ETSI

ETSI
TECHNICAL
REPORT

ETR 181

April 1995

Source:ETSI TC-TE

Reference:DTR/TE-10010

ICS: 33.020, 33.040.40

Key words: Multimedia

Terminal Equipment (TE);
Multimedia portfolio;
A compilation of multimedia applications and services
provided by ETSI members

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

New presentation - see History box

Contents

Foreword

This ETSI Technical Report (ETR) was produced by the Terminal Equipment (TE), Technical Committee of the European Telecommunications Standards Institute (ETSI).

ETRs are informative documents resulting from ETSI studies which are not appropriate for European Telecommunication Standard (ETS) or Interim European Telecommunication Standard (I-ETS) status. An ETR may be used to publish material which is either of an informative nature, relating to the use or the application of ETSs or I-ETSs, or which is immature and not yet suitable for formal adoption as an ETS or an I-ETS.

Introduction

The purpose of this ETR is to identify multimedia applications and services which have a real interest for ETSI members. This study, based on a compilation of multimedia applications and services provided by ETSI members, has also contributed to the elaboration of:

ETR 173: "Terminal Equipment (TE); Multimedia portfolio; Functional model for multimedia applications".

The result of this study is summarized in table A.1 of annex A.

Some of the proposed contributions are given as examples in annex B.

Blank page

1 Scope

The purpose of this ETR is to identify the most important requirements on multimedia applications and services, which should be covered by the ETSI multimedia standardization programme.

This analysis is based on a multimedia portfolio, which is a compilation of multimedia application and service descriptions and their associated service parameter tables, provided by the ETSI members. The different contributors to this action have proposed their examples, keeping in mind the promotion of these multimedia services in telecommunication and the interworking capability.

This actual compilation of multimedia applications and services is not intended to be exhaustive, but it is a first analysis of the relevant multimedia features and parameters of interest for the standardization process.

2 Abbreviations

For the purposes of this ETR, the following abbreviations apply:

ADSL	Asymmetrical Digital Subscriber Line
AF	Access Function
ATM	Asynchronous Transfer Mode
B-ISDN	Broadband Integrated Services Digital Network
CGI	Computer Graphics Interface
CGM	Computer Graphics Metafile
CSCW	Computer Supported Co-operative Working
DTC	Desk Top Conference
EQTV	Extended Quality TV
FTAM	File Transfer, Access and Management
FTP	File Transfer Protocol
GKS	Graphic Kernel System
HDSL	High bitrate Digital Subscriber Line
HDTV	High Definition TV
HRD	High Road Demonstrator
IDB	Interactive Database
ISDN	Integrated Services Digital Network
I&R	Information and Retrieval service excluding video on demand
JPEG	Joint Photographic Experts Group
LAN	Local Area Network
LRD	Low Road Demonstrator
MCU	Multipoint Control Unit
MHIRS	Multimedia/Hypermedia Information Retrieval Service
MIME	Multipurpose Internet Mail Extensions
MPEG	Moving Picture Experts Group
MRD	Middle Road Demonstrator
ODA	Open Document Architecture
PON	Passive Optical Network
PSTN	Public Switched Telephone Network
RTF	Rich Text Format
SBV	Syntax-Based Videotex
SGML	Standard Generalized Markup Language
SRTV	Standard Resolution TV
TCS	Teleconference Service
TE	Terminal Equipment
VOD+I&R	Video on Demand combined with other Information and Retrieval services
WAIS	Wide Area Information Services
WWW	World Wide Web

3 Basis of this study

3.1 Introduction

This work started in 1993. For each proposal, a short description was given and the Multimedia Portfolio Questionnaire, in the form of a table of service parameters, was completed. Each contributor has had the possibility to enhance a first example of the multimedia portfolio table proposed by BT Labs, by adding and/or removing some parameters.

In the resulting portfolio table, service parameters have been classified as described hereafter. The first set of parameters of this portfolio table permits a general description and the classification of the most popular multimedia services. Desired associated secondary services are also mentioned. Then different parameters related to network aspects, access requirements, security, copyright and charging are proposed. Parameters in relation with the different media and their quality requirement have also been included in this porfolio table. Finally, some features related to the user terminal capabilities and other miscellaneous service parameters are listed.

This Multimedia Portfolio Questionnaire could certainly be modified or enlarged, however, it already gives a first analysis of the most demanded multimedia services and applications within ETSI.

3.2 List of the contributing ETSI members and/or associated companies

The ETSI members and associated companies contributing to this work are given in table 1.

Table 1: Names of the contributing ETSI members and associated companies

Names of the companies	Abbreviation of in function of the country
Austrian PTT	AU
Swiss Telecom PTT	CH
Deutsche Bundespost Telekom	D
Tele Danmark Jydsk Telefon	DK
TELEFONICA	E
Alcatel	F1
Cap Sesa	F2
Matra Communication	F3
Norwegian Telecom Research	N
Royal PTT Nederland	NL
Portugal	P
Helsinki Telephone Company	SF
BT Labs	UK1
UK Academic Community	UK2

Most of these contributions have been reviewed for this ETR. Some of the Mutimedia Portfolio Questionnaires and some of the corresponding descriptions are presented in annex B, with the agreement of the contributing ETSI STC TE10 and STC TE2 members or associated companies.

3.3 Important disclaimer

The different proposals of multimedia applications and services given in annex B, are put forward by the ETSI members and/or associated companies by way of example to clarify some of the standardization requirements in the multimedia area; no specific commercial intention of any member is implied.

4 Classification of the results

A general classification of the multimedia services could be as given in figure 1 below:

```
┌─────────────────────┐                    ┌─────────────────────┐
│   communication     │                    │   communication     │
│  person to person   │                    │  person to server   │
└─────────────────────┘                    └─────────────────────┘
      /        \                                  /        \
┌──────────┐  ┌──────────────┐        ┌──────────────┐  ┌──────────────┐
│ real time │  │ differed time │        │ interactive  │  │  broadcast   │
└──────────┘  └──────────────┘        └──────────────┘  └──────────────┘
```

conversational services: **messaging services:**   **information &**   **broadcast services:**
                                                               retrieval services:

e.g. videotelephony   e.g. multimedia mail   e.g. VOD   e.g. digital broadcast
    videoconference   Videotex
    audiographic conf.
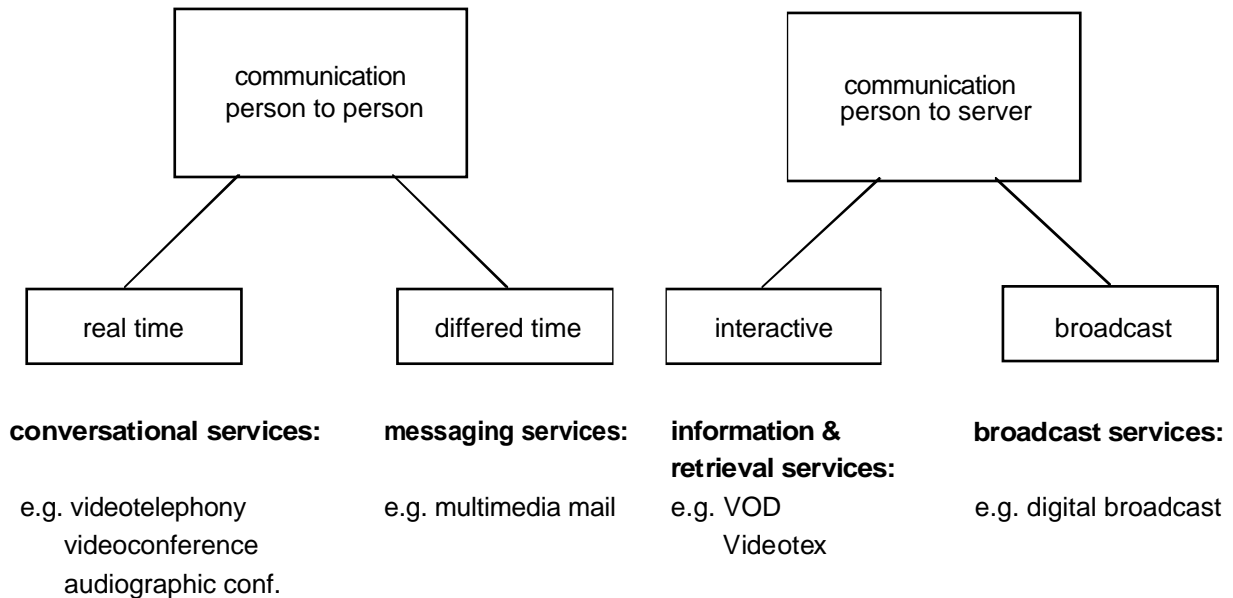
Figure 1

On the basis of the answers to the Multimedia Portfolio Questionnaire, it has been decided to limit the classification to the three following families:

- **teleconference services** (videoconference, videotelephony, audiographic conference services);

- **retrieval services** (excluding Video on Demand (VOD) services);

- **Video on Demand combined with other information and retrieval services**, as a basic service **for residential users.**

This classification is considered to be the most appropriate to analyse and report the results of the Multimedia Portfolio Questionnaire in this ETR. It could become a basis for the Top-Down approach classification as foreseen in the ETSI "Multimedia project plan". It differs slightly from the existing classification scheme, introduced for the purpose of the Bottom-Up approach covering existing work items in the ETSI work programme.

Finally, in this first characterisation of the multimedia services most frequently demanded by the ETSI members, the three proposed families of services have been analysed separately, even though the overlap between these services is increasing. Thanks to this classification, the desired characteristics of the teleconference services can be compared to those of the retrieval services, and the needs of the residential users to those of the professional users. As these types of services will not be developed by the same forum or standardization body, this classification thus finds another justification.

5 Analysis of the results

5.1 Introduction

The examples of multimedia services and applications provided by the ETSI members, can 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.

The complete results of the Multimedia Portfolio Questionnaire are given in the table 2 of annex A, for each family of services. Some questions appearing in the Multimedia Portfolio Questionnaire have been removed from the result table, due to the insufficient number of answers. In the following subclauses, the results for each type of multimedia services are discussed.

5.2 General results and analysis

Nearly 60 % of the proposed examples of multimedia services, describe TeleConference Services (TCS) and 25 % describe Information and Retrieval services (I&R) without VOD capability. Among TCS, 90 % are associated to an information and retrieval service. Only 15 % of the proposals are related to a VOD service combined with other information and retrieval services for residential users (VOD+I&R). This reflects a strong interest from the ETSI members to push the standardization process of the TCS with the associated I&R services.

In this first study of multimedia service requirements, the contributors have not found it of interest to specify the desired document architecture from the standardization bodies and the industry formats, except for TCS where Open Document Architecture (ODA) is proposed in half of these services.

Standards in use for each monomedia (for example: JPEG, JBIG, ... for still images) and quality requirements for the audio and video information have been defined in a few cases and are therefore not reported in this ETR.

5.3 Results and discussion on teleconference services

5.3.1 Service description summary and associated secondary services

23 examples of TCS have been collected. Among them, 17 % have only AudioGraphic Conference Service (AGCS) capability, and **40 %** of the videoconference services can be temporarily switched over to an **audiographic conference service**.

The main characteristics of these TCS can be summarized as follows:

- these TCS are mainly **dedicated to professional/**enterprise **users** (75 **%**). Half of these services are also foreseen for residential users;

- a great majority of these TCS are combined with **retrieval services** (78 **%**);

- more than a quarter of them offer **facsimile** and **file transfer** capability;

- less than a quarter of these TCS are combined with messaging services.

5.3.2 Network aspects and access requirements

40 % of the TCS have **multinetwork capability**. In the majority of the TCS examples, the access and trunk network can be **Integrated Services Digital Network (ISDN)** (>80 %). In nearly **half** of these services, the multimedia terminals are **only** connected to **ISDN**. For a quarter of these TCS, some multimedia user terminals are connected to ISDN and others to Local Area Networks (LAN) within the same service. This is also the case for ISDN and Broadband-ISDN (B-ISDN).

The majority of these service examples have a **transmission rate $\leq$ 2 Mbit/s**, and $\leq$ 128 kbit/s for a quarter of them.

More than half of the TCS have **multipoint communication** capability. The **addition and/or cancellation of the call** during a multimedia session is demanded in 75 % of the proposed services.

In general, the communication is symmetric (65 %). The establishment of the communication is on demand and at any time of the day (>80 %).

5.3.3 Security, copyright and charging

Security aspects are of importance in the proposed TCS. **User identification** and **access control**/priority right management to retrieve and edit data are desired in more than half of the proposals.

The **authentication** and the **signature** of this multimedia service user is also felt as a necessity (50 %).

Charging capability is finally requested in more than half of the examples of TCS.

5.3.4 Used media

As a great majority of the TCS have also an **I&R service capability,** the transmission of **graphics**, **still images** and **audio-visual sequences** as stored information (MPEG,...) is needed. However, the different standards have not been defined in the received contributions.

Transmission of document encoded with **ODA** is desired in half of the proposals. Note that, the type of document architecture has not been defined in the majority of the received examples.

Finally, control signals and other ephemeral signals are desired in 35 % of the TCS.

5.3.5 User terminal features and other service parameters

First of all, participants to a multimedia conference should be able to use **heterogeneous** multimedia **platforms** (PC, workstations, videotelephones) during the same session (80 %).

Enhanced services and terminal features other than the ones available in the actual standardized videoconference and videotelephony services, are desired in a great majority of the proposals (at least 75 %). These features are:

- the possible use of several services simultaneously and the variable bandwidth allocation for the different media during the session;

- local processing and information storage in combination with that of the network (CD-I,...).

In more than half of the proposed services (67 %), the participants to the conference should share all content data. User terminals will be set with the same capabilities.

Finally, edition of multimedia data is felt as necessary in half of the proposed examples of TCS.

5.4 Results and discussion on retrieval services (without VOD)

5.4.1 Service description summary and associated secondary services

10 proposals of Information and Retrieval services (I&R) have been collected.

The majority of these I&R services are specifically **dedicated to professional/**enterprise **users** (70 %). Some of these examples are also proposed for residential users (30 %). In some other proposals, the type of users has not been defined.

Around 20 % of these services not only have I&R capability, but are also combined with the Internet interactive services, messaging services, facsimile and Videotex. 20 % of the I&R service examples also have file transfer and tele-transaction capability. However, telebanking is desired in only 10 % of the proposals.

5.4.2   Network aspects and access requirements

Two thirds of these service examples are proposed with a **maximum** transmission rate of **2 Mbit/s**.

40 % of the proposed I&R services have **multinetwork** capability. In more than a **half** of the proposals, some user terminals are connected to the **ISDN**. For 30 % of the I&R services, the access network is either ISDN or B-ISDN or different public or private networks within the same service. Finally, in 40 % of the cases, multimedia terminals are connected either to LANs or to networks different to the ISDN, within the same service.

In general, the communication is asymmetric (70 %). The establishment of the communication is, in general, on demand (80 %), at any time of the day and without restriction in duration.

5.4.3   Security, copyright and charging

The desired security requirements are the same for the proposed TCS and the I&R. **User identification** and **access control**/priority right management to retrieve and edit data are also demanded in more than half of the proposals.

The **authentication** and the **signature** of this multimedia service user is felt as necessary in the same proportion for the TCS and I&R (50 %). This is the same for **charging** capability which is desired in more than half of the cases.

5.4.4   Used media

The specific standards for graphics, still images and audiovisual sequences as stored information (MPEG,...) have been defined in few I&R service proposals. The results are therefore not reported.

5.4.5   User terminal features and other services parameters

In TCS, heterogeneous multimedia terminals are desired by the majority (80 %). This is the case only in 40 % of the proposed I&R services.

However, in both types of services (TCS and I&R services), the following features are in great demand (>50 %):

-        possible use of several services simultaneously and variable bandwidth allocation for the different media during the session;

-        local processing and information storage in combination with that of the network (CD-I,...).

In a great majority of the I&R service examples, the user terminal can access to the same information (80 %).

Finally, edition of multimedia data is believed to be necessary in half of the proposed examples of TCS and I&R services.

5.5   Results and discussion on VOD services combined with other I&R services

5.5.1   Service description summary

This service is meant mainly for **residential users** (67 %). All the proposals combine **VOD with other retrieval services (VOD+I&R)**. Besides the transmission of audio-visual sequences as stored information (MPEG, etc.), **still images** are demanded in each VOD+I&R example.

Half of these proposals have **Videotex** access, **file transfer**, **telebanking** and **tele-transaction** capability, as associated secondary services.

5.5.2 Network aspects

The user terminals of the same VOD+I&R service can be **connected to several networks** within the same service: Broadband ISDN (B-ISDN), CATV, Public Switched Telephone Network (PSTN) using Asymmetrical Digital Subscriber Line (ADSL) and High bit-rate Digital Subscriber Line (HDSL). However, the number of received answers is insufficient to identify a typical transmission rate for this service.

5.5.3 Others important service parameters and user terminal requirements

As the number of proposals are really few, only the features most in demand are mentioned thereafter (50 % and over).The main characteristics of these VOD+I&R services can be summarized as follows:

- the establishment of communication is desired on demand and around the clock;

- there is a need for security and in particular to **identify the user** (80 %), to **control the access**, to provide **possible authentication**, **signature and partial encryption**;

- **copyright** protection/copy control and **charging**, should also be possible (80 %).

Heterogeneous user platforms are desired, with possible local storage, edition and processing of documents. The possibility to use several services/media simultaneously and specific type of information (feedback traces, etc.), should also be offered.

6 Conclusions

The objective of this first study was to identify multimedia applications and services, which find a real interest among the ETSI members. Three families of services have been analysed: TeleConference Services (TCS), retrieval services (I&R), and a service for residential users which is based on VOD and other Information and Retrieval services (VOD+I&R). Due to the small number of VOD+I&R service proposals, only few important service parameters are reported in this conclusion. These are: multinetwork access capability within the same service, Videotex access, file transfer and tele-transaction. Another important characteristic of this type of service is the multiservice capability of user terminals: VOD is always offered in association with other information and retrieval services.

Thus, the majority of the collected examples describe teleconference services and retrieval services, excluding VOD services. Several service parameters and features are considered important for these two families of multimedia services and are summarized thereafter.

First of all, the majority of these TCS and I&R services are specifically dedicated to professional/enterprise users (70 %). Half of these TCS are also proposed for residential users.

Then, multinetwork capability is proposed in 40 % of the I&R service examples, and also in the same proportion in the TCS examples. The most frequently specified access network is the ISDN. In nearly 90 % of the TCS and 60 % of the I&R services, some user terminals can be connected to the ISDN (but not necessarily). Half of the TCS have only ISDN access network within the same service. Only 20 % of the proposed TCS are desired with ISDN and B-ISDN access network within the same service. 40 % of the I&R services have some but not necessarily all terminals connected to a LAN. As a consequence, for both multimedia type of services, the maximum transmission rate is, in general, 2 Mbit/s (>70 %).

Furthermore, the same security parameters are demanded for both TCS and I&R services. These are: user identification, access control/priority right management to retrieve and edit data, authentication and signature.

Finally, the other important service parameters which are common to both types of services are multiservice capability, heterogeneous multimedia terminals, variable bandwidth allocation for the media, charging, local storage and processing of information.

The importance of some service parameters are, however, different for TCS and I&R services. In the teleconference service proposals, other service parameters are also requested, for example, possible addition and/or cancellation of a call during a session, and shared workspace. The participants to a conference should also share all content data. In most of the I&R service examples, user terminals can have access to the same information (80 %).

In conclusion, the service features listed above reflect a realistic need for standardization activities in order to extend the actual teleconference services and in particular videoconference and videotelephony services. The need for standardization activities, keeping in mind their application in both TCS and I&R services, is real as the majority of the teleconference services are used in combination with some retrieval services.

Annex A: Results of the multimedia portfolio table

A.1   Results of the Multimedia Portfolio Questionnaire

This annex is a summary of the answers to the Multimedia Portfolio Questionnaire. The results have been expressed in function of each family of the proposed multimedia services:

-    Video On Demand services combined with other Information and Retrieval services **(VOD+I&R)** with a total of 6 examples;

-    the other Information and Retrieval services **(I&R)**, with a total of 10 examples;

-    TeleConference Services **(TCS)** with a total of 23 examples.

The numbers in the table below express, as a percentage of the total number of examples and for each type of multimedia service, the interest of the corresponding parameter. The numbers in brackets indicate that this parameter is desired for some but not all user terminals, or only sometimes.

NOTE 1:   The dashed area expresses that this service parameter is desired in at least 50 % of the examples of the corresponding multimedia service type.

NOTE 2:   T1, T2, T3 stand for user terminals 1, 2, 3, respectively.

NOTE 3:   Only the maximal capability of connecting user terminal is mentioned. A TCS with possible multipoint communication and access to a database can operate in a point-to-point communication.

Table A.1: Results of the Multimedia Portfolio Questionnaire

SERVICE PARAMETERS	VOD+ I&R	I&R	TCS
	[%]	[%]	[%]
Service description summary			
Teleconference service (videoconf.,videoteleph., audiogr. conf.)			**100** (13)
Audiographic conference service			43 (39)
Information & retrieval services (excluding video on demand)	100	**100**	78
Video on demand	**100**		
Messaging services		30	43
Dedicated to: large business	33	70	74
small business	33	70	78
residential users	67	30	52
Associated secondary services			
Facsimile	17		35
Videotex	50	20	13
Electronic messaging: X.400/88, X.400/92		20	17
E-mail: RFC 822, MIME		20	13
Internet interactive services (WWW, Gopher, WAIS, NEWS, ...)		30	17
Files transfer (FTAM, FTP,....)	50	20	39
Telebanking	67	10	4
Tele-transaction (tickets and other reservations)	50	30	9

Network aspects		VOD+I&R	I&R	TCS
Transmission rate:	≤ 128 kbit/s			26
	≤ 2 Mbit/s	33	70	83
	>2 Mbit/s	66	30	17
Networks on which user terminals are connected (Access + trunk network)				
- ISDN only within the same service				≈50
- some user terminals on ISDN			60	87
- LAN and others within the same service			40	
- ISDN and LAN within the same service				26
- ISDN and B-ISDN within the same service		17	30	22
- B-ISDN and CATV, PSTN(ADSL, HDSL), PON within the same serv.		100		
User terminals are on different networks		67	40	40
Terminals and databases are on different networks		50		
T1 is connected to T2 only (point to point communication only)				22
T1 is connected to Database(s) only (retrieval application only)		100	100	
T1 is connected simultaneously to T2 and Database(s)				30
T1 is connected simultaneously to T2, T3, ... and Database(s)				43
T1 is connected simultaneously to T2, T3,.(multipoint communicat.)				9
Bi-directional symmetric communication				65 (35)
Bi-directional asymmetric communication		67	70	39 (35)
Access requirements				
Establishment of communication: on demand		100	80	91 (35)
reserved				26 (22)
permanent				(17)
Access: around the clock (at any time of the day)		100	80	83
restricted in time		33		4
restricted in duration			10	13
Addition and/or cancellation of a call during the multimedia session		33	30	74
Call transfer is required, between...				9
Security, copyright and charging				
User identification		83	90	87 (22)
Access control/priority right management: to retrieve data		67	80	74 (9)
to edit data		17	60	52 (9)
Communication content should be totally encrypted		17	10	17
Communication content should be partially encrypted		50	20	17
Authentication/signature		67	50	57
Copyright protection/copy control		83	40	30
Charging		83	60	52
Used media and quality requirements				
ASCII text				30
Others (T.61, ISO..., ...)				
Documents, ODA encoded		**not**		52
SGMLencoded		**enough**	**answers**	22
Postscript				26
RTF				17
others (word,...)				22

	VOD+I&R	I&R	TCS
Graphics (CGM, GKS, CGI,...)	67	30	52
Still images (JPEG, JBIG, GIF, TIFF...)	100	60	70
Audio-visual sequences as stored info (MPEG, JPEG,...)	100	50	52
Real time interactive audio without interactive video capability			17 (13)
Real time interactive audio and video (H.261,...)			74 (26)
Control signals and other ephemeral signals (pointer, electronic pen,...)			35
Video quality			
HDTV (High Definition TV)	**not**	**enough**	**answers**
EQTV (Extended Quality TV)			
SRTV (Standard Resolution TV)			
Reduced spatial resolution and movement portrayal			
Highly reduced spatial resolution and movement portrayal			
Audio quality			
Studio quality	**not**	**enough**	**answers**
Contribution quality CD, ISO/IEC 11172-3 with 180 kbit/s per monochannel,...)			
Emission quality (broadcast distribution) (FM, ISO/IEC 11172-3 with 2x128 kbit/s,...)			
Commentary quality (ISO/IEC 11172-3 with at least 60 kbit/s,...)			
Medium quality speech + audio (G.722,...)			26
Telephone speech quality (G.711, G.728,...)			35
User terminal features and other service parameters			
Heterogeneous multimedia platforms (PC, workstation, videoconf.,...)	67	40	78
Use of several services/media simultaneously	67	80	87
Variable allocation of the bandwidth for the different media	33	50	74
All content data is shared or accessed by all terminals	33	80	57
Shared workspace (graphics, text, picture, movies, audio notes...) for joint editing and viewing			30
Switching mode for conversational telecommunication services:			
- with floor control			22
- with chairman control			35 (26)
- with voice activation			30 (17)
User terminal may retrieve Multimedia data	100	100	91
User terminal may retrieve and edit Multimedia data	67	50	52
Local storage of info. in combination with that of network (CD-I,...)	67	80	91 (13)
Local processing of data	50	80	70 (9)
Off-line downloading of information when user is absent	30	20	30
Application specific type of info: (feedback traces, directory info, searching and navigation,...)	50	30	26

Annex B: Individual proposals of the multimedia portfolio table

B.1 Individual proposals of the Multimedia Portfolio Questionnaire

B.1.1 Introduction

This annex is a compilation of some of the replies to the Multimedia Portfolio Questionnaire and some of the corresponding descriptions of the multimedia services proposed by TC-TE ETSI members. These examples were mainly proposed in order to stimulate the standardization process of the most important missing aspects and parameters of the future standardized multimedia services. No specific commercial intention of any contributing ETSI member is implied.

NOTE 1: The different contributions have been classified in alphabetical order of the contributing country abbreviations.

NOTE 2: In the multimedia portfolio tables, the answer **Y** indicates that the corresponding service parameter is desired for the proposed multimedia service example. The answer **(Y)** indicates that this service parameter is desired sometimes or for some user terminals.

B.2 Proposal from Austria

B.2.1 Answers to the Multimedia Portfolio Questionnaire by the Austrian PTT

Important disclaimer: the features described in this ETR are put forward by way of example to clarify some of the standardization requirements in the multimedia area. Nothing in this ETR represents any specific commercial intention of the ETSI member.

The example **AUa** defines an audiographic conference service, **AUb** a multimedia and hypermedia retrieval service and **AUc** a videotelephony service.

SERVICE PARAMETERS	AUa	AUb	AUc
Service description summary			
Teleconference service (videoconf., videoteleph., audiogr. conf.)	Y		Y
Audiographic conference service	only		
Other conversational services			
Information & retrieval services (excluding video on demand)		Y	
Video on demand			
Messaging services			
Dedicated to: large business	Y	Y	Y
small business	Y	Y	Y
residential users			Y
Associated secondary services			
Facsimile	Y	Y	
Videotex		Y	
Electronic messaging: X.400/88, X.400/92			
E-mail: RFC 822, MIME			
Internet interactive services (WWW, Gopher, WAIS, NEWS, ...)			
Files transfer (FTAM, FTP,....)	Y	Y	
Telebanking		Y	
Tele-transaction (tickets and other reservations)		Y	
Network aspects			
Transmission rate: minimum (bit/s)	64 K	64 K	64 K
maximum (bit/s)	2 X 64 K	2 M	2 M
Networks on which user terminals are connected (Access + trunk network)	ISDN	ISDN, B-ISDN	ISDN, B-ISDN
User terminals are on different networks		Y	Y
Terminals and databases are on different networks		Y	
T1 is connected to T2 only (point to point communication only)			Y
T1 is connected to Database(s) only (retrieval application only)		Y	
T1 is connected simultaneously to T2 and Database(s)			
T1 is connected simultaneously to T2, T3, ... and Database(s)			
T1 is connected simultaneously to T2, T3,.(multipoint communicat.)	Y		
Bi-directional symmetric communication	Y		Y
Bi-directional asymmetric communication	Y	Y	

Access requirements	AUa	AUb	AUc
Establishment of communication: on demand	Y	Y	Y
reserved	Y		
permanent			
Access: around the clock (at any time of the day)	Y	Y	Y
restricted in time			
restricted in duration			
Addition and/or cancellation of a call during the multimedia session	Y	Y	
Call transfer is required, between...			
Security, copyright and charging			
User identification	Y	Y	Y
Access control/priority right management: to retrieve data	Y	Y	
to edit data	Y	Y	
Communication content should be totally encrypted			
Communication content should be partially encrypted			
Authentication/signature	Y	Y	
Copyright protection/copy control		Y	
Charging	Y	Y	Y
Used media and quality requirements			
ASCII text			
Others (T.61, ISO..., ...)	T.51	T.51	
Documents, ODA encoded	Y	Y	
SGMLencoded			
Postscript		Y	
RTF		Y	
others (word,...)		winword, word perfect	
Graphics (CGM, GKS,CGI,...)	Y	Y	
Still images (JPEG, JBIG, GIF, TIFF...)	Y	Y	
Audio-visual sequences as stored info (MPEG, JPEG,...)		Y	
Real time interactive audio without interactive video capability	Y		
Real time interactive audio and video (H.261,...)			Y
Control signals and other ephemeral signals (pointer, electronic pen,...)	Y	Y	
Video quality	**AUa**	**AUb**	**AUc**
HDTV (High Definition TV)			
EQTV (Extended Quality TV)			
SRTV (Standard Resolution TV)		Y	Y
Reduced spatial resolution and movement portrayal		Y	Y
Highly reduced spatial resolution and movement portrayal		Y	Y
Audio quality			
Studio quality			
Contribution quality CD, ISO/IEC 11172-3 with 180 kbit/s per monochannel,...)			
Emission quality (broadcast distribution) (FM, ISO/IEC 11172-3 with 2 x 128 kbit/s,...)			
Commentary quality (ISO/IEC 11172-3 with at least 60 kbit/s,...)			

Medium quality speech + audio (G.722,...)	Y	Y	Y
Telephone speech quality (G.711, G.728,...)	Y	Y	Y
User terminal features and other service parameters			
Heterogeneous multimedia platforms (PC, workstation, videoconf.,...)	Y	Y	Y
Use of several services/media simultaneously	Y	Y	Y
Variable allocation of the bandwidth for the different media	Y	Y	
All content data is shared or accessed by all terminals	Y	Y	Y
Shared workspace (graphics, text, picture, movies, audio notes...) for joint editing and viewing	Y		
Switching mode for conversational telecommunication services:			
- with floor control	Y		
- with chairman control	Y		
- with voice activation	Y		
User terminal may retrieve Multimedia data	(Y)	(Y)	
User terminal may retrieve and edit Multimedia data	(Y)	(Y)	
Local storage of info. in combination with that of network (CD-I,...)	Y	Y	
Local processing of data	Y	Y	
Off-line downloading of information when user is absent		Y	
Application specific type of info: (feedback traces, directory info, searching and navigation,...)		Y	

B.2.2   Description of the proposed services by the Austrian PTT

The Austrian PTT will consider, as a first step, three different multimedia services: Audiographic conferencing, Multimedia/Hypermedia Information Retrieval Services (MHIRS) and Videotelephony.

The answers in examples AUa, AUb and AUc (see subclause B.2.1) are given as for separate services. However, we support a possible convergence of these separate services as a longterm aim.

B.3 Proposal from Switzerland

B.3.1 Answers to the Multimedia Portfolio Questionnaire by the Swiss Telecom PTT

Important disclaimer: the features described in this ETR are put forward by way of example to clarify some of the standardization requirements in the multimedia area. Nothing in this ETR represents any specific commercial intention of the ETSI member.

The example **CHa** defines an entertainment and video on demand service, **CHb** a multimedia service.

SERVICE PARAMETERS	CHa	CHb
Service description summary		
Teleconference service (videoconf., videoteleph., audiogr. conf.)		Y
Audiographic conference service		(Y)
Other conversational services		
Information & retrieval services (excluding Video On Demand)	Y	Y
Video On demand	Y	
Messaging services		Y
Dedicated to: large business		Y
small business		Y
residential users	Y	
Associated secondary services		
Facsimile		Y
Videotex	Y	(Y)
Electronic messaging: X.400/88, X.400/92		Y
E-mail: RFC 822, MIME		Y
Internet interactive services (WWW, Gopher, WAIS, NEWS, ...)		Y
Files transfer (FTAM, FTP,....)		
Telebanking	Y	
Tele-transaction (tickets and other reservations)	Y	
Network aspects		
Transmission rate: minimum (bit/s)		64 K
maximum (bit/s)	< 6 M	128 K
Networks on which user terminals are connected (Access + trunk network)	ADSL, HDSL PON,B-ISDN	ISDN, LAN
User terminals are on different networks	Y	Y
Terminals and databases are on different networks	Y	Y
T1 is connected to T2 only (point to point communication only)		
T1 is connected to Database(s) only (retrieval application only)	Y	
T1 is connected simultaneously to T2 and Database(s)		
T1 is connected simultaneously to T2, T3, ... and Database(s)		Y
T1 is connected simultaneously to T2, T3, (multipoint communicat.)		
Bi-directional symmetric communication		Y
Bi-directional asymmetric communication	Y	

Access requirements		
Establishment of communication: on demand	Y	Y
reserved		
permanent		
Access: around the clock (at any time of the day)	Y	Y
restricted in time		
restricted in duration		
Addition and/or cancellation of a call during the multimedia session		Y
Call transfer is required, between...		

Security, copyright and charging	CHa	CHb
User identification	(Y)	Y
Access control/priority right management: to retrieve data	Y	Y
to edit data		Y
Communication content should be totally encrypted		
Communication content should be partially encrypted	(Y)	Y
Authentication/signature	(Y)	Y
Copyright protection/copy control	Y	
Charging	Y	(Y)

Used media and quality requirements		
ASCII text	Y	Y
Others (T.61, ISO..., ...)	Y	Y
Documents, ODA encoded		
SGMLencoded		
Postscript	Y	Y
RTF		
others (word,...)	Y	Y
Graphics (CGM, GKS,CGI,...)	Y	Y
Still images (JPEG, JBIG, GIF, TIFF...)	Y	Y
Audio-visual sequences as stored info (MPEG, JPEG,...)	Y	(Y)
Real time interactive audio without interactive video capability		(Y)
Real time interactive audio and video (H.261,...)		(Y)
Control signals and other ephemeral signals (pointer, electronic pen,...)	Y	Y

Video quality		
HDTV (High Definition TV)		
EQTV (Extended Quality TV)	(Y)	
SRTV (Standard Resolution TV)	Y	
Reduced spatial resolution and movement portrayal		Y
Highly reduced spatial resolution and movement portrayal		

Audio quality		
Studio quality		
Contribution quality CD, ISO/IEC 11172-3 with 180 kbit/s per monochannel,...)		
Emission quality (broadcast distribution) (FM, ISO/IEC 11172-3 with 2 x 128 kbit/s,...)	Y	(Y)
Commentary quality (ISO/IEC 11172-3 with at least 60 kbit/s,...)		
Medium quality speech + audio (G.722,...)	(Y)	Y
Telephone speech quality (G.711, G.728,...)	(Y)	Y

User terminal features and other service parameters	CHa	CHb
Heterogeneous multimedia platforms (PC, workstation, videoconf.,...)	Y	Y
Use of several services/media simultaneously		
Variable allocation of the bandwidth for the different media		
All content data is shared or accessed by all terminals		
Shared workspace (graphics, text, picture, movies, audio notes...)		Y
for joint editing and viewing		
Switching mode for conversational telecommunication services:		
- with floor control		
- with chairman control		(Y)
- with voice activation		Y
User terminal may retrieve Multimedia data	(Y)	
User terminal may retrieve and edit Multimedia data	(Y)	Y
Local storage of info. in combination with that of network (CD-I,...)	(Y)	Y
Local processing of data	(Y)	
Off-line downloading of information when user is absent		
Application specific type of info: (feedback traces, directory info, searching and navigation,...)	Y	(Y)

B.3.2 Description of the proposed services by the Swiss Telecom PTT

1. Entertainment and interactive multimedia service for residential users: CHa

The interest of residential users for TV-based multimedia services is growing rapidly. These enhanced TV services are mainly dedicated to TV on demand. Additional services can also be offered, such as: multimedia Videotex, electronic games, electronic library (e.g. multimedia Encyclopaedia), CD consultation, tele-transaction (e.g. for tickets or other reservations), tele-shopping, tele-teaching (e.g. for foreign languages), telebanking, ...

1.1. service description

The TV-set is linked to a decoder at the user location. The main decoder functions are:

- to decode the distributed multimedia information, for example: MPEG-1 for audio and video information;

- to decode, code and transmit the associated interactive information.

A remote control unit and/or a PC for the enhanced version of this service, allow the communication with the Interactive DataBase (IDB). The return signal from the remote control unit lets the subscriber choose and control video programmes, games, etc.. Some services, such as tele-teaching and telebanking, are only available for subscribers using a PC terminal.

Very secure authentication and/or billing functions are needed for some of these services.

Service parameters and media used in this first example of multimedia service are reported in subclause B.3.1.

### 1.2.	graphic description

access network   trunk network

ISDN
PSTN
switch

(MPEG)   ADSL, PON
HDSL   LT   B-ISDN
(ATM)   IDB
server

remote
control,
or PC   PSTN

RNIS

decoder   local
IDB
termination   Interactive
DataBase
server
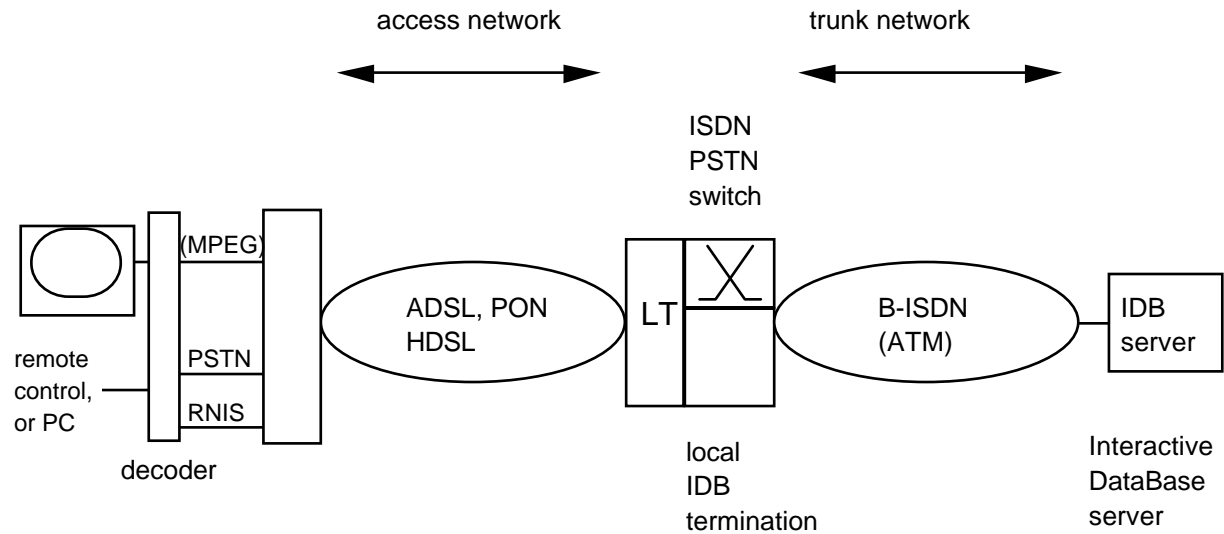
Figure B.1: Technological description

### 1.3.	network description

The interactive signal is transmitted through PSDN and/or ISDN dedicated networks to the Terminal Equipment (TE).

The transmission system in the access network is based on Asymmetric Digital Subscriber Lines (ADSL), High bit rate Digital Subscriber Line (HDSL), or Passive Optical Network (PON).

The transport technology in the B-ISDN trunk network is ATM. The IDB has a B-ISDN interface.

### 2.	Multimedia conferencing service: CHb

### 2.1.	service description

This multimedia conferencing service is based on PC or workstations in a multipoint configuration. The information is transmitted over N-ISDN. Interworking capabilities with a videoconference room is sometimes requested. Each participant of this multimedia conference can be connected to a public database. Local storage (CD-ROM, CD-I,...) can also be used.

Service parameters and media used in this second example of multimedia service are reported in subclause B.3.1. The main service parameters are described as follows:

-	each party can, from his PC, see and/or modify the same window content - graphics, texts, pictures, movies,... and their combinations (shared workspace);

-	the interactive video (not the audio) can be switched off to release some bandwidth to transmit other media types (audiographic conference);

-	all content data are not necessarily shared by all the conference locations. For example, some multimedia conference systems would not have videoconferencing, but only multipoint telephony and other data facilities;

-	the conference room can be equipped to display the data (texts, still images, graphics, etc.) shared by the PC terminals.

2.2.   graphic description
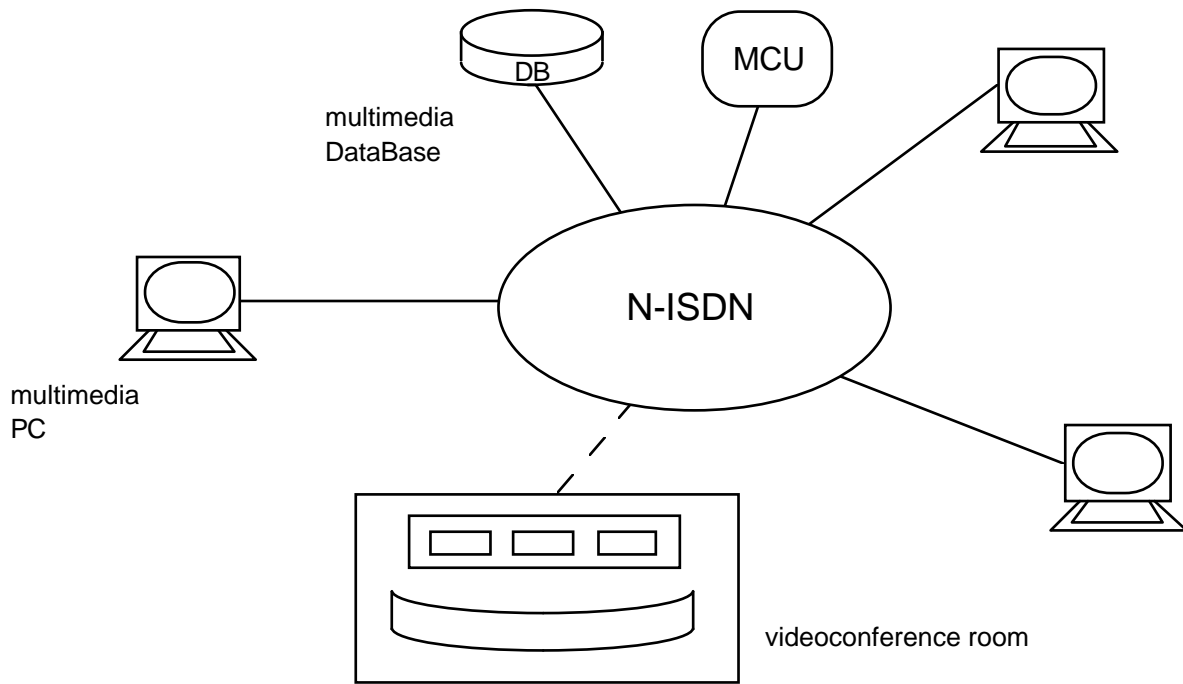
Figure B.2: Graphic description of the proposed multimedia conferencing service

B.4 Proposal from Germany

B.4.1 Answers to the Multimedia Portfolio Questionnaire by the Deutsche Bundespost Telecom

Important disclaimer: the features described in this ETR are put forward by way of example to clarify some of the standardization requirements in the multimedia area. Nothing in this ETR represents any specific commercial intention of the ETSI member.

The example **Da** defines a multifunctional communication system, **Db** a multimedia information and communication system.

SERVICE PARAMETERS	Da	Db
Service description summary		
Teleconference service (videoconf., videoteleph., audiogr. conf.)	Y	Y
Audiographic conference service		
Other conversational services		
Information & retrieval services (excluding video on demand)	Y	Y
Video on demand		
Messaging services	Y	
Dedicated to: large business	Y	Y
small business	Y	Y
residential users	Y	Y
Associated secondary services		
Facsimile	Y	
Videotex	Y	Y
Electronic messaging: X.400/88, X.400/92	Y	
E-mail: RFC 822, MIME		
Internet interactive services (WWW, Gopher, WAIS, NEWS, ...)	Y	
Files transfer (FTAM, FTP,....)		
Telebanking		
Tele-transaction (tickets and other reservations)		
Network aspects		
Transmission rate: minimum (bit/s)	64 K	64 K
maximum (bit/s)	512 K	128 K
Networks on which user terminals are connected (Access + trunk network)	ISDN, LAN	ISDN, LAN
User terminals are on different networks	Y	Y
Terminals and databases are on different networks		
T1 is connected to T2 only (point to point communication only)	Y	Y
T1 is connected to Database(s) only (retrieval application only)	Y	Y
T1 is connected simultaneously to T2 and Database(s)	Y	
T1 is connected simultaneously to T2, T3, ... and Database(s)	Y	
T1 is connected simultaneously to T2, T3,.(multipoint communicat.)	Y	
Bi-directional symmetric communication	Y	Y
Bi-directional asymmetric communication	Y	Y

Access requirements	Da	Db
Establishment of communication: on demand	Y	Y
reserved		
permanent	Y	Y
Access: around the clock (at any time of the day)	Y	Y
restricted in time		
restricted in duration		
Addition and/or cancellation of a call during the multimedia session	Y	
Call transfer is required, between...		
Security, copyright and charging		
User identification	(Y)	(Y)
Access control/priority right management: to retrieve data	Y	Y
to edit data	Y	Y
Communication content should be totally encrypted		
Communication content should be partially encrypted	text, data	text, data
Authentication/signature	Y	Y
Copyright protection/copy control		
Charging		
Used media and quality requirements		
ASCII text	Y	Y
Others (T.61, ISO..., ...)		
Documents, ODA encoded	Y	Y
SGMLencoded		
Postscript	Y	Y
RTF	Y	Y
others (word,...)	Winword	
Graphics (CGM, GKS,CGI,...)	Y	
Still images (JPEG, JBIG, GIF, TIFF...)	Y	Y
Audio-visual sequences as stored info (MPEG, JPEG,...)	Y	Y
Real time interactive audio without interactive video capability	(Y)	(Y)
Real time interactive audio and video (H.261,...)	Y	Y
Control signals and other ephemeral signals (pointer, electronic pen,...)		Y
Video quality		
HDTV (High Definition TV)		
EQTV (Extended Quality TV)		
SRTV (Standard Resolution TV)		
Reduced spatial resolution and movement portrayal		
Highly reduced spatial resolution and movement portrayal		
Audio quality		
Studio quality		
Contribution quality CD, ISO/IEC 11172-3 with 180 kbit/s per monochannel,...)		
Emission quality (broadcast distribution) (FM, ISO/IEC 11172-3 with 2 x 128 kbit/s,...)		
Commentary quality (ISO/IEC 11172-3 with at least 60 kbit/s,...)		
Medium quality speech + audio (G.722,...)		

Telephone speech quality (G.711, G.728,...)		
User terminal features and **other service parameters**	**Da**	**Db**
Heterogeneous multimedia platforms (PC, workstation, videoconf.,...)	Y	
Use of several services/media simultaneously	Y	Y
Variable allocation of the bandwidth for the different media	Y	Y
All content data is shared or accessed by all terminals	Y	Y
Shared workspace (graphics, text, picture, movies, audio notes...) for joint editing and viewing	text, picture, notes	text, notes
Switching mode for conversational telecommunication services:		
- with floor control		
- with chairman control		
- with voice activation		
User terminal may retrieve Multimedia data		Y
User terminal may retrieve and edit Multimedia data	Y	
Local storage of info. in combination with that of network (CD-I,...)	Y	
Local processing of data	Y	
Off-line downloading of information when user is absent		Y
Application specific type of info: (feedback traces, directory info, searching and navigation,...)		

B.5 Proposal from Denmark

B.5.1 Answers to the Multimedia Portfolio Questionnaire by Tele Danmark Jydsk Telefon

Important disclaimer: the features described in this ETR are put forward by way of example to clarify some of the standardization requirements in the multimedia area. Nothing in this ETR represents any specific commercial intention of the ETSI member.

B.5.1.1 Portfolio 1

The example **DKa** defines a broadband interactive multimedia service, **DKe** is based on the project MOSART (multimedia on-line system for art) and **DKh** defines an electronic encyclopaedia service.

SERVICE PARAMETERS	DKa	DKe	DKh
Service description summary			
Teleconference service (videoconf., videoteleph., audiogr. conf.)			
Audiographic conference service			
Other conversational services			
Information & retrieval services (excluding video on demand)	Y	Y	Y
Video on demand	Y		
Messaging services			
Dedicated to: large business			
small business		Y	
residential users	Y	Y	
Associated secondary services			
Facsimile			
Videotex	Y		
Electronic messaging: X.400/88, X.400/92			
E-mail: RFC 822, MIME			
Internet interactive services (WWW, Gopher, WAIS, NEWS, ...)			
Files transfer (FTAM, FTP,....)			(Y)
Telebanking	Y		
Tele-transaction (tickets and other reservations)	Y		
Network aspects			
Transmission rate: minimum (bit/s)	no limitation	64 K	
maximum (bit/s)	20 M	128 K	155 M
Networks on which user terminals are connected (Access + trunk network)	CATV, PSTN, PON	ISDN	B-ISDN
User terminals are on different networks	Y		
Terminals and databases are on different networks			
T1 is connected to T2 only (point to point communication only)			
T1 is connected to Database(s) only (retrieval application only)	Y	Y	Y
T1 is connected simultaneously to T2 and Database(s)			
T1 is connected simultaneously to T2, T3, ... and Database(s)			
T1 is connected simultaneously to T2, T3,.(multipoint communicat.)			
Bi-directional symmetric communication			
Bi-directional asymmetric communication	Y	Y	Y

Access requirements	DKa	DKe	DKH
Establishment of communication: on demand	Y	Y	Y
reserved			
permanent			
Access: around the clock (at any time of the day)	Y	Y	Y
restricted in time			
restricted in duration		Y	(Y)
Addition and/or cancellation of a call during the multimedia session	(Y)		
Call transfer is required, between...			
Security, copyright and charging			
User identification		Y	(Y)
Access control/priority right management: to retrieve data		Y	
to edit data		Y	
Communication content should be totally encrypted			
Communication content should be partially encrypted	Y		
Authentication/signature	Y	Y	
Copyright protection/copy control		Y	
Charging	Y	Y	
Used media and quality requirements			
ASCII text			(Y)
Others (T.61, ISO..., ...)			
Documents, ODA encoded			(Y)
SGMLencoded			(Y)
Postscript			(Y)
RTF			(Y)
others (word,...)			
Graphics (CGM, GKS,CGI,...)			Y
Still images (JPEG, JBIG, GIF, TIFF...)	Y	Y	Y
Audio-visual sequences as stored info (MPEG, JPEG,...)	Y		Y
Real time interactive audio without interactive video capability			
Real time interactive audio and video (H.261,...)			
Control signals and other ephemeral signals (pointer, electronic pen,...)			
Video quality			
HDTV (High Definition TV)	Y		
EQTV (Extended Quality TV)	Y		
SRTV (Standard Resolution TV)	Y		(Y)
Reduced spatial resolution and movement portrayal			(Y)
Highly reduced spatial resolution and movement portrayal			(Y)
Audio quality			
Studio quality	Y		
Contribution quality CD, ISO/IEC 11172-3 with 180 kbit/s per monochannel,...)	Y		
Emission quality (broadcast distribution) (FM, ISO/IEC 11172-3 with 2 x 128 kbit/s,...)	Y		Y
Commentary quality (ISO/IEC 11172-3 with at least 60 kbit/s,...)	Y		
Medium quality speech + audio (G.722,...)	Y		

Telephone speech quality (G.711, G.728,...)	(Y)		
User terminal features and other service parameters	**DKa**	**DKe**	**DKh**
Heterogeneous multimedia platforms (PC, workstation, videoconf.,...)	TV-set	Y	(Y)
Use of several services/media simultaneously	Y	Y	Y
Variable allocation of the bandwidth for the different media	Y		Y
All content data is shared or accessed by all terminals		Y	
Shared workspace (graphics, text, picture, movies, audio notes...) for joint editing and viewing			
Switching mode for conversational telecommunication services:			
- with floor control			
- with chairman control			
- with voice activation			
User terminal may retrieve Multimedia data			Y
User terminal may retrieve and edit Multimedia data		Y	
Local storage of info. in combination with that of network (CD-I,...)	(Y)	Y	(Y)
Local processing of data	(Y)	Y	(Y)
Off-line downloading of information when user is absent	Y		
Application specific type of info: (feedback traces, directory info, searching and navigation,...)	Y	Y	

B.5.1.2   Portfolio 2

The example **DKc** defines an Image Dialogue System.

SERVICE PARAMETERS	DKc
Service description summary	
Teleconference service (videoconf., videoteleph., audiogr. conf.)	
Audiographic conference service	
Other conversational services	Y
Information & retrieval services (excluding video on demand)	
Video on demand	
Messaging services	Y
Dedicated to: large business	Y
small business	Y
residential users	
Associated secondary services	
Facsimile	
Videotex	
Electronic messaging: X.400/88, X.400/92	
E-mail: RFC 822, MIME	
Internet interactive services (WWW, Gopher, WAIS, NEWS, ...)	
Files transfer (FTAM, FTP,....)	
Telebanking	
Tele-transaction (tickets and other reservations)	
Network aspects	
Transmission rate: minimum (bit/s)	
maximum (bit/s)	
Networks on which user terminals are connected (Access + trunk network)	ISDN
User terminals are on different networks	
Terminals and databases are on different networks	
T1 is connected to T2 only (point to point communication only)	Y
T1 is connected to Database(s) only (retrieval application only)	
T1 is connected simultaneously to T2 and Database(s)	
T1 is connected simultaneously to T2, T3, ... and Database(s)	
T1 is connected simultaneously to T2, T3,.(multipoint communicat.)	
Bi-directional symmetric communication	Y
Bi-directional asymmetric communication	
Access requirements	
Establishment of communication: on demand	Y
reserved	
permanent	
Access: around the clock (at any time of the day)	Y
restricted in time	
restricted in duration	
Addition and/or cancellation of a call during the multimedia session	Y

Call transfer is required, between...	
Security, copyright and charging	**DKc**
User identification	
Access control/priority right management: to retrieve data	
to edit data	
Communication content should be totally encrypted	
Communication content should be partially encrypted	
Authentication/signature	
Copyright protection/copy control	
Charging	
Used media and quality requirements	
ASCII text	
Others (T.61, ISO..., ...)	
Documents, ODA encoded	
SGMLencoded	
Postscript	
RTF	
others (word,...)	
Graphics (CGM, GKS,CGI,...)	
Still images (JPEG, JBIG, GIF, TIFF...)	Y
Audio-visual sequences as stored info (MPEG, JPEG,...)	
Real time interactive audio without interactive video capability	
Real time interactive audio and video (H.261,...)	
Control signals and other ephemeral signals (pointer, electronic pen,...)	Y
Video quality	
HDTV (High Definition TV)	
EQTV (Extended Quality TV)	
SRTV (Standard Resolution TV)	
Reduced spatial resolution and movement portrayal	
Highly reduced spatial resolution and movement portrayal	
Audio quality	
Studio quality	
Contribution quality CD, ISO/IEC 11172-3 with 180 kbit/s per monochannel,...)	
Emission quality (broadcast distribution) (FM, ISO/IEC 11172-3 with 2 x 128 kbit/s,...)	
Commentary quality (ISO/IEC 11172-3 with at least 60 kbit/s,...)	
Medium quality speech + audio (G.722,...)	
Telephone speech quality (G.711, G.728,...)	

User terminal features and other service parameters	DKc
Heterogeneous multimedia platforms (PC, workstation, videoconf.,...)	
Use of several services/media simultaneously	
Variable allocation of the bandwidth for the different media	
All content data is shared or accessed by all terminals	
Shared workspace (graphics, text, picture, movies, audio notes...) for joint editing and viewing	Y
Switching mode for conversational telecommunication services:	
- with floor control	
- with chairman control	
- with voice activation	
User terminal may retrieve Multimedia data	
User terminal may retrieve and edit Multimedia data	
Local storage of info. in combination with that of network (CD-I,...)	Y
Local processing of data	Y
Off-line downloading of information when user is absent	
Application specific type of info: (feedback traces, directory info, searching and navigation,...)	

B.5.1.3 Portfolio 3

The example **DKd** is based on the EUROCODE (ESPRIT project 6155), **DKf** defines a medium quality multimedia conference service and **DKg** a high quality multimedia conference service.

SERVICE PARAMETERS	DKd	DKf	DKg
Service description summary			
Teleconference service (videoconf., videoteleph., audiogr. conf.)	Y	Y	Y
Audiographic conference service	(Y)		
Other conversational services	(Y)		
Information & retrieval services (excluding video on demand)	(Y)		Y
Video on demand			
Messaging services	Y		
Dedicated to: large business	Y		(Y)
small business	Y	(Y)	
residential users	Y	(Y)	
Associated secondary services			
Facsimile	Y	(Y)	
Videotex			
Electronic messaging: X.400/88, X.400/92	Y		
E-mail: RFC 822, MIME	Y		
Internet interactive services (WWW, Gopher, WAIS, NEWS, ...)	Y		
Files transfer (FTAM, FTP,....)		(Y)	(Y)
Telebanking			
Tele-transaction (tickets and other reservations)			
Network aspects			
Transmission rate: minimum (bit/s)	9,6 K	2 M	155 M
maximum (bit/s)	> 2 M	30 M	1 000 M
Networks on which user terminals are connected (Access + trunk network)	ATM, ISDN, LAN, GSM, DECT	B-ISDN	B-ISDN
User terminals are on different networks	Y		
Terminals and databases are on different networks	Y		
T1 is connected to T2 only (point to point communication only)			
T1 is connected to Database(s) only (retrieval application only)			
T1 is connected simultaneously to T2 and Database(s)			
T1 is connected simultaneously to T2, T3, ... and Database(s)	Y		Y
T1 is connected simultaneously to T2, T3,.(multipoint communicat.)	Y	Y	
Bi-directional symmetric communication	Y	Y	Y
Bi-directional asymmetric communication			(Y)
Access requirements			
Establishment of communication: on demand	Y	(Y)	
reserved		(Y)	Y
permanent	Y		
Access: around the clock (at any time of the day)	Y	Y	Y

	DKd	DKf	DKg
restricted in time			
restricted in duration			(Y)
Addition and/or cancellation of a call during the multimedia session	Y	Y	Y
Call transfer is required, between...			
Security, copyright and charging	**DKd**	**DKf**	**DKg**
User identification		(Y)	(Y)
Access control/priority right management: to retrieve data			(Y)
to edit data			(Y)
Communication content should be totally encrypted			
Communication content should be partially encrypted			
Authentication/signature			
Copyright protection/copy control			
Charging			
Used media and quality requirements			
ASCII text	Y	(Y)	(Y)
Others (T.61, ISO..., ...)			
Documents, ODA encoded		(Y)	(Y)
SGMLencoded		(Y)	(Y)
Postscript		(Y)	(Y)
RTF		(Y)	(Y)
others (word,...)			
Graphics (CGM, GKS,CGI,...)	Y	Y	Y
Still images (JPEG, JBIG, GIF, TIFF...)	Y	Y	Y
Audio-visual sequences as stored info (MPEG, JPEG,...)	Y	(Y)	(Y)
Real time interactive audio without interactive video capability	(Y)		
Real time interactive audio and video (H.261,...)	Y	Y	Y
Control signals and other ephemeral signals (pointer, electronic pen,...)	Y	Y	(Y)
Video quality			
HDTV (High Definition TV)			Y
EQTV (Extended Quality TV)			
SRTV (Standard Resolution TV)		(Y)	
Reduced spatial resolution and movement portrayal		(Y)	
Highly reduced spatial resolution and movement portrayal			
Audio quality			
Studio quality			Y
Contribution quality CD, ISO/IEC 11172-3 with 180 kbit/s per monochannel,...)			
Emission quality (broadcast distribution) (FM, ISO/IEC 11172-3 with 2 x 128 kbit/s,...)			
Commentary quality (ISO/IEC 11172-3 with at least 60 kbit/s,...)		(Y)	
Medium quality speech + audio (G.722,...)		(Y)	
Telephone speech quality (G.711, G.728,...)		(Y)	

User terminal features and other service parameters	DKd	DKf	DKg
Heterogeneous multimedia platforms (PC, workstation, videoconf.,...)	Y	(Y)	(Y)
Use of several services/media simultaneously	Y	Y	Y
Variable allocation of the bandwidth for the different media	Y	Y	Y
All content data is shared or accessed by all terminals			
Shared workspace (graphics, text, picture, movies, audio notes...) for joint editing and viewing	Y		(Y)
Switching mode for conversational telecommunication services:			
- with floor control	Y		(Y)
- with chairman control	Y	(Y)	(Y)
- with voice activation		(Y)	(Y)
User terminal may retrieve Multimedia data			
User terminal may retrieve and edit Multimedia data	Y		(Y)
Local storage of info. in combination with that of network (CD-I,...)	Y	(Y)	(Y)
Local processing of data	Y	(Y)	(Y)
Off-line downloading of information when user is absent	Y		
Application specific type of info: (feedback traces, directory info, searching and navigation,...)	Y		

B.5.2   Description of the proposed services by Tele Danmark Jydsk Telefon

1.   Broadband interactive multimedia services on integrated access networks: DKa

The aim is for a broadband multimedia interactive information service system based on digitalization and functional reforming of existing infrastructures. In this aspect we follow a general worldwide trend.

The heart in the system is a service provision centre. The user - former television viewer now multimedia user - gets access to the service provision center via an access network, which initially will be the existing CATV-network upgraded with ATM and compressed signals (MPEG-2) downstreams and a return channel for control signals. The existing CATV-network will be supplemented with other types of access networks e.g. ADSL or PON to an integrated access network.

The access network gives independent of the physical type (the lower layers) a logical channel (for the higher layers) to the service provision centre.

This centre switches through to a server chosen by the user.

In this way the user is free to choose at any time a service in accordance with his own wish.

We expect that most services will be pure entertainment (films, music, etc. as is normal for todays' TV and radio broadcast), but we also expect that this supply will be supplemented with a great number of real interactive multimedia services. Some of these services will require very secure authentication and/or billing functions.

2.   Image Dialog System: DKc

The application is providing the two users with a point-to-point still-picture communication availability. To enhance the users benefit, the application also gives the possibility to use interactive tools, e.g. a drawing facility for simultaneously drawing on both local and remote sites. An automatic answering facility gives the opportunity for receiving still-pictures independently of the presence of the remote user.

Export an import of still-pictures to and from Windows Bitmap-format makes it possible to either work in e.g. a desktop publishing application with received still-pictures or to send a still-picture generated in e.g. a dark-room application.

The system is based on a standard PC running under Windows 3.1. For a transport medium, a normal 64 Kb ISDN connection is used. Internally, the application is communicating with an ISDN PC-board through a two-level software interface. From the application down through a special developed high-level ISDN-Capi "HiCapi" and further down to the ISDN PC-board via the Common Application Programmers Interface (CAPI).

The still-pictures are being captured by a standard framegrabber giving a video-resolution of a maximum of 688 pixels x 512 pixels in a VGA resolution of 800 pixels x 600 pixels with 64 K colors. The still-pictures are being compressed according to JPEG.

3. EuroCode (ESPRIT project 6155): DKd

The EuroCODE Project is developing an open distributed multimedia CSCW Shell for development of future client/server applications.

Three demonstrators, will be developed a High Road Demonstrator (HRD), a Middle Road Demonstrator (MRD) and a Low Road Demonstrator (LRD). Two of the demonstrators, i.e. the HRD and the LRD, will be implemented at different sites of the Danish bridge construction project between Funen and Zealand - the Great Belt Project, while the MRD will primarily be implemented at the Norske Rikshospitalet in Oslo but, if time permits, also at the Great Belt sites.

High Road Demonstrator - High bandwidth demands, using e.g. ATM

The main objective of the HRD is to develop a demonstrator that both illustrates and tests the use of live digital video and audio for a range of co-operative work activities. The HRD includes software tools to support unplanned social interaction, shared design and annotation of an artifact, video conferencing and support for asynchronous multimedia messages.

The HRD is designed to be continuously connected and relatively immobile. People will move within the system and have access to the applications and their personal software from anywhere within the system. Audio and video links in the users offices will be controlled from their workstations. They will have access to a variety of different kinds of audio/video connection among members of a group with a variety of different kinds of control.

The functionality of the HRD will be as follows:

Shared awareness: tools for maintaining awareness of others in the group/organization, ranging from general views of common areas to quick glimpses of people in their offices. Allows people to avoid interrupting each other and to instigate more focused form of collaboration.

Meeting support: tools to enable individuals to bring their normal software environment into a meeting room (real or virtual meeting room) and have audio and video connections to others at distant sites.

Informal discussion and spontaneous communication: tools to enable users to talk to each other about shared objects such as writing or engineering drawings. The tools will support collaborative writing and drawing and shared access to the same files.

Multimedia hypermedia message support: tools to provide users with the ability to exchange hypermedia messages containing data, audio segments and video clips.

Middle Road Demonstrator - Medium bandwidth demands, using e.g. Ethernet

The goal of the MRD is the development of a system for real-time group communication among doctors within a hospital. The conference system will allow radiologists and other experts to display, talk about and interact with high-resolution medical images (X-rays, CT-scannings, etc.) and patient records in a

distributed environment. The groups are set up spontaneously when experts need discussion and advice from other experts.

The functionality of the Middle Road Demonstrator will be as follows:

A global window system: this will be implemented as an OSI application that provides the screen and pointer sharing system, and takes care of floor control and arbitration towards the shared application.

Sound communication: this involves digitized sound, sound communication in the data network and mixing digital sound at receiver points.

Multicast communication: the underlying communication structure for both the global window and the sound communication. It will be provided within LAN/Ethernet technology and will ensure multiuser interaction in real time.

Dynamic group configuration: it will be possible for a group to dynamically incorporate new members or remove existing members of a conferencing group, and at the same time take into account the characteristics of the individual user terminal.

Low Road Demonstrator - Low bandwidth demands, using e.g. ISDN-2, GSM and DECT:

The goal of this demonstrator is to develop a system for the support of distributed work using multimedia and hypermedia with special focus on portable computers and mobile communication. The LRD will take into account the different ways of communication and cooperation between members of an geographically dispersed organization, and will consider especially the increasing mobility of todays working world: people working in the field, while travelling or from home/hotel rooms.

The functionality of the Low Road Demonstrator will be as follows:

Process support: modelling, analysis and redesign of business processes. Management of business processes including coordination of the involved roles and activities and interworking with other applications.

Task management: support of ad hoc organizations; specification and management of co-operative tasks in work groups including support for dynamic change, repetitive tasks and specific services e.g. meeting support services.

Information sharing and informal communication: common usage of shared material such as documents, multimedia/hypermedia information, with possibility to make written updates and audio annotations to the shared material e.g. technical drawings.

Basic support of mobile stations: this includes communication between mobile equipment and the base network, the re-integration of data and synchronization of state necessary because of part-time disconnection from the base network.

General remarks:

Especially with respect to the HRD and the LRD, there will be a seamless integration, enabling people working in their offices to communicate with people using portable equipment.

4. ISDN-Based database application (MOSART): DKe

MOSART is an acronym for: Multimedia On-line System for ART.

4.1. Application

The MOSART system is used as an electronic art guide, and gives the users the possibility to look at the work of Danish artists together with their biographies. The database consist of an imagepart (works of art) and a textpart (biography of artists), and contributes to meet the increasing requirement for electronic art

promotion. Due to the marketing of the individual artist, the system will be expensive and difficult to keep updated.

4.2. System description

The system is implemented in a local network (host), in which the database is installed. Through a PC and a scanner installed in the network, the JPEG compressed images and the relevant textual information is put into the database.

A router makes the connection between the local network and ISDN following the "remote work station" concept.

From a WINDOWS-based PC containing an ISDN-PC board, the user can make the connection to the database and search for the desired information. The communication at the database is carried out through the SQL command set. When the desired information is obtained the image files are transmitted, and a decompression is taking place in the users PC. The images can be shown in three different resolutions.

4.3. Next step

The system can be generalized concerning the method of communication and functionality to match other applications. This is mostly a question of redesigning the user-interface.

Beyond this, the system can be extended with a speech module which will make it possible to transfer sequences of sound from the database.

The communication to the screen (user-interface) is, for the moment, carried out by a keyboard and a PC-mouse. This can be done by a speech recognition system which will result in a voice operated interface, and the textual information can appear as clear sound combined with the desired image information.

5. Medium-quality multimedia conferencing service: DKf

This service is intended for interactive communication between two or more participants, each connected to an (ATM-based) B-ISDN via a low to medium-speed access (2 Mbps - 30 Mbps). Users may exchange information in the form of text, data, speech/audio, and video, using point-to-point sending, point-to-multipoint distribution, or multipoint communication: pointers and electronic pens are optional. One or more user terminals may have reduced capabilities, e.g. lack the ability to transmit video. Envisaged usage is for private or business purposes.

6. High-quality multimedia conferencing service: DKg

This service is intended for interactive communication between two or more participants, each connected to an (ATM-based B-ISDN via a high-speed access (155 Mbps - 1 000 Mbps). Users may exchange information in the form of text, data, speech, images, graphics and audio/video, using point-to-point sending, point-to-multipoint distribution, or multipoint communication. Shared workspace may be relevant. One or more users have access to a public or private database of high capacity satellite/space probe data). Envisaged usage is for scientific or large corporation purposes.

7. Electronic encyclopaedia: DKh

The electronic encyclopaedia is a true multimedia "document" allowing users to browse through, and retrieve, "sheets" of information in the form of text, numerical data, high-resolution colourful images, sounds, video clips, etc. This should be regarded as an application as the network has no knowledge of the actual nature of the information, only of the media (text, audio, graphics, etc.) - meaning that the network needs only to provide the transmission capabilities for the various media, when requested. In this respect, both the user and the provider of the Electronic Encyclopaedia will be users of the underlying telecommunications service. Both are connected to a B-ISDN via a medium to high-speed access (<= 155 Mbps). The same service could be used for other professional or private-interest retrieval purposes.

NTR has, like ETSI, identified two areas of interest in future multimedia standardization, conferencing and information retrieval. Since these types of services are under continuing research and development, it would be wise to be as flexible as possible regarding new standards. At this time, nothing should be excluded in the progress.

Communication will in the future be dominated by peer-to-peer computer communication. Tele- and computer companies will both have interests in developing common standards and, therefore, both should be involved in the process.

Regarding the table of parameters, we generally believe that communication in the future will be based upon powerful telecomputers, connected to a network where many servers and recipients may be accessed. The network will be flexible regarding bandwidth, and global "information" services will emerge.

B.6   Proposal from Spain

B.6.1   Answers to the Multimedia Portfolio Questionnaire by TELEFONICA

Important disclaimer: the features described in this ETR are put forward by way of example to clarify some of the standardization requirements in the multimedia area. Nothing in this ETR represents any specific commercial intention of the ETSI member.

B.6.1.1   Portfolio 1

The example **Ea** defines a multimedia service with interactive access to a multimedia database on B-ISDN, **Ed** defines a multimedia service with access to a database and Videotex on ISDN.

SERVICE PARAMETERS	Ea	Ed
Service description summary		
Teleconference service (videoconf., videoteleph., audiogr. conf.)		
Audiographic conference service		
Other conversational services		
Information & retrieval services (excluding video on demand)	Y	Y
Video on demand	Y	
Messaging services		
Dedicated to: large business		Y
small business		Y
residential users	Y	Y
Associated secondary services		
Facsimile		
Videotex	Y	Y
Electronic messaging: X.400/88, X.400/92		
E-mail: RFC 822, MIME		
Internet interactive services (WWW, Gopher, WAIS, NEWS, ...)		
Files transfer (FTAM, FTP,....)		
Telebanking	Y	
Tele-transaction (tickets and other reservations)	Y	Y
Network aspects		
Transmission rate: minimum (bit/s)	2 M	64 K
maximum (bit/s)	6 M	384 K
Networks on which user terminals are connected (Access + trunk network)	PSTN, ADSL, HDSL, B-ISDN	ISDN
User terminals are on different networks	Y	
Terminals and databases are on different networks	Y	
T1 is connected to T2 only (point to point communication only)		
T1 is connected to Database(s) only (retrieval application only)	Y	Y
T1 is connected simultaneously to T2 and Database(s)		
T1 is connected simultaneously to T2, T3, ... and Database(s)		
T1 is connected simultaneously to T2, T3,.(multipoint communicat.)		
Bi-directional symmetric communication		
Bi-directional asymmetric communication	Y	Y

Access requirements	Ea	Eb
Establishment of communication: on demand	Y	Y
reserved		
permanent		
Access: around the clock (at any time of the day)	Y	Y
restricted in time		
restricted in duration		
Addition and/or cancellation of a call during the multimedia session		
Call transfer is required, between...		
Security, copyright and charging		
User identification	Y	Y
Access control/priority right management: to retrieve data	Y	Y
to edit data		
Communication content should be totally encrypted		
Communication content should be partially encrypted	Y	
Authentication/signature	Y	
Copyright protection/copy control	(Y)	
Charging	Y	Y
Used media and quality requirements		
ASCII text		
Others (T.61, ISO..., ...)		
Documents, ODA encoded		
SGMLencoded		
Postscript		
RTF		
others (word,...)		
Graphics (CGM, GKS,CGI,...)	Y	Y
Still images (JPEG, JBIG, GIF, TIFF...)	Y	Y
Audio-visual sequences as stored info (MPEG, JPEG,...)	MPEG	MPEG
Real time interactive audio without interactive video capability		
Real time interactive audio and video (H.261,...)		
Control signals and other ephemeral signals (pointer, electronic pen,...)		
Video quality		
HDTV (High Definition TV)	Y	
EQTV (Extended Quality TV)		
SRTV (Standard Resolution TV)	Y	
Reduced spatial resolution and movement portrayal		
Highly reduced spatial resolution and movement portrayal		
Audio quality		
Studio quality		
Contribution quality CD, ISO/IEC 11172-3 with 180 kbit/s per monochannel,...)	Y	
Emission quality (broadcast distribution) (FM, ISO/IEC 11172-3 with 2 x 128 kbit/s,...)	Y	
Commentary quality (ISO/IEC 11172-3 with at least 60 kbit/s,...)		
Medium quality speech + audio (G.722,...)		

Telephone speech quality (G.711, G.728,...)		
User terminal features and **other service parameters**	**Ea**	**Ed**
Heterogeneous multimedia platforms (PC, workstation, videoconf.,...)		
Use of several services/media simultaneously	(Y)	(Y)
Variable allocation of the bandwidth for the different media		
All content data is shared or accessed by all terminals		
Shared workspace (graphics, text, picture, movies, audio notes...) for joint editing and viewing		
Switching mode for conversational telecommunication services:		
- with floor control		
- with chairman control		
- with voice activation		
User terminal may retrieve Multimedia data	Y	Y
User terminal may retrieve and edit Multimedia data		
Local storage of info. in combination with that of network (CD-I,...)		Y
Local processing of data		
Off-line downloading of information when user is absent		
Application specific type of info: (feedback traces, directory info, searching and navigation,...)	Y	

B.6.1.2   Portfolio 2

The example **Eb** defines a multivideoconference service with access to a multimedia database, **Ec** defines a videotelephony service with file transfer and access to a multimedia database.

SERVICE PARAMETERS	Eb	Ec
Service description summary		
Teleconference service (videoconf., videoteleph., audiogr. conf.)	Y	Y
Audiographic conference service		
Other conversational services		
Information & retrieval services (excluding video on demand)	Y	Y
Video on demand		
Messaging services	Y	Y
Dedicated to: large business	Y	Y
small business	Y	Y
residential users		
Associated secondary services		
Facsimile	Y	
Videotex		
Electronic messaging: X.400/88, X.400/92	(Y)	(Y)
E-mail: RFC 822, MIME	(Y)	(Y)
Internet interactive services (WWW, Gopher, WAIS, NEWS, ...)	(Y)	(Y)
Files transfer (FTAM, FTP,....)	Y	Y
Telebanking		
Tele-transaction (tickets and other reservations)		
Network aspects		
Transmission rate: minimum	64 K	64 K
maximum	384 K	384 K
Networks on which user terminals are connected (Access + trunk network)	ISDN	ISDN
User terminals are on different networks		
Terminals and databases are on different networks		
T1 is connected to T2 only (point to point communication only)		
T1 is connected to Database(s) only (retrieval application only)		
T1 is connected simultaneously to T2 and Database(s)	Y	Y
T1 is connected simultaneously to T2, T3, ... and Database(s)	Y	
T1 is connected simultaneously to T2, T3,.(multipoint communicat.)	Y	
Bi-directional symmetric communication	Y	Y
Bi-directional asymmetric communication	(Y)	(Y)
Access requirements		
Establishment of communication: on demand	Y	Y
reserved		
permanent		
Access: around the clock (at any time of the day)	Y	Y
restricted in time		
restricted in duration		

	Eb	Ec
Addition and/or cancellation of a call during the multimedia session	Y	Y
Call transfer is required, between...		
Security, copyright and charging	**Eb**	**Ec**
User identification	Y	Y
Access control/priority right management: to retrieve data	Y	Y
to edit data	Y	Y
Communication content should be totally encrypted		
Communication content should be partially encrypted		
Authentication/signature	Y	Y
Copyright protection/copy control	(Y)	(Y)
Charging	Y	Y
Used media and quality requirements		
ASCII text		
Others (T.61, ISO..., ...)		
Documents, ODA encoded	Y	Y
SGMLencoded		
Postscript		
RTF		
others (word,...)		
Graphics (CGM, GKS,CGI,...)	Y	Y
Still images (JPEG, JBIG, GIF, TIFF...)	Y	Y
Audio-visual sequences as stored info (MPEG, JPEG,...)	MPEG	MPEG
Real time interactive audio without interactive video capability		
Real time interactive audio and video (H.261,...)	Y	Y
Control signals and other ephemeral signals (pointer, electronic pen,...)	Y	Y
Video quality		
HDTV (High Definition TV)		
EQTV (Extended Quality TV)		
SRTV (Standard Resolution TV)		
Reduced spatial resolution and movement portrayal	Y	Y
Highly reduced spatial resolution and movement portrayal		
Audio quality		
Studio quality		
Contribution quality CD, ISO/IEC 11172-3 with 180 kbit/s per monochannel,...		
Emission quality (broadcast distribution) (FM, ISO/IEC 11172-3 with 2 x 128 kbit/s,...)		
Commentary quality (ISO/IEC 11172-3 with at least 60 kbit/s,...)		
Medium quality speech + audio (G.722,...)	Y	Y
Telephone speech quality (G.711, G.728,...)	Y	Y
User terminal features and other service parameters	**Eb**	**Ec**
Heterogeneous multimedia platforms (PC, workstation, videoconf.,...)	Y	Y
Use of several services/media simultaneously	Y	Y
Variable allocation of the bandwidth for the different media	Y	Y
All content data is shared or accessed by all terminals	Y	Y

Shared workspace (graphics, text, picture, movies, audio notes...) for joint editing and viewing	Y	Y
Switching mode for conversational telecommunication services:		
- with floor control	Y	
- with chairman control	Y	
- with voice activation		Y
User terminal may retrieve Multimedia data	Y	Y
User terminal may retrieve and edit Multimedia data	Y	Y
Local storage of info. in combination with that of network (CD-I,...)	Y	Y
Local processing of data	Y	Y
Off-line downloading of information when user is absent		
Application specific type of info: (feedback traces, directory info, searching and navigation,...)	Y	Y

B.6.2   Description of the proposed services by TELEFONICA

Among all the possible options that the broad term "Multimedia" includes, the following four scenarios are considered having higher priority for Telefònica de España (the order indicates also the priority order):

Scenario 1:   Interactive access to a multimedia database on B-ISDN using copper pair: Ea
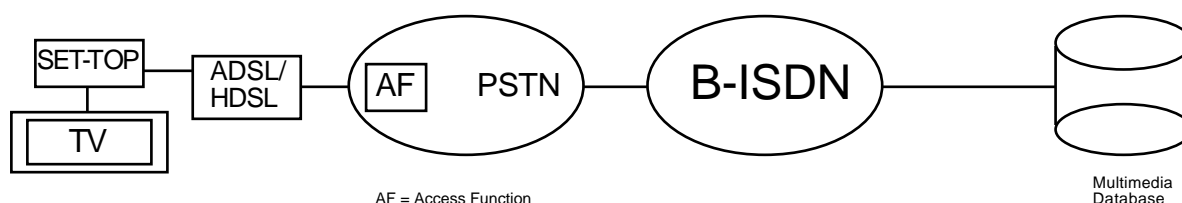

Figure B.3

The user has a TV set + a SET-TOP + a Modem ADSL/HDSL connected to the PSTN by means of a single copper pair between the customer premises and the local exchange. The user wants to access multimedia database(s) for several purposes e.g. to see a film with the same kind of control and features as if he were using his own VCR (e.g. pause, rewind, forward...), or to do teleshopping, telebanking, to make commercial transactions....

Encryption is needed for the transactions of a confidential nature (banking) but not for the others. Nevertheless user identification and password are always needed to access the applications.

The Access Function (AF) (see figure B.3) allows the identification of the user, the selection of the specific application (e.g. VOD, telebanking, ...) and within each of these generic multimedia applications the concrete information or transaction desired. A well defined protocol between the user terminal equipment and the AF is needed in order to provide these facilities. Other functions of the AF are those which allow the connection with the appropriate Multimedia Server to be set up. Again a well defined protocol is needed and a search should be done among existing standards (cabletext, Syntax-Based Videotex (SBV)..).

Regarding the end-to-end dialogue between the user and the service provider, a well defined protocol is needed to ensure the correct remote loading in the SET-TOP of the specific programme which allows the handling of the applications mentioned before (VOD, transactions...). This protocol could also be the SBV mentioned before.

This scenario has the highest priority for TELEFONICA.

Scenario 2:   Multivideoconference + access to multimedia database on NB-ISDN: Eb
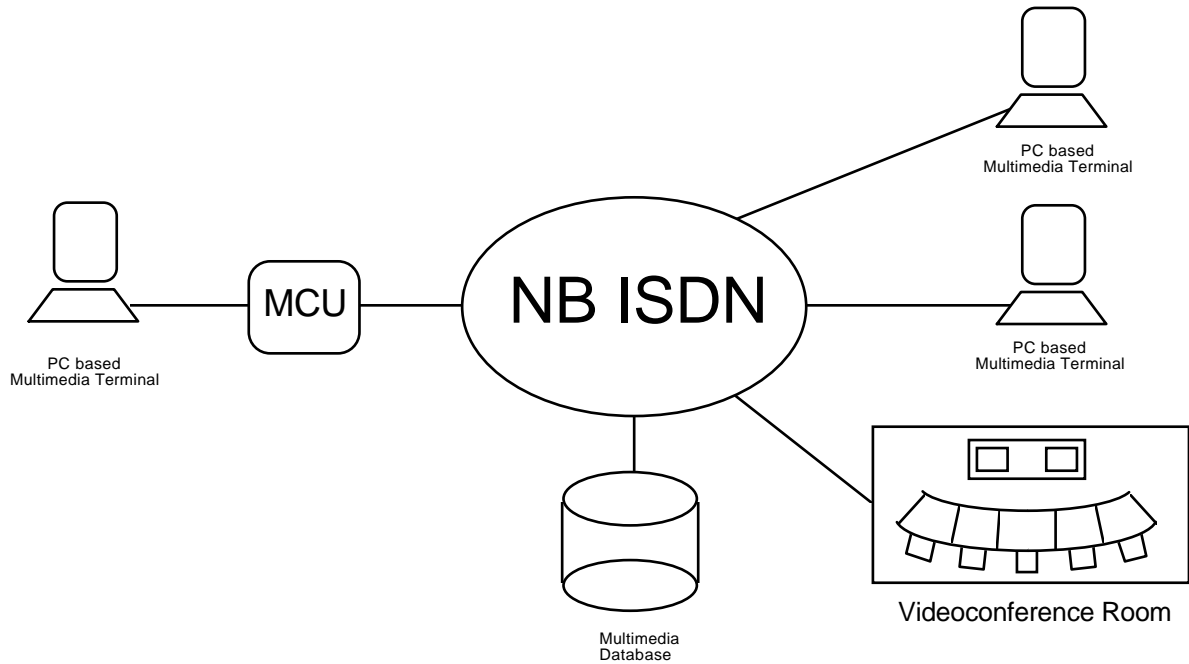

Figure B.4

The user has a PC-based multimedia terminal attached to a Multipoint Control Unit (MCU) connected to the ISDN via several basic accesses (one to three, and therefore: one to six B-channels). The user sets up multiconferences with other multimedia terminals and, on some occasions, with a videoconference room. During the communications they exchange files through the terminals, documents through a facsimile group 3 (video is not used for showing documents) and some of the participants need to consult and retrieve multimedia information from a database also connected to the ISDN. Most of the information of the database consists of documents with graphics and still images but, in some cases, moving images could be retrieved. In these cases, the video communications between the participants could be released or the image could be frozen to allow bandwidth for the database information. Encryption is not needed but passwords are necessary to access the database.

Scenario 3:   Videotelephony + file transfer + access to multimedia database on NB-ISDN: Ec

Figure B.5

The user has a PC-based multimedia terminal connected to basic accesses (one to three, and, therefore, one to six B-channels) of the ISDN. The user makes multimedia calls including videotelephony and file transfer but the video communication is not essential during the complete call. Simultaneous access to a Multimedia Database is needed by both terminals. Most of the information of the database consists of documents with graphics and still images but, in some cases, moving images could be retrieved. In these cases, the video communications between the participants could be released or the image could be frozen to allow bandwidth for the database information. The user needs to control how many B-channels he wants to establish depending on the bandwidth he needs. Encryption is not needed but passwords are necessary to access the database.

The called terminal could be just a videotelephone and, in that case, the access to the multimedia database is made just by the multimedia terminal.

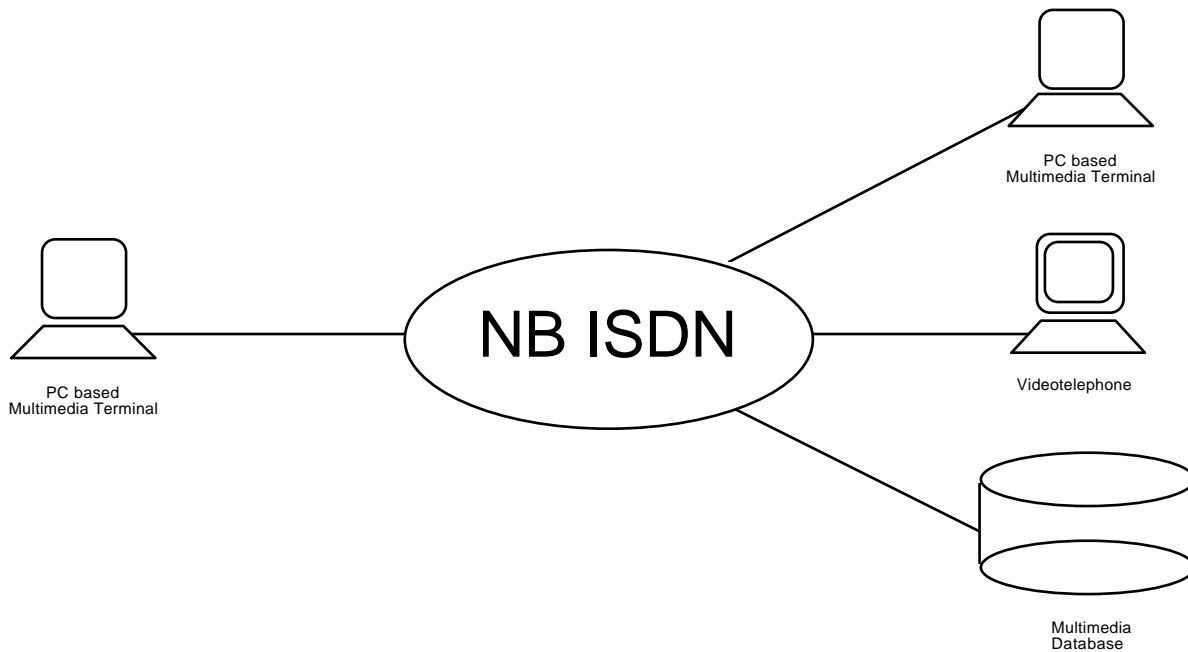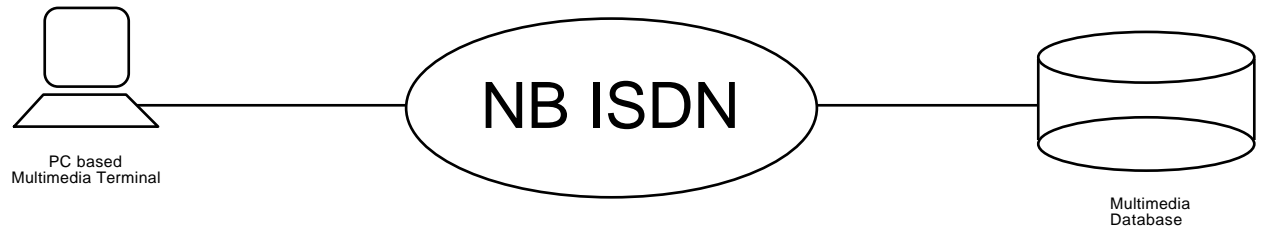Scenario 4:   **Access to a video database + Videotex on NB-ISDN: Ed**

Figure B.6

The user has a PC-based multimedia terminal connected to basic accesses (one to three, and, therefore, one to six B-channels) of the ISDN. The user needs to access a Video Database with the best possible quality for moving images. On some occasions the user accesses a Videotex service. The user needs to control how many B-channels he wants to establish depending on the bandwidth he needs. Encryption is not needed but user identification and password are necessary to access the database.

Specific items to be standardized

The **specific urgent standardization items for scenario 1** are:

a)   the transmission channels in the ADSL/HDSL modems;

b)   the protocol between the user and the Access Function (AF);

c)   the end-to-end protocol for remote loading (user-service provider).

The **specific items to be standardized for scenarios 2,3 and 4** are:

1)   Protocols for retrieval of information including video sequences in NB-ISDN:

      a)   primary access and basic accesses with channel aggregation H12, H0 or 6x64 kbit/s;

      b)   based on ITU-T Recommendation H.261;

      c)   based on MPEG;

2)   protocols and procedures for the retrieval of information simultaneously with a videophone call or audiovisual conference;

3)   procedures and frame structure for data services in an audiovisual environment using B-channels (B, H0, H12 and nx64 kbit/s).

B.7 Proposal from Norway

B.7.1 Answers to the Multimedia Portfolio Questionnaire by the Norwegian Telecom Research

Important disclaimer: the features described in this ETR are put forward by way of example to clarify some of the standardization requirements in the multimedia area. Nothing in this ETR represents any specific commercial intention of the ETSI member.

The example **Na** defines an I&R service with access to an interactive multimedia database, **Nb** define a multimedia conferencing service.

SERVICE PARAMETERS	Na	Nb
Service description summary		
Teleconference service (videoconf., videoteleph., audiogr. conf.)		Y
Audiographic conference service		
Other conversational services		
Information & retrieval services (excluding video on demand)	Y	Y
Video on demand		
Messaging services	Y	Y
Dedicated to: large business		
small business		
residential users		
Associated secondary services		
Facsimile		Y
Videotex		Y
Electronic messaging: X.400/88, X.400/92	Y	Y
E-mail: RFC 822, MIME	Y	Y
Internet interactive services (WWW, Gopher, WAIS, NEWS, ...)	Y	Y
Files transfer (FTAM, FTP,....)	FTP, FTAM	FTP, FTAM
Telebanking		
Tele-transaction (tickets and other reservations)		
Network aspects		
Transmission rate: minimum		
maximum	no limit	no limit
Networks on which user terminals are connected (Access + trunk network)	ISDN, B-ISDN LAN, CATV	ISDN, B-ISDN LAN, CATV
User terminals are on different networks	Y	Y
Terminals and databases are on different networks	Y	Y
T1 is connected to T2 only (point to point communication only)		
T1 is connected to Database(s) only (retrieval application only)	Y	
T1 is connected simultaneously to T2 and Database(s)		Y
T1 is connected simultaneously to T2, T3, ... and Database(s)		Y
T1 is connected simultaneously to T2, T3,.(multipoint communicat.)		Y
Bi-directional symmetric communication		
Bi-directional asymmetric communication		

Access requirements	Na	Nb
Establishment of communication: on demand		
reserved		
permanent		
Access: around the clock (at any time of the day)		
restricted in time		
restricted in duration		
Addition and/or cancellation of a call during the multimedia session		
Call transfer is required, between...		
Security, copyright and charging		
User identification	(Y)	(Y)
Access control/priority right management: to retrieve data	(Y)	(Y)
to edit data	(Y)	(Y)
Communication content should be totally encrypted		
Communication content should be partially encrypted	(Y)	(Y)
Authentication/signature		
Copyright protection/copy control	Y	Y
Charging	(Y)	Y
Used media and quality requirements		
ASCII text	Y	Y
Others (T.61, ISO..., ...)		
Documents, ODA encoded		Y
SGMLencoded		Y
Postscript		Y
RTF		
others (word,...)		Y
Graphics (CGM, GKS,CGI,...)	encapsulated postscript	encapsulated postscript
Still images (JPEG, JBIG, GIF, TIFF...)	JPEG, JBIG, GIF, TIFF	JPEG, JBIG, GIF, TIFF
Audio-visual sequences as stored info (MPEG, JPEG,...)	Y	Y
Real time interactive audio without interactive video capability		
Real time interactive audio and video (H.261,...)		Y
Control signals and other ephemeral signals (pointer, electronic pen,...)		
Video quality		
HDTV (High Definition TV)		
EQTV (Extended Quality TV)		
SRTV (Standard Resolution TV)		
Reduced spatial resolution and movement portrayal		
Highly reduced spatial resolution and movement portrayal		
Audio quality		
Studio quality		
Contribution quality CD, ISO/IEC 11172-3 with 180 kbit/s per monochannel,...)		
Emission quality (broadcast distribution) (FM, ISO/IEC 11172-3 with 2 x 128 kbit/s,...)		
Commentary quality (ISO/IEC 11172-3 with at least 60 kbit/s,...)		
Medium quality speech + audio (G.722,...)		
Telephone speech quality (G.711, G.728,...)		

User terminal features and other service parameters	Na	Nb
Heterogeneous multimedia platforms (PC, workstation, videoconf.,...)	PC,videoconf. workstation	PC,PS,TV,Vph videoconf.
Use of several services/media simultaneously	Y	Y
Variable allocation of the bandwidth for the different media	Y	Y
All content data is shared or accessed by all terminals		
Shared workspace (graphics, text, picture, movies, audio notes...) for joint editing and viewing		
Switching mode for conversational telecommunication services:		
- with floor control		
- with chairman control		
- with voice activation		
User terminal may retrieve Multimedia data	Y	Y
User terminal may retrieve and edit Multimedia data	Y	Y
Local storage of info. in combination with that of network (CD-I,...)	Y	Y
Local processing of data		Y
Off-line downloading of information when user is absent	Y	Y
Application specific type of info: (feedback traces, directory info, searching and navigation,...)		Y

B.8   Proposal from the Netherlands

B.8.1   Answers to the Multimedia Portfolio Questionnaire by the Royal PTT Nederland

Important disclaimer: the features described in this ETR are put forward by way of example to clarify some of the standardization requirements in the multimedia area. Nothing in this ETR represents any specific commercial intention of the ETSI member.

The example **NLa** defines a telebanking and teleshopping service, **NLb** defines a security and surveillance service.

SERVICE PARAMETERS	NLa	NLb
Service description summary		
Teleconference service (videoconf., videoteleph., audiogr. conf.)	(Y)	(Y)
Audiographic conference service	(Y)	(Y)
Other conversational services		
Information & retrieval services (excluding video on demand)	Y	
Video on demand		
Messaging services	Y	
Dedicated to: large business	Y	Y
small business	Y	Y
residential users	Y	Y
Associated secondary services		
Facsimile		
Videotex	Y	
Electronic messaging: X.400/88, X.400/92	Y	
E-mail: RFC 822, MIME		
Internet interactive services (WWW, Gopher, WAIS, NEWS, ...)		
Files transfer (FTAM, FTP,....)	Y	
Telebanking	Y	
Tele-transaction (tickets and other reservations)	Y	
Network aspects		
Transmission rate: minimum (bit/s)	9 600	9 600
maximum (bit/s)	2 M	2 M
Networks on which user terminals are connected (Access + trunk network)	PSTN, (B)-ISDN ADSL,HDSL	PSTN, (B)-ISDN
User terminals are on different networks	Y	Y
Terminals and databases are on different networks	Y	
T1 is connected to T2 only (point to point communication only)		Y
T1 is connected to Database(s) only (retrieval application only)	Y	
T1 is connected simultaneously to T2 and Database(s)	Y	
T1 is connected simultaneously to T2, T3, ... and Database(s)		
T1 is connected simultaneously to T2, T3,.(multipoint communicat.)		
Bi-directional symmetric communication	Y (T1 to T2)	(Y)
Bi-directional asymmetric communication	T1 to database	Y

Access requirements	NLa	NLb
Establishment of communication: on demand	Y	Y
reserved		Y
permanent		Y
Access: around the clock (at any time of the day)	Y	Y
restricted in time		
restricted in duration		
Addition and/or cancellation of a call during the multimedia session	Y	Y
Call transfer is required, between...	T2 to database	
Security, copyright and charging		
User identification	Y	Y
Access control/priority right management: to retrieve data	Y	
to edit data	Y	
Communication content should be totally encrypted		Y
Communication content should be partially encrypted	password only	
Authentication/signature	Y	Y
Copyright protection/copy control		
Charging	Y	
Used media and quality requirements		
ASCII text		
Others (T.61, ISO..., ...)		
Documents, ODA encoded	Y	
SGMLencoded		
Postscript		
RTF		
others (word,...)		
Graphics (CGM, GKS,CGI,...)		
Still images (JPEG, JBIG, GIF, TIFF...)	all	all
Audio-visual sequences as stored info (MPEG, JPEG,...)	all	
Real time interactive audio without interactive video capability	(Y)	(Y)
Real time interactive audio and video (H.261,...)	(Y)	(Y)
Control signals and other ephemeral signals (pointer, electronic pen,...)	Y	Y
Video quality		
HDTV (High Definition TV)	Y (for future)	Y
EQTV (Extended Quality TV)	Y	Y
SRTV (Standard Resolution TV)	Y	Y
Reduced spatial resolution and movement portrayal	Y (near future)	Y
Highly reduced spatial resolution and movement portrayal	Y (near future)	Y
Audio quality		
Studio quality	Y (for future)	
Contribution quality CD, ISO/IEC 11172-3 with 180 kbit/s per monochannel,...)	Y	
Emission quality (broadcast distribution) (FM, ISO/IEC 11172-3 with 2 x 128 kbit/s,...)	Y	
Commentary quality (ISO/IEC 11172-3 with at least 60 kbit/s,...)	Y	Y
Medium quality speech + audio (G.722,...)	(near future)	Y

Telephone speech quality (G.711, G.728,...)	(near future)	Y
User terminal features and other service parameters	**NLa**	**NLb**
Heterogeneous multimedia platforms (PC, workstation, videoconf.,...)	PC, Vph, PSTN Vph	PC, Vph, PSTN Vph
Use of several services/media simultaneously	Y	Y
Variable allocation of the bandwidth for the different media	Y	Y
All content data is shared or accessed by all terminals		
Shared workspace (graphics, text, picture, movies, audio notes...) for joint editing and viewing	Y	
Switching mode for conversational telecommunication services:		
- with floor control		
- with chairman control		
- with voice activation		
User terminal may retrieve Multimedia data	Y	
User terminal may retrieve and edit Multimedia data		
Local storage of info. in combination with that of network (CD-I,...)	Y	Y
Local processing of data	Y	Y
Off-line downloading of information when user is absent	Y	Y
Application specific type of info: (feedback traces, directory info, searching and navigation,...)	Y	

B.9   Proposal from Portugal

B.9.1   Answers to the Multimedia Portfolio Questionnaire by Portugal

Important disclaimer: the features described in this ETR are put forward by way of example to clarify some of the standardization requirements in the multimedia area. Nothing in this ETR represents any specific commercial intention of the ETSI member.

B.9.1.1   Portfolio 1

The example **Pf** defines a virtual museum application, **Pa** is based on the EURESCOM P360 IMS1-II project and **Pe** defines a VOD service.

SERVICE PARAMETERS	Pf	Pa	Pe
Service description summary			
Teleconference service (videoconf., videoteleph., audiogr. conf.)			
Audiographic conference service	(Y)		
Other conversational services			
Information & retrieval services (excluding video on demand)	Y	Y	Y
Video on demand		Y	Y
Messaging services			
Dedicated to: large business		Y	
small business		Y	
residential users	Y	Y	Y
Associated secondary services			
Facsimile			
Videotex			
Electronic messaging: X.400/88, X.400/92			
E-mail: RFC 822, MIME			
Internet interactive services (WWW, Gopher, WAIS, NEWS, ...)			
Files transfer (FTAM, FTP,....)		Y	Y
Telebanking			
Tele-transaction (tickets and other reservations)			
Network aspects			
Transmission rate: minimum (bit/s)	2 M	1,5 M	2 M
maximum (bit/s)	2 M	2 M	155 M
Networks on which user terminals are connected (Access + trunk network)	ISDN	B-ISDN (ATM)	B-ISDN (ATM)
User terminals are on different networks			
Terminals and databases are on different networks			
T1 is connected to T2 only (point to point communication only)			
T1 is connected to Database(s) only (retrieval application only)	Y	Y	Y
T1 is connected simultaneously to T2 and Database(s)	Y		
T1 is connected simultaneously to T2, T3, ... and Database(s)			
T1 is connected simultaneously to T2, T3,.(multipoint communicat.)			
Bi-directional symmetric communication			
Bi-directional asymmetric communication			

Access requirement	Pf	Pa	Pe
Establishment of communication: on demand	Y	Y	Y
reserved			
permanent			
Access: around the clock (at any time of the day)		Y	Y
restricted in time	Y	Y	Y
restricted in duration	Y		
Addition and/or cancellation of a call during the multimedia session	Y	Y	Y
Call transfer is required, between...			
Security, copyright and charging			
User identification	Y	Y	Y
Access control/priority right management: to retrieve data	Y		Y
to edit data			
Communication content should be totally encrypted	Y	Y	
Communication content should be partially encrypted			Y
Authentication/signature			
Copyright protection/copy control	Y	Y	Y
Charging	Y	Y	Y
Used media and quality requirements			
ASCII text			
Others (T.61, ISO..., ...)			
Documents, ODA encoded	Y	Y	
SGMLencoded			
Postscript			
RTF			
others (word,...)			
Graphics (CGM, GKS,CGI,...)	Y	Y	Y
Still images (JPEG, JBIG, GIF, TIFF...)	Y	Y	Y
Audio-visual sequences as stored info (MPEG, JPEG,...)	Y	Y	Y
Real time interactive audio without interactive video capability	Y		
Real time interactive audio and video (H.261,...)			
Control signals and other ephemeral signals (pointer, electronic pen,...)	Y		
Video quality			
HDTV (High Definition TV)			
EQTV (Extended Quality TV)			
SRTV (Standard Resolution TV)			
Reduced spatial resolution and movement portrayal			
Highly reduced spatial resolution and movement portrayal			
Audio quality			
Studio quality			
Contribution quality CD, ISO/IEC 11172-3 with 180 kbit/s per monochannel,...)			
Emission quality (broadcast distribution) (FM, ISO/IEC 11172-3 with 2 x 128 kbit/s,...)			
Commentary quality (ISO/IEC 11172-3 with at least 60 kbit/s,...)			
Medium quality speech + audio (G.722,...)			
Telephone speech quality (G.711, G.728,...)			

User terminal features and other service parameters	Pf	Pa	Pe
Heterogeneous multimedia platforms (PC, workstation, videoconf.,...)	Y	Y	Y
Use of several services/media simultaneously	Y		Y
Variable allocation of the bandwidth for the different media	Y		
All content data is shared or accessed by all terminals		Y	Y
Shared workspace (graphics, text, picture, movies, audio notes...) for joint editing and viewing	Y		
Switching mode for conversational telecommunication services:			
- with floor control			
- with chairman control			
- with voice activation			
User terminal may retrieve Multimedia data	Y	Y	Y
User terminal may retrieve and edit Multimedia data			
Local storage of info. in combination with that of network (CD-I,...)	Y	Y	Y
Local processing of data			
Off-line downloading of information when user is absent	Y		
Application specific type of info: (feedback traces, directory info, searching and navigation,...)			

B.9.1.2   Portfolio 2

The example **Pc** defines a remote printing service, **Pg** is base don RACE APP Telecommunity.

SERVICE PARAMETERS	Pc		Pg
Service description summary			
Teleconference service (videoconf., videoteleph., audiogr. conf.)			Y
Audiographic conference service			(Y)
Other conversational services			
Information & retrieval services (excluding video on demand)	Y		Y
Video on demand			
Messaging services			
Dedicated to: large business	Y		
small business	Y		Y
residential users			Y
Associated secondary services			
Facsimile			
Videotex	Y		
Electronic messaging: X.400/88, X.400/92			
E-mail: RFC 822, MIME			
Internet interactive services (WWW, Gopher, WAIS, NEWS, ...)			
Files transfer (FTAM, FTP,....)			
Telebanking			
Tele-transaction (tickets and other reservations)			
Network aspects			
Transmission rate: minimum (bit/s)	128 K		128 K
maximum (bit/s)	2 M		2 M
Networks on which user terminals are connected (Access + trunk network)	ISDN (Globand)		ISDN
User terminals are on different networks			
Terminals and databases are on different networks			
T1 is connected to T2 only (point to point communication only)			Y
T1 is connected to Database(s) only (retrieval application only)	Y		
T1 is connected simultaneously to T2 and Database(s)			(Y)
T1 is connected simultaneously to T2, T3, ... and Database(s)			
T1 is connected simultaneously to T2, T3,.(multipoint communicat.)			
Bi-directional symmetric communication			
Bi-directional asymmetric communication			
Access requirements			
Establishment of communication: on demand	Y		Y
reserved	Y		
permanent			
Access: around the clock (at any time of the day)	Y		Y
restricted in time	Y		
restricted in duration			

Addition and/or cancellation of a call during the multimedia session	Y		Y
Call transfer is required, between...			
Security, copyright and charging	**Pc**		**Pg**
User identification	Y		
Access control/priority right management: to retrieve data	Y		Y
to edit data	Y		Y
Communication content should be totally encrypted			
Communication content should be partially encrypted			
Authentication/signature			
Copyright protection/copy control			
Charging			
Used media and quality requirements			
ASCII text			
Others (T.61, ISO..., ...)			
Documents, ODA encoded	Y		Y
SGMLencoded			
Postscript			
RTF			
others (word,...)			
Graphics (CGM, GKS,CGI,...)	Y		Y
Still images (JPEG, JBIG, GIF, TIFF...)	Y		Y
Audio-visual sequences as stored info (MPEG, JPEG,...)	Y		Y
Real time interactive audio without interactive video capability			(Y)
Real time interactive audio and video (H.261,...)			
Control signals and other ephemeral signals (pointer, electronic pen,...)			(Y)
Video quality			
HDTV (High Definition TV)			
EQTV (Extended Quality TV)			
SRTV (Standard Resolution TV)			
Reduced spatial resolution and movement portrayal			
Highly reduced spatial resolution and movement portrayal			
Audio quality			
Studio quality			
Contribution quality CD, ISO/IEC 11172-3 with 180 kbit/s per monochannel,...)			
Emission quality (broadcast distribution) (FM, ISO/IEC 11172-3 with 2 x 128 kbit/s,...)			
Commentary quality (ISO/IEC 11172-3 with at least 60 kbit/s,...)			
Medium quality speech + audio (G.722,...)			
Telephone speech quality (G.711, G.728,...)			
User terminal features and other service parameters	**Pc**		**Pg**
Heterogeneous multimedia platforms (PC, workstation, videoconf.,...)			PC, Vph
Use of several services/media simultaneously			Y
Variable allocation of the bandwidth for the different media	Y		Y
All content data is shared or accessed by all terminals	Y		

Shared workspace (graphics, text, picture, movies, audio notes...)			
for joint editing and viewing			
Switching mode for conversational telecommunication services:			
- with floor control			
- with chairman control			
- with voice activation			
User terminal may retrieve Multimedia data			Y
User terminal may retrieve and edit Multimedia data	Y		
Local storage of info. in combination with that of network (CD-I,...)	Y		Y
Local processing of data	Y		
Off-line downloading of information when user is absent	Y		
Application specific type of info: (feedback traces, directory info, searching and navigation,...)			

B.9.1.3 Portfolio 3

The example **Pb** defines a videoconference/desktopvideoconference service, **Pd** defines a teleworking service and **Ph** a telepathology and teleanalysis service.

SERVICE PARAMETERS	Pb	Pd	Ph
Service description summary			
Teleconference service (videoconf., videoteleph., audiogr. conf.)	Y	Y	Y
Audiographic conference service	(Y)		
Other conversational services			
Information & retrieval services (excluding video on demand)	Y	Y	Y
Video on demand			
Messaging services		Y	
Dedicated to: large business	Y		Y
small business	Y		Y
residential users		Y	
Associated secondary services			
Facsimile	Y	Y	
Videotex			
Electronic messaging: X.400/88, X.400/92		Y	
E-mail: RFC 822, MIME			
Internet interactive services (WWW, Gopher, WAIS, NEWS, ...)			
Files transfer (FTAM, FTP,....)		Y	
Telebanking			
Tele-transaction (tickets and other reservations)			
Network aspects			
Transmission rate: minimum (bit/s)	128 K	128 K	128 K
maximum (bit/s)	2 M	2 M	2 M
Networks on which user terminals are connected (Access + trunk network)	ISDN (Globand)	ISDN	ISDN (Globand)
User terminals are on different networks			
Terminals and databases are on different networks			
T1 is connected to T2 only (point to point communication only)			
T1 is connected to Database(s) only (retrieval application only)			
T1 is connected simultaneously to T2 and Database(s)			Y
T1 is connected simultaneously to T2, T3, ... and Database(s)	Y	Y	
T1 is connected simultaneously to T2, T3,.(multipoint communicat.)			
Bi-directional symmetric communication			
Bi-directional asymmetric communication			
Access requirements			
Establishment of communication: on demand	Y	Y	Y
reserved	Y		Y
permanent			
Access: around the clock (at any time of the day)	Y		Y
restricted in time			
restricted in duration			

	Pb	Pd	Ph
Addition and/or cancellation of a call during the multimedia session		Y	
Call transfer is required, between...			
Security, copyright and charging	**Pb**	**Pd**	**Ph**
User identification	Y	Y	Y
Access control/priority right management: to retrieve data		Y	
to edit data			
Communication content should be totally encrypted	Y		Y
Communication content should be partially encrypted			
Authentication/signature		Y	Y
Copyright protection/copy control	Y	Y	
Charging	Y		Y
Used media and quality requirements			
ASCII text			
Others (T.61, ISO..., ...)			
Documents, ODA encoded	Y	Y	Y
SGMLencoded			
Postscript			
RTF			
others (word,...)			
Graphics (CGM, GKS,CGI,...)	Y	Y	
Still images (JPEG, JBIG, GIF, TIFF...)	Y	Y	Y
Audio-visual sequences as stored info (MPEG, JPEG,...)	Y	Y	Y
Real time interactive audio without interactive video capability	(Y)		
Real time interactive audio and video (H.261,...)	(Y)	Y	Y
Control signals and other ephemeral signals (pointer, electronic pen,...)	Y		Y
Video quality			
HDTV (High Definition TV)			
EQTV (Extended Quality TV)			
SRTV (Standard Resolution TV)			
Reduced spatial resolution and movement portrayal			
Highly reduced spatial resolution and movement portrayal			
Audio quality			
Studio quality			
Contribution quality CD, ISO/IEC 11172-3 with 180 kbit/s per monochannel,...)			
Emission quality (broadcast distribution) (FM, ISO/IEC 11172-3 with 2 x 128 kbit/s,...)			
Commentary quality (ISO/IEC 11172-3 with at least 60 kbit/s,...)			
Medium quality speech + audio (G.722,...)			
Telephone speech quality (G.711, G.728,...)			
User terminal features and other service parameters	**Pb**	**Pd**	**Ph**
Heterogeneous multimedia platforms (PC, workstation, videoconf.,...)	Y		Y
Use of several services/media simultaneously		Y	
Variable allocation of the bandwidth for the different media		Y	Y
All content data is shared or accessed by all terminals	Y	Y	Y

Shared workspace (graphics, text, picture, movies, audio notes...) for joint editing and viewing		Y	Y
Switching mode for conversational telecommunication services:			
- with floor control			
- with chairman control			Y
- with voice activation			
User terminal may retrieve Multimedia data	Y		Y
User terminal may retrieve and edit Multimedia data		Y	
Local storage of info. in combination with that of network (CD-I,...)	Y	Y	Y
Local processing of data		Y	Y
Off-line downloading of information when user is absent		Y	
Application specific type of info: (feedback traces, directory info, searching and navigation,...)			

B.9.2 Description of the proposed services by Portugal

1. Projects

1.1. RACE APP - EMN - Europe Museum Network: Pf

The purpose of Multimedia Virtual Museum Applications was to offer the visitor a virtual visit to a distant museum. Moreover, it enabled different museums to share multimedia information and data. This project was concluded at the end of 1992. By then, the interconnection between the LANs of several museums and the transfer of information had been successfully accomplished, through 2 Mbit/s' circuits and ISDN.

1.2. RACE APP - Telecommunity: Pg

The aim was to design a specific application for handicapped people, to evaluate any technical problems and to know the service/applications needed for this market. The communication is person-to-person and the network is ISDN. Multimedia terminals based on PCs, videotelephones and video cameras are used. TLP worked in partnership with a research institute - INESC - and a local University (Human Motricity Department). This pilot is still continuing.

1.3. Telepathology/Teleanalysis: Ph

This application has been running for six months. The aim is to provide remote hospitals, in real time, even during surgery, the Pathological Anatomy service. The operations needed are medical analysis and evaluation of the sample, consulting of the database, manipulation (zooming, filtering, measuring, etc.). Important points are privacy, security and access control to databases. It runs on ISDN-basic access. The pilot has tested user interface, terminal and application capabilities, image quality and network reliability.

This project is also a multi-partner one between a local hospital, some research institutes and the Telecom operators.

2. EURESCOM-Integrated Multimedia Service: Pa

The goal of Eurescom P360 IMS1-II Integrated Multimedia Systems is to develop and implement a laboratory demonstrator for multimedia retrieval services. The applications will be platform-independent and on a server/terminal basis. The communication is established over a 1,5 Mb/s connection. The first experiment is planned to run an ATM European pilot. TLP is responsible for the "Video on Demand" application. The project phase II started in March 1993 and will be concluded in the 3rd quarter of 1995.

3.   Future foreseen services

3.1.   For the medical segment of market

A lot of other different medical applications such as Computed Tomography, Computed Radiography, Electrocardiograms, etc., are envisaged, because the diagnosis is mainly based on visual information and analysis. Acceptance of computer based systems for image is critical and depends on the user-friendliness of the workstation, application and interface. Display capabilities should keep the quality of the image close to what is normally observed in film. For normal work the bitrate of a basic access is good enough because the occurrence of the picture refreshment is very low. Some advanced features (merging information coming from different modalities, large storage systems, object oriented databases, etc.) will demand a better computer and terminal equipment. From the network point of view, large bandwidth provided by ATM will allow the transfer of large amounts of information, e.g. medical conferences, and will help to avoid some bottleneck of the whole system in demanding applications.

3.2.   Videoconference/Desktop conference: Pb

Advanced conference rooms providing simultaneous information flows of audio, video and data, and the possibility of interaction on presented media (capture, editing, transfer and storing). This represents the merging of traditional videoconferencing rooms with Desk Top Conference (DTC) applications.

Live video is a problem because it needs huge amounts of information in a real time flow. Bandwidth limitations (10 Mbps on Ethernet) of the LAN supporting the workstations and its adequacy to the network rate transfer for instance in the local workstations and its adequacy to the network rate transfer for instance in the local loop.

3.3.   Remote printing: Pc

Newspapers and magazine editors will be the privileged users for this kind of application. The purpose is to transfer multimedia final form representation of documents for remote data merging and printing. Some kind of production tools could be available for local edition and frame working. Since non-real time services are needed for the document transmission, no large bandwidths are required. In Portugal there is already some demand for this sort of application and we think that in future it will be an important one.

3.4.   Telework: Pd

In a first phase we intend to launch Telework for technical engineering students. An ISDN terminal will be distributed to each one of their houses in order to allow them to work remotely between them and in connection with the host. We expect to profit from this pilot by acquiring some knowledge and feedback.

The user should be provided with a multimedia application with desktop (DTC) edition and conference possibilities as well as communication facilities (dialling, broadcasting, file transfer, mail facilities, remote access, terminal emulation's etc.). The application should be platform independent. ISDN should support network needs.

3.5.   Video on demand: Pe

This application will provide access to movie databases and retrieval possibilities. After the identification and validation the user will be able to consult different subject databases, to see a videoclip of a particular movie, to retrieve the movie for watching and local store. Charging and database security are major concerns as well as network bandwidth (dynamic bandwidth concepts can be involved). For the IMS1-II experiments, 2Mb/s links between Ethernet LANs will be used for single terminal, single server use. For a large scale service ISDN is to be used. When increased bandwidth will be needed and in the long term, ATM is the network foreseen.

B.10   Proposal from Finland

B.10.1   Answers to the Multimedia Portfolio Questionnaire by Helsinki Telephone Company

Important disclaimer: the features described in this ETR are put forward by way of example to clarify some of the standardization requirements in the multimedia area. Nothing in this ETR represents any specific commercial intention of the ETSI member.

The example **SF** defines an information and retrieval service.

SERVICE PARAMETERS	SF
Service description summary	
Teleconference service (videoconf., videoteleph., audiogr. conf.)	
Audiographic conference service	
Other conversational services	
Information & retrieval services (excluding video on demand)	Y
Video on demand	
Messaging services	Y
Dedicated to: large business	Y
small business	Y
residential users	Y
Associated secondary services	
Facsimile	Y
Videotex	
Electronic messaging: X.400/88, X.400/92	Y
E-mail: RFC 822, MIME	Y
Internet interactive services (WWW, Gopher, WAIS, NEWS, ...)	Y
Files transfer (FTAM, FTP,....)	
Telebanking	Y
Tele-transaction (tickets and other reservations)	Y
Network aspects	
Transmission rate: minimum (bit/s)	2 M
maximum (bit/s)	no limit
Networks on which user terminals are connected (Access + trunk network)	LAN, WAN, B-ISDN (ATM)
User terminals are on different networks	Y
Terminals and databases are on different networks	
T1 is connected to T2 only (point to point communication only)	(Y)
T1 is connected to Database(s) only (retrieval application only)	(Y)
T1 is connected simultaneously to T2 and Database(s)	
T1 is connected simultaneously to T2, T3, ... and Database(s)	
T1 is connected simultaneously to T2, T3,.(multipoint communicat.)	
Bi-directional symmetric communication	
Bi-directional asymmetric communication	
Access requirements	SF
Establishment of communication: on demand	Y

reserved	
permanent	
Access: around the clock (at any time of the day)	Y
restricted in time	
restricted in duration	
Addition and/or cancellation of a call during the multimedia session	Y
Call transfer is required, between...	
Security, copyright and charging	
User identification	(Y)
Access control/priority right management: to retrieve data	Y
to edit data	Y
Communication content should be totally encrypted	(Y)
Communication content should be partially encrypted	Y
Authentication/signature	Y
Copyright protection/copy control	Y
Charging	Y
Used media and quality requirements	
ASCII text	
Others (T.61, ISO..., ...)	Y
Documents, ODA encoded	Y
SGMLencoded	
Postscript	Y
RTF	
others (word,...)	
Graphics (CGM, GKS,CGI,...)	Y
Still images (JPEG, JBIG, GIF, TIFF...)	Y
Audio-visual sequences as stored info (MPEG, JPEG,...)	Y
Real time interactive audio without interactive video capability	
Real time interactive audio and video (H.261,...)	
Control signals and other ephemeral signals (pointer, electronic pen,...)	
Video quality	
HDTV (High Definition TV)	
EQTV (Extended Quality TV)	resolution for VGA-display
SRTV (Standard Resolution TV)	
Reduced spatial resolution and movement portrayal	
Highly reduced spatial resolution and movement portrayal	
Audio quality	
Studio quality	
Contribution quality CD, ISO/IEC 11172-3 with 180 kbit/s per monochannel,...)	Y
Emission quality (broadcast distribution) (FM, ISO/IEC 11172-3 with 2 x 128 kbit/s,...)	
Commentary quality (ISO/IEC 11172-3 with at least 60 kbit/s,...)	Y
Medium quality speech + audio (G.722,...)	
Telephone speech quality (G.711, G.728,...)	

User terminal features and other service parameters	SF
Heterogeneous multimedia platforms (PC, workstation, videoconf.,...)	
Use of several services/media simultaneously	Y
Variable allocation of the bandwidth for the different media	Y
All content data is shared or accessed by all terminals	Y
Shared workspace (graphics, text, picture, movies, audio notes...) for joint editing and viewing	
Switching mode for conversational telecommunication services:	
- with floor control	
- with chairman control	
- with voice activation	
User terminal may retrieve Multimedia data	
User terminal may retrieve and edit Multimedia data	Y
Local storage of info. in combination with that of network (CD-I,...)	
Local processing of data	Y
Off-line downloading of information when user is absent	Y
Application specific type of info: (feedback traces, directory info, searching and navigation,...)	Y

B.10.2   Description of the proposed services by Helsinki Telephone Company

Centralized architecture for commercial multimedia value added services.

In this contribution an architecture for commercial multimedia value added services is proposed. Standardized charging methods and access control methods are needed to make it more flexible for the user to navigate from one service to another. A centralized architecture with a menu system which takes care of charging and access control is suggested.

1.   Introduction

One of the fastest growing data networks is the Internet. Today it is not only a network of the universities and research institutes but also an increasing number of commercial TCP/IP services to corporate customers. These commercial TCP/IP networks have a gateway to the Internet.

Internet is an ideal platform for value added services for the following reasons:

- the Internet covers all industrialized countries and there are millions of users around the world;

- the network layer and transport layer protocols have already been standardized and stabilized and there are implementations for almost any type of computers;

- compared with plain old telephone system or X.25 networks, the Internet offers much more bandwidth which makes it possible to distribute multimedia documents.

The Internet community offers different kind of information and document sharing services today, like anonymous FTP, Archie, Gopher Wide Area Information Services (WAIS) and World Wide Web (WWW). However, all these systems are designed for the sharing of public and non-commercial information. At the moment there is no mechanism which makes it possible for the provider of the information to charge the users of the information.

Of course, each information provider could set up a system which is based on user names and passwords. However, this kind of arrangement is very cumbersome for both the providers of information and the users.

To avoid this bureaucracy, we suggest that a centralized architecture is adopted. In this model, a centralized Menu System takes care of access control and charging.

2. Architecture

There are three types of entities in the system:

- the centralized Menu System;

- information providers;

- customers (users of information).

In this model, the Menu System takes care of the authentication by using a method which is found to be the most suitable and which offers a sufficient level of security. The Menu System is also responsible for charging. All sessions of the users are written to a log file and a bill is sent to each user (e.g. once a month). Similarly, payments to information providers are sent once a month. For example, if there are m service providers and n users we need only m+n payment transactions every month. Without the centralized architecture, m+n transactions would be needed! The architecture is described in the figure B.7.
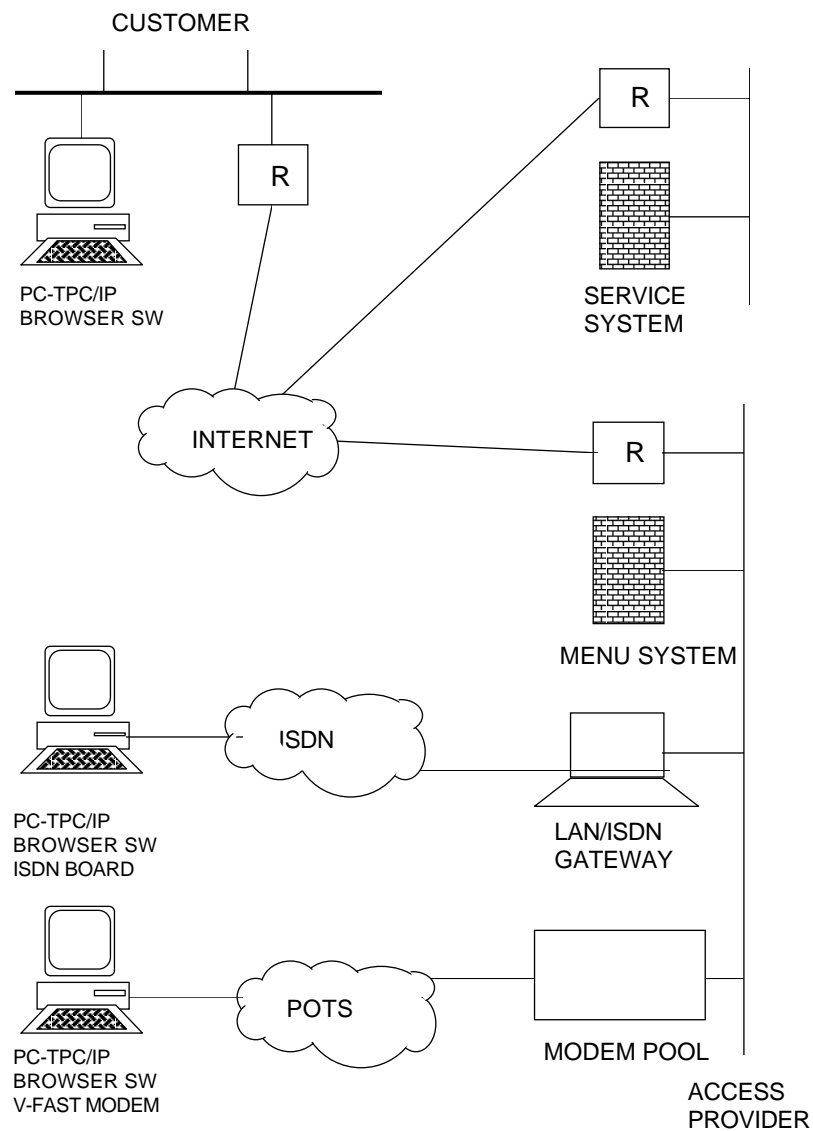
Figure B.7

The Menu System first offers the user a list of available information sources. After that, the Menu System allows him to select the service provider. When a session is active, all information flows through the menu systems which makes it possible to use various charging methods (time based, information based, etc.).

The information shared through this system can be for example:

- financial information in graphical format;

- product catalogues containing images;

- images for entertainment;

- interactive services, like banking services;

- research reports;

- electronic newspapers;

- travel information.

3.   Requirements

Standardization is needed for several parts of the system. At least the following subjects should be standardized:

- format of information offered by the information providers;

- communication protocol between the service provider and the Menu System;

- communication protocol between the Menu System and the user;

- authentication of the user;

- charging methods;

- navigation between subsequent menus offered by the Menu System or by the service providers;

- functionality of the browser program.

At least the following types of information should be supported:

- textual data;

- digitized images;

- fill-in forms for interactive services.

At this moment the Internet is not yet capable of distributing real time video or audio in large scale. However, when ATM technology is adopted as a backbone, this will be possible. The protocols defined in this phase should also be capable of handling these new types of information.

In addition to this, the menu System should be able to communicate with other Menu Systems to allow access to other services.

It is natural to run these application protocols on top of TCP/IP. There are several projects going on around the world in which issues related to this area are investigated. Adopting the best results from these projects to standards could be the best way to proceed.

Client-server architecture is the most feasible method to implement the system. In this model, the protocol does not need to care about the presentation of information on the user's workstation. The browser

program of the user takes care of that and the browser can also call external viewer programs to display information in different formats.

The physical access method to the Internet is totally transparent in this system. The user can connect to the Internet by using any method he desires as long as his communication links support the TCP/IP protocol stack and his computer system is capable of running the browser program. The physical access method can be for example a corporate LAN backbone or a digital dial-up line. The emerging modem standards like V.fast can make also the plain old telephone system suitable for multimedia communications.

The Internet environment and TCP/IP protocol stack should no be regarded as the only alternatives for layers 3 - 4. Instead, they are only used as an example because of the popularity and availability of these environments. Any other suitable protocols can be used as well.

B.11   Proposal from Great Britain

B.11.1   Answers to the Multimedia Portfolio Questionnaire by BT Labs and UK Academic Community

> **Important disclaimer:** the features described in this ETR are put forward by way of example to clarify some of the standardization requirements in the multimedia area. Nothing in this ETR represents any specific commercial intention of the ETSI member or associated company.

The example **UK1a** from **BT Labs** defines a general storage and retrieval service. The examples **UK2a** and **UK2b** from **UK Academic Community** define a distributed information and electronic publishing service and a remote collaboration and consultation service, respectively.

SERVICE PARAMETERS	UK1a	UK2a	UK2b
Service description summary			
Teleconference service (videoconf., videoteleph., audiogr. conf.)			Y
Audiographic conference service			
Other conversational services			
Information & retrieval services (excluding video on demand)	Y	Y	(Y)
Video on demand	Y		
Messaging services		(Y)	(Y)
Dedicated to: large business	Y	Y	Y
small business	Y	Y	Y
residential users	Y	Y	Y
Associated secondary services			
Facsimile	Y		
Videotex	Y		
Electronic messaging: X.400/88, X.400/92			
E-mail: RFC 822, MIME			
Internet interactive services (WWW, Gopher, WAIS, NEWS, ...)		Y	Y
Files transfer (FTAM, FTP,....)	Y		
Telebanking	Y		
Tele-transaction (tickets and other reservations)	Y		
Network aspects			
Transmission rate: minimum	64 K		
maximum	2 M	2 M	2 M
Networks on which user terminals are connected (Access + trunk network)	ISDN, B-ISDN (ATM)	SuperJANET, Internet	SuperJANET, Internet
User terminals are on different networks	Y	Y	Y
Terminals and databases are on different networks	Y	Y	Y
T1 is connected to T2 only (point to point communication only)			Y
T1 is connected to Database(s) only (retrieval application only)	Y	Y	
T1 is connected simultaneously to T2 and Database(s)			
T1 is connected simultaneously to T2, T3, ... and Database(s)			Y
T1 is connected simultaneously to T2, T3,.(multipoint communicat.)			Y
Bi-directional symmetric communication			Y
Bi-directional asymmetric communication	Y	Y	

Access requirements	UK1a	UK2a	UK2b
Establishment of communication: on demand	Y	Y	Y
reserved			
permanent			
Access: around the clock (at any time of the day)	Y	Y	Y
restricted in time			
restricted in duration			
Addition and/or cancellation of a call during the multimedia session		Y	Y
Call transfer is required, between...			
Security, copyright and charging			
User identification	Y	Y	Y
Access control/priority right management: to retrieve data	Y	Y	Y
to edit data	Y	Y	
Communication content should be totally encrypted			
Communication content should be partially encrypted			
Authentication/signature	Y	Y	Y
Copyright protection/copy control	Y	Y	
Charging		Y	Y
Used media and quality requirements			
ASCII text	Y		Y
Others (T.61, ISO..., ...)	Y		
Documents, ODA encoded	Y	Y	Y
SGMLencoded		Y	Y
Postscript		Y	Y
RTF		Y	Y
others (word,...)		Y	Y
Graphics (CGM, GKS,CGI,...)		Y	Y
Still images (JPEG, JBIG, GIF, TIFF...)	Y * TV photo	Y	Y
Audio-visual sequences as stored info (MPEG, JPEG,...)	Y	Y	Y
Real time interactive audio without interactive video capability			Y
Real time interactive audio and video (H.261,...)			Y
Control signals and other ephemeral signals (pointer, electronic pen,...)	Y		Y
Video quality			
HDTV (High Definition TV)			
EQTV (Extended Quality TV)			
SRTV (Standard Resolution TV)	Y		
Reduced spatial resolution and movement portrayal	Y		
Highly reduced spatial resolution and movement portrayal			
Audio quality			
Studio quality			
Contribution quality CD, ISO/IEC 11172-3 with 180 kbit/s per monochannel,...)			
Emission quality (broadcast distribution) (FM, ISO/IEC 11172-3 with 2 x 128 kbit/s,...)	Y		
Commentary quality (ISO/IEC 11172-3 with at least 60 kbit/s,...)	Y		
Medium quality speech + audio (G.722,...)	Y		
Telephone speech quality (G.711, G.728,...)	Y		

User terminal features and other service parameters	UK1a	UK2a	UK2b
Heterogeneous multimedia platforms (PC, workstation, videoconf.,...)	Y	Y	Y
Use of several services/media simultaneously	Y	Y	Y
Variable allocation of the bandwidth for the different media	Y	Y	Y
All content data is shared or accessed by all terminals		Y	Y
Shared workspace (graphics, text, picture, movies, audio notes...) for joint editing and viewing			Y
Switching mode for conversational telecommunication services:			
- with floor control			Y
- with chairman control			Y
- with voice activation			Y
User terminal may retrieve Multimedia data	Y	Y	Y
User terminal may retrieve and edit Multimedia data	Y		Y
Local storage of info. in combination with that of network (CD-I,...)		Y	Y
Local processing of data	Y	Y	Y
Off-line downloading of information when user is absent	Y		Y
Application specific type of info: (feedback traces, directory info, searching and navigation,...)			Y

B.11.2   Description of the proposed services by BT Labs

The contribution by BT is analysed to form the basis for proposals concerning the standardization requirements.

1.   Use of the reference model

R - Requirements						
E - External	N - Network Configuration	S - Call Set-up	I - User Information	C - In-bond Control	A - Application	X - Test
D - Documentation						
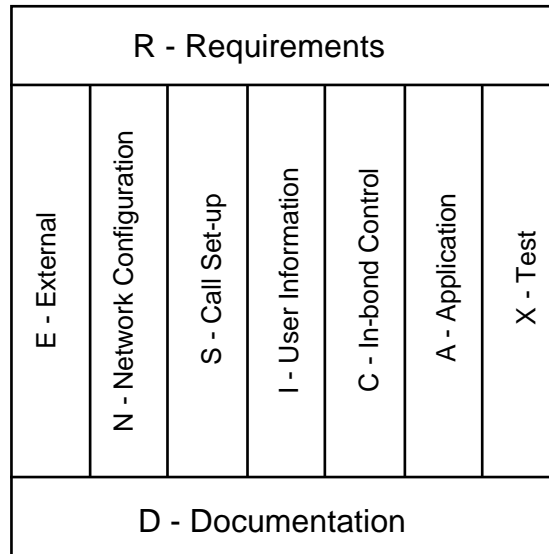
Figure B.8

No analysis of planes given in figure B.8 has been put forward, nor for the Test plane. The reason for this is not only the relatively early stage of the study, but also the likelihood that most of the target documentation will not be in the open standards arena so much as in the operator's domain. Nevertheless, the need or non-standardized aspects needs to be recognized in the structuring of actual standards.

Attention is focused in subsequent sections on the R, N, S, I and C planes in figure B.8.

2.   R-Plane-requirements capture

This item recapitulates material contributed by BT in June 1993 concerning a generic multimedia service concept in the storage/retrieval area. [Attention is drawn to the disclaimer printed at the end of this document] The service parameters in the R-Plane are listed in example UK1a (see the previous portfolio table).

The users have multimedia terminals connected to a ATM local area network and to the ISDN. The ATM network has a gateway into the ISDN, enabling the users to set up calls to a number of multimedia databases provided by their own and other companies.

The users may access the databases if they can satisfy a security check. Possessing further authorization they may store information and may specify (at very short notice) which other users may retrieve and/or modify that information. Several users may operate simultaneously on that information, without the owner losing control of the result.

A wide range of telematic formats is catered for, including nearreal-time modification remotely (for example, working on a document the control manipulations for modification, as well as the basic file, can be transmitted). Not all the terminals have the fullest range of media capabilities - sometimes they can retrieve only some segments of what has been stored, but the limitations are clarified to the user. An important consideration is whether the terminals may be simply ITU-T Recommendation H.320 types, intended originally for conversational applications and able to deal only with ITU-T Recommended H.221-framed signals. In this ETR this possibility is not ruled out.

It is to be noted that in the service described here, no audio or video is transmitted between users, since the access the databases independently of each other; indeed, the terminals may not be capable of handling the signals for conversational applications.

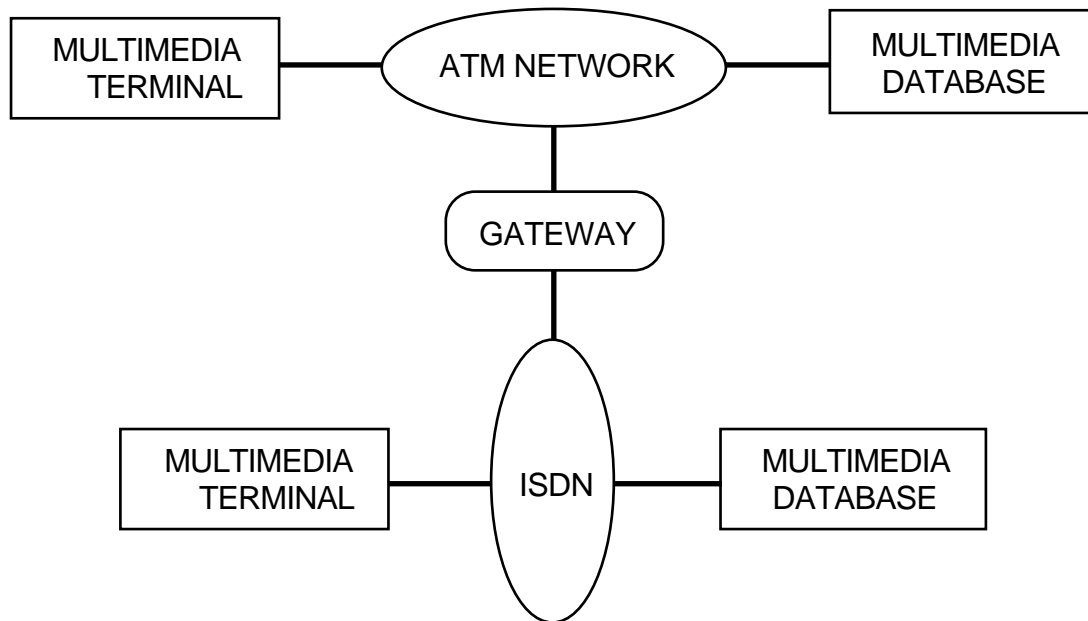### 3.   N-Plane - Network Configuration

```
  MULTIMEDIA              ATM NETWORK              MULTIMEDIA
  TERMINAL                                         DATABASE

                           GATEWAY

  MULTIMEDIA                 ISDN                  MULTIMEDIA
  TERMINAL                                         DATABASE
```

Figure B.9

The network configuration is shown in the above figure; the classification by architectural segment is:

1)   terminals: general multimedia (wide range of options) with standard network interfaces;

2)   networks: two different standard networks, ISDN and B-ISDN, standard network interfaces;

3)   network-based facilities: gateway between standard networks, standard network interfaces;

4)   service management: none in this case.

Essentially, four types of call are required: between terminal and database on the ISDN; ditto on B-ISDN, and between a terminal on one network and a database on the other.

4.   S-Plane - Call set-up, Call Control

a)   Calls involving the ISDN only

The existing standards for D-channel operations need to be extended to cover the type of call involved here. For the case of ITU-T Recommendation H.320 terminals not capable of operating in a "non-conversational" way, the set-up should be the same as for a conversational call in which the destination terminal is set to auto-answer. Work to define generalized multimedia procedures for D-channel signalling is already under way.

b)   Calls involving the ATM network only

Procedures need to be established for call set-up, providing the requisite degree of choice to meet user wishes. It is noted that this work cannot be done in isolation for this proposed range of applications, but in a consistent way for all multimedia applications of B-ISDN; lessons need to be learned from the difficulties encountered with ISDN D-channel signalling procedures.

c)   Calls from ISDN to ATM and vice versa

This problem needs to be tackled simultaneously with (b) above.

The studies required for (b) and (c) should be put in hand at once: the first step should be a clarification of the requirements across the whole multimedia field, in order to understand and cater for the wishes of the users and the PNOs.

5.   I-Plane - User information

It can be argued that no new standards for coding of media are needed: there are already numerous audio and image coding algorithms from ITU and ISO, and more are being developed.

For multiplexing too, schemes are available (ITU-T Recommendation H.221) or under development (H.22x). If ITU-T Recommendation H.221 is not thought appropriate for mono-conversational services, it is strongly advocated that draft ITU-T Recommendation T.120 be used, occupying the whole available channel. **There does not seem to be a need to start a new development here, though the existing schemes should be examined carefully to ensure that appropriate functionality is included**.

The **gateway** poses a particular problem if the effective multiplexing scheme is not the same in ISDN and ATM: a conversion is the required. The coding processes might also be affected.

Within the physical multiplex, there will sometimes be a need for logical relationships between media to be conveyed. The MHEG standard, together with the AVI Scriptware work in ITU-T SG 8, seems to cover this need adequately. **ETSI should give its support to the use of the ITU-T Recommendation T.120 MLP and the provision there in of the means to support MHEG and AVI methods.**

No encryption of in-band signals is called for in the proposed application.

## 6.	C-Plane - In-band Control

Two aspects need to be considered: the terminal-database interworking and the application support.

Terminal-database interworking. As for conversational services, a range of possible databases need to be allowed to reflect various market sectors and types of application; likewise, the terminal population is likely to have considerable variation. In the case of ITU-T Recommendation H.221-framed signals on ISDN, ITU-T Recommendation H.242 takes care of the establishment of appropriate media for transmission of the information signals. **An equivalent process is required for the B-ISDN case, and at the same time the action at the gateway to match the ISDN and B-ISDN processes also needs to be defined.**

In the case that MLP occupies the whole link capacity (no H.221 framing), the gateway process may be much simpler.

Application support. The envisaged applications involve at least the following general areas of control:

1)	storage: when material is input to the database, control parameters may include the magnitude and segmentation of the information, and its classification for retrieval purposes; the authenticity of the user and his right to input material may need to be established, and the user may specify the identities or classes of users who can retrieve;

2)	retrieval: the database may provide for various forms of search and presentation (simple sequential, browse, fast scan, repeat etc.); the authenticity of the user and his right to retrieve material may have to be established.

The range is very wide, and will probably grow rapidly as the multimedia market develops. **It is not proposed that these control parameters be standardized on the contrary our policy should be to provide only a standardized means of dialogue**. The target should be that any multimedia terminal equipped with the syntax rules of this dialogue should be able to communicate with any database so equipped. It may also be assumed that the privacy process can operate within the dialogue, without further standardization. **The work to select such a dialogue method should be put in hand as a matter of urgency.**

Significant features with respect to the multimedia standardization portfolio:

non-conversational multimedia service;

interworking between ISDN and ATM network;

security of database information;

mixed-format telematics, and some terminals having different capabilities w.r.t... media available;

control signals for telematic applications processes in nearreal-time;

standards for audio and moving video as telematics (files, etc.).

Important disclaimer: the features described in this ETR are put forward by British Telecommunications plc by way of example to clarify some of the standardization requirements in the multimedia area. Nothing in this ETR represents any specific commercial intention of the Company.

B.11.3   Description of the proposed services by UK Academic Community

The UK Academic Community is in the process of installing a wide area high speed fibre optic network. to demonstrate the capabilities of the new network a pilot application programme has been put in place. This subclause describes the application areas that have been chosen to make up the demonstrators.

1.   Introduction

The Joint Network Team (JNT) of the UK Academic Community is currently engaged in the installation of a high speed fibre optic network to support UK research. As reported elsewhere, the project implementation consists of three phases. The pilot phase involves six sites: Cambridge University, Edinburgh University, Imperial College London, University College London, Rutherford Appleton Laboratory and Manchester University. These sites were connected in March 1993 with a total of 140 Mbps of bandwidth each. The bandwidth is equally divided between two circuits to provide a high speed data network and two circuits to be used for ATM research.

Following the pilot phase, two further implementation phases are planned to carry the network out into a larger community of sites. Phase 1 which is due to complete by September 1993 will see a further six sites connected at 140 Mbps (Glasgow University, Nottingham University, Birmingham University, Newcastle University, Cardiff University and Leeds University). Around thirty other sites will be connected at lower speeds (10 Mbps).

The provision of raw bandwidth is of little interest to the end user of the network. Users are interested in utilizing the network to support their research. This may be in a number of ways: access to remote databases an information sources, communications and collaborations with colleagues, or carrying out computation on specialist hardware not available locally.

It is with these requirements in mind that the JNT set up the SuperJANET pilot applications programme. The intention of the programme is to demonstrate the effectiveness of the new network by providing examples of applications that could not be supported on the current 2 Mbps JANET network. These demonstrations are important to show to the funding bodies the value of their investment and to stimulate further development of the network. The demonstrations are also aimed at the users, showing them examples of the possibilities and hopefully stimulating their imaginations leading to a whole raft of new uses of the network.

The applications that are reported here are in the first wave and are very much our first attempts at experimenting with the new network.

2.   Application areas

Having identified the reasoning behind mounting an applications pilot programme, what has been identified as a SuperJANET application?

SuperJANET applications are NOT things like electronic mail. It is true that with the coming of true multimedia facilities, people may want to mail electronic messages containing massive amounts of data generated from video clips for example (typically these might be anything from tens to hundreds of megabytes of data). The problems of exchange formats, data storage and queuing algorithms will have to be addressed (but this is currently seen as a little way down the line mainly due to the lack of resources).

We have identified SuperJANET applications as applications that could not previously have been supported across the existing JANET 2 Mbps network. The reasons being either lack of bandwidth, high latency or jitter.

In order to interest a broad spectrum of disciplines, we have identified a (small) number of application areas for study.

These are:

- distributed (multimedia) teaching;

- group communications;

- information services;

- remote access;

- remote consultation;

- supercomputer computational support;

- visualisation.

We have used this classification for the last year and it has become clear that most applications straddle at least two of these categories, nevertheless the classification has been useful.

2.1. Distributed multimedia teaching

Two applications are being piloted in the area of distributed multimedia teaching. The first is the teaching of surgery. In common with other institutions, the clinical teaching hospitals in London require their students to observe a wide range of surgical procedures. However as the teaching institutions and clinical institutions are distributed around the city, moving students between hospitals proved to be a difficult logistical problem. To reduce the severity of this problem, an analogue video network has been used to transmit video images from the operating theatre to venues around London. The system is much more that just broadcast video as the students in the remote room have video and audio signals from the operating theatre, they have audio contact back to the staff at the clinical site and they can have control of the pan, tilt and zoom of the video camera. Additionally, library or prepared supporting still or video sequences may be used. The important feature of this system is that it is interactive, it involves the students in an active way and they are not just viewing a production that could be supplied on videotape.

The system is now being migrated to be carried over the new high speed digital network using ATM as the underlying carrier This will enable connectivity to be achieved across SuperJANET and permit the interaction of students and clinical staff nationally. The network will hence enable students to witness the treatment of rare conditions which are normally never seen outside of specialist centres.

The other teaching application that we plan to demonstrate over SuperJANET has been developed on behalf of the John Moores University at Liverpool, UK. The package called THESEUS provides students with access to a distributed mediabase containing such resources as text, graphics, sound and moving video. The student can be given a suggested instructional pathway through the mediabase or he is free to wander off the path and make the student in finding his way around the material. Roy Stringer, who developed the package, has been working with the Liverpool Women's hospital to complete the first full scale course training technicians working in the field of cervical cytology. These technicians spend many hours preparing samples of tissue sections and viewing the cells microscopically for signs of abnormality. Amongst other things the course provides views of what would be seen down the microscope and provides the student with a slider to enable him to simulate the focus pull through the tissue section. the package involves the student in the learning process by requiring him to participate, interacting with the material. The intention of piloting this application across SuperJANET is to establish its viability for remote use.

2.2. Group communications

Group communications is a classification that is commonly used to cover application areas such as Computer Supported Co-operative Working (CSCW), co-authoring of material, and videoconferencing.

The two applications we have to demonstrate this area both contain an element of videoconferencing. The PANDORA workstation was developed in Cambridge with Olivetti as a research tool. It provides the ability to videoconference between multiple stations, send and receive mail containing video clips and can also deal with broadcast television. The data is carried between stations using an ATM based protocol.

The chemistry departments of Imperial College London and Cambridge University have been collaborating on the design of organic molecules for some time. They have found that face-to-face meetings where models of molecules can be discussed have been difficult to arrange and may lead to delays in progressing their research. It is important for the parties involved in the discussion to be able to view a three dimensional representations of the molecule as its conformation may give clues to its chemistry. These groups have been using modelling software to construct three dimensional images of complex molecules. Using SuperJANET workstations they can view the models simultaneously as well as rotate them in any plane. With the aid of a videoconference link discussions regarding the molecules can speed up formulation of conclusions. Furthermore, the moving images can be recorded to digital storage media for later inclusion in publication in electronic format, thus speeding up the wider dissemination of the material to the whole scientific community.

2.3. Information services

The ability to obtain information easily and quickly gives researchers a competitive edge, particularly when the sources are not limited to those available locally. We have two SuperJANET Projects aimed at making information widely available over the network. The JNT is also active in the RARE multimedia working group investigating solutions for information servers with integrated multimedia capabilities. It is our intention to implement some pilot examples of the RARE recommendations after they have been agreed during mid-1993.

The Super JANET document delivery project relies on relatively low technology. It is intended that the system is used to speed up the interlibrary loan procedure. Rather than rely on the postal system to obtain photocopies of journal articles from remote libraries, copies are requested electronically, scanned in and transferred to the requesting library over the network. Small numbers of requests are not a burden on the network but if all libraries in the UK started to make heavy use of the service, the aggregate traffic would be considerable.

Many researchers are happy to browse information on-line rather than receive paper copies. The Institute of Physics with the support of British Library Research and Development are developing a system win which on-line copies of several well known journals are being made available with the co-operation of the publishers. Images of the journal contents are held on-line at the University of Edinburgh and can be browsed with an X Window System server. The intention to follow this pilot with a more extensive project that includes hyper linking between journals, references and key objects within the publications. Early trials show that although the system will run over the 2 Mbps JANET network, response is slow and would be unacceptable as an en user service. SuperJANET will give the system the necessary improvement in response.

The John Rylands University Library, Manchester is piloting a project to share access to their rare artefacts over the network. They have installed a high quality digital camera and workstation based video conferencing system to allow academics to have images of the artefacts and rare books sent to them on their own workstations. It is hoped that as images are scanned in this way a database of on-line images will be built up for public access.

2.4. Remote Access

This category overlaps significantly with information service, however it is used to indicate access to specialist facilities which would not normally be available to the public. Most applications concern access to images from sensors.

University College London and the Medical Research Council (Cyclotron Unit) are working on the processing of Brain Imaging derived from a variety of medical scanners. Images are taken from Positron Emission Tomography (PET) scanners that show maps of neural activity whilst Magnetic Resonance Images (MRI) shows fine structural detail of the brain. The research group have developed software that is capable of superimposing the three dimensional representations of these image types so as to give an impression of the correlation between structural damage and dysfunction. The intention is to make the facilities available to clinicians at remote sites across the country, and establish a database of normal and abnormal cases for comparative research.

Groups at the University of London and the Rutherford Appleton Laboratory are compiling a Geophysical Database Facility (GDF) which contains satellite sensor data from around the globe. The data represents the chemical composition of the atmosphere and other physical phenomena such as sea surface temperature. SuperJANET will permit researchers to browse through the gigabits of information in the database from their home site.

The Royal Postgraduate Medical School (RPMS) at the Hammersmith Hospital, London have been working on several projects to allow remote access to sources of information and images. These include three dimensional representations of foetal images derived from ultrasound scanning equipment and images from confocal microscopes. They have also developed tools for the planning of neurosurgical procedures.

2.5.   Remote consultation

In a smaller hospital, the more general skill of a duty pathologist may be unable to furnish specialist advice regarding specific rare conditions. The solution to this has been physical transportation of either patient, tissue samples or the expert pathologist. Any of these options involve some delay which in extreme cases may amount to days. the team at the University of Manchester are piloting a project to put in place a pathologists network. Expert pathologists in several centres have agreed to participate. The concept is that tissue samples from the patient can be prepared by technicians and medical practitioners locally with the videoconference set up between the site and the expert pathologist. The connection consists of two video streams, one used to feed an image from a camera mounted on a microscope imaging the samples, one used for face to face discussion between the personnel at each site. In this way expert advice may be given to even the smallest hospital with the minimum of delay.

2.6.   Supercomputer support

It had been suggested that SuperJANET could be used as a "national supercomputer backplane" enabling computers of different architectures (i.e. massively parallel and vector) to co-operate on solving problems. Discussions in the community have not yet revealed any application that needs this sort of support and further development in this direction will wait until the real user requirement has been established.

Visualisation is very high on the SuperJANET pilot priority list with several projects piloting particular applications. These include contributions from the Edinburgh Parallel Computer Centre, Birkbeck college, Imperial college and Cambridge University. The key concept to be piloted is the ability to make these applications interactive over the network. This means that they should have the ability to be run and viewed over the network in real-time. The end user should also be able to interact with the programme and change the value of parameters during execution thus changing the course of the computation.

3.   Conclusions

The pilot applications outlined above are intended to demonstrate what can be achieved. They are pilots and the intention is that they become everyday facilities for the specialist users who need them. They are not meant to be technological showpieces. They are very much first wave and as such have origins in existing applications that can already run either locally or over Local area Networks but **not** over the Wide Area Network.

The intention is that these pilots be used to spark the imagination of the users, into developing **real** new wave applications. It is not believed that it is the job of the network provider to take on the responsibility of application design. Artificial applications are not wanted, real applications that address the real needs of real users are required. the network provider does however have the responsibility of demonstrating the possibilities of the new network encouraging the user community to make the best possible use of it.

It is recommended that any organizations installing new high speed networks consider encouraging their users by making funds available to support application piloting.

Annex C: Bibliography

The following documents are referred in the text of this ETR:

1)   ITU-T Recommendation H.221 (1993): "Frame structure for a 64 to 1 920 kbit/s channel in audiovisual teleservices".

2)   ITU-T Recommendation H.242 (1993): "System for establishing communication between audiovisual terminals using digital channels up to 2 Mbit/s".

3)   ITU-T Recommendation H.261 (1993): "Video codec for audiovisual services at px64 kbit/s".

4)   ITU-T Recommendation H.320 (1993): "Narrow-band visual telephone systems and terminal equipment".

History

Document history	
April 1995	First Edition
February 1996	Converted into Adobe Acrobat Portable Document Format (PDF)