aspects including static, dynamic and control. This Recommendation currently concentrates on the static aspects. The dynamic aspects are for further study, unless explicitly defined in this Recommendation.

From the end-user point of view, the communication tasks and the media components form the basic set of communication capabilities from which all multimedia telecommunication services can be constructed.

Figure 4 shows the hierarchy of the service platform as well as the relations among the communication tasks and the media components.



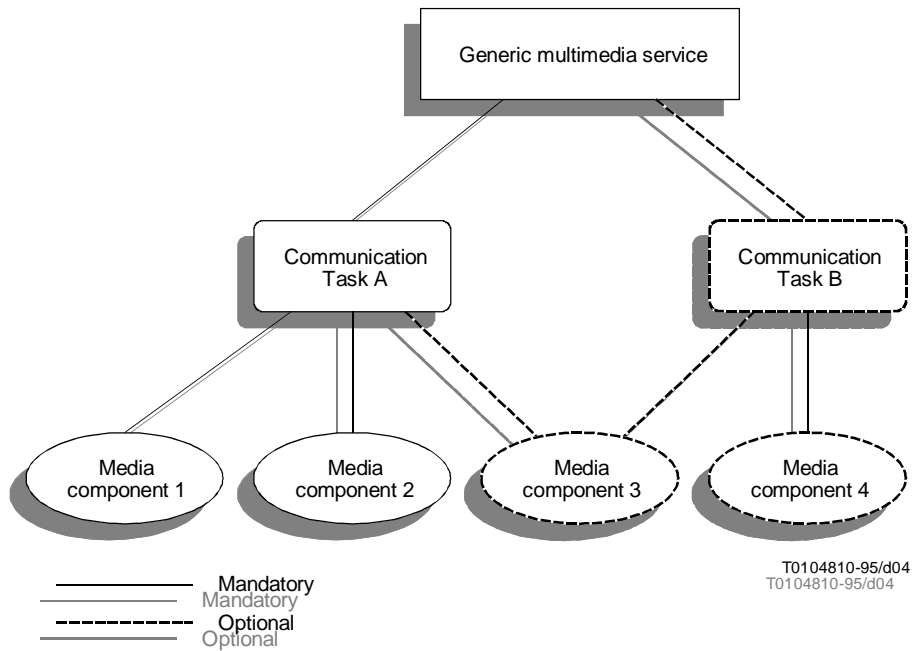


FIGURE 4/E.700  
FIGURE 4/F.700

Application of the reference model to the description of a generic multimedia service

### 3.1 Communication tasks

Starting from the users' requirements in a top-down approach, a multimedia service can first be decomposed into a set of communication tasks, each of them being, separately or not, manipulated by the user and/or the service provider. Conversely, in a bottom-up approach starting from the media components, a communication task can be viewed as a means of bringing together the media components that are related to each other for the purpose of the service.

#### 3.1.1 Method of describing communication tasks

The static properties of a communication task are described using attributes and values. The following attributes and possible values have been identified (other attributes are for further study). See Table 2.

TABLE 2/F.700

Communication configuration	Point-point/point-multipoint/ multipoint-point/multipoint-multipoint
Symmetry of information flow	Unidirectional/bidirectional-symmetric/bidirectional- asymmetric
Transmission control entity	Source/sink/source and sink/third party
Time aspects	Real-time Near-real-time Non-real-time Specified time

Mandatory media components	Audio/video/text/picture/graphics/data
Optional media components	Audio/video/text/picture/graphics/data/ none
Media component interrelations	<ol style="list-style-type: none"> <li>1) Synchronization between: <ol style="list-style-type: none"> <li>a) audio and video (lip synchronism, location related synchronism);</li> <li>b) audio and text (voice synthesis);</li> <li>c) text and video/picture/graphics (subtitles synchronized with images);</li> <li>d) graphics and audio.</li> </ol> </li> <li>2) Symmetry between media components of the same type to allow for bidirectionality.</li> <li>3) Conversion between information types (or media components).</li> </ol>
Time continuity	Isochronous/non-isochronous

## Communication task attributes

### 3.1.2 Attribute considerations

Some attributes are described hereafter.

#### 3.1.2.1 Time aspects

The time aspects are described by two attributes: response time and time continuity. See Table 3.

The response time may have four possible values:

- real-time, i.e. a fraction of a second; this applies for instance to a conversation, or to some video games where user actions have to show immediately on the screen;
- near-real-time, i.e. a few seconds; this applies for instance to retrieval services where the user is waiting for an answer from the system; the acceptable delay depends upon the complexity of the request and the length of the answer;
- non-real-time; this would apply to the storage of information, for instance to archiving or to the storage of a message, where the action can be done within any reasonable but non-critical delay;
- specified time, i.e. at a future exactly defined time or during a future period of time; this could apply for instance to some types of near video on demand, where the user could ask in advance for a film to be sent to him at some future given time, or to a retrieval service where, for a complex request that would take some time for the research or the handling of data, the system would call back later at a given time; it could also apply to messages sent during the night period when the tariff would be lower; similarly, a non-urgent message requiring some human intervention at the receiving end could be sent at any time during office hours.

The time continuity has the attribute values “isochronous” or “non-isochronous.” Isochronous transmission is necessary if the user terminal equipment has no

buffering capabilities, or if the capturing device does not tolerate interruptions or variations in transmission speed or does not have a large enough storage capacity.