



ETSI
TECHNICAL COMMITTEE
REFERENCE TECHNICAL REPORT

TCR-TR 026

March 1997

Second Edition

Source: ETSI TC-MMG

Reference: RTR/MMG-00013

ICS: 33.020

Key words: Multimedia

**Terminal Equipment (TE);
Multimedia Project Plan**

ETSI

European Telecommunications Standards Institute

ETSI Secretariat

Postal address: F-06921 Sophia Antipolis CEDEX - FRANCE

Office address: 650 Route des Lucioles - Sophia Antipolis - Valbonne - FRANCE

X.400: c=fr, a=atlas, p=etsi, s=secretariat - **Internet:** secretariat@etsi.fr

Tel.: +33 4 92 94 42 00 - Fax: +33 4 93 65 47 16

Copyright Notification: No part may be reproduced except as authorized by written permission. The copyright and the foregoing restriction extend to reproduction in all media.

© European Telecommunications Standards Institute 1997. All rights reserved.

Contents

Foreword	5
1 Scope	7
2 References	7
3 Title of the project.....	7
4 Proposer and sponsors	7
5 Scope of the Multimedia Project	7
5.1 The project.....	7
5.2 The area of multimedia	8
6 Objectives.....	9
6.1 The top-down approach.....	10
6.2 The bottom-up approach	11
7 Justification.....	11
8 Time schedule.....	12
9 Global context	12
10 Resource requirements.....	16
Annex A: Terms of reference for MMG: Multimedia Management Group.....	17
Annex B: Terms of reference for Multimedia Project Manager	18
Annex C: Summary of the Multimedia portfolio	19
Annex D: Preliminary identified standardization needs as identified in 1993.....	20
Annex E: Classification of the multimedia work items	23
History.....	26

Blank page

Foreword

This Technical Committee Reference Technical Report (TCR-TR) has been produced by the Terminal Equipment (TE) Technical Committee of the European Telecommunications Standards Institute (ETSI). This TCR-TR was approved as a TCR-TR by the 20th Technical Assembly (TA).

A TCR-TR is a deliverable for use inside ETSI which records output results of ETSI Technical Committee (TC) or Sub-Technical Committee (STC) studies which are not appropriate for European Telecommunication Standard (ETS), Interim European Telecommunication Standard (I-ETS) or ETSI Technical Report (ETR) status. They can be used for guidelines, status reports, co-ordination documents, etc. They are to be used to manage studies inside ETSI and shall be mandatorily applied amongst the concerned TCs. They shall also be utilized by the TC with overall responsibility for a study area for co-ordination documents (e.g. models, reference diagrams, principles, structures of standards, framework and guideline documents) which constitute the agreed basis for several, if not all, TCs and STCs to pursue detailed standards.

A revision has been made to this document during the 9th meeting of ETSI MMG due to changes in the structure of ETSI TC TE.

Blank page

1 Scope

This TCR-TR defines the basic aspects of the Multimedia Project. It follows the layout proposed by the ETSI Technical Assembly (TA) as "Project-oriented management of standardization" (ETSI/TA 18 (93)32 [1]).

This TCR-TR contains a definition of the meaning of Multimedia as seen by ETSI, identifies the milestones to be achieved by the project and the involvement of the ETSI TCs/STCs in it. It should be noted that this involvement could change during the life of the project as work progresses.

2 References

For the purposes of this TCR-TR the following references apply:

- [1] ETSI/TA 18 (93)32: "Project-oriented management of standardization".
- [2] ITU-T Recommendation X.25: "Interface between data terminal equipment (DTE) and data circuit-terminating equipment (DCE) for terminals operating in the packet mode and connected to public data networks by dedicated circuit".
- [3] ITU-T Recommendation H.221: "Frame structure for a 64 to 1 920 kbit/s channel in audiovisual teleservices".
- [4] ETR 181: "Multimedia Portfolio : A compilation of Multimedia Applications and services provided by ETSI members".
- [5] ETR 173: "Functional Model for Multimedia Systems".
- [6] ETR 296: "Multimedia Standardization Areas to be covered".

3 Title of the project

The project title is MULTIMEDIA APPLICATIONS AND SERVICES.

4 Proposer and sponsors

The ETSI TA has assigned the task of managing Multimedia related activities within ETSI to TC-TE and to carry this out as a project following the concept of "Project Management" as proposed by ETSI SRC4.

Within TC-TE this task was previously carried out using STC-TE10 for the planning and co-ordination function and by appointing a Multimedia Project Manager to work closely with STC-TE10 and present reports to TC-TE. Now the work is dealt with in the Multimedia Management Group in close cooperation with the Multimedia Project Manager. See the respective Terms of References (annexes A and B).

5 Scope of the Multimedia Project

5.1 The project

The scope of the Multimedia Project is to identify and define multimedia scenarios for which there is a market opportunity and which can potentially be implemented across existing and future networks, to identify related standardization activities, to identify gaps and propose relevant additional work and to co-ordinate the standardization activities within ETSI while liaising with other bodies and fora outside ETSI.

The following are considered to be within the scope of the project for the areas that directly relate to Multimedia Applications and Services:

- definition and selection of teleservices, i.e. combinations of media into specific applications;
- specification of multi-service terminal equipment including requirements on Man-Machine-Interface aspects, network aspects and end-to-end interworking;
- coding standards: voice, video, data, etc.;
- network requirements (related e.g. to numbering, addressing and routing);
- control capabilities and management capabilities to support key service components and features offered to the users and to service providers (e.g. navigation and multipoint);
- management capabilities supporting specific key operational supports to service providers and subscribers (e.g. Quality of Service (QoS) management, accounting and revenue sharing);
- access aspects up to the transport layer (e.g. ADSL related issues, access to the previously mentioned control and management capabilities);
- performance aspects;
- identification and specification of protocols for end-to-end communication;
- mapping of applications onto bearer services of various networks, e.g. Integrated Services Digital Network (ISDN), Asynchronous Transfer Mode (ATM);
- interworking of multimedia services among different types of networks and across multiple service provisioning domains;
- Application Programming Interface (API) definitions;
- testing aspects (including conformance testing);
- liaisons with other multimedia fora outside of ETSI.

5.2 The area of multimedia

Multimedia applications and services are those that involve at least two different information types, e.g. text, graphics, still picture, audio and video. Currently this means: videotelephony, messaging, electronic mail, Open Document Architecture (ODA), file transfer, information storage and retrieval, database access and Videotex.

Multimedia has come into existence as a result of developments in three areas which used to be exclusive:

- communications;
- information;
- entertainment (TV/film industry).

In a number of aspects they used to be easily distinguished from each other. Examples of these aspects are:

- a) element: what information types are transported;
- b) service: what does it offer to the user;
- c) network: what kind of transport is used.

Table 1 shows the traditional segregation of these areas:

Table 1

	Communications	Information	Entertainment
Element:	speech	digital data	audio & video
Service:	communication	processing and distribution of information	information
Network:	PSTN	data networks, (packet switched)	aerial, coax cables

The contents of all aspects are changing and the areas are increasingly overlapping:

- 1) communications: by adding video and data to telephone conversations the direction for multimedia has been set. Networks for communication are becoming digital and, therefore, are well suited for these new communication media;
- 2) information: addition of audio and video at the user interface makes it more user friendly to control;
- 3) entertainment: more interactivity can also be observed here;

- 4) networks: an integration of networks can be observed. Telephone communications are using radio spectrum, television signals come via cable networks, telephone and datacommunications are making use of cable TV networks, computer networks are integrated into the conversational networks.

The overlapping of these areas is visualised in figure 1 as follows. It shows the three areas separated in topology, equipment, media and application. Migration from one area to another can be seen as previously described. These movements represent the evolution of multimedia.

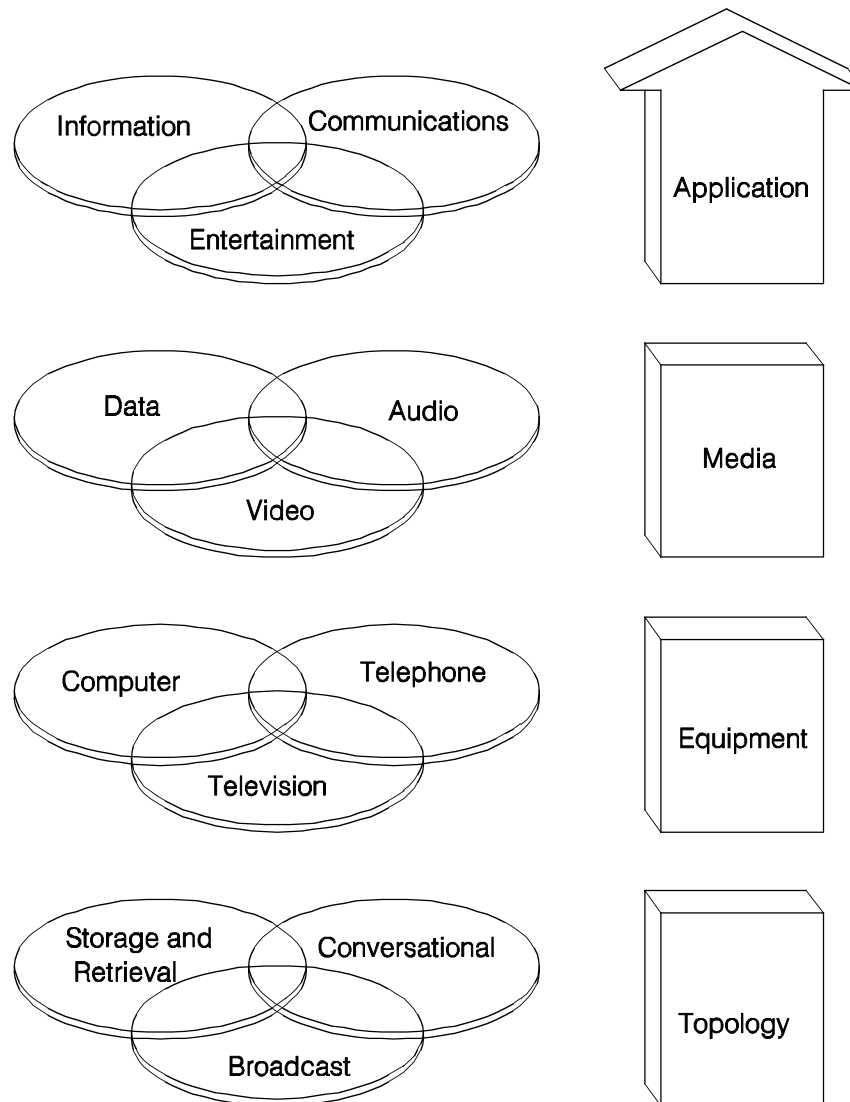


Figure 1: Multimedia - the merging of today's media

Although migrations can be seen, there is not a complete convergence. There will be a large number of developments that will coexist and influence each other. The general trend is the integration of elements of the different areas to enhance functionality to terminal equipment and services. The separation between the three areas will become more vague, but in many cases the origin of an application can still be found in one area.

6 Objectives

The final objective of the project is to get a complete set of standards covering all aspects of Multimedia Applications which will minimise incompatibilities and ensure interoperability when the borders between services tend to vanish.

Interim milestones are identified which are planned to converge on this objective.

The Multimedia Project has been created at a time when there already exists a large number of Work Items (WIs) either directly or indirectly related to the project, which are held in the ETSI database. Further, these WIs exist in many of the STCs of ETSI. As a consequence, the Project Plan is constructed using both the top-down and bottom-up approaches, as identified in the guidance document from the TA (ETSI/TA 18 (93)32 [1]).

All the activities in the Multimedia Project will take into account the work done and scheduled in other standardization bodies and other recognized organisations as a way to avoid duplication and to increase the efficiency.

6.1 The top-down approach

MILESTONE 1: Multimedia Portfolio (ETR181[4])

The Multimedia Portfolio defines a list of desired multimedia applications and services. This TCR-TR is being elaborated by collecting and cataloguing multimedia communication requirements from the examples of desired applications described by the ETSI members (see annex C: "Summary of the Multimedia Portfolio").

MILESTONE 2: Functional model for multimedia applications (ETR173[5])

A reference model for Multimedia Applications was identified. It was established according to the needs and wishes of ETSI members, keeping in mind the promotion of telecommunication multimedia applications and services, and the interworking between the different services.

Until the model was completed a basic classification of the Multimedia Applications had been performed based on the Multimedia Portfolio (Milestone 1) and the Multimedia Project Report (Milestone 0). The Multimedia Applications can be classified into three broad groups allowing combinations between them:

- a) Multimedia Retrieval Services (video on demand, interactive TV...);
- b) Multimedia Conversational Services (videotelephony, teleconference);
- c) Multimedia Distribution Services (Broadcasting TV and Messaging).

(For further details see annex E: "Multimedia Classification").

MILESTONE 3: Identification of standardization areas not yet covered (ETR296 [6])

This work was based on the results of the Multimedia Portfolio (Milestone 1) and the Functional Model (Milestone 2) in addition to the analysis of the valuable activities and projects from recognized international or European organizations, or from commercial initiatives, such as International Multimedia Teleconferencing Consortium (IMTC) and Multimedia Communication Forum (MMCF). International and open standards will be promoted.

Until this work was done, a preliminary set of 7 areas had been identified which had major importance.

These areas are briefly described in annex D, "Preliminary identified standardization needs as identified in 1993".

MILESTONE 4: Identification of the specific work items needed, assignation to TCs/STCs, and priority setting (this Milestone will not have a WI Reference or document number as it was agreed by TC TE, that the work is covered by the ToR for MMG)

Based on the result of the 3 previous milestones, this activity will conclude the top-down approach and will converge with the bottom-up approach explained below.

Milestone 4 will be undertaken in 3 phases:

Phase 1: Initial proposals

Phase 2: Revised proposals on the basis of input of the relevant bodies

Phase 3: Final proposals

6.2 The bottom-up approach

MILESTONE 0: Identification of multimedia Work Items within ETSI

An analysis of the existing work items in the ETSI database had been carried out. This showed that ETSI had 161 WIs directly related to Multimedia spread among several TCs/STCs as shown in table 2 below:

Table 2: Size of the Multimedia Project October 1994

TC (STCs)	No of WIs
BTC (BTC 4)	2 (1%)
HF (HF 1,3)	13 (8%)
JTC	10 (6%)
NA (NA 1,5)	21 (13%)
RES (RES 10)	1 (1%)
SAGE	2 (1%)
SPS (SPS 1,5)	11 (7%)
TE (TE 1,2,3,4,5,10)	100 (62%)
TM (TM 3)	1 (1%)
TOTAL	161 (100%)

This activity had been the first one to be finalized.

Currently 203 Work Items are directly related to Multimedia (of which 136 are already published).

Table 2a: Size of the Multimedia Project January 1997

TC (STCs)	No of WIs
BTC	1 (0,5 %)
HF	13 (7 %)
JTC	26 (13 %)
MMG	1 (0,5 %)
MTA	27 (14 %)
NA	16 (8 %)
RES	1 (0,5 %)
SAGE	3 (2 %)
SEC	3 (2 %)
SMG	1 (0,5 %)
SPS	13 (7 %)
TE	92 (47 %)
TOTAL	197 (100%)

7 Justification

The project is based on the fact that the SRC4 on Public Networks made a number of recommendations regarding the organization of ETSI in relation to project management.

Recommendation number 24 proposed that ETSI be organized to deal with the subject of Multimedia Applications and Services as a project across all TCs and STCs in ETSI. The TA assigned the responsibility for the project management to TC-TE, thereby endorsing Recommendation 24.

Discussions within the groups involved in Multimedia have shown that there is a growing interest in this subject, and that ETSI should not lose any opportunity to take an initiative in this area.

The investigation made through the entire ETSI Work Programme (EWP) as part of the "bottom-up" approach applied to the Multimedia Project, had shown that more than 100 existing work items were directly related to Multimedia. These work items had been proposed by ETSI members and approved by the ETSI TA (following the ETSI procedures) without any logical link and in an isolated manner (apart from the normal liaisons between TCs, STCs and working groups). It was clear that a rational approach following a model and identifying standardization gaps was urgently needed to increase the efficiency and good investment of the technical resources.

In parallel with this project management organisation, there have been a number of commercial initiatives, such as the MCCOI (which now forms part of IMTC) and the MMCF, and it is important for ETSI to assist with the ITU-T in defining the appropriate standards rather than allow Publicly Available Specifications (PASs) to emerge that are not supported by all the players in the Multimedia scene.

The term "Multimedia" links together several fields historically separated which are now clearly connected and even overlapped: telecommunications, information technology, TV broadcasting and entertainment. ETSI is responsible for the standardization of the first field and it shall present properly structured information of what it is doing to those working in the other areas so that a fully co-ordinated solution is achieved.

8 Time schedule

The scheduled time to reach the final target explained in Clause 6 is 3 years. It was recognized that the market may require the standards earlier, but a practical analysis of the time required to reach the target gave a period of 3 years as being more likely. However, this target date has now been revised and the completion of Milestone 4 is now expected to be achieved by February 1997.

Therefore, a complete set of standards for the integration of the 3 fields identified in subclause 5.2 (communications, information and entertainment) should be available by the end of 1997.

The detailed schedule for the Milestones is:

- Milestone 0: June 1994;
- Milestone 1: December 1994;
- Milestone 2: December 1994;
- Milestone 3: March 1996;
- Milestone 4: February 1997.

Ongoing co-ordination activities will take place in parallel with the above milestones and are expected to last until December 1997.

9 Global context

Work related to multimedia is going on in many organisations. The following is an overview of some of the more important with relevance to multimedia.

It is among the tasks for this project to provide a more complete overview.

ITU-T

Similar to ETSI, the ITU-T is covering most aspects of multimedia. Of special interest to the Multimedia Project is the newly formed Joint Co-ordination Group for Audio-Visual and Multimedia Services (AVMMS). This group shall co-ordinate within ITU-T in a similar way to our project.

The following ITU-T Study Groups have, or are planning, multimedia related activities:

- | | |
|-------|--|
| SG 1 | Service definitions; |
| SG 8 | Terminals for telematic services; |
| SG 9 | (formerly CMTT) – Television and Sound Transmission; |
| SG 11 | Switching and signalling; |
| SG 12 | Transmission Performance; |
| SG 13 | General Network Aspects; |
| SG 15 | Transmission systems and equipment including video coding. |

ITU-R

SG 10 Broadcasting Services-Sound;
SG 11 Broadcasting Services-Television.

Joint Technical Committee on Digital Television between the ETSI and the EBU (JTCDT)

The JTCDT is the interface from the pre-standardization work in the area of digital television actually performed by the MoU on Digital Video Broadcasting to ETSI.

ISO IEC/JTC1`

ISO IEC/JTC1 has multimedia related activities in the following Sub Committees:

SC 6 Telecommunications and Information Exchange between systems;
SC 18 Document Processing and related Communications;
SC 24 Computer Graphics and Image Processing;
SC 29 Coding of Picture, Audio, Multimedia and Hypermedia information.

US specific activities

There are three major organisations which provide secretariat support and sponsorship to telecommunications standards making in the United States. They are:

The **Telecommunications Industry Association (TIA)**, an accredited organisation which sponsors Engineering Committees working in the fibre optics and telecommunications equipment area.

The **Exchange Carriers Standards Association (ECSA)** which sponsors Accredited Standards Committee T1-Telecommunications.

The **Computer and Business Equipment Manufacturers Association (CBEMA)** which sponsors Accredited Standards Committee X3 - Information Processing Systems.

These diverse organisations work together, closely co-ordinating their various committee mission and scope statements and work programmes through the **American National Standards Institute (ANSI)**, thus optimising the voluntary industry resources available for standards making.

Committee T1

Committee T1 is the peer to ETSI within the USA and performs work in roughly the same areas.

The following are some of the Sub Committees with multimedia related activities:

T1A1 Performance and Signal Processing;
T1E1 Network Interfaces (including e.g. ADSL);
T1S1 Signalling and services descriptions.

Committee X3

X3H3 Computer Graphics;
X3L3 Audio and Picture coding;
X3V1 Text processing.

Engineering Committees sponsored by TIA

TR-29 Facsimile and Audio graphic Teleconferencing (T.120 Series);
TR-30 Data Transmission Systems and Equipment, modem interface;
TR-41 Telephone Terminal Equipment, private networks.

IEEE 802

The scope for IEEE 802 is the development of standards for the area of Local and Metropolitan Area Networks.

Within 802.1 there is a new group formed to study the aspects of multimedia transport over packet based networks.

802.6 is working with Metropolitan Area Networks, including support for isochronous services.

802.9 is working on hybrid LAN technology for support of isochronous traffic.

European Workshop for Open Systems (EWOS)

EWOS is working with OSI based functional standards and profiles. EWOS is working with IT functions in general but much of the work is relevant for multimedia as well.

The Interactive Multimedia Association (**IMA**) is a US based International trade association.

The IMA is working with "recommended practices" with the aim to create application interoperability.

Current work includes:

- Interactive Video;
- Digital Audio;
- Multimedia Services.

The IMA is also working with IPR issues.

International Multimedia Teleconferencing Consortium (IMTC)

The IMTC is a non-profit making industry organisation with the objective of accelerating global market acceptance of desktop Multimedia collaborative applications. The IMTC is focusing on Multimedia interoperability over existing public and private ISDNs and work spans from network interworking to end user application interoperability. The consortium was formed as a merger of the Multimedia Communications Community of Interest (MCCOI) and CATS. Early 1996 the Personal Conferencing Specification and Work Group also became part of the IMTC.

The MultiMedia Communications Forum (**MMCF**) is a non-profit industry organisation with similar objectives to the IMTC but with a little different focus.

The MMCF is performing basic architectural work and is also working with end user organisations to understand application requirements and priorities. It is focusing on network independent interoperability.

European Multimedia Forum (EMF)

The EMF is a non-governmental organisation representing all parties involved in the Multimedia community who share a common interest in the successful production, delivery and use of Multimedia technology in Europe.

The EMF will serve as an open platform for the exchange of views, opinions and technical proposals within the expanding European Multimedia community.

The EMF will:

- collect and distribute information;
- act as a think-tank;
- promote Multimedia technologies and services;
- provide specific services to its members.

ATM Forum

The ATM Forum's Charter is to accelerate the use of ATM products and services. To be able to define the network requirements, the ATM Forum is also defining and prioritising services which, to a large extent, includes Multimedia.

The ATM Forum has set up a working group, "Service Aspects and Applications", to work in this area. The target for this group is to have a document describing "Audiovisual Multimedia Services" ready by the end of 1994 and including both interactive and distributive video as well as real-time conferencing and desktop services.

Digital Audio-Visual Council (DAVIC)

DAVIC was recently established with the support of large parts of the MPEG community. The purpose of the DAVC is to promote the success of emerging audio-visual applications and services, in the first instance of broadcast and interactive types of services. The DAVIC intends to contribute and to co-operate with the formal standards bodies.

European Videotelephony (EV)

European Videotelephony (EV) is promoted by six European telecommunication companies: BT, Deutsche Bundespost Telekom, France Telecom, Norway's Televerket, PTT Telecom Netherlands and the Italian Societa Italiana per l'Esercizio delle Telecomunicazioni (SIP). Joint efforts between these companies have resulted in the EVE2 trial whose objective was to evaluate the market structure and user requirements in order to develop a successful introduction strategy for videotelephony. The six companies will continue their efforts to systematically pursue their goal of creating a European and eventually a global videotelephony network.

Internet Engineering Task Force (IETF)

The IETF is aiming at the extension of Internet to real-time communication capabilities and at the widening of applications supported by Internet in general.

The IETF is divided into the following Working Groups:

Applications	Internet
IP: Next Generation	Network Management
Operational Requirements	Routing
Security	Service Applications
Transport	User Services
Standards Management	

Some of the relevant Work Items are:

- Audio/Video Transport;
- Multiparty Multimedia Session Control;
- IP Over Asynchronous Transfer Mode.

10 Resource requirements

According to the investigation made through the ETSI Work Programme, the following TCs and STCs are presently involved in the Multimedia Project:

TC	STC
HF	HF1,
JTC	JTC-DT
NA	NA1, NA5,
RES	RES10
SAGE	
SMG	
SPS	SPS1, SPS3, SPS5
TE	TE1, TE2, TE3, TE4, MMG

It is not envisaged to create any new TC or STC.

Annex A: Terms of reference for MMG: Multimedia Management Group

- 1) Keep under review and make recommendations for the strategy for timely evolution of multimedia¹⁾ telecommunication²⁾ standards taking into account evolving market requirements and the increasing demand for new forms of multimedia applications and services.

NOTE: Broadcasting applications are under the responsibility of the ETSI/EBU Joint Technical Committee (JTC). The co-ordination of areas of common interest for telecommunication/broadcasting applications will be mutually agreed between STC-TE10 and JTC, as set out in the TCC approved co-operation agreement of 11.03.1992 between JTC and TE/AVM.

- 2) Develop one or more "Reference Models/Functional Models" for multimedia applications and services, and identify related standardization issues, covering market and user requirements.
- 3) Take responsibility for ensuring drafting, by the appropriate TC's and STCs, of European standards and technical reports necessary for the implementation of the multimedia services for which a demand has been identified, in accordance with the strategy as adopted by ETSI. The mandate includes the planning, co-ordination, and as an exception and only after the approval of TC TE, the working on:
 - definition of services (taking into account services interworking);
 - identification of network requirements (related to network capability, numbering, addressing, routing, interworking) stemming from multimedia applications and services;
 - telecommunication transmission standards (including coding) for multimedia information;
 - identification and specification of protocols for end-to-end communication;
 - specification of multi-service terminal equipment including requirements on man machine interface aspects and network access.
- 4) Provide guidance to ETSI TCs and STCs on the general multimedia telecommunication infrastructure and make recommendations to add, delete or change multimedia work items in the work program of TCs and STCs.
- 5) Co-ordinate the ETSI position in relation to liaison between ETSI TCs/STCs and other standardization bodies working in the same field, recognising that the TCs/STCs have the primary responsibility for such liaison.
- 6) Establish a forum to receive inputs from the following:
 - business computer manufacturers;
 - multimedia application software designers;
 - multimedia application user groups.

1) Multimedia General understanding: Multimedia applications and services are those that involve at least two different information types, e.g. text, graphics, still picture, audio and video. In terms of services this may mean: telephony, videotelephony, messaging, electronic mail, office document architecture, file transfer, information and retrieval, data base access, Videotex.

2) The term "telecommunication" includes all classes of service (conversational, storage/retrieval, and distribution: except broadcasting) in both point-to-point and multipoint call configurations.

Annex B: Terms of reference for Multimedia Project Manager

- To ensure that TQM techniques are applied to standards and reports in the Multimedia field.
- To work in close collaboration with MMG to help to establish, and keep updated, a Multimedia Project Plan, for approval by TC TE.
- To present a "Multimedia Project Report" to the relevant bodies highlighting the problems encountered by the STCs in trying to meet their targets.
- To present interim "Multimedia Project Reports" as necessary.
- To work in close collaboration with the MMG chairman, and attend MMG meetings, in order to ensure that the work progresses in accordance with the guidance from TC TE.
- To attend TEM meetings as necessary.
- To work in close collaboration with the ETSI Secretariat in order to keep the ETSI data base updated with regard to the subset of the ETSI Programme of Work related to the Multimedia Project.
- To contact the TC chairman, STC chairman and PROs involved in Multimedia work as required, in order to monitor the activities and to ensure the liaison with MMG.

Annex C: Summary of the Multimedia portfolio

This annex contains the result of a first study carried out by the STC-TE10 in order to identify multimedia services and applications which have a real interest for the ETSI members.

This action is part of the top-down approach of the Multimedia Project to assist in the definition of one or more functional models for multimedia services and applications, keeping in mind the promotion of telecommunication multimedia applications and services, and the interworking between the different services.

This actual compilation of multimedia applications and services is not exhaustive, but a considerable number of ETSI members have been invited to contribute by means of a questionnaire elaborated by STC-TE10.

A set of 41 examples of multimedia services and applications have been catalogued. This collection of multimedia services and applications may be divided into two categories:

- a first set of examples are based on existing projects or services;
- the other examples were proposed in order to stimulate the standardization process of the most important missing aspects and parameters of the future standardized multimedia services.

In this first analysis, both types of examples are considered equally.

Three families of services have been analysed: teleconference services, retrieval services and TV on demand as a basic service for residential users.

From the few examples of TV on demand services (5), the need for multi-network capability can already be noted.

The majority of the collected examples are describing:

- teleconferencing services¹⁾, e.g. videoconference, videotelephony or audio graphic conferencing services (22 examples), as main services;
- retrieval services.

Both mainly with a transmission rate of maximum 2 Mbit/s.

The main service parameters requested for both types of services are multiservice capability, heterogeneous multimedia terminals, variable allocation of the bandwidth, security, charging capability, local storage and processing of information.

In the teleconference service proposals, 4 other service parameters or media are also requested. These are: addition and/or cancellation of a call during a session, shared workplace, transmission of still images and stores moving pictures.

Copyright protection and control are sought for the proposed retrieval services.

Multi-network capability is proposed in half of the retrieval services and a third of the teleconference services.

In conclusion, the service features listed above, reflect a real need for standardization activities, in order to extend the actual teleconference services. Most of these standardization activities should also consider retrieval services, as the majority of the teleconference services are used in combination with them.

¹⁾ The term "teleconferencing" refers to communication between groups of people situated in two or more different locations; as such it is clearly a subset of "telecommunications".

Annex D: Preliminary identified standardization needs as identified in 1993

One of the main responsibilities within the Multimedia Project is to identify new standardization areas that are needed, and which are not yet covered by Work Items within the ETSI overall work programme. This will be carried out by considering the existing Work Items, together with the proposals made by ETSI members in the Portfolio (annex C) and the activities taking place in other organisations. A properly co-ordinated approach needs to be followed, so that all the different types of Multimedia Applications and Services in each of the classification groups of annex E ("Retrieval, Conversational, Distribution etc.") are achievable through the use of a harmonized set of standards.

In order to assist with carrying out this activity, a preliminary set of 7 tasks has been identified:

- 1) definition of a core multimedia tool-box;
- 2) definition of Multimedia transport service;
- 3) convergence between broadcast and connected services;
- 4) Multimedia & Multiservice convergence;
- 5) integration of MHEG ISO work;
- 6) Multimedia APIs;
- 7) distributed Multimedia architectures.

These tasks will be discussed and refined during the project, and are briefly described in the following sections.

Definition of a core multimedia "tool-box"

The goal of this task is to develop a working methodology through which the integration of Multimedia features in the context of the various service families would be made easier and faster, while diminishing the risk of diverging choices. The methodology will be based on the establishment (and continuous update) of a catalogue of all the Multimedia core components; the entry-points in the catalogue will be oriented towards the ETSI TC client needs and may comprise:

- pointers to existing standards (or parts of standards);
- identification of building blocks (accessible through APIs).

Definition of Multimedia transport service

The following issues have been identified:

- definition of the transport service required at the functional level. This question has not yet been really dealt with, because historically those responsible for network architecture have usually considered that services are based on the establishment and release of homogeneous connections. In practical terms this has resulted in circuit-like connections appropriate for the transfer of synchronous media (through AAL1 adaptation layers for instance in an ATM environment), and packet-like connections appropriate for the transport of "asynchronous" data (through AAL5 adaptation layers in the ATM context) In the case of Multimedia communications, the required transport service is more like an "object transfer service" or a sequence of "object transfer services", where the type of required service transport is defined object by object (or at least object-type by object-type);
- an analysis of whether Multimedia communications should be based on 2 or more parallel connections, or appear as a temporal multiplex within a single connection;
- definition of specific "traffic profiles" in order to allow efficient dynamic resource management (based on statistical data for instance).

Convergence between broadcast and connected services

This item is probably one of the most urgent to be considered due to the high level of activity in the domain of digital TV services. These new TV services appear to be developing very rapidly both in the USA (for instance the DIREC TV project) and in Europe (under the ELG/DVB umbrella). Moreover, in the USA several significant initiatives have been reported, under the generic name of "interactive TV". Within the interactive TV family, VOD (Video On Demand) is the one that most operators seem to consider as likely to be the most popular, and likely to pose the greatest problems with regard to standardization. VOD systems, and the architecture for them show large opportunities for the technical convergence with the Multimedia evolution of data retrieval services, such as:

- sharing MPEG Multiplex;
- sharing set-top adapters;
- sharing general service architectures, or at least identification of those parts of the architectures that could be shared (at specification or even deployment level) between the two families of services.

Multimedia & Multiservice convergence

Currently, the level of integration between the Videotex service, the file transfer service and videotelephony/videoconferencing services is not really satisfactory. For both historical and technical reasons, the Videotex family is based on ITU-T Recommendation X.25 [2] packet-switching network and protocols while the videotelephony family is based on the ITU-T Recommendation H.221 [3] synchronous framing principle. Interworking situations are not yet frequently encountered but there is a growing need to access text, facsimile encoded documents and, soon, full Multimedia databases (including MPEG encoded video clips) during a videoconferencing session. The specification recently adopted in ITU-T SG 8 is a first step in this direction, defining access to JPEG pictures and file transfer protocols during a videoconferencing session. However the proposed solution is not fully satisfactory, in particular in Europe, as it is incompatible with ETSI standardized Multimedia Videotex and file transfer.

Symmetrically, it may be of interest to access recorded videotelephony databases in Videotex mode; in the future, when Videotex terminals incorporate MPEG decoders, such access will require no additional hardware and very limited (if any) software from the multimedia processing point of view.

Current trends at network level (ATM) as well as at information coding level (through explicit clock information in the bit-streams) provide technical solutions to manage "synchronous media" in an asynchronous world. This observation indicates that it is technically feasible to reconcile the two families and have a unique protocol-stack rather than two protocol stacks side-by-side in a multiservice terminal.

Integration of MHEG ISO work

This item could be seen as a sub-item of item 1. While the MPEG standard is rather well established for audio and video coding and transport, the emerging MHEG specifications have not yet reached the same level of awareness.

However, even if it is recognized that one of the main assets of the MHEG standard is its generality (potential use in Multimedia/Hypermedia applications ranging from retrieval applications, messaging applications, interactive television applications, Multimedia broadcasting,...), a great deal of work is still needed to develop the set of APIs which will popularise its use, enabling a progressive migration of existing information systems (for production, management, distribution of Multimedia information) towards MHEG.

Multimedia APIs

In the past, telecommunication services have been specified mainly through the protocols from terminal-to-terminal and between terminals and servers. A complementary approach consists in the definition of generic functional building blocks from which generic equipment such as terminals and servers can be defined. The blocks are related to each other through APIs or PCI in an object oriented environment. As these interfaces are internal to communicating devices, such devices may conform to the service protocol without physically implementing these blocks and the corresponding internal APIs.

As the same set of basic generic blocks can be used to support the Multimedia functions of equipment belonging to different services, it is a pragmatic approach to maximise the commonality of Multimedia features between services. The definition of these blocks and APIs could be part of the Multimedia toolbox mentioned in Item 1.

This strategic area has already been addressed by a number of fora/bodies, for example ISO/IEC JTC1/SC21, ISO/IEC JTC1/SC6, the MMCF and ETSI (for instance PT27V, PT28 or more recently PT63 on MHEG APIs).

Distributed Multimedia architecture

Due to the amount of storage required for multimedia representations , the cost of networks and the cost of memories (tape, disc, RAM), it is possible that the multimedia databases will be distributed rather than centralised. This needs to be examined, in order to determine the impact on the necessary standards.

Annex E: Classification of the multimedia work items

As a result of the decision taken by TC-TE during the plenary meeting in December 1993 about the need of having a classification of the Multimedia Work Items according to a model, and the guidance given by the ETSI TA for each project to be divided into sub projects, a first classification into sub projects was discussed and endorsed by STC-TE10 and was approved by correspondence by TC-TE.

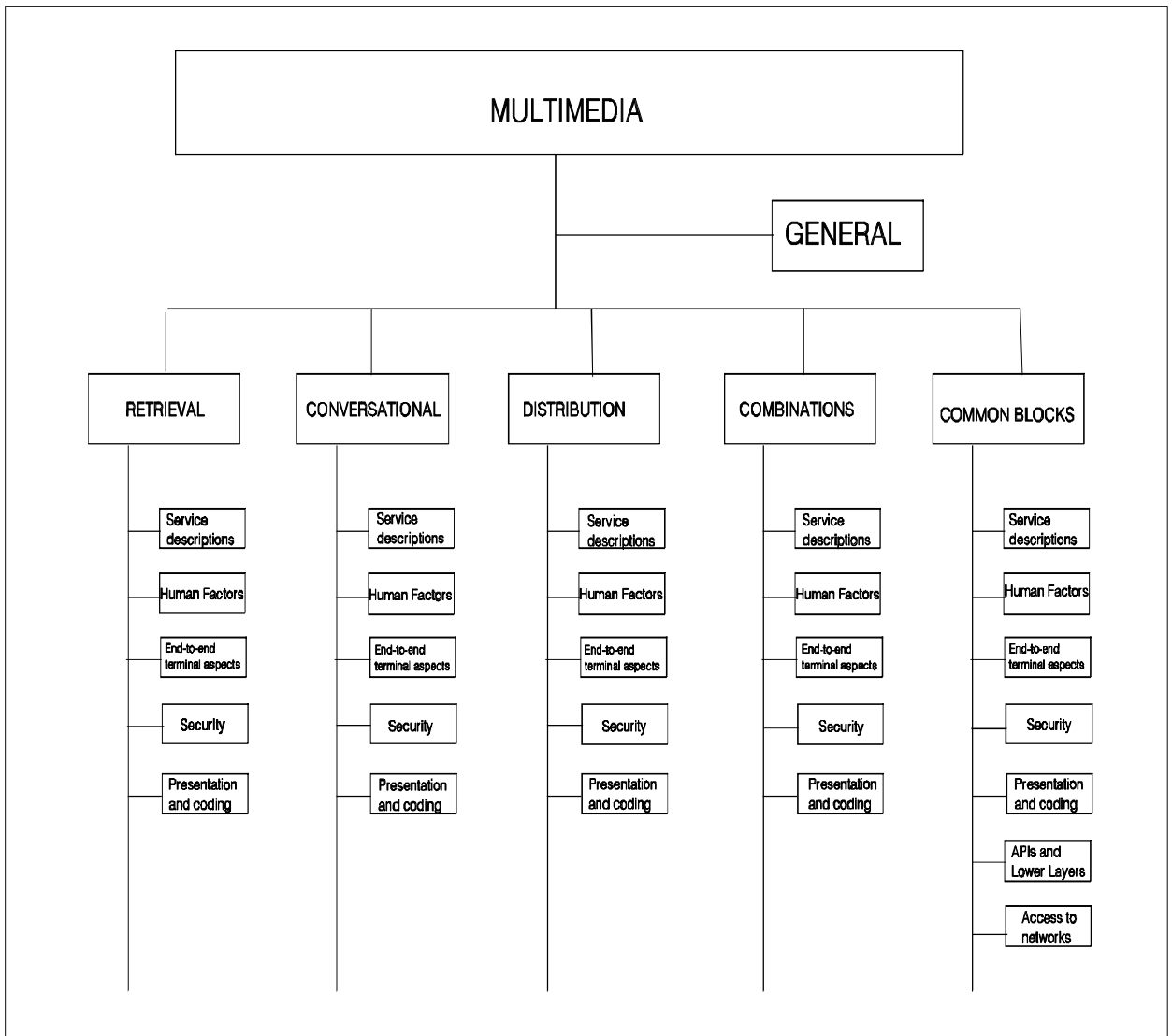


Figure E.1: Classification of the Multimedia Project

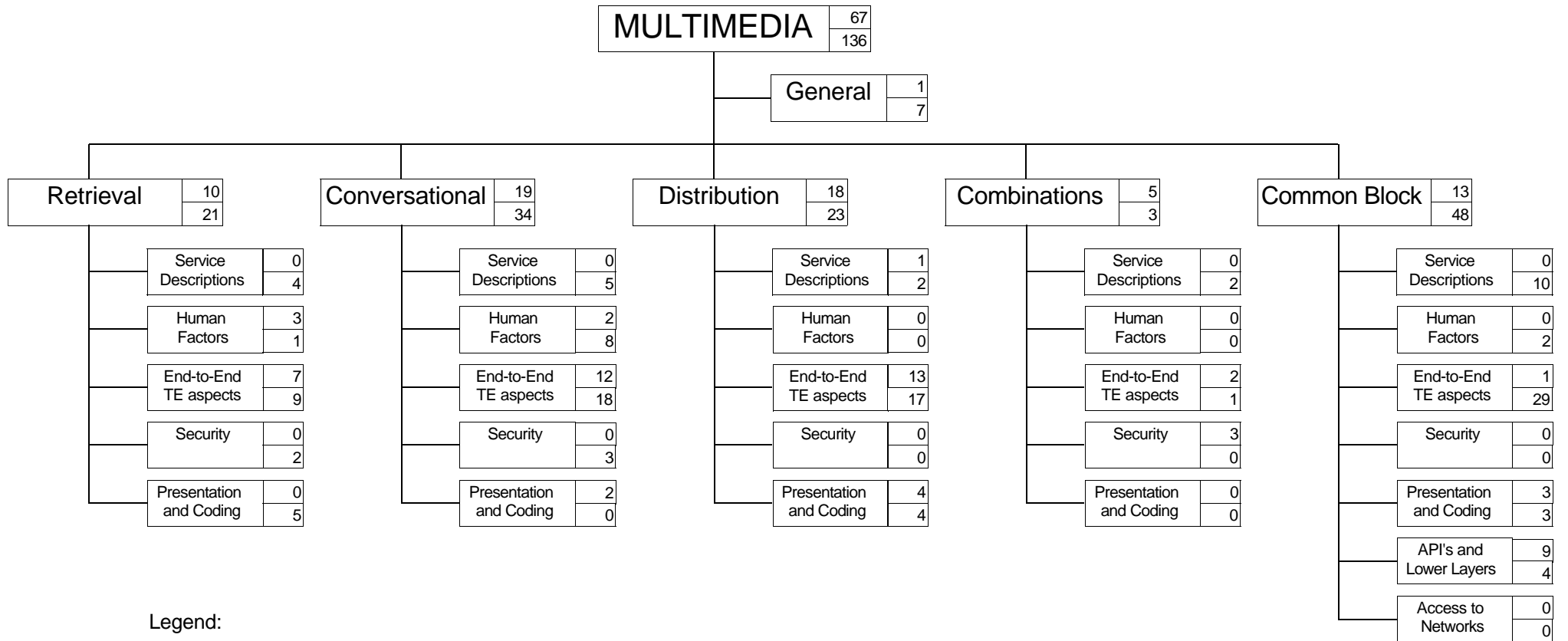
The concepts expressed in figure E.1 have the following meaning:

- GENERAL: Multimedia Reference Documents (e.g. the Multimedia Project Plan, the Multimedia Functional Model...).
- RETRIEVAL: WIs related to Multimedia Retrieval applications and services (unidirectional, sink-controlled, point-to-point).
- CONVERSATIONAL: WIs related to Multimedia Conversational applications and services (bi-directional, source & sink-controlled, point-to-point or point to multipoint) e.g. videotelephony and teleconference.
- DISTRIBUTION: WIs related to Multimedia Distribution applications and services (unidirectional, source-controlled, point-to-multipoint), as e.g. messaging, broadcasting, etc...
- COMBINATIONS: WIs related to Multimedia applications and services including two or more of the 3 categories defined before. At this moment only the combination of CONVERSATIONAL + RETRIEVAL is envisaged.
- COMMON BLOCKS: WIs related to elements to be used in the different applications as e.g. video coding, general APIs...

Within each sub-project a 2nd level decomposition has been made which currently gives similar results for every sub project:

Denomination	Includes WIs related to:
Service descriptions and architectures	Service descriptions Service components General architectures
Human Factors	Human factors Man Machine Interfaces
End-to-end/terminal	End-to-end protocols Terminal aspects Inband signalling
Security	Security Encryption Access restrictions Terminal identification
Presentation and coding	Presentation of information Syntax's and media coding
APIs and Lower Layers	API Lower Layer protocols
Accesses to networks	Network aspects related to Multimedia Access requirements

The Multimedia Overview



Legend:

(sub)project name	number of unpublished and incompleted work items
	number of published/completed work

History

Document history	
October 1994	First Edition
October 1996	Consultation period 1995-10-28 to 1997-02-18
March 1997	Second Edition