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INTERNATIONAL TELECOMMUNICATION UNION

CCITT

THE INTERNATIONAL
TELEGRAPH AND TELEPHONE
CONSULTATIVE COMMITTEE

BLUE BOOK

VOLUME II – FASCICLE II.5

TELEMATIC, DATA TRANSMISSION AND TELECONFERENCE SERVICES OPERATIONS AND QUALITY OF SERVICE

RECOMMENDATIONS F.160-F.353, F.600, F.601, F.710-F.730



IXTH PLENARY ASSEMBLY
MELBOURNE, 14-25 NOVEMBER 1988

Geneva 1989



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**CONTENTS OF THE CCITT BOOK
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BLUE BOOK

Volume I

- FASCICLE I.1 – Minutes and reports of the Plenary Assembly.
List of Study Groups and Questions under study.
- FASCICLE I.2 – Opinions and Resolutions.
Recommendations on the organization and working procedures of CCITT (Series A).
- FASCICLE I.3 – Terms and definitions. Abbreviations and acronyms. Recommendations on means of expression (Series B) and General telecommunications statistics (Series C).
- FASCICLE I.4 – Index of Blue Book.

Volume II

- FASCICLE II.1 – General tariff principles – Charging and accounting in international telecommunications services. Series D Recommendations (Study Group III).
- FASCICLE II.2 – Telephone network and ISDN – Operation, numbering, routing and mobile service. Recommendations E.100-E.333 (Study Group II).
- FASCICLE II.3 – Telephone network and ISDN – Quality of service, network management and traffic engineering. Recommendations E.401-E.880 (Study Group II).
- FASCICLE II.4 – Telegraph and mobile services – Operations and quality of service. Recommendations F.1-F.140 (Study Group I).
- FASCICLE II.5 – Telematic, data transmission and teleconference services – Operations and quality of service. Recommendations F.160-F.353, F.600, F.601, F.710-F.730 (Study Group I).
- FASCICLE II.6 – Message handling and directory services – Operations and definition of service. Recommendations F.400-F.422, F.500 (Study Group I).

Volume III

- FASCICLE III.1 – General characteristics of international telephone connections and circuits. Recommendations G.100-G.181 (Study Groups XII and XV).
- FASCICLE III.2 – International analogue carrier systems. Recommendations G.211-G.544 (Study Group XV).
- FASCICLE III.3 – Transmission media – Characteristics. Recommendations G.601-G.654 (Study Group XV).
- FASCICLE III.4 – General aspects of digital transmission systems; terminal equipments. Recommendations G.700-G.795 (Study Groups XV and XVIII).
- FASCICLE III.5 – Digital networks, digital sections and digital line systems. Recommendations G.801-G.961 (Study Groups XV and XVIII).

- FASCICLE III.6 – Line transmission of non-telephone signals. Transmission of sound-programme and television signals. Series H and J Recommendations (Study Group XV).
- FASCICLE III.7 – Integrated Services Digital Network (ISDN) – General structure and service capabilities. Recommendations I.110-I.257 (Study Group XVIII).
- FASCICLE III.8 – Integrated Services Digital Network (ISDN) – Overall network aspects and functions, ISDN user-network interfaces. Recommendations I.310-I.470 (Study Group XVIII).
- FASCICLE III.9 – Integrated Services Digital Network (ISDN) – Internetwork interfaces and maintenance principles. Recommendations I.500-I.605 (Study Group XVIII).

Volume IV

- FASCICLE IV.1 – General maintenance principles: maintenance of international transmission systems and telephone circuits. Recommendations M.10-M.782 (Study Group IV).
- FASCICLE IV.2 – Maintenance of international telegraph, phototelegraph and leased circuits. Maintenance of the international public telephone network. Maintenance of maritime satellite and data transmission systems. Recommendations M.800-M.1375 (Study Group IV).
- FASCICLE IV.3 – Maintenance of international sound-programme and television transmission circuits. Series N Recommendations (Study Group IV).
- FASCICLE IV.4 – Specifications for measuring equipment. Series O Recommendations (Study Group IV).

- Volume V** – Telephone transmission quality. Series P Recommendations (Study Group XII).

Volume VI

- FASCICLE VI.1 – General Recommendations on telephone switching and signalling. Functions and information flows for services in the ISDN. Supplements. Recommendations Q.1-Q.118 *his* (Study Group XI).
- FASCICLE VI.2 – Specifications of Signalling Systems Nos. 4 and 5. Recommendations Q.120-Q.180 (Study Group XI).
- FASCICLE VI.3 – Specifications of Signalling System No. 6. Recommendations Q.251-Q.300 (Study Group XI).
- FASCICLE VI.4 – Specifications of Signalling Systems R1 and R2. Recommendations Q.310-Q.490 (Study Group XI).
- FASCICLE VI.5 – Digital local, transit, combined and international exchanges in integrated digital networks and mixed analogue-digital networks. Supplements. Recommendations Q.500-Q.554 (Study Group XI).
- FASCICLE VI.6 – Interworking of signalling systems. Recommendations Q.601-Q.699 (Study Group XI).
- FASCICLE VI.7 – Specifications of Signalling System No. 7. Recommendations Q.700-Q.716 (Study Group XI).
- FASCICLE VI.8 – Specifications of Signalling System No. 7. Recommendations Q.721-Q.766 (Study Group XI).
- FASCICLE VI.9 – Specifications of Signalling System No. 7. Recommendations Q.771-Q.795 (Study Group XI).
- FASCICLE VI.10 – Digital subscriber signalling system No. 1 (DSS 1), data link layer. Recommendations Q.920-Q.921 (Study Group XI).

- FASCICLE VI.11 – Digital subscriber signalling system No. 1 (DSS 1), network layer, user-network management. Recommendations Q.930-Q.940 (Study Group XI).
- FASCICLE VI.12 – Public land mobile network. Interworking with ISDN and PSTN. Recommendations Q.1000-Q.1032 (Study Group XI).
- FASCICLE VI.13 – Public land mobile network. Mobile application part and interfaces. Recommendations Q.1051-Q.1063 (Study Group XI).
- FASCICLE VI.14 – Interworking with satellite mobile systems. Recommendations Q.1100-Q.1152 (Study Group XI).

Volume VII

- FASCICLE VII.1 – Telegraph transmission. Series R Recommendations. Telegraph services terminal equipment. Series S Recommendations (Study Group IX).
- FASCICLE VII.2 – Telegraph switching. Series U Recommendations (Study Group IX).
- FASCICLE VII.3 – Terminal equipment and protocols for telematic services. Recommendations T.0-T.63 (Study Group VIII).
- FASCICLE VII.4 – Conformance testing procedures for the Teletex Recommendations. Recommendation T.64 (Study Group VIII).
- FASCICLE VII.5 – Terminal equipment and protocols for telematic services. Recommendations T.65-T.101, T.150-T.390 (Study Group VIII).
- FASCICLE VII.6 – Terminal equipment and protocols for telematic services. Recommendations T.400-T.418 (Study Group VIII).
- FASCICLE VII.7 – Terminal equipment and protocols for telematic services. Recommendations T.431-T.564 (Study Group VIII).

Volume VIII

- FASCICLE VIII.1 – Data communication over the telephone network. Series V Recommendations (Study Group XVII).
- FASCICLE VIII.2 – Data communication networks: services and facilities, interfaces. Recommendations X.1-X.32 (Study Group VII).
- FASCICLE VIII.3 – Data communication networks: transmission, signalling and switching, network aspects, maintenance and administrative arrangements. Recommendations X.40-X.181 (Study Group VII).
- FASCICLE VIII.4 – Data communication networks: Open Systems Interconnection (OSI) – Model and notation, service definition. Recommendations X.200-X.219 (Study Group VII).
- FASCICLE VIII.5 – Data communication networks: Open Systems Interconnection (OSI) – Protocol specifications, conformance testing. Recommendations X.220-X.290 (Study Group VII).
- FASCICLE VIII.6 – Data communication networks: interworking between networks, mobile data transmission systems, internetwork management. Recommendations X.300-X.370 (Study Group VII).
- FASCICLE VIII.7 – Data communication networks: message handling systems. Recommendations X.400-X.420 (Study Group VII).
- FASCICLE VIII.8 – Data communication networks: directory. Recommendations X.500-X.521 (Study Group VII).

Volume IX

- Protection against interference. Series K Recommendations (Study Group V). Construction, installation and protection of cable and other elements of outside plant. Series L Recommendations (Study Group VI).

Volume X

- FASCICLE X.1 – Functional Specification and Description Language (SDL). Criteria for using Formal Description Techniques (FDTs). Recommendation Z.100 and Annexes A, B, C and E, Recommendation Z.110 (Study Group X).
 - FASCICLE X.2 – Annex D to Recommendation Z.100: SDL user guidelines (Study Group X).
 - FASCICLE X.3 – Annex F.1 to Recommendation Z.100: SDL formal definition. Introduction (Study Group X).
 - FASCICLE X.4 – Annex F.2 to Recommendation Z.100: SDL formal definition. Static semantics (Study Group X).
 - FASCICLE X.5 – Annex F.3 to Recommendation Z.100: SDL formal definition. Dynamic semantics (Study Group X).
 - FASCICLE X.6 – CCITT High Level Language (CHILL). Recommendation Z.200 (Study Group X).
 - FASCICLE X.7 – Man-Machine Language (MML). Recommendations Z.301-Z.341 (Study Group X).
-

CONTENTS OF FASCICLE II.5 OF THE BLUE BOOK

Recommendations F.160-F.353, F.600, F.601, F.710-F.730

**Telematic, Data Transmission and Teleconference Services:
Operations and Quality of Service**

Rec. No.		Page
Res. No. 13	Protection of the common names of CCITT defined international public services	3
SECTION 1 — <i>Public facsimile service</i>		
F.160	General operational provisions for the international public facsimile services	5
F.162	Operational requirements of an international store-and-forward facsimile switching service (Comfax)	9
F.170	Operational provisions for the international public facsimile service between public bureaux (bureaufax)	15
F.171	Operational provisions relating to the use of store-and-forward switching nodes within the bureaufax service	22
F.180	General operational provisions for the international public facsimile service between subscribers' stations (telefax)	24
F.182	Operational provisions for the international public facsimile service between subscriber stations with groups 2 and 3 facsimile machines (telefax 2 and telefax 3)	28
F.184	Operational provisions for the international public facsimile service between subscriber stations with group 4 facsimile machines (telefax 4)	29
F.190	Operational provisions for the international facsimile service between public bureaux and subscriber stations and vice versa (bureaufax — telefax and vice-versa)	37
SECTION 2 — <i>Teletex service</i>		
F.200	Teletex service	41
F.201	Interworking between teletex service and telex service — General principles	60
F.202	Interworking between the telex service and the teletex service — General procedures and operational requirements for the international interconnection of telex/teletex conversion facilities	71

Rec. No.		Page
F.203	Network based storage for the teletex service	74
F.220	Service requirements unique to the processable mode number one (PM1) used within the teletex service	78
F.230	Service requirements unique to the mixed mode (MM) used within the teletex service .	83
SECTION 3 — <i>Videotex service</i>		
F.300	Videotex service	89
SECTION 4 — <i>Telematic services, general</i>		
F.350	Application of Series T Recommendations	115
F.351	General principles on the presentation of terminal identification to users of the telematic services	116
F.353	Provision of telematic and data transmission services on integrated services digital network (ISDN)	118
<p><i>Note</i> — F.400 and F.500-series of Recommendations on Message Handling and Directory services respectively are in Fascicle II.6.</p>		
SECTION 5 — <i>Data transmission services</i>		
F.600	Service and operational principles for public data transmission services	123
F.601	Service and operational principles for packet-switched public data networks	126
SECTION 6 — <i>Teleconference service</i>		
F.710	Teleconference service	131
F.721	Basic narrow band videophone service in the ISDN	144
F.730	Service oriented requirements for telewriting applications	148

MODIFICATIONS TO THE F-SERIES

1 *Fascicle II.4*

1.1 The following new Recommendations and Supplements did not appear in Fascicle II.4 of the *Red Book* and were developed during the 1985-1988 Study Period;

Recommendations

F.4	F.75 (the same as F.421, the text is
F.50	found in fascicle II.6)
F.51	F.125
F.73	F.126
F.74	F.127
	F.140

Supplements

No. 2

No. 3

1.2 The following Recommendations and Supplements in Fascicle II.4 of the *Red Book* were revised during the 1985-1988 Study Period:

Recommendations

F.1	F.71
F.30	F.72
F.31	F.80
F.41	F.80 <i>bis</i>
F.42	F.85
F.60	F.110
F.61	F.120
F.70	F.122

Supplement

No. 1

1.3 The following Recommendations have been transferred to the D-series Recommendations and no longer appear in Fascicle II.4 of the *Blue Book*:

Recommendations

F.43	F.67
F.45	F.83
F.66	F.111

1.4 The following Recommendations have been deleted from the F-series and no longer appear in the *Blue Book*:

Recommendations

F.2¹⁾
F.79¹⁾
F.121

1.5 The number of Recommendation F.150 has been changed to F.35, and now appears in Section 3 of Fascicle II.4.

2 *Fascicle II.5*

2.1 The following new Recommendations did not appear in Fascicle II.5 of the *Red Book* and were developed during the 1985-1988 Study Period:

Recommendations

F.171	F.353
F.202	F.600
F.203	F.601
F.220	F.710
F.230	F.721
F.351	F.730

¹⁾ See instead Recommendation C.3 *Instructions for international telecommunication services*, Volume I, *Blue Book*.

2.2 The following Recommendations in Fascicle II.5 of the *Red Book* were revised during the 1985-1988 Study Period:

Recommendations

F.160	F.184 (new number, formerly F.161)
F.162	F.190
F.170	F.200
F.180	F.201
F.182 (new number, formerly § 5 of Rec. F.180)	F.300

3 *New Fascicle II.6*

Fascicle II.6 is a new fascicle in the F-series and contains the following new Recommendations developed during the 1985-1988 Study Period:

Recommendations

F.400	F.420
F.401	F.421 (F.75)
F.410	F.422
F.415	F.500

PRELIMINARY NOTES

1 The Questions entrusted to each Study Group for the Study Period 1989-1992 can be found in Contribution No. 1 to that Study Group.

2 In this Fascicle, the expression "Administration" is used for shortness to indicate both a telecommunication Administration and a recognized private operating agency.

FASCICLE II.5

Recommendations F.160-F.353, F.600, F.601, F.710-F.730

TELEMATIC, DATA TRANSMISSION AND TELECONFERENCE SERVICES¹⁾: OPERATIONS AND QUALITY OF SERVICE

¹⁾ The term "telematic services" is used provisionally.

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**PROTECTION OF THE COMMON NAMES OF
CCITT DEFINED INTERNATIONAL PUBLIC SERVICES**

Resolution No. 13 published in Volume I is reproduced below for the convenience of the reader.

Resolution No. 13

**PROTECTION OF THE COMMON NAMES OF CCITT DEFINED
INTERNATIONAL PUBLIC SERVICES**

(Geneva, 1980)

The CCITT,

considering

- (a) that CCITT has defined, *inter alia*, the international public services "teletex", "telefax" and "bureaufax" in Service Recommendations;
- (b) that those international public services are characterized by complete end-to-end compatibility;
- (c) that it is desirable to use on a worldwide basis for those CCITT defined international public services their respective common name, i.e. "teletex", "telefax" or "bureaufax", to qualify any service provided in that respect as complying completely with the CCITT definitions for the respective international public service in order to guarantee end-to-end compatibility;
- (d) that it is essential to protect the use of the aforementioned common names;

noting

- (a) that within a number of countries, several Recognized Private Operating Agencies (RPOAs) may provide such CCITT defined international public services and may also wish to add further optional user facilities in addition to the respective basic international public service as defined by the CCITT;
- (b) that, for the preceding reason, some RPOAs may wish to use service designations, e.g. XXX/teletex, indicating a combination of a basic international public service as defined by the CCITT with additional optional user facilities;

resolves to request Administrations

- (1) to ensure that any such international public service offered by an Administration be denominated by its respective common name, i.e. "teletex", "telefax" or "bureaufax" and comply completely with the respective CCITT definitions for such service;

(2) to endeavour to protect the common names of the CCITT defined international public services "teletex", "telefax" and "bureaufax", *inter alia* through the communication of those names to the national, regional and international authorities for the registration and administration of trade marks and service marks in order to ensure that the said names be not made the subject of trade marks or service marks or if claimed in an application for the registration of trade marks or service marks be made the subject of a disclaimer;

(3) to ensure that in the case of a combination of any such CCITT defined international public services together with further optional user facilities in addition to that basic service, the trade mark or the service mark for such a combined service offered by any RPOA be always combined with the respective common name of the basic CCITT defined international public service, i.e. "teletex", "telefax" or "bureaufax", and that the latter names, in the case of registration of such a trade mark or service mark, be made the subject of a disclaimer;

(4) to inform the Director of the CCITT continuously about the measures taken with regard to resolves (1) to (3) above;

requests the Director of the CCITT

to compile the information received in respect of such measures and to make this information available on request for consultation by Administrations.

SECTION 1

PUBLIC FACSIMILE SERVICE

Recommendation F.160

GENERAL OPERATIONAL PROVISIONS FOR THE INTERNATIONAL PUBLIC FACSIMILE SERVICES¹⁾

1 General considerations

Considering:

- a) the growing importance of facsimile (see § 2.1) as a means of communication in international relations;
- b) the need of users to have facsimile services (see § 2.5) available at international level for the exchange of documents, whether between subscriber stations or through the intermediary of public stations;
- c) that facsimile services cover a part of the needs not met by other methods of telecommunication;
- d) that, in accordance with the Series T Recommendations, facsimile services may be operated using various methods of transmission and switching;
- e) that the characteristics specified in the relevant Series T Recommendations in respect of standardization of equipment for operating facsimile services promote these services and simplify operational questions;
- f) that the use of universal terms to regulate operating procedures for facsimile services between manual terminals would avoid difficulties of understanding that could arise in relations between users speaking different languages;
- g) that universal terminology would be desirable at international level with regard to facsimile services;

it is important that the Administrations be requested to observe common provisions in respect of the operation of facsimile services in all relations.

¹⁾ See Resolution No. 13 at the beginning of this fascicle.

2 Terminology

2.1 facsimile

F: télécopie

S: facsímil

Reproduction of all forms of graphical, handwritten or printed material, at a distant location of the original material, within the limits and characteristics specified by the relevant CCITT Recommendations.

2.2 facsimile terminal (facsimile machine)

F: terminal de télécopie (télécopieur)

S: terminal facsímil (aparato facsímil)

Machine used for the transmission and/or receipt of documents in facsimile services.

2.3 subscriber's facsimile station

F: poste d'abonné de télécopie

S: estación facsímil de abonado

Equipment made available to a facsimile service subscriber, including a facsimile terminal, access to the appropriate public telecommunication networks as well as connecting and possible additional equipment.

2.4 public facsimile station

F: poste public de télécopie

S: estación facsímil pública

Equipment operated by an Administration in a facsimile bureau open to the public, including a facsimile terminal, access to the telecommunication networks (with possible use of dedicated circuits) as well as connecting and possible additional equipment.

2.5 facsimile service

F: service de télécopie

S: servicio facsímil

Telecommunication service offered for the purpose of transmitting documents between facsimile machines.

2.6 facsimile on private networks

F: télécopie sur réseaux privés

S: facsímil por redes privadas

With regard to facsimile communications on private networks, circuits leased must be used in accordance with the provisions of Recommendation T.10 and the Series D Recommendations.

2.7 international public facsimile service

F: service public international de télécopie

S: servicio facsímil público internacional

A telecommunication service between facsimile stations in different countries. These services may be classified in three categories:

- a) public facsimile service between subscribers' stations (use of a public telecommunication network);
- b) public facsimile service between Administrations' public bureaux (see § 2.8) (use of a public telecommunication network or dedicated circuits);
- c) public facsimile service between Administrations' public bureaux and subscribers' stations, and vice versa (use of a public telecommunication network).

2.8 public facsimile bureau

F: bureau public de télécopie

S: oficina facsimil pública

An Administration's public bureau responsible for accepting, transmitting, receiving and delivering facsimile documents.

3 General characteristics of the facsimile service

3.1 Terminals

3.1.1 Specification and classification of compatible terminals shall be in accordance with:

- a) the relevant Series T Recommendations;
- b) current national legislation.

3.2 Network

3.2.1 The facsimile service may utilize:

- a) the public switched telephone network (PSTN);
- b) the integrated services digital network (ISDN);
- c) the circuit switched public data network (CSPDN);
- d) the packet switched public data network (PSPDN);
- e) dedicated circuits between public facsimile bureaux (Bureaufax service).

4 Restrictions on the use of a facsimile service

4.1 Administrations reserve the right to suspend facsimile services in the circumstances described in Articles 19 and 20 of the *Convention* [1].

4.2 Administrations shall refuse to make facsimile services available to an agency that is known to be organized for the purpose of sending or receiving documents for third parties and for retransmission by any means in order to avoid the payment of the full charges normally levied for such correspondence.

4.3 Administrations shall refuse to make facsimile services available to a client whose activities may be regarded as an infringement of the functions of an Administration in providing a public telecommunication service.

5 Scope

5.1 The provisions set out below shall apply to the operation of public facsimile services via the public telecommunication networks in international relations:

- a) between subscribers' (Telefax) facsimile stations (see Recommendations F.180, F.182 and F.184);
- b) between public facsimile bureaux (Bureaufax: see Recommendations F.170 and F.171);
- c) between public facsimile bureaux and subscribers' facsimile stations, and vice versa (see Recommendation F.190).

5.2 Classes of service

Two classes of facsimile service in each category mentioned in § 5.1 are handled by the Administration. They are:

- a) ordinary private facsimile correspondence;
- b) service facsimile correspondence, including franking privilege telecommunications using facsimile, which, in accordance with Recommendation D.193, may be offered during conferences and meetings of the ITU.

5.3 Service facsimile correspondence is exchanged between the Administrations concerned (see Recommendations F.170, F.180 and the relevant Series D Recommendations).

5.4 Where agreement is reached between Administrations, similar arrangements may be made to those described in Recommendation F.1, §§ D.14 and D.15 (service telegrams), and Recommendation F.60, §§ 2.2.2 and 2.2.3 (service telex calls).

5.5 Service facsimile correspondence may be requested only by persons authorized to do so by their respective Administrations.

5.6 Service facsimile correspondence relating to the official business of the ITU may be exchanged between Administrations and recognized private operating agencies on the one hand and the Chairman of the Administrative Council of the ITU, the Secretary-General of the ITU, the Director of the CCITT, the Director of the CCIR and the Chairman of the IFRB on the other hand.

5.7 Franking privilege facsimile correspondence is considered as service facsimile correspondence and is admitted on a reciprocal and optional basis where consistent with national law.

5.8 Service facsimile correspondence should be made, as far as possible, outside the busiest hours.

6 Quality of service

6.1 The quality of service depends on the normal characteristics of the network used and of the facsimile terminals, in particular their scanning and reproduction parts.

6.2 Terminal-to-terminal quality shall be checked by various measurements. In particular, the quality of the scanning and reproduction functions may be checked:

- a) between manually operated terminals;
- b) between a terminal operated manually and an automatic terminal;
- c) between automatic terminals;

by:

- i) automatic transmission of a test chart to check the reproduction system of the destination terminal;
- ii) transmission of a chart on paper to check the scanning system on the transmitting terminal or the reproduction system of the destination terminal.

The standardized CCITT test chart shall be used for this purpose.

6.3 Administrations shall perform test and measurement services:

- a) to locate faults and to restore service on the public network excluding terminal equipment; or
- b) to locate and to clear faults, including those involving the terminals.

Note — For the Telefax 4 service, see also Recommendation F.184, § 6.

7 Terminal identification

7.1 Identification of terminals is effected following the procedures laid down in the relevant Series T Recommendations. (See also Recommendations F.182, § 4, and F.184, § 5.3.)

8 Terminal implementation

If the transmitted document is not generated from a physical scanner, then the signals appearing across the network interface should be identical to those which would be generated if a hard copy of the document had been physically scanned (see relevant T-Series Recommendations).

Terminals which do not include a physical scanner shall have the ability to accept input from such a scanner.

If the received document is not displayed on paper then the signals appearing across the network interface should be identical to those which would be generated if the received document was being displayed on paper.

Terminals which display documents in “soft” form shall have the ability to output the document to a device which will produce a paper copy of it.

If the received document is displayed in “soft” form e.g. on a visual display unit, it is not necessary for the whole document to be displayed at one time; however, the user must be able to display the other parts of the document e.g. by scrolling. (Technical requirements for the display of documents in “soft” copy form are for further study.).

9 Enquiries and complaints

9.1 Enquiries and complaints services shall be provided by Administrations.

Reference

- [1] *International Telecommunication Convention*, Nairobi, 1982.

**OPERATIONAL REQUIREMENTS OF AN INTERNATIONAL
STORE-AND-FORWARD FACSIMILE SWITCHING SERVICE (COMFAX)**

1 Introduction

1.1 With the development of equipment that provides store-and-forward facilities for facsimile service, and that permits inter-operation between dissimilar facsimile terminals, there is a requirement to ensure that such systems should have the capability of interworking with each other.

1.2 It is therefore necessary to define the areas in which common procedures or facilities are essential to provide a standardized international service which may be accessed by a wide variety of terminals and which can employ a wide variety of networks for access and interworking purposes.

1.3 The service would be provided for registered users for the origination of traffic. However, to make the service attractive to potential users, the transmission of messages could be allowed to any facsimile terminal (preferably capable of automatic reception), connected to the public telephone network, the public data networks or by direct connection from the facsimile switching node.

2 Scope

2.1 This Recommendation defines the basic operational requirements of an international store-and-forward facsimile switching service, whereby switching and protocol conversion facilities are provided by Administrations using computer-controlled store-and-forward nodes.

2.2 As a national option, input from character terminals, for output to facsimile terminals, may be provided. Optionally, the service should be capable of receiving messages from a domestic or international Telemessage service (telex, Teletex and Videotex) for the transmission and/or delivery of messages in a facsimile mode.

2.3 Technical requirements of the service are not covered in this Recommendation. Facsimile terminals are covered in the Series-T (see also Recommendations F.180, § 1.3 and F.161).

2.4 Tariff and accounting aspects will be covered in D-series Recommendations.

3 General requirements

3.1 The service shall offer a range of store-and-forward facilities using message switching principles.

3.2 The service shall be capable of converting the transmission formats of a range of normally incompatible document facsimile terminals so that these can communicate with each other. The requirement is that facsimile terminals conforming to CCITT Group 3 and Group 4 standards should be acceptable. As a national matter, Group 2 access may be optionally offered.

3.3 The service shall be capable of accepting input from character-orientated terminals, for transmission to a facsimile terminal.

3.4 Customers shall gain access to a switching node either by dialling over the PSTN, or a data network, or by direct connection.

3.5 Customers shall receive transmissions from the node to the customer's facsimile terminal either by the switching node dialling over the PSTN or a PDN or by a direct connection.

3.6 Messages may be transmitted between store-and-forward nodes. Each node shall be uniquely identified by an identification code. The numbering of nodes is for further study.

3.7 Communications between nodes internationally shall be either by automatic dialling over the PSTN or a PDN or by a direct connection.

3.8 Access to an ISDN store-and-forward switching node is for further study.

4 Quality of service

4.1 The quality of service depends on the normal characteristics of the network used and of the facsimile terminals, in particular their scanning and reproduction parts.

4.2 Switching nodes should provide a means of assessing terminal-to-node quality.

In particular, the quality of the scanning and reproduction functions may be checked between:

- a) manually operated terminal and the switching node;
- b) automatic terminal and the switching node;

by:

- i) automatic transmission of a test chart by the switching node to check the reproduction system of a receiving terminal;
- ii) transmission of a test chart on paper to check the scanning system on the transmitting terminal.

The standardized CCITT test charts, Nos. 2 and 3, per CCITT Recommendation T.21 shall be used for this purpose.

4.3 Administrations shall perform test and measurement services:

- a) to locate faults and to restore service on the public network, excluding terminal equipment; or
- b) to assist users to locate and clear faults, including those involving the terminals.

4.4 *Terminal identification*

Identification of terminals is affected by the procedures laid down in relevant Series-T Recommendations.

4.5 *Error protection*

4.5.1 *Between Group 3 terminals and a switching node*

For further study.

4.5.2 *Between Group 4 terminals and a switching node*

To ensure integrity, error protection will be provided by Group 4 control procedures (see Recommendations T.62 and T.70).

4.5.3 *Between switching nodes*

For further study.

4.6 *International routes*

4.6.1 *Public switched telephone network*

Communications between international nodes shall operate at a data rate of 9.6 kbit/s, with fallback rates of 7.2, 4.8 and 2.4 kbit/s.

4.6.2 *Circuit switched public data network*

Store-and-forward facsimile nodes connected to a circuit switched data network shall operate in accordance with user classes of service 6 or 7 as defined in Recommendation X.1.

4.6.3 *Packet switched data network*

Store-and-forward facsimile nodes connected to a packet switched data network shall operate in accordance with user class of service 10 or 11 as defined in Recommendation X.1.

4.6.4 Store-and-forward facsimile nodes connected to an ISDN shall operate in accordance with user class of service 30 as defined in Recommendation X.1.

4.7 *Duration of service*

4.7.1 The national and international store-and-forward facsimile switching facilities shall be open continuously.

4.7.2 Receiving terminals shall, in principle, be available to accept calls continuously.

4.8 *Observations on the quality of service*

Administrations shall make observations to evaluate the quality of the store-and-forward facsimile switching service nationally as required and internationally at least once each year.

4.9 *Enquiries and complaints*

Enquiries and complaints services shall be provided by administrations. Unless bilaterally agreed otherwise between the administrations concerned, customers should address any enquiries or complaints to their own administration.

4.10 *Conversion rules*

4.10.1 Every S&F node should have the conversion facilities to realize communication between the mandatory mode of G3 and that of G4, class 1. Other conversion modes can be optional.

4.10.2 Information on conversion modes of the node on the recipient's side and information on subscriber terminal attributes should be sent to the node on the originator's side. The possibility of conversion should be examined at the node on the originator's side. Here also, requests not to convert documents should be handled.

4.10.3 The node on the originator's side should decide which node is to be used for converting documents by considering information on the conversion modes of both nodes and on subscriber terminal attributes.

5 **Service facilities**

5.1 *Broadcast transmissions*

Customers can register lists of destinations to which they regularly transmit identical messages, and can then initiate transmission to those destinations by input of a single address code. The system need not necessarily transmit a message to the required destinations simultaneously. Systems should be able to accept at least 40 destinations for a given message.

5.2 *Multi-address transmissions*

Customers can send the same message to many locations by entering the destination addresses sequentially before transmitting the message. The multi-address facility differs from the broadcast facility in that it is not necessary to specify destination addresses in advance. Broadcast facility would therefore be used for transmitting multi-address messages on a regular basis; multi-address facility would be used for occasional multi-destination messages. Systems should be able to accept at least 40 destinations for a given message.

5.3 *Abbreviated addressing*

5.3.1 Abbreviated address codes can be assigned to frequently called destination numbers; these are, in effect, broadcast lists containing a single entry.

5.3.2 A customer shall be able to retrieve the abbreviated address codes assigned to destination numbers by using a terminal for verification purposes. As an optional facility the customer, following validation as a registered user, may be able to add, delete or amend entries in an existing broadcast list.

5.3.3 Based on bilateral agreement, a customer shall be able to activate abbreviated codes in the node to which he is connected and in a node to which his call is routed by the originating node. In such cases, the customer will provide the originating node with routing instructions which specify the destination node and code for the abbreviated address stored in the destination node.

5.4 *Hold for delivery requested by the originator*

The node shall enable originators to send documents into the system that will not be delivered automatically, but will remain stored in the system.

The system shall inform the recipient that the message being sent to him is being held in the facility.

The receiving customer can retrieve the message whenever desired by inputting the appropriate request code and identification information.

5.5 *Hold for delivery requested by the recipient*

The system shall enable recipients to receive documents from the node that will not be delivered automatically, but will remain stored in the system.

Before accepting the message from the originator, the system shall inform the originator that a message will be held for delivery in the node.

The receiving customer can retrieve the message from the originator when desired by inputting the appropriate request code and identification information.

5.6 *Deferred delivery by the recipient*

The destination customer has the option of requesting that the delivery of all documents be deferred until a specified time, by input of a request code, followed by the delivery time. Before accepting the message from the originator, the system shall audibly inform him that the message will be held for delivery in the facility.

5.7 *Deferred delivery by the originator*

The originator has the option of requesting on a per document basis that the delivery of a document be deferred and take place as close to, but not before, the date and time specified as possible, by input of a request code followed by the required delivery time.

5.8 *Multi-page facility*

5.8.1 When transmitting a facsimile document of more than one page during a single session, the initial dialogue between the originating customer and computer establishes the information necessary to link the pages of a multi-page document.

5.8.2 For inputs to a facsimile store and forward node from a text terminal, the text message originator may transmit a code to the node within the message text to indicate that a page break should occur at that point. Additionally, the node shall automatically insert page breaks where otherwise the text would have exceeded a normal page length.

5.9 *Automatic reception*

The destination node shall recognize the tones generated by terminals capable of unattended automatic reception and, upon recognition of these tones, shall transmit the messages.

To ensure the most effective handling and delivery of facsimile documents it is considered preferable that the acceptance of messages is conditional upon the destination terminal having automatic reception. This should be a mandatory requirement for customer registration to the service. The delivery of messages to terminals having manual reception would lead to operational and technical difficulties and Administrations cannot be held responsible for possible non-delivery in these circumstances.

5.10 *Date, time and originator's identity*

The originating node shall include reference information on all documents. This information should be composed of date, time and calling terminal identification. Called terminal identification may be prepared as an option. Ideally, this reference information should appear on the first line of each page of the document.

The time mentioned above should be defined as the time that the reception of a message from an originating terminal has been completed.

To avoid any misunderstanding on the part of the recipient as to the originator of the message, the store and forward node ID could consist of alpha characters only. The originator ID as received by the node could be shown below the store and forward node ID, prefixed by "Message from:", which could be automatically generated by the node. By bilateral agreement these details, including date, time and a message reference number, could be delivered to the recipient as a separate covering page, as per the following example:

REF: LDN/ROME AHB082 2207 1987/1230 GMT
BTI COMFAX SERVICE
Message from: +44 1 404 5707

The above covering page generated by the node would be a non-chargeable item.

5.11 *Recall attempts*

If a destination terminal is busy, it shall be recalled at a certain interval during a maximum of four hours. The method and timing of making recall attempts is a national matter except where an international connection is involved. In that case, re-attempts should be made at 20¹⁾-minute intervals over a maximum period of 4¹⁾ hours.

When it is impossible for a destination terminal to receive messages due to the absence of recording paper, lack of power supply or the terminal being out of order, a non-delivery advice should be sent to the originator after confirmation of this situation.

When the originator receives the non-delivery advice, the message shall be deemed "non-deliverable".

5.12 *Closed user group*

Exchange of communication is limited to a group of terminals designated by a subscriber and no calls into or out of the closed user group are permitted. However, outgoing access from the closed user group may be provided at the discretion of the controlling Administration.

5.13 *Information retrieval*

Information may be stored in a node in advance which can be retrieved by any customers through dialling the appropriate number. Such information could be weather reports, stock market quotes, etc.

6 **Operational requirements of nodes**

6.1 Sufficient information shall be stored in the node to enable charging to be carried out. This information shall include, but not necessarily be limited to the following:

- date/time of submission
- date/time of delivery
- volume of data transmitted
- transmission holding time.

6.2 After the destination node has successfully completed the delivery of a message to the destination terminal, the destination notifies the originating node of the completion of the transmission.

6.3 If the destination node cannot deliver after recalls are attempted, it shall notify the originating node of this fact along with the call identification information.

6.4 Facsimile messages may be sent internationally by the originating node to distant customers in one of the following ways:

6.4.1 From the originating node to the destination node, and then to the customer.

The need for the originating node to verify connectivity of the distant customer's terminal at the destination node before accepting the message from the originating customer is for agreement between Administrations on a bilateral basis.

¹⁾ Parameters for further study.

6.4.2 From the originating node directly to a distant customer in those cases where a node does not exist in the country concerned. This is subject to bilateral agreement.

7 User assistance

If a customer encounters difficulty in making a facsimile call, the input of a specific code gives access to an assistance operator at the origin node. Also, if an access procedure error occurs more than three times when setting up a call, the caller shall be automatically transferred to an assistance operator. The operator has equipment which can be used to obtain information and to identify procedural errors, and to give information on the progress of message delivery.

Alternatively, the node may provide coded information indicating operating errors or equipment faults. Registered users will use a manual to investigate the fault. The manual should provide appropriate information in an easily understood form, enabling the user to locate information and rectify errors without the need to contact administration staff on the majority of occasions. The user manual will also provide appropriate details to enable the user to contact an enquiry point, at which administration staff will more fully investigate the fault.

8 Non-delivery advice

If a destination terminal is busy or out of order in spite of recalling, a non-delivery message shall be transmitted to the originator's terminal.

The non-delivery message should be composed of a non-delivery notification (NDN), the originating date and time, the destination identification and an indication of whether the whole or part of the document was not delivered.

9 Delivery confirmation

As an extra chargeable service, if a customer requests delivery confirmation this information will be transmitted to the customer when available.

10 Call establishment procedures

10.1 *Originating a call*

After gaining access to the switching node, the following information is provided to the node to establish a facsimile call.

10.1.1 *Destination customer's identity*

10.1.2 *Originating customer's identity*

The method of entry shall be at the discretion of the Administration. Further study is required on whether additional information is required.

10.2 *Receiving a call*

10.2.1 The store-and-forward system shall be able to handle calls that are automatically answered.

10.2.2 The destination customer's identity will be provided to the node.

10.2.3 Administrations may also provide for inaudible automatic reception over the public switched telephone network.

11 Customer information

11.1 *Directories*

A customer should provide all information required to be included in a directory for this service.

11.2 *Directory entries*

For further study.

12 **Access to facsimile message handling facilities**

Customers of the store-and-forward facsimile switching service should have access to the services offered by message handling facilities.

Recommendation F.170

OPERATIONAL PROVISIONS FOR THE INTERNATIONAL PUBLIC FACSIMILE SERVICE BETWEEN PUBLIC BUREAUX (BUREAUFAX) ¹⁾

1 General provisions

1.1 In accordance with the general conditions of Recommendation F.160, Administrations may operate an international public facsimile service between public bureaux²⁾ provided that terminals are compatible or compatibility is ensured by the network from the standpoint of the characteristics specified in the relevant Recommendations and in accordance with bilateral or multilateral agreements.

Note — The operation of the international public facsimile service between public bureaux and subscriber stations and vice versa is covered by Recommendation F.190.

1.2 Facsimile terminals may be manual, have automatic operation of the called station or be fully automatic. The operational procedures applicable in relations between the different types of stations are set out in the relevant Recommendations in the T-Series.

2 Conditions for acceptance

2.1 Documents for facsimile transmission shall normally be accepted up to a maximum size ISO A4 (210 × 297 mm). Exceptionally, documents of a different size may be accepted by bilateral agreement between those administrations concerned, for example the North American "legal" size (216 × 356 mm).

2.2 For faithful transmission, contents of documents must leave minimum blank margins of 10 mm on all four sides. With regard to formats other than A4 which have been bilaterally agreed, the margins to be left on all four sides of the documents shall be 15 mm in the case of North American formats.

2.3 Where the area to be transmitted exceeds the area reproducible by facsimile, a document may be divided by the sender.

2.4 Care must be taken to ensure that there is no loss of the reproducible part transmitted.

2.5 To ensure the satisfactory facsimile transmission of a document, senders should be advised not to submit documents with insufficiently sharp contrast or inadequate definition.

2.6 If the customer presents a document containing colours of half-tones, he should be informed that, with existing equipment, faithful reproduction at the distant end will not be possible as printing will be in black and white only.

2.7 If, after having been informed that the quality of the document to be transmitted is unsuitable for satisfactory facsimile transmission (this includes all photographs and documents in colour), the sender of the document still insists on its transmission, it shall be accepted by the public bureau only at the sender's own risk. In this event the service instruction RISQUES EXPEDITEUR (abbreviated RE) must be inserted in box 6 on the transmittal sheet. When the service instruction RE is not applicable to the whole document, the relevant pages must be designated in box 6 of the transmittal sheet, for example: "RE 3 + 5 + 12".

¹⁾ See Resolution No. 13 at the beginning of this fascicle.

²⁾ Public bureaux may be offices of Telecommunication or of Postal Administrations.

2.8 Administrations shall reserve the right to refuse the transmission of documents in the circumstances described in Articles 19 and 20 of the ITU Convention [1] and in Article 36 of the Universal Postal Union Convention [2].

3 Composition of a facsimile transmission

3.1 Every facsimile transmission shall include

- a transmittal sheet as the first page, in accordance with § 3.2, and
- a customer's document in accordance with § 3.4.

3.2 Transmittal sheet

3.2.1 The transmittal sheet must permit the identification of the following information:

- 1) originating office and optional, originating number of the document;
- 2) international transmitting bureau (sending office);
- 3) document sending number;
- 4) number of pages (excluding the transmittal sheet, except in those cases where the lower portion of the sheet carries a message for the addressee);
- 5) date and, if necessary, time of acceptance;
- 6) service instruction RE (Risk of Sender) in accordance with § 2.7, if applicable;
- 7) delivery mode, in coded form, and other service instructions, if any and the call number for delivery modes E, F, G and H;
- 8) the addressee's address containing all the particulars necessary to ensure the routing and delivery of the facsimile document without enquiries or requests for information. As a general rule, it should indicate:
 - i) the designation of the addressee;
 - ii) his full postal address including, if it exists, the postal code;
- 9) sender's address (including, if it exists, the postal code) and, if available, his telephone, telex or Teletex number.

Note – Items 1) and 9) may be omitted from the transmittal sheet if this information can be traced from other information provided elsewhere on the form.

3.2.2 The various parts of the transmittal sheet shall be contained within ISO format A5 (210 × 148 mm). They may also be located in the upper half of a sheet of ISO format A4 so that the sender can use the lower half to write a document.

Note – If a North American format is used for the transmittal sheet, the width of the sheet will be 216 mm (instead of 210).

3.2.3 The various parts of the transmittal sheet shall be designated at least in French or in English or in Spanish. Other languages may be added by Administrations.

3.2.4 Figure 1/F.170 shows the measurements, locations and designations of the various parts of the transmittal sheet.

3.3 Customer's document

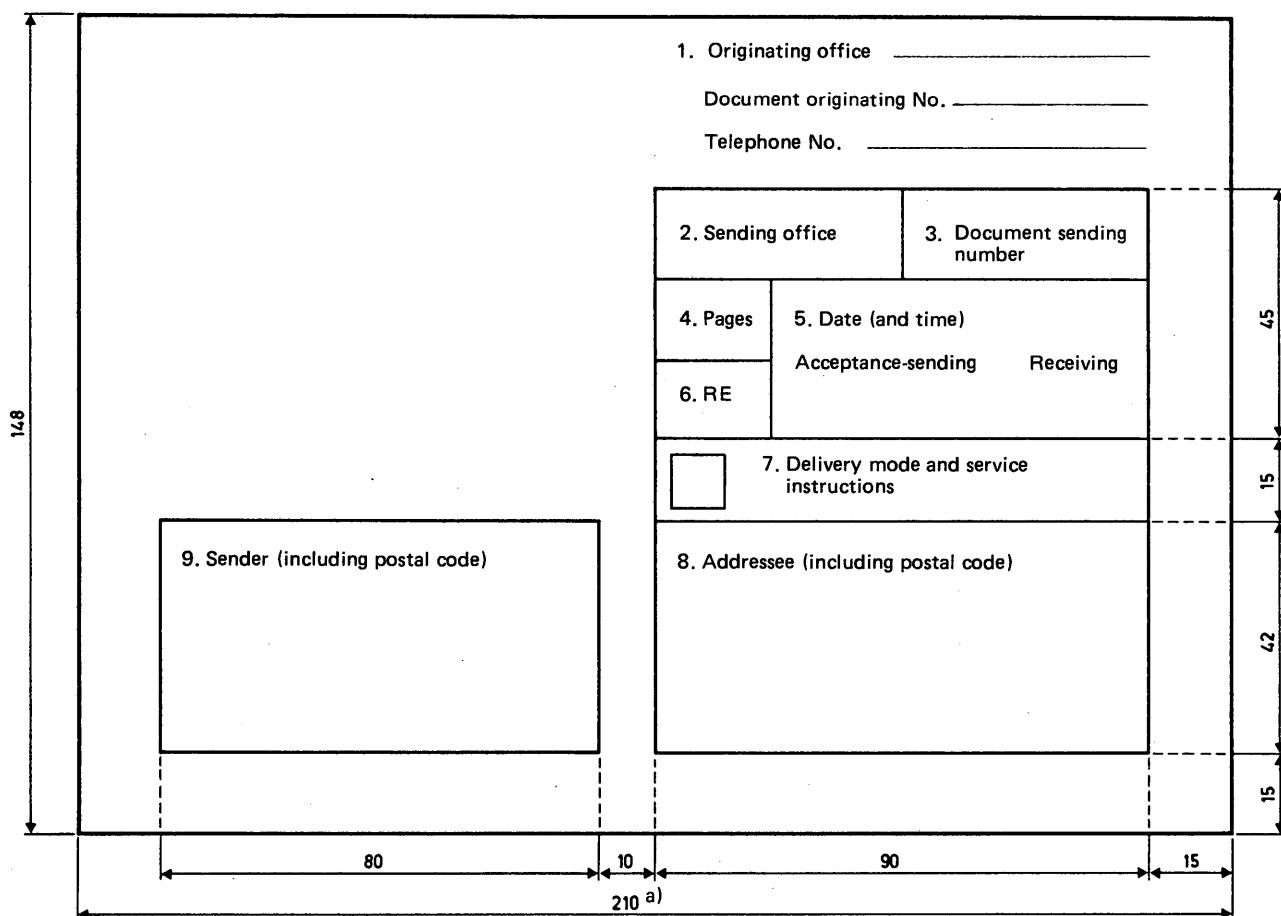
3.3.1 The document for facsimile transmission can contain written or printed matter, drawings, or any other graphic, subject to the limitations referred to under conditions for acceptance in § 2 above. A signature is optional.

4 Acceptance

4.1 A document for facsimile transmission may be handed in at the counter of a public bureau. Other means of acceptance and the modes of returning the original to the sender after transmission may be designated by the Administration responsible for the public bureau.

4.2 The sender may use transmittal sheets that consist of the A4 version in accordance with § 3.2.2, if available, for writing out a document in the lower half of the sheet.

4.3 The sender of a facsimile document shall be required to establish his identity if called upon to do so by the accepting public facsimile bureau.



CCITT-69970

a) North American standard: 216 mm

Note 1 – The information in boxes 1 and 9 need not necessarily be transmitted and may be inserted elsewhere on the sheet. When the information in box 9 (sender) is given on the front of the sheet, it must appear in the left-hand part.

Note 2 – In box 5, the time and words “acceptance-sending” and “receiving” are optional.

Note 3 – Concerning box 7, the following delivery modes may be supplied on the basis of agreements between the terminal Administrations concerned:

A	Normal delivery	Courrier ordinaire
B	Special delivery	Exprès
C	EMS (Express Mail Service)	EMS (courrier accéléré)
D	Counter collection	Retrait au guichet
E	Counter collection with telephone advice to the indicated call number	Retrait au guichet avec avis téléphonique au numéro indiqué
F	Telefax (with call number and CCITT group when known)	Téléfax (avec numéro d'appel et, s'il est connu, groupe du CCITT)
G	Counter collection with telex advice to the indicated call number	Retrait au guichet avec avis télex au numéro indiqué
H	Counter collection with teletex advice to the indicated call number	Retrait au guichet avec avis télételex au numéro indiqué

Other modes of delivery may be agreed between Administrations.

FIGURE 1/F.170

Measurements, locations and designations of the various parts of the transmittal sheet in accordance with § 3.2

5 Transmission

5.1 In principle, documents shall be transmitted by a public bureau in the order in which they are accepted, except where a priority system is established.

5.2 At the request of the transmitting bureau, on a case by case basis and immediately after the transmission, the receiving public bureau will acknowledge the satisfactory receipt of a facsimile document.

5.3 A transmission prevented by adverse conditions shall be repeated as soon as conditions allow.

In case of unsatisfactory receipt, the receiving public bureau should indicate service instruction "RPT PAGE ..." in box 7 of the transmittal sheet.

5.4 If a facsimile document received at the international receiving public facsimile station is unsatisfactory after a maximum of three attempts, in principle no further attempts shall be made. The sender will be informed of the situation, by the transmitting bureau.

5.5 If transmission cannot be effected by the international transmitting public bureau within 4 hours of acceptance by the public facsimile bureau, the sender should be informed as soon as possible.

5.6 On no account will the international receiving public bureau request repeat transmissions in an attempt to improve the quality of facsimile reproduction of pages designated as unsuitable by the service instruction RE.

6 Delivery

6.1 The Administrations determine the method of delivery they use for the facsimile documents they receive, according to Figure 1/F.170, Note 3, of the present Recommendation. The methods of delivery used by each Administration should figure in the Bureau fax Table (see Section 11 below).

6.2 The facsimile documents received by a destination public bureau are, as far as possible, delivered to the addressee according to the method of delivery indicated in box 7 of the facsimile transmittal sheet.

6.3 The receiving public facsimile bureau shall, if required, record the date and time of receipt and the method of delivery of each facsimile document.

6.4 Facsimile documents should be delivered to the addressee within the following times from the moment when the receiving public bureau is able to process the documents received (the hours when the receiving public bureau is closed are not taken into account for delivery times):

- | | |
|--------------------------------|---|
| Method of delivery A: | – ordinary postal service times; |
| Method of delivery B: | – places of delivery having a bureau fax bureau: 4 hours; |
| | – places of destination without a bureau fax bureau: as provided by the Administration responsible for the receiving bureau fax bureau; |
| Method of delivery C: | – processing by the receiving bureau before 1200 noon on working days: delivery the same day; |
| | – processing by the receiving bureau after 1200 noon on working days: delivery the next working day; |
| Method of delivery D: | – collection from the counter one hour after processing by the receiving bureau; |
| Method of delivery E, F, G, H: | – the addressee is called within one hour. If the public bureau cannot reach the addressee within three hours, the destination Administration may apply another method of delivery, to deliver the facsimile document to the addressee as soon as possible. |

6.5 The addressee of a facsimile document must establish his identity if required to do so by the destination public facsimile bureau.

6.6 The addressee of a facsimile document with the service instruction RE in accordance with § 2.7 above shall be obliged to accept the quality of facsimile reproduction offered.

6.7 When a facsimile document cannot be delivered to the addressee, the destination Administration must advise the international transmitting office of the origin Administration, giving the reason for non-delivery. Box 7 of the Bureau fax transmittal sheet can be used to this effect. The Administrations can agree to transmit this information through other telecommunication services like Telex, Teletex, etc.

7 Service facsimile correspondence

7.1 By agreement between Administrations, service facsimile correspondence may be exchanged between the Administrations concerned for the purposes mentioned below:

- to exchange communications between the Administrations concerned for the efficient operation of the Bureau fax service as necessary, including communications concerning enquiries or claims from customers in connection with the Bureau fax service;
- to exchange communications between the Administrations concerned in connection with other telecommunication services provided mutually by these Administrations, in particular urgent communications that cannot be effected by other telecommunication means, e.g. by international telex or telegram services, because they contain diagrammatic material or other material where it is important for the original to be exactly reproduced.

Note – The indication **SERVICE** should be clearly shown on the transmittal sheet.

7.2 The Administrations should reply to the requests for information and claims by correspondence within 15 days of receipt of the request.

8 Archives

8.1 The maintenance of archives shall be at the discretion of the individual Administrations concerned which will decide on the most suitable arrangements to answer any subsequent queries, in particular on the international accounts.

9 Charging, refunds and accounting

9.1 Charging principles, refund of charges and international accounting for the transmission of documents in the international public facsimile service between public bureaux are governed by Recommendations, agreements and/or conventions such as are given in CCITT Recommendation D.70.

10 Cancellation at the request of the sender

10.1 Where permitted by the Administration concerned, the sender of a facsimile document, or his authorized representative, may, upon establishing his identity or authority, cancel his document provided its international transmission has not begun.

10.2 In the case of multipage facsimile documents, one or more pages may be cancelled if their international transmission has not yet begun. The transmitting public bureau must then amend accordingly the number of pages cited on the transmittal sheet and request the receiving public bureau to do likewise.

This amendment goes at the end of the transmission; through a new transmittal sheet, giving the correct number of pages effectively transmitted. This second transmittal sheet shall contain the necessary information to identify the sheet initially transmitted.

10.3 At the sender's request, pages already received by the receiving public facsimile bureau may be either delivered to the addressee or destroyed according to the instructions of the sender.

11 Bureau fax Table

11.1 Each Administration participating in the Bureau fax service should supply information required for the Bureau fax Table to the ITU Secretariat, either directly or through the International Bureau of the UPU. All subsequent amendments should be communicated by the Administrations concerned in the same manner as they arise.

11.2 This table contains the information required for routing traffic as well as useful information concerning other operational aspects of the service provided by the Administration concerned.

11.3 The ITU General Secretariat publishes the Bureau fax Table with information received from the Administrations, while any subsequent amendments appear in the ITU Operational Bulletin.

12 Bureaufax service via the public switched telephone network, via a public data network, via the ISDN or via facilities dedicated to Bureaufax service

12.1 The special provisions applicable in the case of international public facsimile service via the public switched telephone network are normally those indicated in Recommendation F.182.

12.2 Special provisions applicable in the case of international public facsimile service via a public data network are being studied.

12.3 Special provisions applicable in the case of international public facsimile service via the Integrated Services Digital Network are for further study.

12.4 Special provisions applicable in the case of international public facsimile service via dedicated circuits are for further study.

12.5 Special provisions applicable in the case of international public facsimile service using store-and-forward switching facilities are those indicated in Recommendation F.171.

12.6 Special provisions applicable in the case of international public facsimile service using MH services are for further study.

ANNEX A
(to Recommendation F.170)

List of expressions for use in the operation of facsimile services

English	French	Spanish	Local language
1. <i>Identification of facsimile station</i>	1. <i>Identification du poste de télécopie</i>	1. <i>Identificación de la estación facsimil</i>	
1.1 Public facsimile station ... here.	1.1 Ici le poste public de télécopie de ...	1.1 Aquí la estación facsimil pública de ...	
1.2 Subscriber's facsimile station ... here.	1.2 Ici le poste d'abonné de télécopie ...	1.2 Aquí la estación facsimil de abonado ...	
1.3 Who are you?	1.3 Qui êtes-vous?	1.3 ¿Con quién comunico?	
1.4 Give your call number in ... (language).	1.4 Donnez votre numéro d'appel en ... (langue)	1.4 Indique su número de llamada en ... (idioma)	
2. <i>Transmission/reception</i>	2. <i>Transmission/réception</i>	2. <i>Transmisión/recepción</i>	
2.1 I have a facsimile document for you.	2.1 J'ai une télécopie à vous transmettre	2.1 Tengo un documento facsimil para usted	
2.2 Are you ready to receive?	2.2 Etes-vous prêt pour la réception?	2.2 ¿Está usted listo para recibir?	
2.3 I am ready to receive.	2.3 Je suis prêt pour la réception	2.3 Estoy listo para recibir	
2.4 Are you ready to send?	2.4 Etes-vous prêt pour la transmission?	2.4 ¿Está usted listo para transmitir?	
2.5 I am ready to send.	2.5 Je suis prêt pour la transmission	2.5 Estoy listo para transmitir	
2.6 Please switch over to facsimile machine.	2.6 Veuillez commuter sur «télécopieur»	2.6 Por favor, pase a aparato facsimil	
2.7 I am switching over to facsimile machine.	2.7 Je commute sur télécopieur	2.7 Paso a aparato facsimil	
2.8 How many pages in the facsimile document?	2.8 Combien de pages comporte la télécopie?	2.8 ¿Cuántas páginas comprende el documento facsimil?	
2.9 The facsimile document consists of ... pages.	2.9 La télécopie comporte ... pages	2.9 El documento facsimil comprende ... páginas	
2.10 Transmission speed: ... minutes.	2.10 Vitesse de transmission: ... minutes	2.10 Velocidad de transmisión: ... minutos	
2.11 Have you finished?	2.11 Avez-vous terminé?	2.11 ¿Ha terminado?	
2.12 I have finished.	2.12 J'ai terminé	2.12 He terminado	
2.13 We can terminate the call.	2.13 Nous pouvons couper la communication	2.13 Podemos cortar la comunicación	
3. <i>Transmission quality and irregularities</i>	3. <i>Qualité de transmission et irrégularités</i>	3. <i>Calidad e irregularidades de transmisión</i>	
3.1 Facsimile document well received.	3.1 Télécopie bien reçue	3.1 Documento facsimil bien recibido	
3.2 Facsimile document badly received, repeat in full.	3.2 Télécopie mal reçue, redonnez tout	3.2 Documento facsimil mal recibido, repita todo	
3.3 Facsimile document badly received, repeat page(s) ...	3.3 Télécopie mal reçue, redonnez page(s) ...	3.3 Documento facsimil mal recibido, repita la(s) página(s) ...	
3.4 Bad connection, will call you back.	3.4 Communication mauvaise, je vous rappelle	3.4 Mala conexión, le llamo de nuevo	
3.5 Bad connection, am cutting off, call me back.	3.5 Communication mauvaise, je coupe, appelez-moi	3.5 Mala conexión, voy a cortar, llámame de nuevo	
3.6 My facsimile machine is defective.	3.6 Mon télécopieur est défectueux	3.6 Mi aparato facsimil está defectuoso	
4. <i>Routing</i>	4. <i>Acheminement</i>	4. <i>Encaminamiento</i>	
4.1 Please route facsimile document to ...	4.1 Veuillez acheminer la télécopie sur ...	4.1 Por favor, encamine el documento facsimil a ...	
4.2 I cannot accept the facsimile document.	4.2 Je ne peux accepter la télécopie	4.2 No puedo aceptar el documento facsimil	
4.3 Can you accept traffic for ...?	4.3 Pouvez-vous accepter le trafic pour ...?	4.3 ¿Puede usted aceptar tráfico para ...?	
4.4 Routing error.	4.4 Erreur d'acheminement	4.4 Error de encaminamiento	
5. <i>Miscellaneous</i>	5. <i>Divers</i>	5. <i>Expresiones varias</i>	
5.1 Tell us what to do.	5.1 Dites-nous que faire	5.1 Díganos que hay que hacer	
5.2 Wait a moment.	5.2 Attendez un instant	5.2 Espere un momento	
5.3 Find somebody who speaks ... (language).	5.3 Passez-moi une personne parlant ... (langue)	5.3 Póngame con alguien que hable ... (idioma)	
5.4 I am giving you someone who speaks ... (language).	5.4 Je vous passe une personne parlant ... (langue)	5.4 Le pongo con una persona que habla ... (idioma)	
5.5 I cannot understand you.	5.5 Je ne vous comprends pas	5.5 No le comprendo	
5.6 Please call me by telex at number ...	5.6 Veuillez m'appeler par télex au numéro ...	5.6 Por favor, llámame por télex al número ...	

References

- [1] *International Telecommunication Convention*, Nairobi, 1982.
- [2] *Universal Postal Union Convention*, Hamburg, 1984.

Recommendation F.171

OPERATIONAL PROVISIONS RELATING TO THE USE OF STORE-AND-FORWARD SWITCHING NODES WITHIN THE BUREAUFAX SERVICE

1 General provisions

1.1 In accordance with Recommendations F.160 and F.170, Administrations may operate an international public facsimile service between public bureaux. Additionally, in accordance with Recommendation F.190, Administrations may operate a service between public bureaux and private subscribers' stations.

1.2 In the bureaufax service, it is not uncommon for the transmitted document to be scanned and transmitted several times as it progresses from the office of origin to the office of destination. With each rescan and retransmission, the quality of the document, as finally delivered to the addressee is progressively degraded. By the replacement of manual retransmission practices with switching nodes, employing store-and-forward techniques, document quality may be preserved. Quality may even be improved over current transmission practices through the use of error handling techniques between nodes and the use of data networks, rather than the telephone network, as the transmission medium.

1.3 This Recommendation states the operational provisions peculiar to the bureaufax service when store-and-forward facsimile switching nodes are employed within the international transmission of documents.

2 Conditions of acceptance

2.1 Documents for transmission within the bureaufax service and between subscriber stations and public bureaux shall conform to § 2 of Recommendation F.170.

3 Composition of a facsimile transmission

3.1 Every facsimile transmission shall include a transmittal sheet and the customer's document as defined in § 3 of Recommendation F.170.

4 Acceptance

4.1 *Acceptance at a public bureau*

The acceptance of documents at the counter of a public bureau will conform to § 4 of Recommendation F.170.

4.2 *Acceptance from subscribers' stations*

4.2.1 A document for delivery through the bureaufax service may be accepted directly from the subscriber's station into store and forward node in the country of origination.

4.2.2 The customer will access the store and forward node in conformance with the provisions of Recommendation F.162. At the discretion of the administration in the country of origin, the customer must be a registered user of the service.

4.2.3 The Administration in the country of origin will provide users of the service with the information necessary to route the document through the store and forward node, and any interconnected store and forward node, to the appropriate public bureau in the country of destination. The addressing of such facsimile messages should use abbreviated dialling codes rather than explicit telephone numbers for the facsimile terminals in the destination bureau.

4.2.4 The correct addressing of the facsimile message will be the responsibility of the originating subscriber.

4.2.5 As for transmissions originating from a public bureau, messages entered into the bureaufax service by a subscriber must contain a transmittal sheet, in accordance with F.170, § 3.2, as the first page. The Administration in the country of origin will ensure that transmittal forms are available to its subscribers.

4.2.6 Acceptance of the facsimile document by the node will constitute acceptance into the bureaufax service.

4.2.7 Facsimile documents to be entered into the bureaufax service may, optionally, be accepted from text terminals in cases where the node can provide the necessary conversion to the appropriate facsimile format. In such cases, the transmittal sheet may be generated either by the originating terminal or by the node.

5. Transmission

5.1 International bureaufax transmissions may involve store and forward switching nodes, typically at gateway locations, in three different ways:

- nodes in both the country of origin and country of destination,
- node located in the country of origin,
- node located in the country of destination.

In any case, each node will be programmed with abbreviated codes for delivering documents to inland public bureaux. These abbreviated codes will be made available to other administrations for the efficient routing of traffic.

5.1.1 *Nodes in both countries*

5.1.1.1 Facsimile documents will be entered into the node both by public bureaux and by private subscribers.

5.1.1.2 Documents will be transmitted between nodes in accordance with Recommendation F.162, § 4.6. Wherever possible, the routing between nodes will employ networks designed specifically for the transmission of data to preserve a maximum quality of delivered document. This is important since the end-to-end transmission may still involve multiple scans and retransmissions.

5.1.1.3 If the quality of the document received at the public bureau in the country of destination is not satisfactory, the receiving bureau will contact the assistance operator at the node in the country of destination, who, following confirmation that the document held in store in the node is acceptable, will initiate a retransmission.

5.1.1.4 If the quality of the document held in store by the node in the country of destination is not satisfactory, the operator will contact the assistance operator at the node in the country of origin who, following confirmation that the document held in store there is acceptable, will initiate a retransmission.

5.1.1.5 If the quality of the document held in store by the node in the country of origin is not satisfactory, the operator will request retransmission from the originating public bureau or subscriber.

5.1.2 *Node in the country of origin*

5.1.2.1 The international transmission from the node in the country of origin to the public bureau in the country of destination will comply with Recommendation F.170, § 5, with the following exceptions:

5.1.2.2 If a document received at the international receiving public station is not satisfactory, the international receiving public station will contact the assistance operator at the node in the originating country to request retransmission. The assistance operator will act in accordance with § 5.1.1.5 above.

5.1.3 *Node in the destination country*

5.1.3.1 Except by bilateral agreement, the node in the destination country will accept facsimile transmissions from the country of origin in a manner emulating a facsimile terminal, i.e. the originating country's operator need not be knowledgeable of any special procedures to deposit the document into the node. In this case, transmission is in conformance with § 5 of Recommendation F.170 except that the node acts as the international receiving public facsimile station.

5.1.3.2 Documents received by the node in the above manner will be routed to the destination public bureau through manual intervention.

6 Delivery

6.1 Delivery of facsimile messages by the destination public facsimile bureau will generally comply with § 6 of Recommendation F.170.

6.2 Delivery of bureaufax messages to subscribers' stations will generally comply with § 2 of Recommendation F.190.

6.2.1 In cases where a store and forward node exists in the country of destination, the message will be transmitted to the subscribers' stations directly from the node, without recourse to an additional stage of printing and rescanning the document.

6.2.2 By bilateral agreement, the facsimile transmitting station in the country of origin may provide the node with sufficient information to effect automatic switching and retransmission of the message directly to subscribers' stations. Otherwise, transmission to subscribers' stations will be effected by manual intervention of the node operator.

6.2.3 By bilateral agreement in cases where a node exists only in the country of origin, facsimile messages may be transmitted directly from the node to subscribers' stations in the country of destination.

7 Other provisions

Provisions relating to:

- Service facsimile correspondence
- Archives
- Charging, refunds and accounting
- Cancellation at the request of the sender
- List of public bureaux

will conform to the appropriate section of Recommendation F.170.

Recommendation F.180

GENERAL OPERATIONAL PROVISIONS FOR THE INTERNATIONAL PUBLIC FACSIMILE SERVICE BETWEEN SUBSCRIBERS' STATIONS (TELEFAX) ¹⁾

1 General

1.1 In accordance with the general conditions in Recommendation F.160, facsimile subscribers' stations may participate in the subscriber facsimile service operated over the public telecommunication network, provided that their installations are compatible or that compatibility is ensured by the network, in terms of the characteristics specified in the relevant Recommendations.

1.2 Administrations shall establish the conditions and procedures for connecting facsimile subscriber station terminals to the public telecommunication networks in accordance with their regulations. However, terminals with automatic reception should insofar as possible be directly accessible to the calling station without manual intervention by an operator at the called subscriber's end (direct connection to the network without a manually served domestic exchange between).

1.3 Facsimile terminals may be manual, automatic for incoming calls or fully automatic. Automatic reception is desirable. The operating procedures applicable in relations between the different types of stations are set out in the relevant T-series Recommendations.

Note — The operation of the public international facsimile service between subscriber stations and public bureaux (and vice versa) is the subject of the Recommendation F.190.

¹⁾ See Resolution No. 13 at the beginning of this fascicle.

2 Conditions of acceptance

2.1 Calls between subscribers' stations participating in the subscriber facsimile service shall in principle be accepted without any limits on duration. Nevertheless, the procedures prescribed for the public networks used shall also apply to the facsimile service between subscribers' stations.

2.2 Conditions relating to maximum format, quality of paper to be used and other practical and operational aspects shall be limited and prescribed by the characteristics of facsimile terminals, as laid down in the relevant Recommendations.

3 Service facsimile correspondence

3.1 Service facsimile documents may be exchanged between the Administrations concerned for the purposes mentioned below:

- to exchange communications between the Administrations concerned for the efficient operation of the service as necessary, including communications in connection with subscribers' requests or enquiries (for example directory information) with respect to the service;
- by agreement between Administrations, to exchange communications between the Administrations concerned in connection with other telecommunication services, in particular urgent communications which cannot be effected by other telecommunication means e.g. by international telex or telegram services because they contain diagrammatic material or other material where it is important for the original to be exactly reproduced;
- for franking privilege documents where considerations similar to the above apply (see the relevant Series D Recommendations)²⁾.

4 Tariffs, refunds and accounting

4.1 Tariffs, refund of charges and international accounting for the transmission of facsimile documents in the international public facsimile service between subscribers' stations shall be governed by Recommendation D.71.

5 Service name

5.1 Telefax

5.1.1 The public facsimile service between subscriber stations on a public telecommunication network shall be known as the Telefax service.

5.1.2 It is assumed that all terminals forming a part of the international Telefax service shall be "hardwired" (the question of the use of acoustic couplers is for further study).

5.1.3 The service shall consist of the Telefax 2, Telefax 3 (including minitelefax 35³⁾ and minitelefax 36³⁾) and Telefax 4.

5.2 Telefax 2

5.2.1 Telefax service using Group 2 terminals shall be known as Telefax 2.

5.2.2 Administrations wishing to establish an international Telefax 2 service shall ensure that all terminals conform to the appropriate Recommendations and that international operational procedures and service quality (Recommendation F.160, § 6) are observed.

²⁾ See Recommendation F.160, § 5.

³⁾ Provisional name.

5.3 **Telefax 3**

5.3.1 Telefax service using Group 3 terminals shall be known as Telefax 3.

5.3.2 Telefax service using Group 3 terminals for A5 documents shall be known as mini telefax 35.

5.3.3 Telefax service using Group 3 terminals for A6 documents shall be known as mini telefax 36.

5.3.4 Administrations wishing to establish an international Telefax 3 (including minitelefax 35 and minitelefax 36) service shall ensure that all terminals conform to the appropriate Recommendations and that international operational procedures and service quality (Recommendation F.160, § 6) are observed.

5.4 **Telefax 4**

5.4.1 Telefax service using Group 4 terminals shall be known as Telefax 4.

5.4.2 Administrations wishing to establish an international Telefax 4 service shall ensure that all terminals conform to the appropriate Recommendations and that international operational procedures and service quality (Recommendations F.160, § 6 and F.184, § 6) are observed.

6 **Directories**

6.1 *Compilation of directories*

6.1.1 As far as possible each Administration shall publish a directory of its subscribers participating in the Telefax service at least once a year.

Note — Some Administrations may wish to provide the directory as an annex to another publication. Additionally, some may wish to place an identifying mark against entries in telephone directories to indicate Telefax subscribers.

6.1.2 Directories should not be larger than 210 × 297 mm (A4).

6.1.3 The directories sent to Administrations shall be set up in roman letters. When the directory is written in a language other than that used in the country to which it is sent, it shall contain an explanatory note to facilitate its use. This note shall be drawn up in whatever official language of the Union has been agreed upon by the Administrations concerned.

6.1.4 The call number published shall be that which the calling subscriber has to select in order to obtain the called subscriber in accordance with the procedure prescribed in his own country.

6.2 *Contents of directories*

6.2.1 As far as possible, directories shall contain at least, in alphabetical order of subscribers' names (subscribers of the same name being classified in the alphabetical order of the places where they are located):

Column 1: subscriber's name and address, including the locality.

Column 2: group of facsimile machine according to characteristics specified by the CCITT, i.e.:

- 2 or 3 or 4, or
- 3/2 in the case of interworking between Groups 3 and 2 terminals, or
- 4/3 in the case of interworking between Groups 4 and 3 terminals.

Column 3: national call number of the facsimile subscriber's station, i.e.:

- trunk code in parentheses ();
- subscriber's number (followed by an extension number if the terminal is connected to a PABX).

For a model see Table 1/F.180.

TABLE 1/F.180

Subscriber's name and address, including the locality 1	Facsimile equipment 2	Call number 3
Laboratoires Durant Analyses médicales Rue Bellevue 108 1205 GENÈVE	3/2	(022) 56 12 14
Lacta SA Produits laitiers Route du Centre 14 1701 FRIBOURG	2	(037) 30 18 22
Editions Petite Indienne Chemin du Baladin 91 1944 VILLEBRUNE	4/3	(031) 26 05 87

6.2.2 It would be desirable for the directory also to contain supplementary information of assistance to the subscriber, as follows:

- telephone numbers for customer services such as faults, enquiries, test centre, sales departments;
- user procedures, both for national and international calls;
- general information about facsimile terminals, i.e. compatibility matters, facilities (unattended operation, serial numbering, etc.);
- information on any Bureaufax service provided by the Administration (general information, list of offices including call numbers, opening hours, tariffs, Bureaufax — Telefax interworking);
- information on public Telefax stations (general information, places, addresses, call numbers, opening hours, tariffs).

6.2.3 It would be desirable for the directory to contain other lists of subscribers:

- classified according to type of business;
- in order of station identification.

6.3 *Supply of directories*

6.3.1 Each Administration publishing a directory shall supply, free of charge, to the Administrations with which it has Telefax relations a sufficient number of copies of its directories to meet the requirements of operating the service. This number shall be fixed in advance by mutual agreement and shall be regarded as applicable until a request to change it is received. Such request must be made not later than 1 February each year.

6.3.2 Each Administration publishing a Telefax directory shall supply, against payment, to the Administrations with which it has Telefax relations a number of its directories to be put on sale. This number shall be fixed in advance by mutual agreement and shall be regarded as applicable until a request to change it is received. Such a request must be made not later than 1 February each year.

6.3.3 A subscriber wishing to obtain a copy of the Telefax directory of another country must apply to his own Administration. If an Administration receives a direct application for a directory from a subscriber in a foreign country, it must forward the request to the Administration of the subscriber's country.

6.3.4 An Administration that has supplied directories of its country intended for sale to another Administration shall indicate the equivalent in gold francs or special drawing rights (SDR) of the sale price of the directories applied in the country of origin plus any postal charges.

6.4 *Accounting arrangements concerning the paid supply of directories for sale*

6.4.1 At least once a year and preferably at the end of the current period of the directories concerned, each Administration that has supplied another Administration with directories for which payment is due shall draw up a special account for the amounts due to it for such directory supplies, including the cost of dispatch, and shall send it to the last-named Administration for settlement. These amounts may be included in the monthly telephone or telex accounts depending on the bilateral arrangements made by Administrations.

6.4.2 Except where the Administrations have agreed otherwise, no accounts shall be established for the paid supply of directories unless the total number of copies delivered to an Administration for sale exceeds 50. When the number is 50 or less, directories shall be delivered free of charge.

7 Interworking between services

7.1 Interworking between Telefax 3 and Telefax 2 services and between Telefax 4 and Telefax 3 services must be provided (see also Recommendation F.184, § 5.1.4.2).

7.2 Interworking between the Telefax and Bureaufax service is dealt with in Recommendation F.190.

7.3 Interworking with other services: the entire problem of interworking is under study.

8 Public Telefax stations (public Telefax booths)

8.1 A public Telefax station is an equipment comprising the facsimile terminal and the access to the network which an Administration places at the disposal of the public for the operation of the Telefax service.

8.2 Public Telefax stations are operated in the same way as Telefax subscriber stations and form an integral part of the Telefax service.

8.3 Where necessary, public Telefax stations are listed in the Telefax directory (see § 6).

8.4 The Administrations establish the conditions under which public Telefax stations are placed at the disposal of users.

Note — A regulation of the international operational procedure to be applied to the exchange of facsimile messages between public bureaux and public Telefax stations still requires further study.

Recommendation F.182

OPERATIONAL PROVISIONS FOR THE INTERNATIONAL PUBLIC FACSIMILE SERVICE BETWEEN SUBSCRIBER STATIONS WITH GROUPS 2 AND 3 FACSIMILE MACHINES (TELEFAX 2 AND TELEFAX 3)

1 Terminals

1.1 The facsimile terminals using the public switched telephone network shall be in accordance with the relevant Series T Recommendations.

2 Network

2.1 The Telefax 2 and the Telefax 3 services shall be provided over the public switched telephone network (PSTN).

3 Procedures for the transmission of documents

3.1 The technical procedures for transmitting documents in the Telefax 2 and 3 services are to be found in Recommendation T.30.

4 Terminal identification

4.1 Manual operation

4.1.1 In manual operation it is assumed that terminal identification is established by normal telephone conversation.

4.2 Automatic operation

4.2.1 In the case of automatic operation at the called station, an answering tone of 2100 Hz shall identify connection to a non-voice terminal. Additionally, an automatic identification must be regarded as compulsory for Group 3 machines or machines of later standards participating in the Telefax service.

4.2.2 It would be desirable for the identification of the transmitting station to appear at the receiving station, in the form of an identification line printed at the top of each page received, in an area 10 mm deep extending across the whole width of the page. This area may be either inside or outside the nominal A4 page, in accordance with the option selected by the user.

4.2.3 The digital station identification shall consist of up to 20 characters (including only digits and spaces). This identification shall be the international telephone number and the format should be as follows: plus sign, country code, space, area code, space, subscriber's number. For the coding arrangements, see Recommendation T.30.

4.2.4 The identification of the receiving station, at the transmitting station, may be either displayed or printed.

Note — The study of the technical arrangements concerning automatic operation identification should be carried out as a matter of urgency by Study Group VIII.

5 Directory

See Recommendation F.180, § 6.

Recommendation F.184

OPERATIONAL PROVISIONS FOR THE INTERNATIONAL PUBLIC FACSIMILE SERVICE BETWEEN SUBSCRIBER STATIONS WITH GROUP 4 FACSIMILE MACHINES (TELEFAX 4)

1 Introduction

1.1 Scope

1.1.1 This Recommendation defines the rules to be followed in the international Group 4 Facsimile (Telefax 4) service.

1.1.2 Telefax 4 is an international service, offered by Administrations enabling subscribers to exchange correspondence either manually or automatically via telecommunication networks.

1.1.3 The basic element of the correspondence between people using the service is the page, as the smallest unit of text treated as an entity. No restrictions shall exist as far as the operator procedures for generation of the text or the positioning of text within the reproducible area on a page are concerned.

1.1.4 Questions of an essentially technical nature concerning the international Telefax 4 service are dealt with by other Recommendations.

1.1.5 In this Recommendation, the word terminal is used instead of apparatus which appears in Recommendations T.563 and T.6. These two words should be considered as being equivalent.

1.2 *Service definitions*

1.2.1 *General*

1.2.1.1 An essential characteristic of the Telefax 4 service is that it provides a basic level of compatibility between all terminals participating in the service.

1.2.1.2 There are three classes of Group 4 facsimile terminals:

- **Class I** – minimum requirement is a terminal able to send and receive documents containing facsimile encoded information (in accordance with Recommendations T.6, T.503 and T.400 series).
- **Class II** – minimum requirement is a terminal able to transmit documents that are facsimile encoded (in accordance with Recommendations T.6, T.503 and T.400 series). In addition, the terminal must be capable of receiving documents which are facsimile coded (in accordance with Recommendations T.6, T.503 and T.400 series), Teletex coded (in accordance with the basic coded character repertoire as defined in Recommendation T.61) and also mixed-mode documents (in accordance with Recommendations T.501 and T.400 series).
- **Class III** – minimum requirement is a terminal that is capable of generating, transmitting and receiving facsimile coded documents (in accordance with Recommendations T.6, T.503 and T.400 series), Teletex coded documents (in accordance with the basic coded character as defined in Recommendation T.61) and mixed-mode documents (in accordance with Recommendations T.501 and T.400 series – when defined).

1.2.1.3 Where a Telefax 4 Class 3 terminal and mixed mode Teletex terminal are both provided on the ISDN, they should be able to communicate without any restriction according to the basic service requirements of this Recommendation F.200.

1.2.2 *Basic requirements*

1.2.2.1 The basic requirements of Telefax 4 service are as follows:

- a) a basic level of compatibility is provided between any two terminals both nationally and internationally so that they may communicate image-coded information to each other. This is to be achieved by requiring that terminals comply with Recommendations T.563, T.6, T.62, T.70, T.503 and T.400 series;
- b) it is for each Administration to decide on the network(s) on which the Telefax 4 service will be carried. There shall be no restriction on the type of network to be used;
- c) it should be possible to extend the Telefax 4 service to any number of countries;
- d) to permit private use applications, for example, encryption, there should be no technical limitation on the bit sequence of the subscriber's information that may be transmitted;
- e) a received Telefax 4 message can be printed or displayed as decided by the recipient and the terminal characteristics. If the message is printed, the receiving subscriber will be furnished with a document that is identical with that produced by the sending subscriber as far as its contents, layout and format are concerned;
- f) it is intended that the Telefax 4 service should require no changes to the Recommendations for existing services or networks.

1.2.3 *Standardized options*

1.2.3.1 It is recognized that some subscribers may need to use their Group 4 facsimile terminals to communicate nationally and internationally using service features that are not included in the basic requirements. A number of CCITT-standardized options should, therefore, be defined. However, the provision of any option in a service leads to some degree of incompatibility and the number of standardized options should be restricted, as shown below, to those features for which a clear international need can be foreseen.

The sending terminal shall ensure the transmission of documents using only those options that have been indicated as being available at the receiving terminal.

1.2.3.2 The standardized options should provide means for:

- a) different pel transmission densities (T.563);
- b) optional coding schemes (T.6);
- c) grey scale images (T.6);

- d) colour images (T.6);
- e) use of the mixed-mode of operation (T.61, T.6, T.501, T.503 and T.400 series);
- f) printable areas (T.561 — Classes II and III only, T.563);
- g) escape into national and private options (T.62);
- h) resolution conversion algorithms (T.563).

Note 1 — Administrations are encouraged to ensure that standardized and nationally defined options are used in such a way as to minimize the need for the introduction of private use options.

Note 2 — There is a need for further study as the service develops. Changes may be required to this list.

1.4 *Restrictions on the use of the Telefax 4 service*

Note — Please refer to CCITT Recommendation F.160 for details.

2 Network requirements

2.1 It is the responsibility of each Administration to decide in which network(s) the Telefax 4 service is to be provided. The term Telefax 4 network, as used in this Recommendation, shall be taken to mean a network on which Telefax 4 service is provided.

2.2 Considering that the Telefax 4 service may be operated on the following networks:

- a) Telefax 4 service on a circuit switched public data network (CSPDN);
- b) Telefax 4 service on a packet switched public data network (PSPDN);
- c) Telefax 4 service on a public switched telephone network (PSTN);
- d) Telefax 4 service on an integrated services digital network (ISDN),

interworking between Group 4 facsimile terminals supported on any network must be possible.

2.3 The international connection shall use international data transmission facilities. Exceptionally, bilateral agreements to use other means may be made where necessary.

2.4 Connection between PSTNs may use international telephone circuits.

In all cases for interworking between networks of different types, the same network should be used for both traffic directions.

2.5 In the case of international interworking between Group 4 facsimile terminals connected to dissimilar networks, Recommendation X.300 shall apply.

2.6 International routes between ISDNs for the Telefax 4 service shall be capable of supporting user data rates up to 64 kbit/s.

3 Numbering plan

3.1 Considering that it is the responsibility of each Administration to decide on the network(s) to be used for the Telefax 4 service in accordance with the options noted in § 2, the Telefax 4 numbering plan must accommodate these options.

3.2 The Telefax 4 numbering plan is based on the individual numbering plans of each of these networks, i.e. Recommendation E.163 for PSTNs and Recommendation X.121 for public data networks (PDNs) and Recommendation E.164 for ISDN.

3.3 Each of these numbering plans provides for international calls between similar networks.

3.4 The numbering plan for PDNs provides for calls to national and international PSTNs.

3.5 As the numbering plan for PSTNs does not provide for calls to PDNs and non-voice terminals on the ISDN, those Administrations that use the PSTN nationally for the Telefax 4 service must provide for call set-up procedures to give access to the National Telefax 4 service in the other countries on a PDN or the ISDN. These procedures should also apply to access from Group 3 to Telefax 4 interworking capabilities in these countries.

3.6 Administrations are requested to consider the numbering plan of their particular implementation relative to the existing networks. Further study is required.

4 Coding scheme

4.1 The basic coding scheme and control functions for the international Telefax 4 service are detailed in Recommendation T.6.

4.2 The basic character repertoire of graphic characters and control functions for the Telefax 4 service – Class II and Class III – and the coding of these characters for transmission between terminals are found in Recommendation T.61.

4.3 The use of other recognized national and/or application-oriented coding schemes is for further study (see Recommendation T.61).

5 Operation of the Telefax 4 service

5.1 General

5.1.1 The Telefax 4 service in each country and the interconnection between countries or networks shall use automatic switching so that it is possible for any Telefax 4 subscriber to reach any other Telefax 4 subscriber using fully automatic selection. This shall not, however, preclude, on a purely interim basis, the use of manual call set-up by international operators, where the calling terminal is served from a PSTN in which international call access to another PSTN serving the called terminal cannot be automatically provided.

Note 1 – Special requirements may in these instances be applicable to the terminals in order not to affect unduly the grade of service.

Note 2 – The feasibility of this approach requires further study.

5.1.2 It is a requirement to allow the through-connection of a call between Group 4 facsimile terminals connected to a private automatic branch exchange (or similar systems) and those connected to public exchanges used for the Group 4 facsimile service.

5.1.3 Two-way alternate (TWA) communication is a capability of the Telefax 4 service, which also includes one-way communication (OWC); the calling subscriber will have full control of the Group 4 facsimile call.

5.1.4 Interworking with other services

For further study.

5.1.4.1 Interworking between basic mode and mixed mode Teletex terminals and Classes I, II and III Group 4 facsimile terminals connected to the Telefax 4 service is shown in Table 1/F.184. Where direct interworking between Teletex and Group 4 facsimile terminals is not possible, it is essential that Administrations provide the interworking capability as a function of the network or through specific features.

5.1.4.2 Interworking between facsimile terminals of the Telefax 4 service connected to the PSTN and Telefax terminals of the Telefax 3 service (see Recommendation F.180) should be provided as a function of the Group 4 terminal.

Depending on the networks used, different cases of interworking have to be considered:

- 1) Telefax 3 (PSTN) – Telefax 4 (PSTN);
- 2) Telefax 3 (PSTN) – Telefax 4 (PDN);
- 3) Telefax 3 (PSTN) – Telefax 4 (ISDN).

Note – Telefax 3 terminals and Telefax 4 terminals which are to be connected in the PSTN can also be connected to the ISDN via terminal adaptors.

This case is identical to Case 1 since the interworking of such terminals with PSTN terminals in the same country has to be provided via telephone connections.

Re 1 – Interworking by means of terminal compatibility is possible.

Re 2 – In this case, Telefax 4 terminals use data transmission facilities. Interworking shall be provided by network interworking units. As far as the numbering plans are concerned, refer to §§ 3.4 and 3.5.

Re 3 – In this case, Telefax 4 terminals use specific service features in the ISDN. Interworking shall be provided by network interworking units. §§ 2.5, 3.4 and 3.5 apply accordingly.

TABLE 1/F.184

Possible cases of direct interworking for Teletex and Group 4 facsimile terminals on the same network

From \ To	Facsimile Group 4 Class I	Facsimile Group 4 Class II	Facsimile Group 4 Class III	Teletex basic mode	Teletex mixed mode
Facsimile Group 4 Class I	F	F	F		F
Facsimile Group 4 Class II	F	F	F		F
Facsimile Group 4 Class III	F	T, F, MM	T, F, MM	T	T, F, MM
Teletex basic mode		T	T	T	T
Teletex mixed mode	F	T, F, MM	T, F, MM	T	T, F, MM

T: Document with Teletex character coded information only.
 F: Document with fax coded information only.
 MM: Mixed-mode document with character and fax coded information.

5.1.4.3 Interworking between Telefax 4 terminals provided on different public data networks (PDNs) shall be provided in accordance with the appropriate CCITT Recommendation.

5.1.4.4 Interworking is desirable between terminals of the Telefax 4 service and terminals of services other than facsimile provided over public switched networks.

5.1.4.5 In both the Teletex and Telefax 4 services, the machines providing mixed mode should enable a direct exchange of documents in accordance with Recommendations T.6, T.61, T.503 and T.400 series.

Note – Interworking with other services is for further study.

5.2 Call phases

5.2.1 The operations for each call may be divided into the following three phases:

- a) Preparation: preparation of the information to be transmitted.
- b) Transmission:
 - call establishment (manual or automatic);
 - pre-information phase (see Note);
 - information transfer (see Note);
 - post information phase (see Note);
 - call clearing.

Note – During these parts of the transmission phase the network must be transparent with respect to control procedures.

- c) Output: displaying the message either by immediate printing or from a storage medium upon control by the operator.

Note – The information may consist of one or more Telefax 4 documents each consisting of one or more Telefax 4 pages.

5.2.2 The control procedures as specified in Recommendation T.62, T.503 and T.400 series shall be used as end-to-end communication procedures between terminals in the service.

5.2.3 The network independent basic transport service for Telefax 4 is specified in Recommendation T.70.

5.2.4 The network-dependent control procedures for the Telefax 4 service should be those that are defined for that network on which the Telefax 4 service is provided (see relevant Recommendations).

5.3 *Call identification*

5.3.1 *General*

5.3.1.1 The Telefax 4 procedures include the exchange of reference information prior to sending any document. This reference information includes identification of the parties to the call as well as the date and time. Also, supplementary reference information is exchanged during a call to allow reference to an individual document or page for error recovery or other purposes.

5.3.1.2 This reference information, taken together, is defined to be printable on a single line called the call identification line. Use of this information is a local decision except in recovering from an interrupted transmission. In the case of automatic linking, the use of this information is for further study.

5.3.2 *Format of the call identification line*

Details of the format of the call identification line are given in Recommendation F.200.

5.4 *ISDN supplementary services*

5.4.1 International supplementary services for the Telefax 4 service in the circuit mode on the B channel:

- a) closed user group;
- b) multiple numbers for a subscriber;
- c) user-to-user signalling;
- d) calling line identification presentation;
- e) called line identification presentation.

Other supplementary services are for further study.

5.4.2 Use of national supplementary services is beyond the scope of this Recommendation.

5.4.3 *Supplementary services for the Telefax 4 service in the packet mode*

The provision of packet mode services according to Recommendation X.31 within the ISDN is for further study.

6 **Quality of service**

6.1 *Class I terminals*

6.1.1 For quality of service using class I terminals, see Recommendation F.160, § 6.

6.2 *Class II and III terminals*

6.2.1 The quality of service for Class II and III terminals and interworking with other services is for further study.

6.3 *Error protection*

To ensure call integrity, error protection will be provided by Telefax 4 control procedures (see Recommendations T.62 and T.70). The error rate on the pre-information, information and post-information phases should not exceed 1×10^{-6} .

6.4 *International routes*

The capacity of the routes between countries also has an important influence on the quality of the service. For that reason, the number of circuits provided between any two networks should be such that in the route busy hour not more than one call in 50 is lost due to a lack of international circuits (see Recommendation T.62). (For further study.)

6.5 *Duration of service*

6.5.1 The national and international facilities of the Telefax 4 service shall be open continuously.

6.5.2 Telefax 4 terminals for which call numbers are published in the directories shall, in principle, be available to accept calls continuously.

6.6 *Observations on the quality of the service*

For further study.

7 **Subscriber terminals**

7.1 *General*

7.1.1 In order to support a high quality of service, a range of data signalling rates has been defined as follows:

7.1.1.1 *Public data networks*

Terminals on a circuit switched data network shall operate in accordance with user classes of service 5 and 7 as defined in Recommendation X.1.

Terminals on a packet switched data network shall operate in accordance with user classes of service 9 to 11 as defined in Recommendation X.1.

7.1.1.2 *Public switched telephone networks*

Terminals on the public switched telephone network shall operate at 9600 bit/s with fallback to 7200 bit/s and 4800 bit/s.

7.1.1.3 *Integrated Services Digital Networks (ISDN)*

Terminals on the ISDN shall operate in accordance with user classes of service 30 as defined in Recommendation X.1.

7.1.2 The facilities required in terminals connected to the international Telefax 4 service are listed in the following paragraphs.

7.2 *Coding scheme*

7.2.1 Class I Group 4 facsimile terminals shall have the ability to send, receive and display documents encoded using the Group 4 coding scheme defined in Recommendation T.6.

7.2.2 In addition to the requirements detailed in § 7.2.1, Class II terminals shall have provision for receiving and displaying basic Teletex and mixed-mode documents.

7.2.3 In addition to the requirements detailed in §§ 7.2.1 and 7.2.2, Class III terminals shall have provisions for generating basic Teletex and mixed-mode documents (see Recommendation T.61).

7.3 No constraints should be made on the type of presentation technology employed.

7.4 *Receiving capability*

7.4.1 The ability of a terminal to receive incoming traffic is a prerequisite for it to answer the call.

Note — The control procedures may allow for negotiation of storage capability between terminals. This matter is for further study.

7.4.2 If during a call, the ability of the receiving terminal to continue to accept traffic is jeopardized (e.g. memory threshold reached) an indication of this condition will be passed to the sending terminal using the control procedures to permit the orderly termination and resumption of the transmission.

7.5 *Alarm indicators*

7.5.1 Alarm indicators (visual and/or audible) are required in the terminals to inform users about conditions that could have an adverse effect on the quality of service.

7.5.2 Where appropriate, the following indicators are required:

- a) terminals unable to transmit (e.g. paper jam at transmitting end);
- b) terminals unable or soon unable to receive (e.g. paper jam or receiving memory nearly full);
- c) operator assistance required;
- d) message received in store.

7.6 *Terminal identification*

7.6.1 Each terminal in the Telefax 4 service shall have a unique identification. Details of the identification are given in Recommendation F.200.

7.6.2 It is the responsibility of the calling terminal to verify the identification of the called terminal prior to the information transfer phase of the call.

7.7 *Page format, Telefax 4 service*

7.7.1 *General*

7.7.1.1 The principal objective of the Telefax 4 service is to establish a basic defined mode of operation common to all machines used in the service. Therefore, a minimum basic requirement is defined, and all terminals used in the Telefax 4 service shall comply with this minimum basic requirement. This, however, does not preclude the possibility that terminals may by prior agreement operate in modes different from these basic minimum requirements.

7.7.1.2 The maximum reproducible areas for various standard paper sizes are defined in Recommendation T.563.

The minimum requirement is that the image area defined by the United Nations' layout key and ISO 3535 shall be reproduced.

7.7.1.3 The range of the terminals' capabilities is exchanged during session establishment, prior to document transmission. These procedures are defined in Recommendation T.62 and Recommendation T.503 and T.400 series along with the default values for these capabilities if this exchange is not explicitly stated.

7.7.1.4 A particular selection from this established range of capabilities is made preceding transmission of each document. Some of these selections may be changed at page boundaries and some may also be changed within a page.

8 **Customer information**

8.1 *Directories*

A terminal must comply with all the requirements of a service in order to be included in the directory for that service.

Mixed-mode terminals may have entries in the Telefax and Teletex directories. The entries for such terminals may include indication of their dual capability. See also Recommendation F.180, § 6.

In the case of network interworking facilities to provide interworking Telefax 4 terminals on dissimilar networks or between Telefax 3 and Telefax 4 terminals, separate access numbers to subscribers via interworking units may be necessary. These numbers must be shown in directories.

Note — In these cases, the terminals of the Telefax 4 service may have two identifications (contrary to what is indicated in § 7.6.1). In a given call, however, only one identification is valid.

8.2 *Operating instructions*

For further study.

9 Access to facsimile Message Handling Facilities

Users of the Telefax 4 service may wish to have access to the services offered by Message Handling Facilities. This is for further study.

10 Tariff principles

(This matter requires further studies in conjunction with Study Group III.)

Recommendation F.190

OPERATIONAL PROVISIONS FOR THE INTERNATIONAL FACSIMILE SERVICE BETWEEN PUBLIC BUREAUX ¹⁾ AND SUBSCRIBER STATIONS AND VICE VERSA (BUREAUFAX – TELEFAX AND VICE-VERSA)

1 General

1.1 Recommendation F.160 lays down general provisions for all forms of international public facsimile services. The specific provisions concerning international public facsimile service between public bureaux (Bureaufax) and between subscriber stations are contained in Recommendations F.170, F.171, F.180, F.182 and F.184.

1.2 With a view to increasing the flexibility and range of these facsimile services, this Recommendation deals with the international transmission of facsimile documents:

- a) from a public bureau to a subscriber station (public-to-private); and
- b) from a subscriber station to a public bureau (private-to-public).

1.3 Since these methods of operation do not involve the participation of a public bureau at both ends of the connection, the quality of reproduction and speed of delivery normally available in the conventional Bureaufax service may not be attainable.

1.4 The relevant tariff provisions may be found in Recommendation D.73.

2 “Public-to-private” transmission

2.1 Except where contrary provisions are published by the terminal Administrations concerned, “public-to-private” facsimile transmission is permitted.

2.2 The accepting public facsimile bureau should ask the sender of the document for the following information before accepting the document for transmission:

- a) the CCITT Group of the destination subscriber’s facsimile machine;
- b) the destination facsimile station’s call number.

¹⁾ Public bureaux may be offices of Telecommunication or of Postal Administrations.

On accepting the facsimile document, the public bureau can use, if appropriate, the Bureaufax transmittal sheet in accordance with Recommendation F.170 and provide the necessary information in the corresponding boxes.

2.3 In those cases where:

- a) the accepting bureau considers that the quality of the document to be transmitted is unsuitable for satisfactory facsimile transmission; or
- b) the sender is unsure of the CCITT Group of the destination facsimile machine,

the document will be sent only if the sender accepts the possible risk of non-delivery or of unsatisfactory quality on reception. In effect, the same provisions apply as for "RISQUES EXPEDITEUR" in the Bureaufax service (Recommendation F.170). If b) above applies, or if, after several attempts within a maximum duration of 3 hours from the time of acceptance of the facsimile document, the destination subscriber cannot be reached, the sender should be given the option of transmission by means of the normal Bureaufax service (where available) in accordance with Recommendation F.170, at the tariffs applicable to that service.

Note – During an interim period for gaining the greatest possible operational experience, the Administrations should apply the same procedure if they know that the receiving facsimile machine operates automatically.

3 "Private-to-public" transmission

3.1 Except where contrary provisions are published by the terminal Administrations concerned, "private-to-public" facsimile transmission is permitted.

3.2 Facsimile documents received by a public bureau from a subscriber station in another country are handled and delivered to the addressee in accordance with appropriate methods laid down by the destination Administration. The provisions of Recommendation F.170, §§ 6.1, 6.3, 6.4 and 6.5 may be applied.

3.3 The sending subscriber shall provide the receiving public bureau with sufficient information for processing his facsimile documents; to that end the subscriber should use a transmittal sheet in accordance with Figure 1/F.190. Administrations should encourage the use of such forms by informing subscribers of their availability.

3.4 If the sending subscriber does not use a transmittal sheet as in § 3.3 above, he shall provide the receiving public bureau with at least the following information:

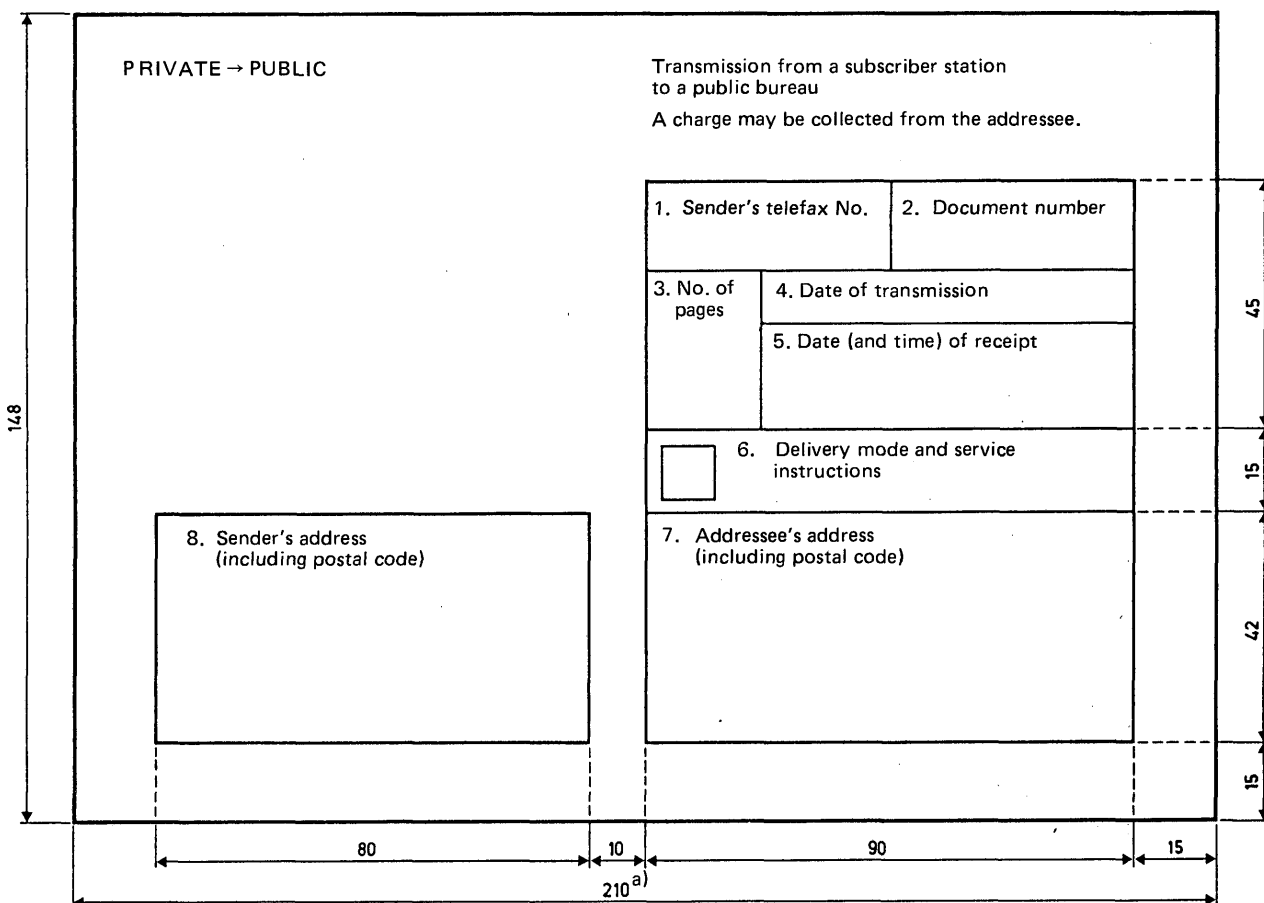
- a) the call number of his facsimile terminal;
- b) the number of pages of the document, in accordance with Recommendation F.170, § 3.2.1, item 4;
- c) the addressee's address, in accordance with Recommendation F.170, § 3.2.1, item 8, as well as the addressee's telephone, telex or teletex numbers if necessary.

It is advisable for the sending subscriber also to give his address, in accordance with Recommendation F.170, § 3.2.1, item 9.

3.5 On receipt of the facsimile document, the receiving bureau should contact the addressee in order to reach agreement on the mode of delivery and the charging.

3.6 The receiving bureau may contact the sending subscriber if the copy received is of unsatisfactory quality.

3.7 In the event of non-delivery owing to incomplete address information or for other reasons (e.g., when the receiving bureau cannot establish contact with the addressee even though the address is complete, or when the document is not collected by the addressee), the receiving bureau may contact the sending subscriber. The facsimile document received and/or other relevant information, should be kept on file in accordance with the national regulations in force.



CCITT-69971

^{a)} North American standard: 216 mm

Note 1 — Boxes 2, 5 and 6 are to be filled in by the receiving public bureau.

Note 2 — The information in box 8 (sender) is optional. When given, it must appear in the left-hand part of the transmittal sheet.

Note 3 — The addressee's address should include the telephone, telex or teletex number if necessary.

Note 4 — The number of pages given in box 3 must be in accordance with Recommendation F.170, § 3.2.1, item 4.

Note 5 — Concerning box 6, the following delivery modes may be requested by the addressee, in so far as they are offered by the destination administration:

A	Normal delivery	Courrier ordinaire
B	Special delivery	Exprès
C	EMS (Express Mail Service)	EMS (courrier accéléré)
D	Counter collection	Retrait au guichet
E	Counter collection with telephone advice to the indicated call number	Retrait au guichet avec avis téléphonique au numéro indiqué
G	Counter collection with telex advice to the indicated call number	Retrait au guichet avec avis télex au numéro indiqué
H	Counter collection with teletex advice to the indicated call number	Retrait au guichet avec avis télétex au numéro indiqué

Other modes of delivery may be offered by the destination administration.

FIGURE 1/F.190

Measurements, locations and designations of the various parts of the transmittal sheet in accordance with § 3.3

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SECTION 2

TELETEX SERVICE

Recommendation F.200

TELETEX SERVICE ¹⁾

1 Introduction

1.1 *Scope*

1.1.1 This Recommendation defines the rules to be followed in the automatic international Teletex service.

1.1.2 Teletex is an international service, offered by Administrations, enabling subscribers to exchange correspondence on an automatic memory-to-memory basis via telecommunication networks.

1.1.3 In the basic Teletex service the element of the correspondence between people using the service is the page-formatted document with the page, as the smallest unit of text treated as an entity. No restrictions shall exist for generation of the text and/or the positioning of text within the printable area on a page.

Note — Exception to this rule is the application of the processable mode of operation for which the page as basic element of correspondence cannot be used.

1.1.4 It is not the intention of the service to compete with or to duplicate public data services, although the use of Teletex for transmission of data (e.g. to question a data bank) may be a possible by-product.

1.1.5 Questions of an essentially technical nature concerning the Teletex service are dealt with by other Recommendations.

1.1.6 Throughout this Recommendation the term Teletex equipment is used addressing user's equipment independently, whether this equipment is a dedicated teletex terminal or a terminal or system with added Teletex capabilities.

1.2 *Service definitions*

1.2.1 *General*

1.2.1.1 The Teletex service provides communication between equipment which is used for the preparation, editing and printing of correspondence.

1.2.1.2 It is an essential characteristic of the Teletex service that it provides a basic level of compatibility between all equipment participating in the service.

¹⁾ See Resolution No. 13 at the beginning of this fascicle.

1.2.2 *Basic requirements*

1.2.2.1 The basic requirements of the Teletex service are as follows:

- a) A basic level of compatibility is provided between any two Teletex terminals both nationally and internationally so that they may communicate formatted documents composed of character-coded information to each other. This is to be achieved by requiring that terminals comply with Recommendations T.60, T.61, T.62 and T.70. (T.70 does not yet include operation on the ISDN.)
- b) It is for each Administration to decide on the network(s) on which the Teletex service will be carried. There shall be no restriction on the type of network to be used.
- c) Real time connection between Teletex equipment operating at different speeds is required for the duration of the call. The information on the successful transmission should be given by the receiving equipment to the sending equipment within the call.
- d) It should be possible to extend the Teletex service to any number of countries.
- e) The graphic character repertoire of any office machine keyboard that satisfies the provisions of Recommendation T.61 and that is acceptable to the national Administrations for use within the Teletex service should be permitted as a source.
- f) In order to enable private applications and facilities, such as, for example, encryption, there should be no technical limitation on the bit sequence of the users' information that may be transmitted.
- g) Local mode operation should not be disturbed by incoming calls under normal operating conditions.
- h) A received Teletex message can be printed or displayed otherwise as decided by the recipient and equipment characteristics. If the message is printed, the receiving subscriber will be furnished with a document that is identical with that produced by the sending subscriber as far as its contents, layout and format are concerned.
- i) It is intended that the service should require no changes to the Recommendations for existing services or networks.
- j) The Teletex service will provide the ability to intercommunicate in both directions with the telex service by means of conversion facilities. (Refer to Recommendations F.201, U.201 and T.90.)
- k) The Teletex service allows for intercommunication with the IPM service using a Public Teletex Access Unit (refer to Recommendation F.422).
- l) Facilities for providing a permanent copy (not necessarily on paper) of every message should exist at every Teletex installation.
- m) The man/machine interface in the Teletex service should be as simple as possible in accordance with the normal use of office equipment.

Note — The use of "terminal" is in accordance with the Note in § 5.3.

1.2.3 *Standardized options*

1.2.3.1 It is recognized that some subscribers may need to use their Teletex equipment to communicate nationally and internationally using service features which are not included in the Teletex basic requirements, but which are, nonetheless, frequently used in office equipment. A number of CCITT-standardized options should, therefore, be defined. However, the provision of any option in a service could lead to some degree of incompatibility and the number of standardized options should be restricted, as shown below, to those features for which a clear international need can be foreseen.

The sending Teletex equipment shall ensure the transmission of documents using only those options which have been indicated as being available at the receiving Teletex equipment.

1.2.3.2 The standardized options should provide means for:

- a) different character spacings (initially 12 and 15 pitch);
- b) different metric values for line spacing (initially 3.175 mm and 5 mm);
- c) selection of different graphic rendition of any selected portion of the text;
- d) indication that special stationery should be used;

- e) use of a wide range of character repertoires other than the Teletex basic character repertoires (both national and application-orientated);
- f) specification of increased printable areas for paper sizes normally used for office correspondence; e.g. ISO A4, A4L and North American paper size;
- g) escape into national and private options;
- h) use of Kanji character repertoires (JIS²⁾ C6226) and associated character spacing (6-pitch) and page formats (ISO A4, B5, B4);
- i) specification of paper sizes other than ISO A4 or A4L as well as the associated printable areas.

Note 1 – Administrations are encouraged to ensure that standardized and nationally defined options are available and used in such a way as to minimize the need for the introduction of private use options.

Note 2 – There is a need for further study as the service develops. Changes may be required to this list.

1.2.3.3 In addition to the basic mode of operation, a number of possible other modes may be offered, which in principle should also be able to exchange the basic mode between them.

a) *Use of the mixed mode of operation*

This mode provides the user with means for transferring documents containing graphical information encoded using techniques other than those defined for the basic Teletex service, e.g. the Teletex/Telefax mixed mode of operation (see Recommendation F.230).

b) *Use of the interactive mode of operation*

The interactive mode allows Teletex equipment (terminals or fully automatic systems) to communicate in real time with each other.

c) *Use of the processable mode of operation*

The processable mode of operation provides the user with means of interchanging documents containing sufficient information to reprocess them efficiently (see Recommendation F.220).

d) *Network based storage*

In addition network based store-and-forward and (at the discretion of the recipient) store-and-retrieve facilities may become available (see Recommendation F.203).

1.3 *Definitions of terms used in the Teletex service*

1.3.1 The terms listed in Annex B contain the definitions given as they are used in these provisions.

1.4 *Availability of service*

1.4.1 In principle the Teletex service offered by Administrations shall normally operate on a fully automatic basis and be open continuously.

1.5 *Classes of call*

1.5.1 There are two accepted classes of call:

- a) ordinary private Teletex calls;
- b) service calls, including privilege telecommunications using Teletex, which in accordance with Recommendation D.193, may be offered during conferences and meetings of the ITU. (Where Administrations choose to allow service calls via semiautomatic or manual operation these calls shall be permitted.)

²⁾ JIS: Japanese Industrial Standard.

1.6 *Restrictions on the use of the Teletex service*

1.6.1 Administrations reserve the right to suspend the Teletex service in the cases mentioned in Articles 19 and 20 of the *Convention* [1].

1.6.2 Administrations shall refuse, in accordance with national regulations, to make the Teletex service available to an agency that is known to be organized for the purpose of sending or receiving messages to/from third parties and for retransmission by any means in order to avoid the full charges normally levied for such correspondence.

1.6.3 Administrations shall refuse to make Teletex service available to a user whose activities may be regarded as an infringement of the functions of an Administration in providing a public telecommunication service.

2 **Network requirements**

2.1 It is the responsibility of Administrations to decide in which network(s) the Teletex service is to be provided. The term Teletex network, as used in this Recommendation, shall be taken to mean a network on which Teletex service is provided.

2.2 Considering that the Teletex service may be operated on the following networks:

- a) Teletex in a circuit switched public data network (CSPDN);
- b) Teletex in a packet switched public data network (PSPDN);
- c) Teletex in a public switched telephone network (PSTN);
- d) Teletex in an integrated services digital network (ISDN).

Interworking between Teletex terminals supported on any network must be possible.

2.3 The procedures for call set-up to Teletex equipment connected to different networks shall be as similar as possible.

2.4 The international connection shall use international data transmission facilities. Exceptionally, bilateral agreements to use other means may be made where necessary.

2.5 Connection between PSTNs may use international telephone circuits.

2.6 In the case of international interworking between Teletex equipment connected to dissimilar networks, Recommendation X.300 shall apply.

2.7 International routes shall be capable of supporting user data rates of at least 2400 bits/s (see applicable Recommendations).

Note – It is recognized that national implementations of the Teletex service on varying types of network may involve national operation at different information throughput rates. It should be noted that in these cases buffering and/or flow control may be required (see Recommendations T.60, T.62 and T.70).

2.8 International routes between ISDNs for the Teletex service shall be capable of supporting user data rates of 64 bit/s.

3 **Numbering plan**

3.1 Considering that it is the responsibility of each Administration to decide on the network(s) to be used for the Teletex service in accordance with the options noted in § 2, the Teletex numbering plan must accommodate these options.

3.2 The Teletex numbering plan is based on the individual numbering plans of each of these networks, i.e. Recommendation E.163 for PSTNs, Recommendation X.121 for public data networks and Recommendation E.164 for ISDN.

3.3 Each of these numbering plans provides for international calls between similar networks.

3.4 The numbering plan for PDNs (Recommendation X.121) provides for calls to PSTNs and ISDNs.

3.5 As the numbering plan for PSTNs does not provide for calls to PDNs, those Administrations that use the PSTN nationally for the Teletex service must provide for call set-up procedures to give access to the Teletex service on a PDN in other countries.

3.6 The numbering plan for ISDNs (Recommendation E.164) provides for calls to PDNs.

3.7 Numbering and addressing in intercommunication between the Teletex service and the IPM (Interpersonal Messaging) Service are in accordance with rules as laid down in Recommendation F.422.

4 Character repertoire

4.1 The basic Teletex character repertoire of graphic characters and control functions for the international Teletex service and the coding of these characters for transmission between Teletex equipment are found in Recommendation T.61.

4.2 Other recognized national and/or application-oriented character repertoires can be used. These repertoires should only be used after registration by the CCITT and in accordance with the rules given in Recommendation T.61.

4.3 To indicate the use of a subset of the Teletex graphic character repertoire, a control function IGS (Identify Graphic Sub-repertoire) is used.

4.4 Each IGS is registered by the CCITT and each Administration can ask for registration of one or more IGSs following the rules specified in the appropriate Recommendation.

4.5 If a graphic symbol that is not in the basic Teletex character repertoire is generated, the service cannot guarantee that it will be represented in a recognizable form at the receiving Teletex equipment.

5 Operation of the Teletex service

5.1 General

5.1.1 The Teletex service in each country and the international interconnection between countries or networks shall use automatic switching allowing any Teletex user to reach any other Teletex user using fully automatic selection.

5.1.2 It is a requirement to allow the through-connection of a call between a Teletex equipment connected to a private automatic branch exchange (or similar systems) and equipment connected to public exchanges used for the Teletex service.

5.1.3 A virtual dialogue mode of operation, which appears to the subscriber as a interactive mode, may become possible, as a new standardized option within the Teletex service, both allowing for communication between persons and data base access.

5.1.4 Mixed modes of operation within the Teletex service using specialized techniques such as they are used in the Telefax service as well as character-coded texts, are important additional facilities for the Teletex service.

5.1.5 Other standardized options (such as processable modes and EDI) may be offered for meeting applications to be undertaken via Teletex.

5.1.6 Two-way alternate (TWA) communication is a capability of the Teletex service, which also includes one-way communication (OWC); the calling subscriber will have full control of the Teletex call.

5.1.7 Intercommunication with other services such as telefax, interpersonal messaging, telex and videotex is envisaged and is (to be) defined in a separate Recommendation.

5.2 Call phases

5.2.1 The operations for each call may be divided into the following three phases:

a) Preparation

- preparation of the information in local mode;
- loading of the information into memory.

b) Transmission (in principle, automatic)

- call establishment;
- pre-information phase (see Note);
- information transfer from memory to memory (see Note);
- post information phase (see Note);
- call clearing.

Note — During these parts of the transmission phase the network must be transparent with respect to control procedures.

c) Output

- emptying the memory.

Note — The information may consist of one or more Teletex documents each consisting of one or more Teletex pages.

5.2.2 The control procedures as specified in Recommendation T.62 shall be used as end-to-end communication procedures between any equipment participating in the basic Teletex service.

5.2.3 The network independent basic transport service for Teletex is specified in Recommendation T.70.

5.2.4 The network-dependent control procedures for the Teletex service should be those that are defined for that network on which the Teletex service is provided (see the relevant Recommendations).

5.2.5 Further information should be available through end-to-end control procedures, which may be used by Teletex equipment to identify additional information found in a document. Details of the additional document information are for further study.

5.2.6 Reference to the control procedures to be applied in intercommunication with other services can, in case of differences with the Teletex service, be found in the appropriate Recommendations covering these intercommunication cases.

5.3 *Call identification*

Note — In this paragraph “terminal” is used to identify the end-point of responsibility of the Teletex service.

5.3.1 *General*

5.3.1.1 The Teletex procedures include the exchange of reference information prior to sending any document. This reference information includes identification of the parties to the call as well as the date and time. Also, supplementary reference information is exchanged during a call to allow reference to an individual document or page for error recovery or other purposes.

5.3.1.2 This reference information, taken together, is defined to be printable on a single line called the call identification line. Use of this information is a local decision except in recovering from an interrupted transmission. In the case of automatic linking, the use of this information is for further study.

5.3.2 *Format of the call identification line*

5.3.2.1 The call identification line is composed of four fields as follows:

- Field 1: identification of the called terminal;
- Field 2: identification of the calling terminal;
- Field 3: date and time;
- Field 4: supplementary reference information.

5.3.2.2 Presentation of this information may be made on the first or last line on each page of a document or on only one page of a document, or it may be omitted. The maximum allowable number of printable lines transmitted per page is reduced by one to allow optional printing of the call identification line. The choice of whether and where this presentation is made is a local decision except in certain recovery situations.

5.3.2.3 Where the transmission of a document is interrupted for any reason, the receiving equipment should print, or otherwise display, only the acknowledged pages as defined in Recommendation T.62. Both terminals should also notify the occurrence of interruption to operators (see §§ 7.8 and 7.9).

5.3.2.4 When the call identification line is presented the format shown in Figure 1/F.200 is used.

Field 1		Field 2		Field 3		Field 4
Identification of the called terminal	/	Identification of the calling terminal	/	Date and time	/	Supplementary reference information
24 characters	1	24 characters	1	14 characters	1	7 characters
72 characters						

FIGURE 1/F.200

Format of the call identification line

5.3.2.5 Field 1 (identification of the called terminal) contains the identification of the called terminal in the format defined in § 7.5. It is originated in the control procedures by the called terminal equipment.

5.3.2.6 Field 2 (identification of the calling equipment) contains the identification of the calling terminal in the format defined in § 7.5. It is originated in the control procedures by the calling equipment.

5.3.2.7 Field 3 (date and time) contains the date and time reference information showing the year, month, day, hour and minute in the fixed format of 14 characters thus YY-MM-DD-HH:MM. This field is originated in the control procedures by the calling terminal. (*Note* – The calling terminal may obtain this information from the network, an internal clock or manual input.) This time represents the local time at the calling terminal and is intended to represent the time of call origination.

5.3.2.8 Field 4 (supplementary reference information) contains a document reference number, a hyphen (coding 2/13) as a separator and a page reference number as defined in Recommendation T.62. This field has a fixed length of seven character positions and is originated in the control procedures by the terminal that is sending the associated documents.

In the processable mode of operation as defined in Recommendation F.220, the page as basic element of correspondence cannot be used. As a consequence part 4 of the CIL presenting the page number will not be printed.

5.3.2.9 Each of the fields of the call identification line is separated by the solidus (/) character (coding 2/15).

5.3.2.10 Only graphic characters of the Teletex graphic character repertoire corresponding to those of International Telegraph Alphabet No. 2 are used in the call identification line.

5.3.3 The long term objective for identification of Teletex equipment is the application of Recommendation F.351. This requires further study.

5.4 *Special services*

5.4.1 Since the effectiveness of the Teletex service will be increased by the availability of special facilities such as those given in the list of examples below, Administrations should give attention to their early introduction:

- network-based storage (see Recommendation F.203);
- abbreviated address calling;
- multi-address calling;
- identification by the network;
- automatic date and time indication;
- indication of charge.

5.4.2 Most of these facilities will be provided by the network on a national basis and it should be borne in mind that the Teletex service will be carried by different networks.

5.4.3 They may also be provided from Teletex equipment and systems instead of, or as well as, from the network.

5.4.4 The network should not impose any limitations on optional and private use applications.

5.4.5 Intercommunication with other services is covered in separate Recommendations.

5.4.6 For the ISDN, the international supplementary services which may be used for Teletex in the circuit mode on the B channel are, as a minimum as follows: in accordance with Recommendation X.30:

- i) closed user group;
- ii) multiple numbers for a subscriber;
- iii) direct dialling in (DDI);
- iv) user-to-user signalling;
- v) calling line identification presentation;
- vi) calling line identification restriction;
- vii) connected line identification presentation.

Use of other supplementary services is for further study.

5.4.7 The use of national supplementary services is beyond the scope of this Recommendation. Indication-wise, the following is a list of national supplementary services available in the ISDN;

- i) number selection barred;
- ii) direct call;
- iii) selective direct call;
- iv) abbreviated address calling;
- v) redirection of calls to a mailbox in the network;
- vi) outgoing calls barred;
- vii) incoming calls barred;
- viii) line hunting with only one TID;
- ix) connect when free;
- x) call waiting;
- xi) centralized distribution in original country of record private;
- xii) information;
- xiii) centralized PBS facilities;
- xiv) credit card calling from public booth;
- xv) date and time call duration record for billing;
- xvi) directory enquiries;
- xvii) fault reporting service;
- xviii) freephone service (name and definition of this service need to be changed for Teletex);
- xix) general deactivation;
- xx) general telecommunication information;
- xxi) operator access to, and control of, supplementary services;
- xxii) out of area lines;
- xxiii) priority selection;
- xxiv) store and forward;
- xxv) deferred delivery;
- xxvi) itemized bill;
- xxvii) traffic statistics;
- xxviii) bilateral closed user group;
- xxix) bilateral closed user group with outgoing access;
- xxx) on-line facilities parameter registration/cancellation;
- xxxi) DTE inactive registration/cancellation;
- xxxii) RPOA selection.

5.4.8 *Supplementary services for Teletex in the packet mode on the ISDN*

5.4.8.1 The provision of packet mode services within the ISDN in accordance with Recommendation X.31 is for further study.

5.4.8.2 Equally the use of international supplementary services for packet mode on international ISDNs is for further study.

6 **Quality of service**

6.1 *General*

6.1.1 The Teletex service provides any user with the facility to communicate text, or other suitable data, to any other user nationally and internationally.

The characteristics of the user equipment, as described in § 7 are of relevance to this matter.

Note 1 — As practical experience of the implementation of the Teletex service has increased, the need to revise the quality of service figures quoted in this section has been foreseen.

Note 2 — The quality notions for the Teletex service do not necessarily apply to all extensions and types of intercommunication. Each case may need its own arrangements to be defined in the appropriate Recommendations.

Note 3 — Additional quality of service parameters may be added.

6.1.2 In order to ensure to the user of the Teletex service (i.e. to the sender) an adequate Quality of Service, which includes information about the minimum presentation capabilities on the receiving side, the capability of printing a paper copy shall be available at least once at each Teletex installation. This capability need not necessarily reside at each terminal, but rather could be provided by a central facility.

6.2 *Teletex equipment*

6.2.1 The quality of the service depends, among other things, on the ability of the called equipment to receive calls.

6.2.2 *Circuit switched public data networks*

6.2.2.1 In order to ensure an adequate grade of service, it should be an objective that the total loss probability of calls to a Teletex number should not exceed 0.05.

6.2.2.2 It is understood that the total loss probability (P_E) is composed of the loss probability due to incoming traffic (P_i), outgoing traffic (P_o) and due to temporary memory overload (P_m). P_m should not exceed 0.005 at a traffic intensity of 2 received messages per busy hour.

6.2.2.3 The values specified above for total loss probability shall apply to basic teletex, not covering the use of processable, interactive and mixed modes of operation. For the purpose of calculation it is assumed that 20% of the 24-hour total traffic occurs during peak hours. The foregoing values assume a skewed distribution for the character content of normal business correspondence, the distribution having a mean value of 1600 characters (including approximately 400 characters "header" information), a standard deviation of 800 characters and a mode of 1214 characters.

6.2.3 *Packet switched public data networks*

The quality of service criteria for these networks is the subject of separate Recommendations.

6.2.4 *Public switched telephone networks*

The quality of service criteria for these networks is the subject of separate Recommendations.

6.2.5 *Integrated Services Digital Networks*

The quality of service criteria for these networks is the subject of separate Recommendations.

6.2.6 The quality of service criteria for the above networks is for further study. The network used should in principle not degrade the quality of service for Teletex.

6.3 *Error protection*

6.3.1 To ensure call integrity, error protection will be provided by Teletex control procedures (see Recommendations T.62 and T.70). The error rate on the pre-information, information and post-information phases should not exceed 1 in 10^6 characters.

6.3.2 The control procedures to be applied to this end in intercommunication with other services may be different and are then a matter for the appropriate Recommendations (e.g. Recommendation F.422 for intercommunication between the Teletex service and the IPM service.)

6.4 *International routes*

6.4.1 The capacity of the routes between countries also has an important impact on the quality of the service. For that reason, the number of circuits provided between any two networks should be such that during peak hours not more than one call in 50 is lost due to a lack of international circuits (see Recommendation T.62).

6.5 *Availability of service*

6.5.1 The national and international facilities of the Teletex service, including the Teletex/telex conversion facilities, shall be open continuously.

6.5.2 Teletex user equipment for which call numbers are published in the directories shall, in principle, be available to accept calls continuously.

6.5.3 In order to meet the requirement of § 6.5.2, it is permissible to use a Storage Facility which can be network or customer premises based. This facility must appear in every respect to the originator as Teletex equipment. (Refer to Recommendation F.203.)

6.5.4 Two methods of delivery are available from the Document Storage Facility to the called Teletex equipment: automatic delivery, where the Storage Facility delivers messages when the called equipment is available to receive them, and retrieval initiated by the recipient. (Refer to Recommendation F.203.)

6.6 *Observations on the quality of the service*

6.6.1 Administrations should, as a minimum, monitor and evaluate the quality of the Teletex service internationally as described above.

6.6.2 Administrations should arrange to exchange statistics on the quality of the service at least once a year.

6.6.3 It is desirable that the statistics provide the information contained in Annex A.

6.6.4 Observations should be made at such points and in such quantity as to provide by preference a representative sample of at least 200 calls for each period on each route and to take into account the effects of store-and-forward services.

6.6.5 When exchanging statistics, Administrations should forward not only statistics of the route concerned but also comparable statistics for either all international Teletex traffic or Teletex traffic over similar routes.

7 **Users' Teletex equipment**

7.1 *General*

7.1.1 In order to support a high quality of service, a signalling rate of at least 2.4 kbit/s on the local loop is recommended except for the ISDN where a signalling rate of 64 kbit/s applies. This signalling rate refers to the information transmission speed as seen by the users' equipment.

7.1.2 The facilities required on equipment connected to the international Teletex service are listed in the following.

7.1.3 It is recognized that in certain applications, there may be a need for equipment only having the ability to receive messages. For this type of Teletex equipment, the requirements of § 7.2.1 are waived.

7.2 *Character repertoire*

7.2.1 Teletex equipment shall have the ability to generate characters of the basic international Teletex character repertoire (see Recommendation T.61).

7.2.2 Teletex equipment must be able to receive and store all the characters of the basic Teletex character repertoire.

7.2.3 Teletex equipment shall have the ability to represent as legibly as possible all graphic characters of the basic international Teletex repertoire and to respond to control characters.

7.2.4 No constraints should be made on the type of presentation technology employed.

7.3 *Storage*

7.3.1 *General*

7.3.1.1 The Teletex equipment will have memory for storage to be used for both local and communication functions.

7.3.1.2 Memory is required in the receiving equipment so that an operator may be assured undisturbed operation when working in local mode. Memory is also necessary to bridge the difference in speeds between reception from line and transfer to secondary storage media.

7.3.2 *Receiving capability*

7.3.2.1 The ability of Teletex equipment to receive incoming traffic is a prerequisite to answer the call. This ability must be sufficient to meet the quality of service as specified in § 6 of this Recommendation.

The entire receive memory of Teletex equipment should be available to incoming documents. If requested by the originating equipment, the available receive memory in the called equipment should not be partitioned into pages. Consequently, in principle, there should be no limitation to the number of characters per page.

7.3.2.2 If during a call the ability of the receiving equipment to continue to accept traffic is jeopardized (e.g. memory threshold reached) an indication of this condition will be passed to the sending equipment by the control procedures to permit the orderly termination and resumption of the transmission.

7.3.3 *Memory negotiation*

7.3.3.1 Memory negotiation is an optional capability.

7.3.3.2 Teletex equipment supporting memory negotiation must be able to interwork with equipment not supporting memory negotiation.

7.3.3.3 Requests for memory should be related to the size of the document(s) to be sent (i.e., must not be a value less than that required to send the document(s), should not be a predetermined value, and should not be significantly larger than the document(s) to be sent).

7.3.3.4 Reservations of memory should be related to the size of the memory requested.

7.3.3.5 It is to be determined by the sending Teletex equipment whether or not to initiate sending. A document may have to be sent during more than one session, if the receiving equipment responds with not sufficient memory to receive that document.

7.3.4 *Interruption of local mode*

7.3.4.1 Appropriate indicators signifying the presence of a message, as well as receive storage full will be provided to allow for interruption of local mode operation to permit presentation of Teletex message(s).

7.4 Alarm indicators

7.4.1 Alarm indicators (visual and/or audible) are required in Teletex equipment to signify each of the following conditions:

- a) receiving storage contains one or more messages;
- b) receiving storage threshold reached;
- c) output medium (e.g. paper) low.

7.5 Teletex terminal identification

Note – In this paragraph “terminal” is used to identify the end-point of responsibility of the Teletex service.

7.5.1 For each connection to the network, the terminals in the Teletex service shall have a unique identification. The different parts of this identification are contiguous as shown in Figure 2/F.200 and no characters other than those specified there are used.

Part 1		Part 2	Part 3		Part 4
Network and country ^{a)} code	—	National subscriber number	(—) Additional information	=	Mnemonic abbreviation
Up to 4	1	Up to 12	Up to 4	1	Minimum 3
Maximum 15			Maximum 24 characters		

^{a)} Country or geographical area code.

FIGURE 2/F.200

Format of the terminal identification

7.5.2 It is the responsibility of the calling terminal to verify the identification of the called terminal prior to the information transfer phase of the call.

7.5.3 Part 1 (network and country ³⁾ code) contains the relevant information about the network and country concerned in accordance with the principles of Recommendation X.121 ⁴⁾. For Teletex terminals connected to the ISDN Part 1 contains 0, followed by the 1 to 3 digit country code of E.164 (see also Recommendation F.351).

7.5.4 Part 2 (national subscriber number) is the number of the main station or of the private branch exchange. It will be the complete call number including any national area code applicable within the country concerned, by means of which a user can be reached by other subscribers of the same country and on the same network ⁴⁾. This part is separated from Part 1 by a hyphen (coding 2/13).

7.5.5 Part 3 (additional information), when used, begins with a hyphen (coding 2/13) and may contain alphanumeric characters for:

- a) the extension number of Teletex equipment connected to local networks, e.g. PBXs (see Recommendation T.70, extending addressing);
- b) the code abbreviation of an extension number when the numeric number cannot be contained in Part 3;
- c) the code identifier of specific equipment. This possibility can be used for indication of, for example, Teletex equipment in a “group number” or when a call is terminated in a document storage facility outside the terminal. In the latter case the value « + + + » in Part 3 will be returned to the calling terminal;

³⁾ Country or geographical area code.

⁴⁾ These are not necessarily the numbers used in call establishment.

The indication of special service signals within Part 3 is for further study.

Where alphabetic characters are used, the use of capital or small letters does not effect the meaning. The maximum number of characters in Part 3 is normally four. However, observing the other rules in § 7.5, Part 3 may be enlarged. (This item requires further study.)

7.5.6 Part 4 (mnemonic abbreviation) will consist of a minimum of three letters as information for the automatic identification of the connected subscriber. Both capital and small letters can be used and mixed. Only non-accented letters A-Z and a-z must be used (coding 4/1 to 5/10 and 6/1 to 7/10).

The use of capital or small letters does not change the meaning of the mnemonic especially in the telex/Teletex intercommunication case (e.g. "ABC" mnemonic has the same meaning as "AbC" mnemonic). The mnemonic abbreviation must always be preceded by the character = (equals sign, coding 3/13).

7.5.7 The parts of the terminal identification are justified to the left and the format is fixed at a length of 24 characters. If the total number of characters in parts 1 to 4 is less than 24, the format must be filled to 24 characters by the addition of space characters (coding 2/0) immediately following Part 4.

7.5.8 The directories issued by Administrations must include at least Parts 1, 2 and 4 of the Teletex user's terminal identifications.

7.5.9 In intercommunication with other services as much as possible the identification systems of the separate services should be maintained, with required conversion to be provided by network devices. This point will be covered by each intercommunication case separately via the appropriate Recommendations.

7.6 *Format of Teletex pages*

7.6.1 *Objectives*

7.6.1.1 It is a basic objective of the Teletex service to achieve as much similarity as possible to existing operating procedures of office machines. Another objective is to establish a basic, defined mode of operation common to all Teletex equipment machines used in the service. Therefore, a minimum basic requirement is defined, and all terminals used in the Teletex service shall comply with this minimum basic requirement. This, however, does not preclude the possibility that equipment may by prior agreement between the parties concerned operate in modes different from these basic minimum requirements.

7.6.2 *General*

7.6.2.1 The maximum printable areas for various standard paper sizes are defined in Recommendation T.60 and shall not be exceeded. The range of equipment capabilities is exchanged during session establishment, prior to document transmission. These procedures are defined in Recommendation T.62 along with the default values for these capabilities if this exchange is not explicitly stated.

7.6.2.2 A particular selection from this established range of capabilities is made preceding transmission of each document. Some of these selections may be changed at page boundaries and some may also be changed within a page.

7.6.3 *Basic requirements*

7.6.3.1 As minimum requirement for the specification of the format used, four parameters are required. These parameters are:

- a) paper orientation;
- b) line spacing per line-feed character;
- c) left margin;
- d) character pitch.

Additional parameters may be used to identify optional capabilities used for a document.

7.6.3.2 These parameters remain effective until changed. In the absence of an explicit selection these parameters must be automatically restated in every control signal that causes feeding of the next page.

7.6.4 Paper size and paper orientation

7.6.4.1 It is a requirement that the Teletex service should accommodate both the ISO A4 (210 × 297 mm) as well as the North American (216 × 280 mm) size of paper format in both the vertical and the horizontal paper orientation.

7.6.4.2 The standard paper orientation, in the absence of an appropriate control signal, is with the long dimension being vertical as viewed for reading. This orientation is hereafter called the A4 orientation.

7.6.5 Number of characters per page

It is a requirement to have a page of undefined size. Theoretically it must be of sufficient size to contain all characters, including control characters when the originating equipment negotiated impartitioned storage of a specific transmission.

7.6.6 Line spacing per line-feed character

7.6.6.1 This parameter may be changed at any point within a document. In the absence of an operator selection the default value shall be one line-feed (= 4.23 mm). Provision shall be made for selecting 0.5, 1, 1.5 and 2 line-feeds per line-feed character.

7.6.7 Left margin

7.6.7.1 This parameter selection may be changed at any point within a document. In the absence of an operator selection the default value shall be approximately 20 mm and may be expressed as an integral number of character pitches. Printing left of the defined margin on a per line basis must be possible by means of operator commands.

7.6.8 Character pitch

7.6.8.1 The basic character pitch shall be ten (= 2.54 mm character spacing).

7.6.9 Positioning of text

7.6.9.1 One line in the maximum printable area is reserved for the call identification line, see § 5.3 for details.

7.6.9.2 The printable areas include an allowance for printing with an offset of 2.12 mm above the first baseline and 2.12 mm below the last baseline for exponents and indices respectively. Equally, such offsets may be used within the page. Text should not be positioned by such offsets in such a way that characters overlay characters previously printed or displayed.

7.6.10 Use of the page format

7.6.10.1 Table 1/F.200 gives the maxima of lines per page and characters per line that may be used in the basic service with the basic values given below. For intercommunication with telex, see Recommendation F.201.

TABLE 1/F.200

	Vertical format	Horizontal format
Maximum number of text lines	55 ^{a)}	38 ^{a)}
Maximum number of characters per line	5 + 72 ^{b)}	5 + 100 ^{b)}

^{a)} The call identification line is not included in this figure.

^{b)} The 5 characters can be positioned in the left margin by using appropriate control commands (see § 7.6.6).

7.7 *Information to the Teletex user*

The operator must be given sufficient information to identify difficulties with sending and receiving documents.

7.7.1 Sufficient information should be provided to enable an operator to perform a status check to be made of documents in store.

7.7.2 If equipment cannot automatically transmit a document, sufficient information should be given to the operator to be able to:

- i) identify the document;
- ii) identify the reason for failure.

This information will enable the operator to take appropriate action to resolve this difficulty.

Multi-address calls will be reported on a per address basis.

7.7.3 If the CIL is presented on every page of a document, information will need to be provided to enable an operator to identify interrupted and continued documents received.

7.7.4 In view of the importance of using the same indicators/reason codes for a clear understanding and efficient way for the exchange of information between international operators to overcome service difficulties, it is recommended to adopt the same indicators/reason codes to report service abnormalities detected by the Teletex equipment to the international operators.

With this approach, difficulties for the international operator should be minimized to change his working equipment.

7.7.5 In the case of document interruption during transmission, the receiving equipment should automatically notify the interruption to the operator. After the interruption the terminal should generate and/or add a note to the text of the unfinished message specifying the event of the interruption. This note should be in such a way as to easily separate the original text to allow message reconstruction. The message bearing the note should be printed or otherwise displayed showing the event of the interruption.

7.7.6 After an interruption of a document transmission, two resumption procedures should be considered: manual (§ 7.8) and automatic (§ 7.9).

7.8 *Manual procedure for interrupted document resumption*

7.8.1 The transmitting operator informed by his terminal of the unfinished transmission of a document, should generate an "Operator Message" as a separate cover sheet to the remaining part of an interrupted document whose CIL was specified.

The Operator Message should contain the indication "Operator Message".

All other pages containing the text of the untransmitted part of the interrupted document.

7.8.2 The operator who receives an unfinished document should keep the received part waiting for document completion and, if required, manual linkage.

7.9 *Automatic procedure for interrupted document resumption*

7.9.1 This procedure is optional and should be activated after the receiving Teletex equipment has detected that the message concerns the completion of a previously received unfinished document.

7.9.2 After interruption, the sending Teletex equipment should keep in its permanent memory the remaining pages of the interrupted document with the receiving equipment to keep the received pages of the unfinished document.

At the resumption of communication, the sending equipment transmits the remaining pages, sending and presenting all the information the receiving terminal needs to link the parts of the interrupted document.

7.9.3 If the receiving Teletex equipment is not able to link the interrupted document, it should submit to the operator within the time limit of 12 hours the part of the document received. In this case the operator will follow the manual procedure.

8 Customer information

8.1 Directories

8.1.1 As far as possible a directory of Teletex users shall be provided by each Administration that operates a Teletex service.

8.1.2 As far as possible each Administration shall publish a directory of its users at least once a year.

8.1.3 Directories should be A4 size (210 × 297 mm). The printed area should be compatible with the printable area in the basic Teletex service.

8.1.4 The directories sent to Administrations shall be set up in Roman letters. The entry for each installation should show the full terminal identification as defined in § 7.5 of this Recommendation.

8.1.5 When directories are written in a language other than the language used in that country, they shall be accompanied by an explanatory note to facilitate the use of such directories. This note shall be drawn up in whatever official language of the Union has been agreed by the Administrations concerned.

8.1.6 Each directory shall include the following:

- a) how to use the directory, including lists of any symbols or abbreviations used;
- b) an alphabetic list of subscribers with the full terminal identification and business descriptions;
- c) a list of the network codes for those networks to which the subscribers have access together with the full access prefixes to those networks;
- d) how to use the service;
- e) how to establish international calls;
- f) how to establish calls to the telex service;
- g) how to establish calls to other services with which intercommunication is offered;
- h) how to use standardized options;
- i) where to go for help, responsible contact addresses for further information and/or maintenance.

8.1.7 Each Administration shall supply free of charge to Administrations with which a Teletex service exists a sufficient number of copies of its subscriber directories for official use. The number of such copies shall be fixed in advance by bilateral agreement and shall be regarded as applying until a request to change is received; such requests must be made at least three months in advance.

8.1.8 Each Administration shall supply against payment to Administrations with which a Teletex service exists a number of its directories to be put on sale. The number of copies intended for sale shall be regarded as applying until a request to change it is received; such requests must be made at least three months in advance.

8.1.9 Since the updating of directories in new services is a complicated matter Administrations should develop adequate procedures to keep each other informed on a regular basis of the changes to their directories. To that end electronic directory access may be adequate, e.g., using the mechanisms of the interactive mode of operation, whereas a further or alternative mechanism may also be provided by offering national operator services or help desks in such a way that efficient procedures come into existence for obtaining information on foreign Teletex services and their users.

8.1.10 A user wishing to obtain a copy of the directory of another Administration must apply to his own Administration. If an application for its directory is received directly by an Administration from a user of another Administration the request shall be forwarded to the user's own Administration.

8.2 Operating instructions

These instructions are being provided nationally taking into account the typical national environment of the Teletex service. Possible international aspects are for further study. Administrations are suggested to release user manuals.

8.3 *Printing of Teletex numbers*

Standardized printing of Teletex numbers (terminal identification) on letterheads is especially valuable for international purposes. It is recommended that this printing contain the word Teletex, followed by the complete number in accordance with the terminal identification format of Figure 2/F.200, § 7.5 above. For example:

Teletex: 933 – 99384965 = DAIISEDE

9 **Tariff principles**

These are laid down in separate Recommendations, called the D. Series. For intercommunication with other services different tariff principles may apply.

ANNEX A

(to Recommendation F.200)

Standard format for reporting the results of service observations

Administration (or RPOA) Traffic from to
Period of observation: 19.... to 19.... Period of day:
Route busy hour (outgoing): UTC to UTC
..... UTC to UTC Total calls observed:

Subject	Observations traffic to	Average of all outgoing Teletex traffic
Effective calls (% of total call attempts)		
Average chargeable time(s)		
Analysis of ineffective attempts (% stated in each of ineffective attempts) to be: ..		
– cut-offs during call selection		
– cut-offs during call progress		
– lack of outgoing international circuits		
– lack of circuits in distant national network		
– invalid selection		
– wrong number obtained		
– distant terminal engaged		
– distant terminal not ready		
– mutilations		
– other (specify)		

ANNEX B
(to Recommendation F.200)
Refers also to F.200-Series

Glossary of terms used in the Teletex service

B.1 call phases

F: phases d'une communication

S: fases de la comunicación

The five phases of a Teletex call that cover the activities between the calling terminal's call request signal and the disconnection of the terminals are:

- a) call set-up;
- b) pre-information sequence;
- c) information transmission;
- d) post-information sequence;
- e) call clearing.

B.2 calling terminal

F: équipement terminal demandeur

S: terminal llamante

That terminal that initiates the procedures to establish a call.

B.3 called terminal

F: équipement terminal demandé

S: terminal llamado

That equipment to which a call is made.

B.4 interactive mode

F: mode interactif

S: modo interactivo (modo dialogado)

The exchange in real time of user information during a call or series of calls between calling and called equipment.

B.5 fully automatic operation

F: fonctionnement entièrement automatique

S: explotación automática (operación automática)

Operation such that Teletex equipment is able to send documents (prepared in local mode, e.g., by an operator) into receiving storage without the intervention of an operator beyond the initial command and similarly are capable of receiving messages while they are unattended. Operator selection and operator assisted printing are not excluded.

Note — Examples are the intercommunication between the Teletex service and the telex service, the intercommunication between the Teletex service and the IPM service.

B.6 interworking in the Teletex service between different networks

F: interfonctionnement, dans le service télétext, entre des réseaux différents

S: interfuncionamiento de redes diferentes en el servicio teletex

The facility of making calls from a Teletex equipment served by one network to a Teletex equipment served by a different (and possibly a different type of) network.

B.7 interworking between Teletex and other services

F: interfonctionnement entre le service télétext et d'autres services

S: interfuncionamiento del servicio teletex con otros servicios

The facility of sending and receiving information between a Teletex equipment and an equipment/user of another service, such as telex, interpersonal messaging, videotex, etc.

B.8 intercommunication

F: intercommunication

S: intercomunicación

In the context of Teletex, a relationship between services, where one of the services is Teletex, enabling the user of the Teletex service to communicate with users of other services.

B.9 local mode

F: mode local

S: modo local

That state of an equipment that permits operation of some of its functions independently of any network functions.

B.10 mixed mode of operation

F: mode d'exploitation mixte

S: modo mixto de explotación

In the Teletex service, the mixed mode of operation provides the user, in addition to the basic features of the Teletex service, with means for transferring documents containing encoded graphical information using techniques other than those defined for the basic Teletex service.

B.11 multi-station Teletex installation

F: installation télétext à postes multiples

S: instalación teletex multiestación

A Teletex installation that includes more than one work station.

B.12 standardized option

F: option normalisée

S: opción normalizada

A service feature, defined by CCITT as an addition to the basic requirements, that may optionally be used by subscribers in the international Teletex service.

B.13 storage within the network

F: stockage dans le réseau

S: almacenamiento dentro de la red

A network-provided facility that will accept and store messages and relay them to the addressee(s), or (in case of store-and-retrieve) will be retrieved by the addressee.

B.14 Teletex call

F: communication télétext

S: comunicación teletex

The temporary connection (or apparent connection as perceived by the caller) of Teletex equipment to other Teletex devices for the purpose of exchanging information.

B.15 Teletex page

F: page télétext

S: página teletex

The smallest unit of text treated as an entity in office correspondence in the Teletext service. One A4 (or A4L or North American Standard) page or the information that may be presented on it. Paper sizes other than ISO A4 or A4L may be included as standardized options.

B.16 Teletex document

F: document télétext

S: documento teletex

A sequence of one or more pages intended by the originator to be delivered as a single entity in the original page sequence.

B.17 Teletex equipment

F: équipement télétext

S: equipo teletex

A device that is capable of transmitting and receiving Teletex documents in accordance with the basic requirements of Recommendation T.60.

Recommendation F.201

INTERWORKING BETWEEN TELETEx SERVICE AND TELEX SERVICE – GENERAL PRINCIPLES

CONTENTS

- 1 *Introduction*
- 2 *Basic interworking service*
- 3 *Interworking with one-stage selection procedure for telex to teletex*
- 4 *Interworking with two-stage selection procedure for telex to teletex*
- Annex A – Reactions to abnormal conditions during the telex input*
- Annex B – Glossary of terms*

1 Introduction

This Recommendation defines the general principles and operational aspects of interworking between the teletex service and the telex service.

The teletex service is defined in Recommendation F.200 and in the relevant technical Recommendations.

The telex service is defined in Recommendations F.60, F.69 and in the relevant technical Recommendations.

The technical details of teletex/telex interworking are defined in Recommendations T.90 and U.201.

In order to promote the use of the teletex service, it is necessary to provide interworking with the telex service. (See Recommendation F.200, § 1.2.2.1 i)).

The implementation of national interworking between the teletex service and the telex service, which should be provided, is a matter for the Administration concerned.

International interworking should also be provided, and in this case the following three general principles should be adopted:

- a) Interworking should be entirely automatic and no operator intervention should be necessary.
- b) Where Administrations do not provide conversion facilities, basic interworking on international connections will be at 50 bauds.
- c) Where two Administrations both have a teletex service, or at least suitable conversion equipment, the possibility of a bilateral agreement to use an international teletex connection can be considered. It is recommended that, where possible, an international teletex connection should be used provided that the practical operational difficulties (e.g. tariff, routing and conversion problems) can be overcome.

2 Basic interworking service

2.1 Conversion

The teletex terminal should be capable of selecting a subset of its graphic character repertoire corresponding to International Telegraph Alphabet No. 2 and of restricting the length of a line to 69 characters: the necessary conversion between the services (e.g. of service procedures, transmission rates and codings) should be provided within the networks. To the telex terminals, existing specifications apply.

2.2 Location of the conversion facilities in the case of international traffic

There are two possible situations to be considered in the basic service as shown in Figure 1/F.201.

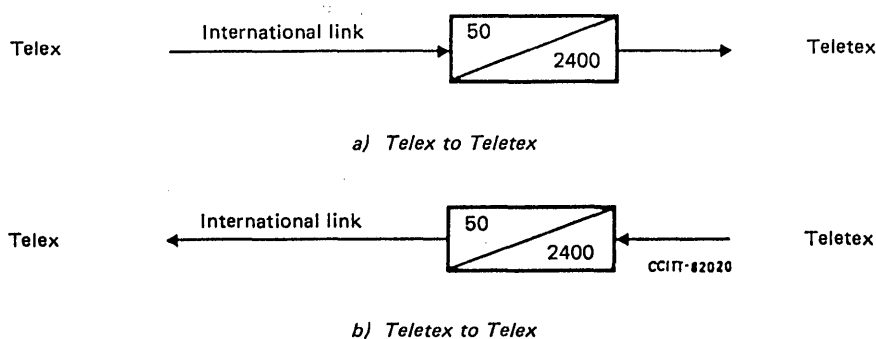


FIGURE 1/F.201

In cases that countries introduce the teletex service at different time, it must be assumed that the conversion facility is in the same country as the teletex terminal, in cases of operational conversion facilities on both ends § 1 c) above could apply.

2.3 Methods of interworking

- a) Considering that the teletex service can be provided upon various networks (see Recommendation F.200, § 2);
- b) Considering that an Administration can provide the teletex service on more than one network (e.g., PSTN and PSPDN, ...);
- c) Considering the technical constraints of the existing networks (e.g. numbering plans, ...);

The two following methods of interworking between the telex service and the teletex service can be provided:

- i) interworking with one-stage selection for telex to teletex procedure;
- ii) interworking with two-stage selection for telex to teletex procedure.

The conversion facility (CF) is performing interworking using store and forward principles.

The interactive mode is not required for interworking.

The two methods are described in §§ 3 (one-stage) and 4 (two-stage) with their conditions of implementation and their service characteristics. It is up to Administrations to decide which method they can provide. Administrations should take into account possible implications of the operational procedures to foreign subscribers.

The Administrations whose telex subscribers make access to foreign CFs should inform their customers of the procedures attached to the two methods.

2.4 *General service requirements for telex to teletex direction*

In the selection step of the one-stage selection procedure and in the first selection step of the two-stage selection procedure, the procedures should appear to the telex operator to be the same as for any other telex call.

Validation of the called teletex terminal is mandatory. Validation is performed either by a direct validation call or by data base access, in order to minimize the number of possible unsuccessful calls.

Format checking of the teletex address is desirable in both cases, immediately after the address input.

If the validation leads to a negative result, the CF should send at least the telex service signal “NP” or, if available, other appropriate service signals, according to Recommendation U.70, and the CF should then clear the call.

The storage capacity of the store and forward conversion facility may impose a limit on the length of messages (see also Annex B).

If abnormal conditions occur during the text deposit of the telex message, and the call is cleared before its normal completion, the conversion facility shall nevertheless transmit to the teletex terminal the text received so far and indicate that this transmitted text is probably not complete (see also Annex B).

The teletex terminal must be capable of properly reproducing a telex text. However, the conversion facility must provide any necessary rearrangement of the text, such as paging.

In principle, the telex customer should not be charged for unsuccessful calls, that is, when his message fails to reach the teletex user due to congestion or fault of the Administration's equipment, etc. Refund procedure should be in accordance with Recommendation F.67, Division E.

The CF shall wait at least 15 seconds for activity on the line before clearing. See also Annex A for abnormal conditions during message input.

2.5 *General service requirements for teletex to telex direction*

The teletex terminal shall provide to the conversion facility a telex mode. In this mode it shall:

- a) transmit only the character repertoire of the International Telegraph Alphabet No. 2 with the code frame of teletex characters;
- b) restrict the line length to 69 characters or less;
- c) insert the control characters carriage-return and line-feed at the appropriate positions. Only the sequence carriage-return and line-feed should be used to introduce a new line.

The message should appear to the receiving telex terminal as a normal telex message.

The CF shall transmit to the telex terminal the stored message in the format in which it was originated. After text transmission is complete, the CF shall send to the telex terminal the teletex answerback. This rearranged teletex terminal identification (or “teletex answerback”) contains the teletex user directory information:

- DNIC or TCC and national number according to Recommendation X.121 if there is more than one network for teletex service (in this case, DNIC, or TCC are separated from the national number by a hyphen (–), Combination No. 1 of ITA2);
- National number if only one network. If space is available, the teletex terminal answerback will contain the mnemonic part of the teletex identification.

The provision by the store and forward CF of an acknowledgement following a successful call is a matter for national consideration, but an indication of failure, and the cause of failure, should be given whenever a message is undelivered.

The provision of interworking with the telex service must not reduce the quality of service on the teletex network as a result of excessive holding time caused, for example, by difficulties in setting up the telex connection.

3 Interworking with one-stage selection procedure for telex to teletex

3.1 *Service principles: telex to teletex direction*

3.1.1 *Numbering plan and teletex network environment*

The procedure for making the call should appear to the telex operator to be the same as for any telex call.

The numbering plan and teletex network environment should support the above principle.

The total selection information of the teletex user should not be longer than 12 digits.

3.1.2 *Text delivery to the teletex terminal*

Normally, text delivery to the teletex terminal would occur while the telex call is held, immediately after the end of input (EOI) signal.

It is the responsibility of Administrations operating the store and forward conversion facilities to arrange alternative means of delivering for the messages that could not be delivered directly to the teletex terminal.

3.1.3 *Protocol and technical aspects*

Teletex protocol and other technical aspects of interworking using the one-stage procedure are described in Recommendation U.201.

3.2 *Service principles: teletex to telex direction*

3.2.1 *General requirements*

The general requirements developed in § 2.5 are relevant for this method of interworking.

3.2.2 *Text deposit to the conversion facility by the teletex terminal*

Text deposit takes place during a call which follows normal teletex procedures with the conversion facility emulating a teletex terminal. The teletex terminal should clear the call after text deposit without waiting for the delivery to the telex terminal.

3.2.3 *Text delivery to the telex terminal by the conversion facility*

The principles of Recommendation U.40 shall be applied for all delivery reattempt requirements.

Before forwarding the text, to ensure security of delivery, the telex answerback is taken and compared with the telex answerback given by the teletex user.

The method of validation of the recipient's answerback shall be in accordance with Recommendation U.75.

In case of unsuccessful evaluation (see Figure 1/U.75), the message shall not be forwarded, the NDN control document returned to the teletex subscriber shall include the answerback received.

In case the teletex user has so requested, by inputting a single character in the mnemonic field, no check of the answerback shall be performed. The message is then to be forwarded.

If no information is present in the mnemonic field, the conversion facility (CF) should try to extract the Telex number of the called telex party from its answerback:

- If extraction is not possible, the message is forwarded.
- If extraction result matches with the selection, the message is forwarded.
- If extraction result mismatches with the selection, the message is not forwarded.

If any signal is received from the telex network during the delivery to the telex terminal, the call shall be cleared and one further attempt to deliver the message may be made after an interval of at least three minutes. In this case the text shall be preceded by "POSSIBLE DUPLICATE MESSAGE".

After text transmission is completed, the telex answerback should be taken and compared with that received at the start of delivery. In the event of a mismatch, the telex answerback shall be taken again, and if there is a match with that received at the start of delivery, the delivery shall be deemed successful. If there is a second mismatch, the call shall be cleared and one further attempt to deliver the message may be made after an interval of at least three minutes. In this case the text shall be preceded by "POSSIBLE DUPLICATE MESSAGE".

The action to be taken when a notification cannot be delivered should be the responsibility of the Administration operating the conversion facility and is a national matter.

Administrations should advise their customers of the meaning and possible consequences of using special telex characters sequences (see Recommendation S.4) in the submitted text.

An acknowledgement call to the teletex terminal is mandatory if the telex delivery was unsuccessful (Non-Delivery Notification: NDN) but optional if the telex delivery succeeds (Positive Delivery Notification: PDN).

3.2.4 *Protocol and technical aspects*

Teletex protocol and other technical aspects of interworking are described in Recommendation T.90.

4 **Interworking with two-stage selection procedure for telex to teletex**

4.1 *Service principles: telex to teletex direction*

4.1.1 *General requirements*

The general requirements developed in § 2.4 are relevant for this method of interworking.

4.1.2 *Numbering plan and teletex network environment*

Two-stage selection must be used if total selection information requires the input of more than 12 digits.

4.1.3 *Multiple address input facility*

It is up to the Administrations operating the CF to offer this facility or not, on a bilateral agreement basis. This facility allows the telex originator to send a single message to several teletex recipients. Format of multiple address input is described in detail in Recommendation U.201.

4.1.4 *Validation*

Validation of the national address of the called teletex terminal is mandatory. Validation of the teletex mnemonic, whenever input by the telex user, is also mandatory.

The two recommended validation methods are:

- a) validation call to the teletex subscriber,
- b) automatic checking in a data base.

It is the responsibility of the Administration providing the CF to determine which of the two methods is to be implemented.

In both methods it is desirable to check the format of the teletex selection information before the start of the validation process. The validation process should begin immediately after the complete teletex address has been received.

The subscriber is expected to wait after the end of address (EOA) signal for his answerback to be tripped and for the receipt of a progress signal. This signal may be either a GA, a positive validation answer followed by a GA, or a negative validation answer.

The progress signal should appear within five seconds counted after the address input (i.e. after the EOA) even if the validation process is not completed (see Table 1/F.201).

TABLE 1/F.201

Action of CF following validation result

Telex emitter state following the Teletex address input	Action of CF when validation result becomes available	
	Positive result	Negative result
Inputting own telex address	Wait for end of address input and send positive validation answer. (See Note 1)	Interrupt input with "TTT. . ." characters. If input stops, send telex service signal and clear. If not, clear the call.
Waiting to start input (see Note 2)	Send positive validation answer. (See Note 1)	Send telex service signal and clear.
Message input in progress	Wait for end of input and send positive validation answer, with GA replaced by the IMA message. (See Note 1)	Interrupt input with "TTT. . ." characters. If input stops, send telex service signal and clear. If not, clear the call.
Input finished and waiting	Send positive validation answer, with GA replaced by the IMA message. (See Note 1)	Send telex service signal and clear.
Subscriber has cleared the call	No action.	Recall subscriber and send an appropriate NDN.

Note 1 — Format of positive validation answer is described in Recommendation U.201.

Note 2 — If the validation result is not available within 5 seconds, the CF shall return GA, continue the validation process, and wait for text input.

If the subscriber does not wait for the progress signal, then the input of the message and its subsequent delivery is at his own risk. There is also a risk that a collision can occur between the message input and the validation answer.

When receiving multiple address, the procedure is similar to the single-address one. The CF should try to validate one of the proposed Teletex addresses, and return the result of the first positive one followed by GA.

If no address is valid the call shall be rejected.

4.1.5 *Capture of the calling telex address*

Capture of the calling telex address by the conversion facility is necessary for later use in order to recall the telex user if needed (e.g. non-delivery notification, . . .).

Where the answerback is not processable according to U.74, the calling telex address should be input directly.

Format of the telex address is the Recommendation F.69 country code followed by the national telex number.

4.1.6 *Input message acknowledgement*

The input message acknowledgement (IMA) is to be returned by the CF to the calling telex user after the EOI.

This information is used as the message reference in case of a non-delivery notification (NDN).

The input message acknowledgement will consist of the "IMA" service signal, a date and time and an optional message reference number.

4.1.7 *Text delivery and clearing*

After the EOI, the telex user should hold the line until receiving IMA.

Whenever technically possible, the CF should attempt to deliver the message to the teletex user immediately after the EOI in order to provide an on-line delivery acknowledgement (ODA) facility.

If the CF provides the on-line delivery acknowledgement facility (ODA), it sends a MOM signal immediately after the IMA. If the ODA facility cannot be provided, the CF sends a service signal (ITL) immediately after the IMA, followed by clearing.

If the on-line delivery acknowledgement facility is provided, the CF attempts *to establish* the delivery call within a maximum period of 30 seconds, with several attempts (at least one in the case of PSTN). Attempts should be made at 5-second intervals measured from the end of one attempt to the beginning of the next.

A MOM signal is returned after each attempt followed eventually by network service signals. If the message delivery succeeds, the teletex answerback as described in Note 6 of Figure 7/U.201 is the on-line delivery acknowledgement for the telex user.

If the teletex *call establishment* fails within 30 seconds, the CF sends a service signal (ITL) and clears the call.

After sending an ITL signal, in all cases, the CF should attempt to deliver the message within four hours. The CF should make at least 16 series of four calls, with 15 minutes between each series. (These figures may be revised in some cases, e.g. in the case of a PSTN.)

If the delivery fails despite the performance of the cycle of delivery attempts, the CF should send a non-delivery notification (NDN). This information is sent to the telex user with the complete reference of the related message in order to allow the telex user to take further action. No further delivery action shall be taken by the CF.

The NDN is described in the relevant sections of Recommendation U.201 and should contain the following items:

- CF's telex answerback;
- indication of content (NDN);
- CF's current date and time;
- received teletex identifier (as transmitted by the user during message deposit);
- IMA (as transmitted by the CF after message deposit);
- cause of non-delivery (telex service signal of the last delivery attempt as specified).

In case multiple address delivery is offered, every non-delivered address should be notified to the telex originator of the message.

4.1.8 *"Follow-on" message facility*

4.1.8.1 *General service aspects*

It is up to the Administration operating the CF to offer this facility or not.

If offered, this facility allows the telex originator to enter a new message after the deposit of the previous one, without clearing the call.

If available, this facility should be offered to both manual terminals and Telex Automatic Emitting Devices (TAEDs).

When the CF offers the ODA facility, the new message is entered after the on-line-delivery acknowledgement of the previous one has been returned.

When the ODA facility is not offered by the CF, the next message is entered after the "ITL" prompt related to the previous message.

4.1.8.2 *Protocol aspects*

Detailed protocol aspects are described in the relevant sections of Recommendation U.201.

4.1.8.2.1 *Manual terminals*

- When offered, the use of the follow-on message facility is prompted by the CF to the subscribers by means of a prompt sent after the ODA or the ITL (see Recommendation U.201) "CRLF TTX NBR";
- If no data has been received within 15 seconds after this prompt, the CF should clear the call.

4.1.8.2.2 *Telex automatic emitting devices*

- The operator of TAEDs may request the follow-on facility when offered, after checking in an international directory its existence.
- Request for follow-on messages is done by concatenation of several sequences: “teletex Address, Message, EOI”.
- The CF should wait 15 seconds after the end of message (EOI) sequence before clearing the call, for a possible following message.
- When the facility is not offered, the CF should stop the transmission of the following message by means of “TTT...” sequences and clear the call (see abnormal conditions in Recommendation F.201).

4.1.9 *Positive delivery notification to a telex originator (PDN)*

4.1.9.1 *General service aspects*

In case on-line delivery acknowledge facility (ODA) is not offered by the CF, implementation of the PDN facility is considered as useful.

It is up to the Administration operating the CF to offer this facility or not.

Access to the facility is available to users of Administrations having an agreement with the one operating the CF.

This facility allows the originator telex user to ask for the sending of a positive delivery notification (PDN).

The PDN is returned to the telex originator as soon as possible, within an eight-hour delay, after the delivery of the message to the teletex recipient.

If delivery of the PDN to the originator is not possible, the PDN should be printed out on a suitable service position and sent by mail.

4.1.9.2 *Protocol aspects*

Detailed protocol aspects are described in the relevant sections of Recommendation U.201.

4.1.9.2.1 *PDN facility request by the calling telex user*

If the PDN facility is offered, the telex originator requires a PDN by means of a specific sequence of characters following the input of the recipient teletex address.

When the facility is requested by the user whilst not offered by the CF, the CF should stop the transmission by means of sequences of “Ts” and clear the call.

4.1.9.2.2 *PDN facility content*

If the PDN facility is offered, the PDN should contain the following items, with the format described in the relevant sections of Recommendation U.201:

- CF's telex answerback;
- indication of content (PDN);
- CF's current date and time;
- selection information (Teletex address as received from the user during deposit);
- received Teletex identifier;
- IMA (as transmitted by the CF after message deposit);
- date and time of delivery (CF's time).

4.1.10 *Protocol and technical aspects of interworking with two-stage selection*

Telex protocol and other technical aspects are described in Recommendation U.201, § 3.2.

4.2 *Service principles: teletex to telex direction*

4.2.1 Service principles teletex to telex direction are identical for one-stage and two-stage telex/teletex interworking.

The principles described in § 3.2 apply in total to two-stage selection.

4.2.2 Differences between protocols occurring on the telex side are described in relevant parts of Recommendation U.201.

ANNEX A

(to Recommendation F.201)

Reactions to abnormal conditions during the telex input

A.1 *Telex connection clearing without the end of input signal*

After a clear without the end of input (EOI) signal, the conversion facility should forward the message to the teletex user.

A.2 *Telex user pausing during input of address information*

If there is a delay greater than 15 seconds at the start of the address input or between characters within the address input, the CF shall clear the connection.

A.3 *Telex users stopping transmission without sending the end of input signal*

After at least a 30 seconds time-out, the conversion facility should send a prompt "GA" to the telex user in order to request more information input (e.g. a text or the end of input signal). If after a further 30 seconds time-out there is no more information, then the conversion facility should send the input message acknowledgement signal, followed by a service message BK. After this the conversion facility should clear the call and forward the message to the teletex user.

A.4 *Telex users sending a WRU to the conversion facility during text input*

- i) In case of one-stage selection procedure, the CF should return the rearranged teletex answerback (see Note 3 of Figure 1/U.201).
- ii) In case of two-stage selection procedure, in any step of the procedure, the conversion facility should return its answerback after receiving a WRU. In addition:
 - if WRU is followed by text, message input is continued after the conversion facility answerback. Also the WRU is deleted from the message text;
 - if WRU is followed by a clear from the telex network, the conversion facility proceeds as in § A.1 above;
 - if WRU is followed by an idle condition, the conversion facility proceeds as in § A.3 above.

A.5 *Telex users sending a text after the end of input signal*

Any characters received after the end of input signal will be ignored. The conversion facility should use the "TTT..." characters to attempt to stop the telex transmission and if successful, then send an input message acknowledgement signal followed by clearing. After clearing, the message should be normally forwarded to the teletex terminal.

A.6 *Telex users clearing after the end of input signal and before the input message acknowledgement signal*

The message shall be normally forwarded to the teletex terminal.

A.7 *Telex users sending national variants of ITA2 characters (figure shift characters of F, G and H)*

These combinations could either be converted into a teletex code which is a non-telex character (e.g.: "**"), or into the national use of these combinations. The choice is a national matter.

A.8 *The conversion facility detecting signal distortion during text input*

Reactions to the detection of distortion are a national matter.

A.9 *Telex users sending a bell signal*

The conversion facility has to ignore the bell signal in text input.

A.10 *CF's storage capacity overflow during telex message input*

- In order to avoid memory overflow occurring during message input, a guaranteed message length of 12 000 characters is defined.
- The CF should return an "NC" service signal if guaranteed storage space is not available.
- Messages exceeding the guaranteed length will continue to be accepted if storage is available.
- If the number of characters received by the conversion facility during a message input exceeds the available storage to that input, the conversion facility should discard the excess characters and no attempt should be made by the conversion facility to overwrite previously stored characters. When this occurs, the conversion facility should immediately attempt to prevent the telex user from sending further characters by transmitting a sequence of "TTT ..." characters for a maximum of 20 seconds.

If the calling terminal stops transmission within this period, the conversion facility should return the message length exceeded indication, "LDE", return IMA in case of the two-stage selection procedure and then behave as normal, as if the text input phase had finished.

If the terminal continues to transmit characters after this period, the conversion facility should forcefully clear the connection.

The conversion facility should attempt to deliver the message text, accepted and stored, preceded by a special text prefix to indicate to the called teletex user that the message may be incomplete.

ANNEX B

(to Recommendation F.201)

Glossary of terms

B.1 *General glossary*

B.1.1 **interworking**

F: interfonctionnement

S: interfuncionamiento

Same as definition in Recommendation F.200, § B.7.

B.1.2 **conversion facility (CF)**

F: unité de conversion (UC)

S: unidad de conversión (UC)

Fully automatic system performing the necessary conversion between the teletex service and the telex service (see Recommendation F.201, § 2.1).

B.1.3 **one-stage/two-stage selection procedure for telex to teletex direction of interworking**

F: procédure de numérotation en une étape ou en deux étapes pour l'interfonctionnement dans le sens télex vers télételex

S: procedimientos con marcación mono o bietapa para el interfuncionamiento de télex a teletex

Addressing of the teletex terminal by the telex terminal can be done, either by sending the total selection information in one phase to the CF or by calling first the CF (first stage of the selection), and by sending the teletex address after the connection to the CF has been established (second stage of the selection).

B.1.4 validation of the called teletex terminal [validation result (positive or negative)]

F: validation du terminal télétexte demandé [résultat de la validation (positif ou négatif)]

S: validación del terminal teletex llamado [resultado de validación (positivo o negativo)]

This validation is performed by the CF to verify that the teletex terminal is available, i.e. either the teletex terminal has been called with this address (validation call) or this address has been controlled in a data base (see Recommendation F.201, § 4.1.4).

B.1.5 message deposit/message delivery (text deposit/delivery)

F: dépôt du message/remise du message (dépôt/remise du texte)

S: depósito de mensaje/entrega de mensaje (depósito/entrega de texto)

The message “deposit” is the sending by the calling terminal of the whole message to the store and forward CF before its further “delivery” to the called terminal.

B.1.6 on-line delivery acknowledgement (ODA)

F: avis de remise en ligne (ODA)

S: acuse de recibo de entrega en línea (ODA)

The on-line delivery acknowledgement facility gives to the waiting telex (i.e. having maintained the connection with the CF after its message deposit) the opportunity to receive “on-line” a proof of the CF’s message delivery to the teletex terminal, provided the call establishment to the teletex terminal has been performed within 30 seconds counted after the end of the message input (see Recommendation F.201, § 4.1.7).

B.1.7 non-delivery notification: NDN / positive delivery notification: PDN

F: avis de non remise (ANR)/avis de remise positive (ARP)

S: notificación de no entrega (NDN)/notificación de entrega positiva (PDN)

If the CF has not been able to deliver the message to the called terminal despite the performance of a defined cycle of delivery attempts on the called terminal network (each network has a specific cycle) and within a maximum of a four hours duration, the CF should send a NDN to the calling user to indicate to him that his message has not been delivered to the called terminal and that no further delivery action will be taken by the CF.

Note — The NDN facility is not provided in the one-stage selection method of interworking from telex to teletex.

B.2 Specific glossary to one-stage selection procedure

B.2.1 CF prefix

F: préfixe de L’UC

S: prefijo de UC

In the one-stage selection method of interworking, the “CF prefix” is the special number (up to 7 digits) to be put before the called teletex number, to indicate that the total telex selection is for reaching a teletex terminal.

B.3 Specific glossary to two-stage selection procedure

B.3.1 CF national number

F: numéro national de L’UC

S: número nacional de UC

In the two stage selection method of interworking, the “CF national number” is the national telex number of the CF, given to the called telex users at the beginning of the telex delivery phase of the teletex to telex exchange for further use of interworking with the teletex of the CF’s country.

B.3.2 input message acknowledgement : IMA

F: accusé de dépôt (IMA)

S: acuse de recibo de mensaje introducido (IMA)

The IMA message sent by the CF to the telex user is used to indicate that the message has been well received by the CF and to give to the telex user a unique reference for this message. This reference should be used again when sending an NDN (see Recommendation F.201, § 4.1.6).

B.4 Abbreviations

A/B	Answerback
CF	Conversion facility
DNIC	Data network identification code (Recommendation X.121)
EOA	End of address
EOI	End of input
IMA	Input message acknowledgement
NBR	Number
NDN	Non-delivery notification
ODA	On-line delivery acknowledgement
PDN	Positive delivery notification
SOA	Start of address
TAED	Telex automatic emitting devices
TCC	Telephone country code (Recommendation E.163)
TTX	Teletex

Recommendation F.202

INTERWORKING BETWEEN THE TELEX SERVICE AND THE TELETEX SERVICE – GENERAL PROCEDURES AND OPERATIONAL REQUIREMENTS FOR THE INTERNATIONAL INTERCONNECTION OF TELEX/TELETEX CONVERSION FACILITIES

CONTENTS

1	<i>Scope</i>
2	<i>Introduction</i>
3	<i>Service Outline</i>
4	<i>International Interconnection</i>
5	<i>Delivery/Non-Delivery Notification</i>
6	<i>Message Transfer</i>
7	<i>Elements of inter-CF message transfer procedures</i>
8	<i>Error Recovery</i>
9	<i>Message Input and Message Delivery</i>

1 Scope

1.1 Many Administrations have implemented, or are about to implement teletex/telex conversion facilities (CF). In many cases the telex selection and message input procedures, for the CF, differ for each country of destination.

1.2 This Recommendation proposes operational procedures for the international interconnection of CFs allowing access from the telex service to the international teletex service to be in the country of origin.

2 Introduction

2.1 The introduction of the international interconnection of CFs will, in many cases, lead to single selection and message input procedures, for telex access to the international teletex service, in the country of origin. Thus ensuring that the message input procedure may be tailored to meet national needs.

2.2 Use of error detecting transmission protocols between interconnected CFs will extend the performance characteristics of the teletex service across the international boundary when interworking between the telex and teletex services.

2.3 Telex customers interworking with the international teletex service may be identified in the country of origin.

2.4 The return of non-delivery and delivery notifications across international boundaries may be simplified.

2.5 Greater transmission efficiency may be achieved with multi-address messages and messages addressed to both telex and teletex addresses may be accommodated.

2.6 International accounting principles may be established for the international inter-CF traffic.

3 Service Outline

3.1 The international interconnection of CFs should be established between Administrations on a bilateral basis.

3.2 The general service requirements for telex to teletex and teletex to telex directions of interworking respectively should be in accordance with § 2 of Recommendation F.201.

3.3 The interconnection of CFs allows a telex or teletex subscriber to deposit a message with a CF in the originating country for subsequent delivery, via a CF in the destination country, to a teletex or telex subscriber respectively.

3.4 In the international interconnection of CFs, using store-and-forward principles, the message is deposited with a CF in the originating country and transferred to a CF in the destination country for delivery.

3.5 Provision may be made for both single and multi-address messages, where the multi-address message may contain both telex and teletex addresses.

3.6 In the event of failure to deliver to any address or addresses a non-delivery notification shall be issued to the originating CF by the destination CF. The requirement to send a non-delivery notification is mandatory.

3.7 A delivery notification may be issued to the originating CF, to indicate successful delivery to any address or addresses, by the destination CF by bilateral agreement. However it should be a function of the CF that delivery notification is provided if requested.

3.8 Any request for delivery notification should be provided on a service basis and not on an individual message basis.

3.9 The need for a status enquiry for outstanding messages is for further study.

4 International Interconnection

4.1 The term "network management boundary" refers to the boundary within which the CF service is provided under the control of one Administration.

- 4.2 The extension of CF facilities beyond the management network boundary of an Administration requires co-operation between CFs across international connections.
- 4.3 Administrations should agree bilaterally on the network(s) to be used to interconnect CFs.
- 4.4 Five possibilities may be considered:
- a) Circuit Switched Public Data Network (CSPDN);
 - b) Packet Switched Public Data Network (PSPDN);
 - c) Public Switched Telephone Network (PSTN);
 - d) Private Leased Circuits;
 - e) ISDN.
- 4.5 International routes shall be capable of supporting a minimum data rate of 2400 bit/s; data transmission rates should be agreed bilaterally.
- 4.6 In the international interconnection of CFs the responsibility to deliver messages is transferred from the originating Administration to the destination Administration.
- 4.7 In the basic service messages addressed to more than one destination CF management network should be separated at the originating CF management network.
- 4.8 The possibility of forwarding messages via transit CF management networks is for further study.

5 Delivery/Non-Delivery Notification

- 5.1 In the international interconnection of CFs it is necessary to return delivery/non-delivery status information to the originating CF. This information should be compiled at the destination CF when either the message has been delivered or no further attempts to deliver will be made to that address.
- 5.2 The return of delivery and non-delivery advice information to the originating CF may be on a per message address or per message basis.
- 5.3 Delivery and non-delivery information provided on a per message address basis requires explicit notification to the originating CF.
- 5.4 Delivery and non-delivery information provided on a per message basis may only require explicit notification of non-deliveries and implicit notification of deliveries.
- 5.5 Where bilateral agreement exists to return delivery notifications, all notifications should be explicit.
- 5.6 The method employed on an international connection between two CFs to transfer delivery/non-delivery information should be the subject of bilateral agreement. Account should be taken of the means by which the interconnection is established and the possible effects on service.
- 5.7 If technically possible the attempt to deliver the message, in the telex to teletex direction, by the destination CF should allow the provision of an on-line delivery acknowledgement facility.
- 5.8 The interconnection procedures with CFs employing single-stage selection in telex to teletex direction are for further study.

6 Message Transfer

- 6.1 The co-operation of two or more CFs may be required to complete the function of message transfer.
- 6.2 The transfer of the message between CFs should be as soon as practically possible after the deposit of the message in the originating CF.
- 6.3 Where an originating CF is unable to transfer the message to the destination CF a non-delivery notification should be returned to the originating customer.
- 6.4 In assuming responsibility for the delivery of the message the destination CF should attempt to deliver the message immediately after receipt of the message from the originating CF. The action to be taken where the message cannot immediately be delivered is for further study.
- 6.5 The delivery time targets for both the transmission of messages between CFs and the delivery of the message from the destination CF should be agreed bilaterally.

6.6 The destination CF should return the delivery information, to the originating CF, immediately after delivery of the message or the final attempt to deliver the message.

6.7 In the event of non-delivery the action to be taken with regard to the message text is for further study. It may be required to return the message text with the non-delivery advice.

7 Elements of inter-CF message transfer procedure

7.1 The basic element of the message transfer procedure is the message transfer unit. This unit is classified as either a text message transfer unit or a service message transfer unit allowing easy identification of the function(s) for which co-operation is required.

7.2 Text message transfer units carry messages submitted by a telex or teletex customer for delivery to a specified address or addresses.

7.3 Service message transfer units do not contain customer messages but are used to convey service information about messages.

7.4 There are four types of message transfer unit which may be used to provide a CF interworking capability:

- i) Text transfer — used to transfer destination address information and the customer message;
- ii) Delivery notification — used to provide information on an address (or addresses) to which the message has been delivered;
- iii) Non-delivery notification — used to provide information on an address (or addresses) to which the message has not been delivered;
- iv) Combined delivery/non-delivery notification — used to provide information on whether a message has or has not been delivered to a number of addresses.

Other types of message transfer units are for further study.

7.5 The provision of a status report covering one or more messages is for further study.

7.6 To achieve reliable message transfer the control procedures for the transfer of messages between CFs should be in accordance with the relevant CCITT technical Recommendations.

8 Error Recovery

8.1 For error conditions arising during the CF to CF transfer normal error recovery procedures should be in accordance with the relevant CCITT technical Recommendations.

8.2 For error conditions arising during the input to or delivery from a CF the procedures detailed in Recommendations F.201 and T.90 should apply.

9 Message Input and Message Delivery

9.1 Message input and delivery procedures should be generally in accordance with Recommendations F.201 and T.90 for telex and teletex respectively.

Recommendation F.203

NETWORK BASED STORAGE FOR THE TELETEx SERVICE

The CCITT,

considering

- (a) that Teletex service has been and is being introduced by many countries;
- (b) that a requirement for Teletex access to a store-and-forward unit in the country of origination has been identified;
- (c) that a requirement for Teletex access to a store-and-forward unit in the destination country has been identified;

(d) that a requirement for Teletex access to a store-and-retrieve unit in the destination country has been identified;

(e) that the units described in this Recommendation enhance the Teletex service,

unanimously declares

that the general principles described in this Recommendation should be adopted for the provision of network based storage for the Teletex service.

1 Scope

1.1 This Recommendation describes the principles for the provision of network based storage for the Teletex service. This includes store-and-forward (SF) and store-and-retrieve (SR) units.

1.2 The Teletex service is described in Recommendation F.200.

1.3 The technical aspects of SF and SR are to be defined in the relevant T series Recommendations.

2 General

2.1 The access to store-and-forward and store-and-retrieve units by international Teletex users and the international interconnection of the units are provided on the basis of bilateral agreements between Administrations.

2.2 The Administrations providing the unit(s) are responsible for the barring of international access from unauthorized users and for the barring of unauthorized calls such as transit calls to specific countries. The method of barring is the responsibility of the Administration which is providing the unit(s) and is beyond the scope of this Recommendation.

2.3 It may also be necessary for Administrations to make provision to selectively block access to international SF and SR in other countries.

3 Service Requirements

3.1 The relation between the Teletex service and the SF and SR is illustrated in Figure 1/F.203.

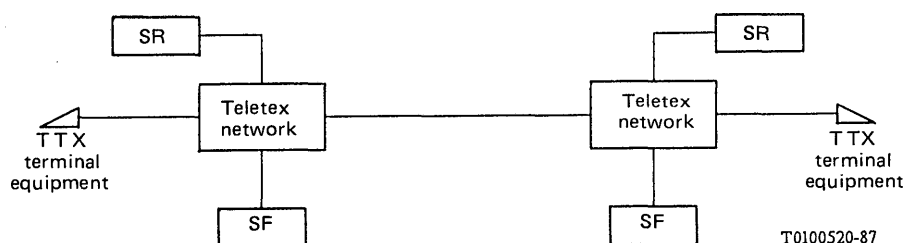


FIGURE 1/F.203

Functional description of store-and-forward
and store-and-retrieve units for the Teletex service

3.2 The preferred method for the service concept should be the utilization of Message Handling Services as defined in the F.400 series Recommendations. The technical implementation of these units is a national matter.

3.3 For international compatibility the SF will support the basic requirements of the Teletex service as defined in Recommendation F.200. The support of standardized options of the Teletex service is a national matter.

3.4 The SF may be available to the Teletex user(s) either by subscription or on a per message request basis. The SR is usually available by subscription. The availability of the unit(s) and one stage or two stage selection procedures are a national matter.

3.5 In principle the originating Teletex terminal equipment may select the SF either in the country of origin or the country of destination. Typically if the call is intended for multiple deliveries in one country of destination, the SF of that country may be used.

3.6 A Teletex document is considered by the SF to be delivered when it has been positively acknowledged by either the destination Teletex terminal equipment or the SR. When a document has been delivered to an SR, the originating Teletex terminal equipment will be advised by the SF to which the document was submitted.

4 Description of Store-and-Forward and Store-and-Retrieve Units

4.1 *Store-and-forward unit*

4.1.1 A Teletex user may select any of the store-and-forward facilities as described in § 5 of this Recommendation.

4.1.2 The SF should only accept messages for delivery to destination addresses served by the SF.

The destination addresses may be addresses of Teletex terminal equipment and other equipment using services to which Teletex is interconnected.

4.1.3 Acceptance of the message by the SF does not guarantee that the message can be delivered to the destination address.

4.1.4 Delivery of the accepted document shall be attempted immediately after receipt of the message.

4.1.5 If message delivery was not successful within 24 hours from time of input, the SF will send a non-delivery notification to the originating Teletex terminal equipment and shall eliminate the document from the storage of the SF. The intervals of delivery attempts are a national matter.

4.2 *Store-and-Retrieve Unit*

4.2.1 The SR requires a subscription by the receiving terminal. Therefore the function shall be located in the destination point of delivery.

4.2.2 The SR is required to support all of the store-and-retrieve facilities described in § 5.

4.2.3 From the service point of view a document is considered to be delivered when it becomes available for retrievable by the recipient.

4.2.4 The following options are available:

- 1) the receiving Teletex terminal equipment or user retrieves the Teletex document(s);
- 2) the SR conveys the Teletex documents to the Teletex terminal equipment during specific time interval(s) as subscribed to.

The choice of either or both of the option(s) is a national matter.

5 Facilities

5.1 *Facilities for Store-and-Forward Teletex*

5.1.1 *Deferred Delivery*

This facility enables an originating Teletex user to instruct the SF that a document being submitted should be delivered no sooner than a specified date and time. Delivery will take place as close to the date and time specified as possible, but not before. The date and time specified for deferred delivery is subject to a limit which is defined by the SF of the originating country.

5.1.2 *Delivery notification*

This facility enables an originator to request that an explicit notification be returned when a submitted document has been successfully delivered to the recipient or an SR. The notification is related to the submitted document by means of the document identifier and includes the date and the time of delivery. In the case of a multi-destination document, a delivery notification may refer to any or all of the recipient(s) to which the document was delivered.

When a document is delivered after distribution list expansion, the notification shall be sent to the document originator.

The delivery notification carries no implication that any user action, such as examination of the document's content, has taken place. This is especially applicable when delivery to an SR has occurred.

5.1.3 *Distribution List*

This facility allows a sender to have a document transmitted to a group of recipients, by naming the group instead of having to enumerate each of the final recipients.

The creation and management of the distribution list is a national matter.

The provisioning of distribution lists in destination countries is a matter for bilateral agreements.

5.1.4 *Grade of Delivery Selection*

This facility enables an originating Teletex user to request that transfer through the SF be urgent or non-urgent, rather than normal. The time periods defined for non-urgent and urgent transfer are longer and shorter, respectively, than that defined for normal transfer. This indication is also sent to the recipient with the document.

5.1.5 *Multi Destination Delivery*

This facility enables an originator to specify that a document being submitted is to be delivered to more than one recipient. Simultaneous delivery to all specified destinations is not implied by this facility. The number of recipients on a submitted recipient document is unlimited.

5.1.6 *Non-Delivery Notification*

This facility enables the SF to notify an originating Teletex user if a submitted document was not delivered to the specified recipient(s). The reason the document was not delivered is included as part of the notification. For example, the recipient may be unknown to the SF.

In the case of a multi destination document, a non-delivery notification may refer to any or all the recipient(s) to which the document could not be delivered.

In the case of a distribution list, a non-delivery notification may refer to one or all of the recipients to which the document could not be delivered.

5.2 *Facilities for Store-and-Retrieve Teletex*

5.2.1 *Storage Requested by the Recipient*

A Teletex user may subscribe to SR. He may request that all documents destined for his Teletex terminal equipment be delivered to the SR for subsequent retrieval or conveyance by the SR at specified time intervals.

5.2.2 *Retrieval by the Recipient*

The method of retrieval by the recipient of Teletex documents stored in SR is a national matter.

6 *Quality of Service*

6.1 The basic quality of service requirements are those defined in Recommendation F.200. Additional quality of service requirements are for further study.

6.2 The unique identification of each Teletex document enables the system to provide information about the status of a document.

In the event of system failure all accepted and non-delivered documents should be traceable. If a document cannot be delivered, the originator must be informed by a non-delivery notification.

Administrations should provide assistance to their subscribers, with regard to non-delivery notifications not being received in due time. Additional provisions on support of status and tracing of messages may be provided under national responsibility.

7 Special provisions for internationally interconnected Teletex store-and-forward units

7.1 *Service outline*

7.1.1 The interconnection of SFs allows a Teletex subscriber to deposit a document with an SF in the originating country for subsequent delivery, via an SF in the destination country, to a Teletex subscriber or an SR.

7.1.2 Documents addressed to more than one destination SF should be separated at the originating SF. This may include the separation of distribution lists resident in more than one destination SF.

7.1.3 The responsibility to deliver single and multi-address messages is transferred from the originating Administration to one or a number of destination Administrations.

7.1.4 The transfer of the document between SFs should be as soon as practically possible after the deposit of the message in the originating SF.

7.1.5 In assuming responsibility for the delivery of the document the destination SF should attempt to deliver the document immediately upon receipt of the document from the originating SF.

7.1.6 In the international interconnection of the SFs it is necessary to return delivery/non-delivery status information to the originating SF. This information is compiled on a per address basis at the destination SF when either the document has been delivered or no further attempts to deliver will be made.

Recommendation F.220

SERVICE REQUIREMENTS UNIQUE TO THE PROCESSABLE MODE NUMBER ONE (PM1) USED WITHIN THE TELETEx SERVICE

CONTENTS

1	<i>Introduction</i>
2	<i>Description</i>
3	<i>Intercommunication with other services</i>
4	<i>Quality of service</i>
5	<i>Customer's information</i>

1 Introduction

1.1 Scope

1.1.1 The processable mode number one (PM1) is one of the standardized options of the teletex service.

1.1.2 Equipments with teletex capabilities providing PM1 belong to the teletex service and shall meet with all the rules expressed in the main body of the Recommendation F.200. Furthermore, they shall meet with the additional rules described in this Recommendation.

1.1.3 The purpose of PM1 is to cater for the interchange of documents such as memoranda, letters and reports that contain characters only. The documents can be interchanged in a form that will enable the recipient:

- either to further process the document;
- or, to display or print the document as intended by the sender.

1.1.4 Questions of an essentially technical nature concerning this processable mode PM1 of the equipments with teletex capabilities are dealt with by the following Recommendations:

- T.400 series of Recommendations: Document Architecture, Transfer and Manipulation”;
- Recommendation T.502: “A document application profile PM1 for the interchange of processable form documents”;
- Recommendation T.522: “Communication application profile BT1 for document bulk transfer”;
- Recommendation T.562: “Terminal characteristics for Teletex processable mode PM1”.

1.2 Definition

1.2.1 General on the processable mode

- a) The processable mode of operation provides the user, in addition to the basic features of the Teletex service, with means for interchanging documents containing suitable information to reprocess them efficiently.
- b) Several processable modes are being defined within the CCITT depending on the users' needs (number of reprocess functions provided to the user and the ability or not to reprocess text containing graphics or other contents).
- c) They all are to be designed as application profiles of the T.400 series of Recommendations. Each new one is a superset of the previous. It is intended that equipments supporting a higher level of Processable Mode will always support any lower level.

1.2.2 Definition of PM1

PM1 is a processable mode designed to take into account a common set of functions commonly available to wordprocessing softwares.

Its main characteristics are that it allows to reprocess transmitted documents with only a single-column layout and containing only character encoded text. Additional characteristics may be found in § 2.

The complete definition of this mode includes:

- the definition of the document features which can be interchanged between equipments supporting PM1. These features are functionally as well as technically defined in Recommendation T.502;
- the definition of the protocol elements to be used for the transfer of documents and for the negotiation of optional features between equipments supporting PM1. This definition is technically specified in Recommendation T.522;
- the specification of the equipment characteristics to be supported for PM1. These characteristics are defined in Recommendation T.562.

1.2.3 Document application profiles (T.500 series)

The document application profiles defined in the T.500 series of Recommendations may be used by any telematic services. Supplementary constraints may be added by particular services using these document application profiles.

This Recommendation F.220 defines in § 2.2.4 the constraints unique to the equipments participating in the Teletex service using the application profile PM1 as described in Recommendation T.502.

1.2.4 *Communication application profiles* (T.520 series)

A DTAM protocol subset has to be used for the interchange of documents between PM1 equipments with Teletex capabilities. These subsets are defined in the T.520 series of Recommendations as “communication application profiles”.

This Recommendation F.220 refers in § 2.3.1 to Recommendation T.522 defining the adequate communication application profile (called BT1 for Bulk Transfer 1”) to be used for PM1.

1.2.5 *Equipment characteristics* (T.560 series)

The characteristics of equipments using application profiles are defined in the T.560 series of Recommendations.

This Recommendation F.220 refers in § 2.4 to Recommendation T.562 defining the particular characteristics for equipments with Teletex capabilities supporting PM1.

2 **Description**

2.1 *General*

Documents can be interchanged in three principal forms, namely:

- processable form, which allows a document to be revised by a recipient, if required;
- formatted processable form, which allows a recipient to reproduce the document as intended by the sender and/or to revise the document;
- formatted form, which allows a recipient to reproduce the document as intended by the sender.

2.2 *Characteristics of a PM1 interchanged document*

2.2.1 *Logical characteristics*

From the logical point of view, the document interchanged between equipments using PM1 consists of a set of paragraphs.

The paragraph refers to an amount of text that is distinct from any other part of the document. The use of such paragraphs is therefore to distinguish between portions of the document content that have different properties.

2.2.2 *Layout characteristics*

- a) A document may be divided into one or more page sets, which are not nested. This allows, for example, sets of pages having different layouts to be distinguished.
- b) A page set is considered to consist of a sequence of pages. The first page of this sequence may have a layout different from the other pages of the set.
- c) The maximum number of independent and non-overlapping areas which may subdivide a page is three. These areas consist of an area lying at the top of the page that is reserved for header text, an area lying at the bottom that contains footer text and an area lying between the header and footer areas that is reserved for body text.
- d) Text designated as header or footer text may consist of one or more paragraphs and these are intended to be laid out entirely in the header or footer area respectively on each page of a document. Header and footer text may not occur in any other area of the page. Header and footer text is optional and therefore may not exist on each page of the document. Also, the header and footer text may not be the same throughout the document.
- e) Also, it is possible to specify that the text area is to be laid out on the “recto” or “verso” side of the sheet of paper and to specify the orientation (portrait or landscape) for any page of the document.

2.2.3 *Document content*

Only a character content shall be used within a document interchanged between equipments with Teletex capabilities supporting PM1.

Characters rendition are: normal rendition, bold, italicized, underlined and crossed out (this last is non-basic).

2.2.4 Features supported by PM1

The features supported by PM1 are described by Recommendation T.502: "Document application profile PM1 for the interchange of processable form documents". The purpose of this paragraph is to give an overview of these features.

2.2.4.1 The features which can be interchanged using PM1 mode fall into the following categories:

- Page format features: these relate to how the layout of each page of a document will appear when reproduced (e.g. left and right margins, headers and footers).
- Character content layout and imaging features: these relate to how the document content will appear within the page of the reproduced document (e.g. first line indentation, alignment).
- Character repertoire: this relates to the character sets and control functions that make up the document content.
- Document management features: these concern the information associated with the document that relates to the document as a whole, such as its title, history and creation date. This information can be used in applications such as filing and retrieval.

2.2.4.2 Paper formats and assured reproduction areas

a) Paper formats

Different paper formats can be declared by the sender for the presentation of the interchanged document.

The two principal paper formats which can be used without any negotiation are:

- ISO A4 paper format (210 × 297 mm);
- North American letter paper format (215.9 × 279.4 mm).

The following paper formats may also be used, but need a negotiation:

- ISO A3 paper format (297 × 420 mm);
- Japanese legal paper format (257 × 364 mm);
- Japanese letter paper format (182 × 257 mm).

b) Assured reproduction areas

Recommendation T.562 specifies the assured reproduction areas for the paper formats listed above.

The presentation of the document layout and content by the recipient is guaranteed if the dimensions of the interchanged page do not exceed the dimensions of the assured reproduction area.

c) Page dimensions

The page dimensions are always smaller than the paper formats.

The maximum dimensions of the basic interchanged page correspond to the common area between the assured reproduction areas of A4 and North American paper formats.

These dimensions are given in Recommendation T.562. This allows any PM1 document to be printed by using one of the two principal paper formats. The use of larger page dimensions must be negotiated.

2.2.4.3 Fall-back techniques

- a) Some basic and non-basic features described in Recommendation T.562 are allowed to be approximated using fall-back techniques.
- b) This Recommendation determines the fall-back procedure which may be used by the recipient if features present in the interchanged document are not locally available (see Table 1/F.220).
- c) All other features, not listed in Table 1/F.220, must not be approximated.

2.3 Communication aspects

2.3.1 All the non-basic features defined for PM1 in Recommendation T.502 must be negotiated before the interchange of the document. Negotiation is only allowed to fail when a required non-basic feature is not supported by the recipient's system and that this system does not support any suitable fall-back mode for this feature.

2.3.2 A processable mode document can only be sent as a unit. If an equipment tries, for any reason, to send one document in different parts, the contribution of the document is not accepted by the recipient because it is not possible to provide an automatic linkage for PM1 documents. Consequently, the sender has to retransmit the whole document.

TABLE 1/F.220

Features	Fall-back modes
<i>Document layout</i> Separation Widows and orphans Association of paragraphs Recto/verso pages	Ignore Ignore Ignore Recto
<i>Content layout and imaging</i> Emphasis – Italicized – Bold	Bold or underlined Italicized or underlined
<i>Document management</i> (e.g.: title, subject, etc.)	Ignore

2.3.3 Direct communication of basic teletex documents between a teletex equipment supporting only the basic mode and a teletex equipment supporting both the basic and the processable mode PM1 is provided. Technical communication rules are defined in Recommendation T.562, § 8, taking into account the case where an equipment tries to send a PM1 document to an equipment supporting only the basic mode.

2.3.4 If the transmission of a PM1 document fails, the user should always be informed of the reason of the failure.

Note – The consultation, before the communication, of the teletex service directory allows to know the nature of the receiving equipment and so, allows to avoid communication failures due to incompatible modes.

Some local mechanisms may also be implemented to check the nature of the receiving equipment by consulting a local directory before any communication. The process may be useful when the recipient belongs to a list of usual addressees.

2.3.5 Generally, equipment will provide an automatic conversion from a PM1 document to a basic teletex document if the PM1 document is in a formatted form.

2.4 *Equipment characteristics*

2.4.1 Equipments with Teletex capabilities supporting PM1 must provide the user with the ability:

- To create, transmit, receive the three forms of documents defined in § 2.1. The sender's intention, concerning the transmitted document, is expressed by the particular form of this document.
- To present (print or display on screen) the received document when it has been transmitted in the formatted processable form or the formatted form. If printed, the receiving user is furnished with a document identical with that produced by the sending subscriber as far as its contents, layout and format are concerned.

Note – If sent in a processable form, the layout of the document between the sending and the receiving sides may differ.

- To reprocess the received document when it has been transmitted in the processable or the formatted processable form.

2.4.2 Other characteristics of equipments with teletex capabilities supporting the processable mode PM1 are described in Recommendation T.562.

2.4.3 The CIL presentation rules, as defined in Recommendation F.200, apply with the restriction that there is no page number in the field 4 of the CIL.

3 Intercommunication with other services

Equipment belonging to the processable mode PM1 of the Teletex service has the ability to intercommunicate with equipment belonging to any other services that incorporate the PM1 document application profile, BT1 communication profile, and PM1 terminal characteristics.

4 Quality of service

For further study.

5 Customer's information

5.1 Directories

5.1.1 In the Teletex directory published by each Administration, the special symbol PM1, the meaning of which is "Processable Mode number 1", shall be inserted when an equipment with Teletex capabilities provides this processable mode in order to give some guidance to the users.

5.1.2 This symbol should be placed so that it could not be understood as a part of the equipment identification.

Recommendation F.230

SERVICE REQUIREMENTS UNIQUE TO THE MIXED MODE (MM) USED WITHIN THE TELETEx SERVICE

CONTENTS

1 Introduction

2 Description

3 Intercommunication with other services

4 Quality of service

5 Customer's information

1 Introduction

1.1 Scope

1.1.1 The mixed mode (MM) is one of the standardized options of the teletex service.

1.1.2 Terminals equipment with teletex capabilities providing MM belong to the teletex service and shall meet with all the rules expressed in the main body of the Recommendation F.200. They shall also meet the additional rules described in this Recommendation.

1.1.3 The purpose of MM is to provide for the interchange of formatted documents such as memoranda, letters and reports that contain characters and raster-graphic images.

1.1.4 Questions of an essentially technical nature concerning the operational mode MM of equipment with teletex capabilities are described in the following Recommendations:

- T.400-Series of Recommendations: "Document Architecture, Transfer and Manipulation";
- Recommendation T.501: "Document application profile MM for the interchange of formatted mixed-mode documents";
- Recommendation T.521: "Communication application profile BT0 for document bulk transfer."
- Recommendation T.561: "Terminal characteristics for mixed-mode of operation MM."

1.2 *Definition*

1.2.1 *General*

The mixed-mode of operation provides the user, in addition to the basic features of the teletex service, with means for interchanging documents containing raster-graphic images.

Future developments in the processable mode may allow the interchange of MM documents with equipment having a higher level than PM1 of processable mode capability.

1.2.2 *Definition of MM*

MM allows the interchange of documents containing fully laid out pages containing character-coded and raster-graphic coded information. These documents cannot be further processed after delivery to the recipient.

The complete definition of this mode includes:

- the definition of the document features which can be interchanged between equipment supporting MM. These features are functionally as well as technically defined in Recommendation T.501;
- the definition of the protocol elements to be used for the transfer of documents and for the negotiation of optional features between equipment supporting MM. This definition is technically specified in Recommendation T.522;
- the specification of the equipment characteristics to be supported by MM. These characteristics are defined in Recommendation T.561.

1.2.3 *Document application profiles (T.500 series)*

The document application profiles defined in the T.500 series of Recommendations may be used by any Telematic services. Supplementary constraints may be added by particular services using these document application profiles.

This Recommendation F.230 defines in § 2.2.4 the constraints unique to the equipment participating in the teletex service using the document application profile MM as described in Recommendation T.501.

1.2.4 *Communication application profiles (T.520 series)*

A DTAM protocol subset has to be used for the interchange of documents between MM equipment with teletex capabilities. These subsets are defined in the T.520 series of Recommendations as “communication application profiles”.

This Recommendation F.230 refers in § 2.3.1 to Recommendation T.522 defining the adequate communication application profile (called BT1 for “Bulk Transfer 1”) to be used for MM.

1.2.5 *Equipment characteristics (T.560 series)*

The characteristics of equipment using application profiles are defined in the T.560 series of Recommendations.

This Recommendation F.230 refers in § 2.4 to Recommendation T.561 defining the particular characteristics for equipment with teletex capabilities supporting MM.

2 *Description*

2.1 *General*

Documents can only be interchanged in formatted form, which allows a recipient to reproduce the document as intended by the sender.

2.2 *Characteristics of an interchanged MM document*

2.2.1 *Layout characteristics*

Pages are laid out in blocks. Each block contains either character-code or raster-graphic coded information.

Blocks may be transparent or opaque. Blocks may be superimposed.

In principle, there is no limit to the number of blocks on a page. Technical restrictions may limit the number of blocks on a page.

2.2.2 Document content

Character content, raster-graphics content, or both may be used within a document interchanged between equipment with Teletex capabilities supporting MM.

Character renditions are: normal rendition, bold, italicized, underlined and crossed out (this last is non-basic).

2.2.3 Features supported by MM

The features supported by MM are described by Recommendation T.501: "Document application profile MM for the interchange of formatted mixed-mode documents". The purpose of this paragraph is to give an overview of these features.

2.2.3.1 The features which can be interchanged using MM fall into the following categories:

- Page format features: these ensure that the page layout can be completely specified such that it can be reproduced exactly.
- Character content layout and imaging features: these relate to how the document character content will appear within the page of the reproduced document (i.e. exactly as specified in the original).
- Raster-graphic image layout and imaging features: these relate as to how the image content will appear within the page of the reproduced document (i.e. exactly as specified in the original).
- Character repertoire: this relates to the character set and control functions that make up the character content.
- Raster-graphic image coding: this relates to the image coding method used to encode the raster-graphic image content.
- Document management features: these concern the information associated with the document that relates to the document as a whole, such as its title, history and creation date. This information can be used in applications such as filing and retrieval.

2.2.3.2 Paper formats and assured reproduction areas

a) Paper formats

Different paper formats can be declared by the sender for the presentation of the interchanged document.

The two principal paper formats which can be used without any negotiation are:

- ISO A4 paper format (210 × 297 mm);
- North American letter paper format (215.9 × 279.4 mm).

The following paper formats may also be used, but need a negotiation:

- ISO A3 paper format (297 × 420 mm);
- Japanese legal paper format (257 × 364 mm);
- Japanese letter paper format (182 × 257 mm).

b) Assured reproduction areas

Recommendation T.561 specifies the assured reproduction areas for the paper formats listed above.

The presentation of the document layout and content by the recipient is guaranteed if the dimensions of the interchanged page do not exceed the dimensions of the assured reproduction area.

c) Page dimensions

The page dimensions are always smaller than the paper format

The maximum dimensions of the basic interchanged page correspond to the common area between the assured reproduction areas of A4 and North American paper formats.

These dimensions are given in Recommendation T.561. This allows any MM document to be printed by using one of the two principal paper formats. The use of larger page dimensions must be negotiated.

2.2.4.3 Fall-back techniques

Some basic and non-basic features described in Recommendation T.561 are allowed to be approximated using fall-back techniques.

This Recommendation determines the fall-back procedure which may be used by the recipient if features present in the interchanged document are not locally available.

They concern character renditions:

Renditions	Fall-back modes
Bold	Italicized or underlined
Italicized	Bold or underlined

2.3 *Communication aspects*

2.3.1 All the non-basic features defined for PM1 in Recommendation T.501 must be negotiated before the interchange of the document. Negotiation is only allowed to fail when a required non-basic feature is not supported by the recipient's system and that this system does not support any suitable fall-back mode for this feature.

2.3.2 Direct communication of basic teletex documents between a teletex equipment supporting only the basic mode and a teletex equipment supporting both the basic and the mixed mode MM is provided. Technical communication rules are defined in Recommendation T.561, § 8, taking into account the case where an equipment tries to send a MM document to an equipment supporting only the basic mode.

2.3.3 If the transmission of a MM document fails, the user should always be informed of the reason of the failure.

Note – The consultation, before the communication, of the teletex service directory allows to know the nature of the receiving equipment and so, allows to avoid communication failures due to incompatible modes.

Some local mechanisms may also be implemented to check the nature of the receiving equipment by consulting a local directory before any communication. The process may be useful when the recipient belongs to a list of usual addressees.

2.3.4 Equipment may provide an automatic conversion from a MM document to a basic teletex document deleting raster-graphic content. This conversion should always be made with the user's agreement.

Note – Equipment may also provide automatic conversion from a MM document to a formatted PM1 document by deleting the rest of graphic contents.

2.4 *Equipment characteristics*

2.4.1 Equipment with teletex capabilities supporting MM must provide the user with the ability:

- to create, transmit and receive the documents defined in § 2.1;
- to present (print or display on screen) the received document when it has been transmitted. If printed, the receiving user is furnished with a document identical to that produced by the sending subscriber as far as its contents, layout and format are concerned.

2.4.2 Other characteristics of equipment with teletex capabilities supporting the mixed mode MM are described in Recommendation T.561.

3 **Intercommunication with other services**

Equipment belonging to the mixed mode MM of the teletex service has the ability to intercommunicate with equipment belonging to any other services that incorporate the MM document application profile, BT1 communication profile, and MM terminal characteristics.

4 **Quality of service**

For further study.

5 Customer's information

5.1 *Directories*

5.1.1 In the teletex directory published by each Administration, the special symbol MM, the meaning of which is "Mixed Mode", shall be inserted when equipment with teletex capabilities provides the mixed mode in order to give some guidance to the users.

5.1.2 This symbol should be placed so that it could not be understood as a part of the equipment identification.

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SECTION 3

VIDEOTEX SERVICE

Recommendation F.300

VIDEOTEX SERVICE

CONTENTS

- 1 Scope
- 2 Definition of terms
- 3 Functionalities of the service
- 4 Operation of the Videotex service
- 5 International interworking of Videotex services
- 6 Intercommunication with other telematic services
- 7 Service quality
- 8 Tariffing implications

1 Scope

1.1 This Recommendation describes the superset of characteristics and functions of international Videotex services.

1.2 The characteristics and functions of Videotex services are specified to ensure that users of a Videotex service are able to access Videotex services in other countries operating in accordance with Recommendations T.100 and T.101 and other relevant CCITT Recommendations.

1.3 The organisational and technical structures used to configure the service may differ from country to country depending on national circumstances. In particular, whether an Administration is a Videotex service provider will depend on national circumstances. However, it is the responsibility of Administrations to ensure that telecommunications facilities permit users to access Videotex services in other countries, subject to bilateral agreements and/or current regulations of both countries.

2 Definition of terms

2.1 Videotex service

2.1.1 General

A Videotex service is an interactive service which provides, through appropriate access by standardized procedures, for users of Videotex terminals to communicate with data bases and other computer based applications via telecommunications networks.

The Videotex service includes the following set of characteristics:

- 1) information is generally in an alphanumeric and/or pictorial form and may be supplemented by audio;
- 2) information is stored in a data base;
- 3) information is transmitted between the data base and users by telecommunication networks;
- 4) displayable information is presented on a suitably modified television receiver or other visual display device;
- 5) access is under the user's direct or indirect control;
- 6) the service is easily operated by the general public as well as specialist users, i.e. the service is user-friendly;
- 7) the service provides facilities for users to create and modify information in the data bases;
- 8) the service provides data base management facilities which allow information providers to create, maintain and manage data bases and to manage closed user group facilities;
- 9) the service provides computer based applications, e.g., data processing, computer games.

2.1.2 Videotex service profile

The set of functionalities required by a Videotex service. It includes the service, application and presentation functionalities.

2.1.3 Videotex application

Part of a Videotex service which is under the responsibility of only one application provider. The Videotex Service provider may also act as an application provider.

2.2 Videotex service facilities

2.2.1 General

A Videotex service facility is an application layer implementation in a Videotex service, providing a specific, clearly defined facility to Videotex users. Videotex service provides users with a number of such service facilities.

2.2.2 Videotex information retrieval

A Videotex service facility in which a user obtains information by means of a dialogue with a data base.

2.2.3 Videotex transaction

A Videotex service facility which allows users to create and/or modify information stored in a data base. Access to these facilities will generally require special functions and procedures to authenticate the authority to access. This service facility includes, but is not limited to, transactions leading to or influencing a commercial relationship between users and application providers.

2.2.4 Videotex messaging

A Videotex service facility which allows users to communicate with each other by storing messages in a commonly accessible data base. These stored messages may either be retrieved by the user or delivered automatically.

2.2.5 Videotex conferencing

A Videotex service facility which, by providing routing and switching functions, enables users to send and receive messages in a conversational manner. This does not preclude direct terminal-to-terminal messaging using existing networks.

2.2.6 Videotex data processing

A Videotex service facility which allows the user to employ processing and storage capacity at the host computer.

2.2.7 Videotex telesoftware

A Videotex service facility which allows a host computer to deliver a program and/or data to a Videotex terminal in order to have it processed in this equipment.

2.3 Participants in Videotex service

2.3.1 Videotex service provider

A party responsible to the user for the provision and operation of a Videotex service.

2.3.2 Videotex application provider

A party responsible by agreement with a Videotex service provider for providing information or transaction facilities to Videotex service users. The information provider may or may not operate the host computer on which the application is implemented.

2.3.2.1 internal Videotex application provider

An application provider whose applications and/or whose facilities are provided by means of the service provider's host computer(s).

2.3.2.2 external Videotex application provider

An application provider whose applications and/or whose facilities are provided by means of host computers not provided by the service provider.

2.3.3 Videotex communications network provider

A party responsible by agreement with a Videotex service provider for providing telecommunication services for interconnecting user terminals, application provider equipment and/or Videotex host computers.

2.3.4 Videotex user

A person who, by means of a Videotex terminal, uses the Videotex service.

2.3.5 Videotex closed user group

A group of users who are permitted access to applications or other Videotex service facilities that are not available to other users.

2.4 Videotex systems

2.4.1 General

A Videotex system is the hardware and software used to implement a Videotex service.

2.4.2 Videotex terminal

The equipment by means of which the user interacts with the Videotex service. A typical Videotex terminal includes:

- 1) a numeric keypad and/or alphanumeric keyboard and/or other graphical input devices;
- 2) a visual display unit or a suitably modified television receiver;
- 3) electronic processing and storage devices required to interface these components to the telecommunications network and to generate the display.

The terminal may also provide a direct terminal-to-terminal capability, and may include other components, such as a hard copy output unit, magnetic or optical storage devices, and additional processing and/or storage devices.

2.4.3 Videotex user/terminal identification facility

A facility which allows the Videotex system to distinguish between authorised and non authorised access to a Videotex service or certain applications of a service, eg. messaging, closed user groups and billing, there are three types of identification.

- a) Identification of the terminal.
- b) Identification of the user.
- c) Identification of the line.

2.4.4 telecommunication network

Telecommunications means for transmission of Videotex information.

2.4.5 Videotex host computer

The computer (or network of computers provided by a single party) on which one or more applications are implemented and/or one or more other Videotex service facilities are provided.

2.4.6 external Videotex host computer

A host computer not operated by the service provider.

2.4.7 Videotex service centre

A computer system used by the Videotex service provider to authorize access to a Videotex service. Other functions of the service centre may include assistance to users in selecting the particular application required (either provided by the service centre or by other host computers), as well as management facilities such as billing, statistics gathering, etc. The same computer may also be a host computer and/or provide a gateway function.

2.4.8 international Videotex gateway

A function of a computer providing access to a foreign Videotex service with all its capabilities and according to the international Videotex protocol. It may include protocol selection and/or protocol conversion and/or dialogue handling functions. In addition, the gateway is the point where the administrative data for the international Videotex services are handled, such as the data for international accounting, billing information in case of frame/application or additional communication charges, information about the subscriber status in case of Videotex messaging and service data concerning the service profiles or terminal profiles. The gateway can also give access to the directory of Videotex service available in the foreign country.

2.4.9 Videotex access point

A function of a computer providing access to Videotex host computers, protocol conversion for layers 1-3 management facilities such as billing, statistics gathering and dialogue handling capabilities.

2.4.10 Videotex interface unit

A function of a computer providing protocol conversion for layers 4-7 (of OSI Reference Model) and/or data syntax conversion and optionally protocol conversion for layers 1-3 (PAD). It may also handle some administrative tasks such as billing for the conversion charges and optionally the communication network charges. A Videotex Interface Unit is typically used between a terminal and a foreign Videotex Service Centre.

2.4.11 Videotex service unit

It is a Videotex Interface Unit with the additional functions of handling application charges and accounting, and may also provide user authorization and/or identification.

2.4.12 Videotex data base

A set of information and/or transaction facilities that can be accessed by, or made available to, users.

2.4.13 Videotex frame

The information that is retrieved by a single user function from a terminal and presented as a complete entity (full screen contents or parts of the screen, e.g. areas on the screen) by the terminal, but may include information that requires scrolling before it is displayed and may include dynamic effects such as overwriting. Local user action may take place within a frame.

2.4.14 Videotex page

An organised set of one or more frames.

2.4.15 Videotex form

A form is a frame where one or several fields are defined for the collection of user data.

2.4.16 Videotex system field

A data collection field in which a predetermined type of data is filled in by the videotex service or by the user.

3 Functionalities of the service

3.1 General

3.1.1 This § 3 describes the various service, presentation and application facilities that may be used in the Videotex service to support an application.

3.1.2 In order to ensure non-obsolescence of data bases and to permit the international exchange of data, a range of service profiles will be defined. They will allow the service profile(s) used in preparing an application to be compared with the service profile assumed by the user. It will then be possible to determine whether or not the user can interact directly with the application.

3.1.3 Applications will require knowledge of the service profile assumed by the user in order to detect differences between the service profile assumed by the user and those assumed in preparing the application.

3.1.4 If it is not possible for the user to interact directly with the application then, the data syntax and/or application and service functions may be transcoded or, the terminal or application adapted.

3.1.5 If the service profile assumed by the user and that assumed in preparing the application differ and adaption or transcoding is not possible, then applications should exercise discretion in limiting access to data when the displayed information may not convey the complete meaning of the application.

3.1.6 What transcoding adaptation or limitation of access is necessary and where this takes place may be predefined for a set of service profiles or may be negotiated during the session.

3.2 Application level

3.2.1 The application level describes the functions of the Videotex service that enable users to access and use the different applications. While it is desirable that all Videotex services employ the same commands and visual identifiers for these functions, further studies are required. Some keying sequences may be used for more than one function. Some of these functions may be implicit in other functions and some functions may not be implemented or appropriate in some Videotex services. Additional functions may be required subject to further study.

3.2.2 Service functions

These functions may be used within the service, according to implementation. From the user point of view they are selected by routing to or selecting an appropriate point in the Videotex service:

3.2.2.1 *Function V1*

Select an application on a Videotex service (containing an identification of the application).

3.2.2.2 *Function V2*

Leave the application and return to the first effective choice in the national Videotex service.

3.2.2.3 *Function V3*

Return to the first effective choice of the foreign Videotex service.

3.2.2.4 *Function V4*

Leave the application and return to the point from which this application was selected.

3.2.2.5 *Function V5*

Provide billing information.

3.2.2.6 *Function V6*

Leave the Videotex service (mandatory).

3.2.2.7 *Function V7*

Request service/application identification.

3.2.3 *Dialogue functions*

The following functions may be used within the application to retrieve items of information or, to collect data and forward them to application, according to implementation.

3.2.3.1 *Functions D1 [a) to d)]*

Declare valid an input. The input is forwarded for processing. Several types of input have been identified. In some cases an input is implicitly terminated.

- a) Free-text input – only limited by the size of the field.
- b) Direct selection of a frame if it is directly retrievable.
- c) Progress through a choice from one frame to another frame by the use of one or two digits.
- d) Select a frame through the use of a keyword.

3.2.3.2 *Function D2*

Correcting an input. When the user is inputting data either in retrieval or in data collection mode it is the facility to correct an input character by character.

3.2.3.3 *Function D3*

Clearing an input. In the same situation as above (D2), it is the facility offered to the user to clear a full input.

3.2.3.4 *Function D4*

Move one step forward in the application.

3.2.3.5 *Function D5*

Move to the next input field.

3.2.3.6 *Function D6*

Retrace the previous step of the user's action. The number of steps may need to be limited and certain steps may be excluded from the retrace.

3.2.3.7 *Function D7*

Move to the previous field.

3.2.3.8 *Function D8*

Repeat the frame; retransmission of the information necessary to restore the latest displayed image, e.g., in the case of transmission error. Fields will contain the last user input.

3.2.3.9 *Function D9*

Repeat the updated frame; repeat the same frame with any changes that there may have been since the last access. Fields will contain the default values.

3.2.3.10 *Function D10*

Return to the first menu in the application.

3.2.3.11 *Function D11*

Previous menu; retrace the last frame in the previous progression of the user's action that allowed a choice in the application.

3.2.3.12 *Function D12*

Ask for help or guidance without leaving the application.

3.2.3.13 *Function D13*

Retrace the last frame in the previous progression of the user's action that contained a form, without any input by the user.

3.2.3.14 *Function D14*

Retrace the last frame in the previous progression of the user's action that contained a form, including the contents of the fields entered by the user.

3.2.3.15 *Function D15*

Interrupt the action in progress. Whether the interrupt results in an abort or a temporary hold is application dependent.

3.2.3.16 *Function D16*

Set a marker at the current point in the application for access at a later time within the same session.

3.2.3.17 *Function D17*

Abstain from forwarding the contents of the input fields.

3.2.3.18 *Function D18*

Declare valid a set of inputs e.g., the contents of a form are forwarded for processing.

3.3 *Presentation level*

3.3.1 *General principles*

3.3.1.1 This section provides a set of definitions and specifies a set of functional capabilities and possible enhancements for the presentation level of the international Videotex service.

3.3.1.2 The definitions provided, and functional capabilities specified in this section apply to text in its broad sense; i.e. text consisting of symbols, phrases or sentences in natural or artificial languages, pictures, diagrams and tables.

3.3.1.3 Each functional capability is individually specified independent of what implementation techniques or coding schemes are used by the terminal equipment. Specification of the repertoires and coding is the subject of Recommendations T.100 and T.101.

3.3.2 *Structure of display*

3.3.2.1 *Defined display area*

The rectangular part of the screen that can be used by the Videotex service. Its structure may be redefined. (See Figure 1/F.300.)

3.3.2.2 *Border area*

The part of the screen which is outside the defined display area. (See Figure 1/F.300.)

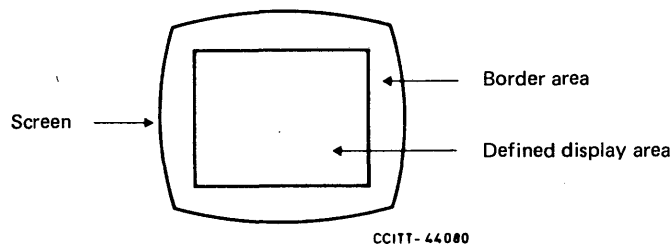


FIGURE 1/F.300

3.3.2.3 *Character location structure*

The defined display area is made up of an array of contiguous character locations in which each character location is the area needed for the display of one character in normal size including any space required to separate alphanumeric characters. In this structure each graphic element is displayed in one or more character locations on the defined display area.

3.3.2.4 *Cartesian coordinate structure*

Graphic elements are defined within a two-dimensional space using either normalized or absolute coordinates. Rectangular defined display areas map into the square coordinate space.

Normalized coordinates use a cartesian 0 to 1 (non inclusive) numbering scheme. As an example, in the case of a television screen with a 4 : 3 aspect ratio, the defined display area corresponds to 0 to 1 (non inclusive) in the X axis and 0 to approximately 0.75 in the Y axis. The drawing of graphic elements into the entire normalized coordinate space may be permissible but only the inscribed 4 : 3 area will be visible.

An absolute coordinate system may, for example, use a CCIR-defined standard for digitized television signals of 540 pixels horizontally and 480 pixels vertically within the defined display area.

3.3.2.5 *Active drawing area*

An active drawing area is an area within the defined display area within which graphic elements are to be displayed. The definition of an active drawing area cancels any previous active drawing area, but has no effect on graphic elements already being displayed.

3.3.2.6 *Scrolling area*

A scrolling area is an area smaller than or equal to the defined display area, within which the characters and associated attributes move in specified increments under the action of format effectors (whether explicit or implied) or specific controls. The procedure for scrolling is defined by two processes:

- 1) the designation of the screen area inside which a scroll operation is to be executed;
- 2) the execution of the scrolling action.

Scrolling occurs in a direction perpendicular to the character path or logical pel path and far enough to bring the next intended character location or the location of the next logical pel just into the scrolling area.

3.3.2.7 *Input field*

This function specifies an input field to be used as a user area on the display screen. An input field may be provided to accept user input from the terminal keyboard and to support local editing by the user. Any number of input fields may be defined.

3.3.2.8 *Marked characters*

Characters may be marked for further action at the terminal, such as transfer to an output device.

More than one type of marking may exist and each may be separately processed.

3.3.2.9 *Protected/unprotected area*

Areas within the defined display area can be protected against alteration, manipulation or erasure. The protection is valid for attributes as well as characters.

Protected areas can only be altered by the use of an unprotected function or by the action of clearing the screen.

3.3.2.10 *Multi-plane configuration*

A multi-plane configuration can be defined through multi-plane control commands which include addressing, priority relationship and attribute. For example, a character plane on a photographic plane configuration offers scrolling characters on a steady photographic picture, or a photographic plane on another photographic plane configuration offers simple animation.

3.3.3 *Graphic elements*

Graphic elements are used to display text, including symbols, or pictures. They are categorized below. Applicable to each of the following categories is a set of display attributes and control functions. Attributes and control functions for each category are specified in §§ 3.3.5, 3.3.6, 3.3.7 and 3.3.8, for the international Videotex service. Those attributes and control functions which are commonly applicable to all categories of graphic elements are defined in § 3.3.4.

3.3.3.1 *Alphanumeric characters*

3.3.3.1.1 Alphanumeric characters are those graphic elements pertaining to the written form of text. They include alphabetic letters with or without diacritical signs, numerical digits and fractions, punctuation marks, typographical symbols, mathematical signs, as well as space and special letters, signs and symbols.

3.3.3.1.2 In this Recommendation, alphanumeric characters are denoted by names which are intended to reflect their customary meaning and not to specify a particular style or font design for the textual characters when displayed.

3.3.3.1.3 Dynamically redefinable characters are defined and down-loaded into the terminal, which can then use them as additional graphic elements.

3.3.3.2 *Pictorial characters*

Pictorial characters are used to construct drawings with blocks; each character defines a pattern within a block of predetermined dimensions and will occupy one character position when displayed. Unlike alphanumeric characters, a pictorial character has a specifically designed pattern when displayed. The pattern can either be predetermined such as in the case of mosaic characters or line drawing characters or be dynamically redefinable. Pictorial characters also differ from alphanumeric characters in the manner in which certain attributes such as underlining or proportional spacing apply.

3.3.3.3 *Geometric elements*

Geometric elements are used to construct drawings of various types by a succession of overlay of points, straight lines, arcs, etc. Each element is specified in terms of normalized Cartesian coordinates to describe the position, end-points, or vertices of each drawing operation.

3.3.3.4 *Photographic elements*

Photographic elements are used to render an image by the transmission and display of an array of individual picture elements (pixels) within an active drawing area. The photographic elements may be used to display a two-colour picture, a picture using a range of colours from a palette, or a picture with an unrestricted range of colours. In the case of an unrestricted range of colours the image may be subjectively similar to a still broadcast-quality television picture.

3.3.4 *Common display attributes and control functions*

The attributes and control functions detailed in this section apply to all types of graphic elements described in § 3.3.3 above.

3.3.4.1 *General*

3.3.4.1.1 *Foreground and background specification*

The foreground is a graphic element and the background is the remaining area of the display against which the foreground is displayed.

Note — The background may be specified in two different ways, depending on the implementation:

- a) as a single solid colour at the location of each graphic element on the display,
- b) as the cumulative result of all graphic elements displayed prior to the foreground, which subsequently amends the affected background by overwriting.

3.3.4.1.2 *Attribute techniques*

3.3.4.1.2.1 *Parallel attributes*

Parallel attributes are the property of the active position and move with it under the action of format effectors or spacing display characters (including space).

3.3.4.1.2.2 *Serial attributes*

Serial attributes are set between markers on a row. They apply from the position of the active position at the time they are received to the end of the row or until a contradictory marker is reached.

3.3.4.1.2.3 *Non-spacing and spacing attributes*

Display attributes may be implemented in such a way that they may be changed at each character location (non-spacing attributes) or a displayed character location may be required to implement the change (spacing attribute).

3.3.4.1.3 *Colour*

Colour in this context is considered to include saturated and unsaturated colours of any intensity, grey tones, black and white. A colour may also be set to “transparent”, in which case a lower plane (e.g. background) will be displayed.

Alternative colour modes are used to interpret the numerical value of the colour parameter, either directly in terms of colour components or indirectly as an index into a colour look-up table (palette).

The colour range may be extended by providing a number of colour look-up tables. These colour look-up tables may hold a fixed repertoire of colours, or may be redefinable.

3.3.4.2 *Common display attributes*

3.3.4.2.1 *Foreground colour*

The colour of graphic elements can be specified by this attribute.

3.3.4.2.2 *Background colour*

This attribute is used to specify the colour to be used for the background when graphic elements are displayed, in a similar manner to the specification of foreground colour.

3.3.4.2.3 *Border colour*

The border area may be specified as a single colour or more than one colour.

3.3.4.2.4 *Flash*

This attribute allows the graphic element to be flashed at a specified rate and phase relationship for the primary purpose of gathering attention. The following attribute states are defined:

Steady

The graphic elements are displayed normally.

Flash rate

The on/off interval and the rate of flashing may be specified or may take on predefined values.

Flash phase

The phase relationship between flashing graphic entities may be specified or may take on predefined values.

Flash colour

The graphic elements may change between various colours, that is between foreground or background colours or between referenced colours in a colour look-up table.

3.3.4.2.5 *Conceal*

The characters are displayed as spaces until the user chooses to make them appear.

3.3.4.3 *Common control functions*

The following functions control the display of either a portion of the graphic elements or the entire screen. They apply to all types of graphic elements described in § 3.3.3.

3.3.4.3.1 *Reset*

This function reinitializes the control and attribute parameters to their default values, either on a selective basis or on a global basis.

Certain control functions implicitly reset some attributes.

3.3.4.3.2 *Overwriting mode*

Specified elements of the displayed image can be cleared and replaced by the display of new data, or can be logically combined (e.g., logical OR operation) with the new data to produce a superposed display.

3.3.4.3.3 *Clear screen*

This function clears the whole screen to black or to the background colour.

3.3.4.3.4 *Clear partial screen*

This function clears part of the screen to black or to the background colour on a selective basis. Any of the following structures may be chosen:

- active drawing area;
- scrolling area;
- input field;
- one or more planes;
- marked characters;
- protected area.

3.3.4.3.5 *Wait*

This function is used to cause a delay of a specified time in the processing of presentation level functions currently received by the Videotex terminal.

3.3.4.3.6 *Define dynamically redefinable sequences (macro)*

This function provides the capability of grouping graphic elements, attributes and control functions. A macro is labelled with a name and consists of an arbitrary sequence of graphic elements, attributes, parameter values and appropriate control functions. The name thereafter acts as a substitute for the entire string of specified functions which make up that particular macro. Separate groupings may exist which contain only graphic elements from one of the categories defined in § 3.3.3 above.

3.3.4.3.7 *Select macro sets*

This function provides for the selection of an already defined set of macro sequences, allowing individual sequences within such a set to be called by their names. When a macro name is called, the entire macro sequence is processed.

3.3.5 *Display of alphanumeric text*

The character repertoires for this section are those specified in Recommendations T.100 and T.101.

Terminals must be able to display correctly the following formats:

31 columns 16 rows	} of Latin-based alphanumeric characters
40 columns 20 rows	
40 columns 24 rows	

Whereas the attributes and control functions defined in this section are used mainly with alphanumeric characters, some also apply to pictorial characters.

3.3.5.1 *Attributes for alphanumeric text*

3.3.5.1.1 *Character rotation*

This attribute determines the rotation of an alphanumeric character relative to the horizontal direction. The rotation can either be chosen from a fixed set, i.e., 0°, 90°, 180°, or 270°, or can be any angle between 0° and 360°.

3.3.5.1.2 *Character path*

This attribute determines the writing direction, i.e., the direction in which the active position is automatically advanced after a character is displayed. Four directions are possible: right, left, up and down. These directions may either be expressed relative to the character rotation or relative to fixed screen coordinates.

3.3.5.1.3 *Inter-character spacing*

This attribute determines the distance the cursor is moved after a character is displayed.

3.3.5.1.4 *Inter-row spacing*

This attribute determines the relative location of the active cursor when it is advanced to a new line in a direction perpendicular (relative -90°) to the character path.

3.3.5.1.5 *Alphanumeric character size*

The size of an alphanumeric character can be specified in one of the following manners:

- a) by specifying the width and height of the character field,
- b) by specifying a double-height character, where the height is set to twice its default value and the width is set to its default value,
- c) by specifying a double-width character, where the width is set to twice its default value and the height is set to its default value,
- d) by specifying a double-size character, where both height and width are set to twice their default values,
- e) by specifying proportional spacing in a given character height.

3.3.5.1.6 *Underline*

This attribute is used for underlining alphanumeric characters either individually or on a character-string basis.

3.3.5.1.7 *Invert*

Alphanumeric characters can be displayed either in normal mode or in inverted (reverse video) mode. In inverted mode, the explicit background and foreground colours are interchanged.

3.3.5.1.8 *Cursor*

A cursor may be used to indicate the character location(s) on the screen in which the next alphanumeric or pictorial character is to be written. More than one style can be defined for the cursor, e.g. underscore, block, cross hair or manufacturer dependent. Also the cursor can be either flashing or steady or invisible.

3.3.5.1.9 *Text font*

This attribute determines which of a choice of fonts is to be used for displaying the text.

3.3.5.2 *Format effector functions*

Format effectors are control functions that influence the positioning of alphanumeric text and pictorial characters. They include the functions given below:

- a) moving the active position a distance equal to the inter-character spacing lying parallel to the character path in the direction opposite to the character path (i.e., 180° to the direction of the character path);
- b) moving the active position a distance equal to the inter-character spacing lying parallel to the character path in the direction of the character path;
- c) moving the active position a distance equal to the inter-row space in a direction perpendicular to the character path (relative -90°);
- d) moving the active position a distance equal to the inter-row space lying perpendicular to the character path in a direction perpendicular to the character path (relative 90°);
- e) moving the active position to the first character position within the active drawing area along the character path;
- f) moving the active position to the home character position in the display area;
- g) moving the active position to a given location in the display area.

3.3.5.3 *Other control functions for alphanumeric text*

3.3.5.3.1 *Word wrap*

This function causes the alphanumeric text to be buffered into words. A word is displayed on the current line only if the entire buffered word will fit into the space remaining on the current line within the display area. If the word does not fit into the space remaining on the current line, then the cursor is repositioned beginning at the first character position on the next line and the word is displayed. The space character should be omitted if the last word on the line is terminated with a space that does not fit on that line.

3.3.5.4 *Dynamically redefinable character set (DRCS)*

A DRCS is a set of characters whose shapes are sent from the service and down-loaded via the line. It may be used to represent alphanumeric characters, special symbols, or picture element symbols for constructing fine graphics. Once loaded, the DRCS is regarded as a member of a library.

Two types of DRCS have been identified. The first type is the basic DRCS. Only the shapes of the characters are down-loaded. Characters are displayed on the screen according to prevailing attributes.

The second type of DRCS is described in § 3.3.6.4.

3.3.5.4.1 *Define dynamically redefinable character sets*

This function enables the definition of a dynamically redefinable character set (DRCS), identified by a name either by using any sequence of graphic elements, attributes and control functions or by using bit patterns defining the shape of the characters.

3.3.5.4.2 *Select DRCS*

This function determines which DRCS, already defined, will be used.

3.3.6 *Display of pictorial characters*

The attributes and control functions defined below are used specifically with pictorial characters such as mosaics. Many of the attributes and functions (including the format effectors) of alphanumeric text also apply to pictorial characters.

3.3.6.1 *Attributes for pictorial characters*

3.3.6.1.1 *Contiguous/separated characters*

This attribute allows a pictorial character to be displayed in either one of two styles:

- a) contiguous: the characters adjoin one another,
- b) separated: each character is surrounded and separated by a border of the background colour, the width of which may be specified.

3.3.6.1.2 *Size of pictorial characters*

This attribute specifies the size of a pictorial character either by means of normalized Cartesian coordinates or in terms of a predetermined default character size (as per § 3.3.5.1.5 above).

3.3.6.2 *Control function for pictorial characters*

3.3.6.2.1 *Select mosaic subrepertoire*

This function determines which subsets of the mosaic repertoire will be used for constructing mosaic pictures.

3.3.6.3 *Mosaic repertoire*

The mosaic repertoire for this section is specified in Recommendations T.100 and T.101.

3.3.6.4 *Pictorial DRCS*

General considerations for DRCS are given in § 3.3.5.4. In pictorial DRCS, the down-loaded characters are completely defined in foreground colours, i.e. all the dots of a character cell have a defined foreground colour, chosen from a number of colours.

3.3.7 *Display of geometric drawings*

3.3.7.1 *Normalized Cartesian coordinates*

Geometric elements are defined within a two-dimensional space using normalized coordinates, that is, a Cartesian 0 to 1 numbering scheme (see § 3.3.2.4).

3.3.7.2 *Control functions of geometric drawings*

3.3.7.2.1 *Specify resolution*

This function specifies the resolution of coordinate data, that is, the accuracy to which the X and Y coordinates are specified.

3.3.7.2.2 *Define filling texture*

This function is used to dynamically redefine filling textures in addition to the ones that are already predetermined. See the description of “texture pattern” attribute (§ 3.3.7.3.3).

3.3.7.2.3 *Define graphic object (segment)*

This function provides the capability of grouping geometric elements, attributes for geometric elements, control functions of geometric elements and alphanumeric text into a named segment. The elements are stored in the display device. They can be displayed or not under control of the visibility attribute (§ 3.3.7.3.5).

3.3.7.2.4 *Insert graphic object*

This function provides for the selection of an already defined named segment. Before the elements are processed the coordinate data within the elements are transformed using a transformation matrix (§ 3.3.7.2.6).

3.3.7.2.5 *Delete graphic object*

This function deletes the named segment and its contents.

3.3.7.2.6 *Define transformation matrix*

This function allows the specification of a transformation matrix used during insertion of a graphic object (§ 3.3.7.2.4).

3.3.7.2.7 *Window*

This function defines a rectangular part of the normalized coordinate space to be used.

3.3.7.2.8 *Viewport*

This function defines the rectangular region of display space to be used.

3.3.7.3 *Attributes for geometric elements*

3.3.7.3.1 *Logical pel (brush)*

This attribute is used to determine the size and shape of the logical pel (brush). Geometric elements are drawn by moving the logical pel (brush) around the screen. The size and shape of the logical pel (brush) therefore directly determines the line width of geometric elements. The logical pel (brush) size will correspond to at least one and possibly many display pixels. The shape of the logical pel (brush) can be of different types, e.g. square or circle. By choosing appropriate values for the width (dx) and the height (dy), these types can be formed into a rectangle or an ellipse.

3.3.7.3.2 *Line texture*

The line texture can be solid, dotted, dashed or dot-dashed. It is used for lines as well as outlines.

3.3.7.3.3 *Texture pattern*

Enclosed geometric elements may be filled by texture patterns. The texture pattern can be chosen from solid colour, hatched or patterned. The hatched textures can be chosen from vertical hatching, horizontal hatching, diagonal hatching (45° and -45°), vertical and horizontal crosshatching and diagonal crosshatching. Pattern textures can be dynamically defined (§ 3.3.7.2.2).

3.3.7.3.4 *Highlighting*

Filled and enclosed geometric elements can be highlighted by drawing their perimeters in black, as a line in the background colour or in a manufacturer dependent way. This attribute applies either to segments or to individual elements.

3.3.7.3.5 *Visibility*

This attribute controls the display of elements during the creation of a named segment (§ 3.3.7.2.3).

3.3.7.3.6 *Marker representation*

This attribute determines the size and the type of a marker to be used in the *marker (point)*. A marker representation may be chosen from a <.>, a <+>, a <*>, a <o> and a <x>, or other shape or be the default to the logical pel shape. The origin of the marker representation may be at its centre, or at other points of the marker representation.

3.3.7.4 *Geometric elements*

When drawing pictures with geometric elements the start location of each geometric element may be specified in either one of two ways:

- a) as an absolute position (current drawing point position independent)
- b) as a relative position with respect to the final drawing point position of the previously drawn geometric element (current drawing point position dependent).

Further coordinate positions may be specified in either an absolute, a relative or an incremental manner.

3.3.7.4.1 *Marker (point)*

Marker is used to perform the operation of writing a marker representation at specified positions. The size and type of the marker representation is controlled by the marker representation attribute (§ 3.3.7.3.6).

3.3.7.4.2 *Line*

Line is used to draw a straight line between specified drawing positions using the current line texture.

3.3.7.4.3 *Arc/circle*

Arc/circle provides the capability of drawing a circle, or a segment of a circle using the current line texture. The arc is drawn from an initial drawing position to a final drawing position through an intermediate point on the arc.

A circle is drawn when the start and end points are coincident. For the definition of a circle, the intermediate point on the arc defines the diameter of the circle.

Alternatively a circle may be defined by the position of its centre and its radius.

A straight line is drawn if the three points are co-linear.

An arc and the chord joining the start and end points of the arc define an enclosed arc.

3.3.7.4.4 *Rectangle*

Rectangle is used to draw a rectangular area of specified width and height.

3.3.7.4.5 *Polygon*

Polygon is used to draw a polygon with the current line texture, from the initial drawing position, through a series of vertices, back to the initial drawing position. There is an implicit closure between the initial drawing position and the last vertex specified so that the final drawing position is identical with the initial drawing position.

3.3.7.4.6 *Polycurve*

Polycurve is used to draw a curved line through, or best fit to, more than three given point positions.

3.3.7.4.7 *Infill*

Infill is used to fill the surrounding area of the specified position with the current texture.

3.3.7.4.8 *Pixel array*

Pixel array is used to define a rectangle with m by n cells. In drawing the cells of this rectangle, all cells may have different colours.

3.3.8 *Display of photographic pictures*

3.3.8.1 *Control functions for photographic pictures*

3.3.8.1.1 *Photographic image development mode*

This function controls the sequence of development of the image on the display. Possible modes include:

- a) successive display of horizontal lines of the height of the logical pel;
- b) successive display of rectangular blocks;
- c) progressive improvement of the spatial resolution over the whole active drawing area;
- d) progressive improvement of colour resolution over the whole active drawing area.

3.3.8.2 *Attributes of photographic elements*

3.3.8.2.1 *Logical pel size*

This attribute is used to determine the width (dx) and height (dy) of the logical pel which is a rectangle whose orientation is fixed with respect to the Cartesian coordinate system. The logical pel size will correspond to at least one and possibly many display pixels. Photographic images are created by defining the colours of logical pels.

3.3.8.2.2 *Colouring block size*

This attribute determines the size of the rectangular colouring block. The logical pels within each colouring block may only take the foreground or background colour specified for that block.

3.3.9 *Audio capability*

Audio capability includes music, voice, and other sounds. This section also identifies possible enhancements.

3.3.9.1 *Synthesized musical sounds*

This function may be used to present synthesized musical sounds having various timbre. The musical tone coding system is employed to represent musical information. Musical information is transmitted to the user terminal, and sounds are reproduced in the user terminal, possibly with tone synthesizer techniques. Capabilities include the following:

3.3.9.1.1 *Part*

Multiple parts can be defined in a single tune. Each part may be defined separately; however, they could be reproduced simultaneously.

3.3.9.1.2 *Timbre*

The timbre of sounds may be defined by specifying a particular musical instrument. Each part may have a different timbre.

3.3.9.1.3 *Pitch and duration*

Every sound in a part may be reproduced by specifying the pitch and the duration of each musical tone.

3.3.9.1.4 *Data transfer control*

Start and end of the entire transfer of the musical definition or start and end of a part definition may be indicated. Start of reproduction may also be indicated.

3.3.9.1.5 *Jump and repetition control*

Jump and repetition in the reproduction of a tune may be defined. Labels may be defined to indicate a range of repetition or the destination of the jump.

3.3.9.1.6 *Sound level control*

Sound level in reproduction of a tune may be defined.

3.3.9.2 *Other possible audio techniques (for further study.)*

3.3.9.2.1 *Text and music synchronization*

This function may be used to specify the visual and audible effects of synchronization.

3.3.9.2.2 *Synthesized voice*

This function is used to present human voice with the help of voice synthesis techniques. Coded voice parameters-to-voice conversion, and character coded text-to-voice conversion may be possible.

3.3.9.2.3 *Arbitrary sounds*

This function is used to reproduce any sounds including that of human voice and musical instruments.

3.3.10 *Animation capability*

This provides animation (movement) capability, and identifies possible enhancements.

3.3.10.1 *Colour manipulation*

This function may be used to create simple animation effects by manipulating the flash and colour attributes.

3.3.10.2 *Display position manipulation*

This function may be used for a form of animated display by manipulating the relative display position with the help of multi-plane display capability.

3.3.10.3 *Other possible animation techniques (for further study)*

3.3.10.3.1 *Timed execution of drawing an image*

This function may be used for time-regulated drawing of coded pictorial information.

3.3.10.3.2 *Successive overwriting of selected pictorial information*

This function realizes animated or moving display of pictorial information through successive overwriting.

3.4 *Session level*

3.4.1 *General*

The purpose of the session is to establish and organize the dialogue(s) between the user and the data base. The Videotex session is an interactive session that may permit one or more steps of questions and answers.

3.4.2 *Session establishment/closure*

The basic function of the session is to establish the logical connection between the applications. It includes the facility to negotiate a set of capabilities that can be used at the beginning of the session. The renegotiation of those capabilities is for further study.

The function to close the logical connection is also performed by the session level either in an orderly manner or through an aborting mechanism.

3.4.3 *Dialogue management*

The session level provides the tools to establish the right of the user and the data base to send and receive data. In the case where one party has the need to send data without having the right for it, it provides a facility to obtain it.

3.5 *Communication levels (to be defined)*

4 Operation of the Videotex service

4.1 *User information/directories*

4.1.1 As far as possible a directory of information/application providers shall be made available by each administration participating in the international Videotex service.

4.1.2 In addition, if an administration is providing an international Videotex messaging service, a directory of subscribers of the messaging facility shall be made available by the administration.

4.1.3 It is up to the administration to determine in which cases the information/application providers can decide whether they want to be included in the directory.

Equally, the administration determines the cases in which a subscriber to the international Videotex messaging service is free to decide whether or not to be included in the directory of messaging subscribers.

4.1.4 The directory of information/application providers shall include:

- information on how to use the directory,
- an ordered list of providers,
- method of access.

It is recommended that the following information should be made available:

- information/application provider's name,
- short description of the service/application,
- language of the service,
- costs for the service/application and charging method,
- availability of the service,
- application access information,
- access conditions,
- information/application provider's address and telephone,
- legal responsibility for the contents of the application,
- technical information eg. the service profile and additional equipment required.

4.1.5 The directory of international Videotex messaging subscribers shall include:

- information on how to use the directory,
- an alphabetic list of subscribers with messaging address.

4.1.6 In principle, directories can be made available in electronic or paper form. Dialogue procedures and character repertoire of electronic directories are determined by the Videotex service provider, consistent with the national Videotex service. The use of a full keyboard by the consulting user may be required. It may be useful to integrate the electronic directory as much as possible with the facility concerned (e.g. messaging, telex access).

4.2 User authorization and identification

There are two functions which the «local» Videotex service may provide to an application in the «remote» Videotex service.

- 1) Authorization: validating the user's entitlement to access the application.
- 2) Identification: providing the user's, name, address, telephone number, etc., in a standardized format.

Note – Some applications may require neither authorization nor identification of the user. Others may achieve this by interaction directly between the user and the application.

4.3 System fields

4.3.1 General

The system field facility is an optional function provided by a Videotex service and can be used to transfer preregistered user data to an application. The proposed fields (partly or completely filled) for such data are as follows:

- | | |
|-------------------------------|--------------------------------------|
| 1. country code | 3 char. num., telephone country code |
| 1a. national telephone number | 12 char. num. |
| 2. subscriber no. | 12 char. num. |
| 2a. co-user suffix | 4 char. num. |
| 2b. user no. (2+2a) | 16 char. num. |
| 3. subscriber title | 5 char. alpha-num. |
| 4. subscriber name | 30 char. alpha-num. |
| 5. additional name | 30 char. alpha-num. |
| 6. street | 30 char. alpha-num. |
| 7. town | 30 char. alpha-num. |
| 8. postcode | 7 char. alpha-num. |
| 9. date | 8 char. DD.MM.YY, num. |
| 10. time | 8 char. hh:mm:ss, num. |
| 11. date and time | 17 char. DD.MM.YY hh:mm:ss, num. |

Note – The field names and lengths are provisional pending harmonisation with other telematic services.

4.3.2 It is up to the Administrations to decide to set up or not the system field facility.

4.3.3 The implementation and use of the above system fields in international connections may be subject to legal restrictions (e.g., consumer privacy) that may be in effect nationally or internationally.

4.3.4 Services which do not support the system field facility will ignore all the associated protocol items and consider all the system fields as normal data collection fields.

4.3.5 The international availability of this data or parts of it may be subject to legal restrictions or restrictions imposed by users or Administrations.

5 International interworking of Videotex service

5.1 Videotex interworking allows a videotex terminal in a given country to interact in real time with a videotex application located in a different country.

5.2 Different services operate with different service profiles ie. use different data syntaxes and support different application and service functions.

5.2.1 In order to facilitate interworking the data syntax and/or application and service functions may need to be transcoded or, the terminal or application adapted.

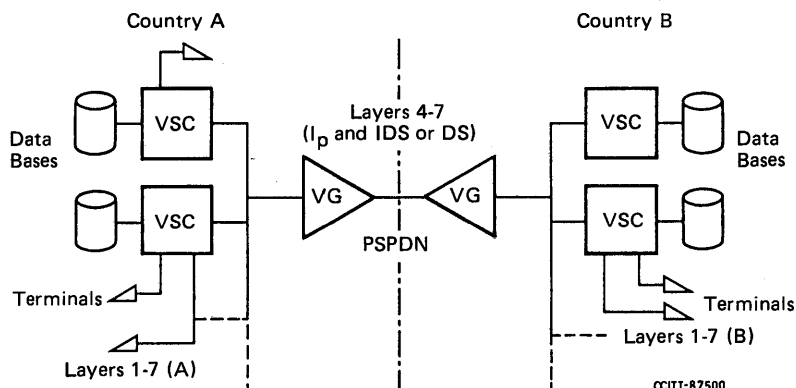
5.2.2 What transcoding or adaptation is necessary and where this takes place may be predefined for a set of service profiles or may be negotiated during the session.

5.2.3 It is the responsibility of the Administrations involved to jointly decide upon the configuration of the international Videotex service to be implemented, and the service profiles to be supported.

5.2.4 When the service profiles in two countries differ it may be necessary to use the set of international interworking protocols and the interworking data syntax to be defined in Recommendation T.101. If the interworking data syntax is not required or does not exist then any of the data syntaxes defined in T.101 may be used.

5.3 International interworking configurations

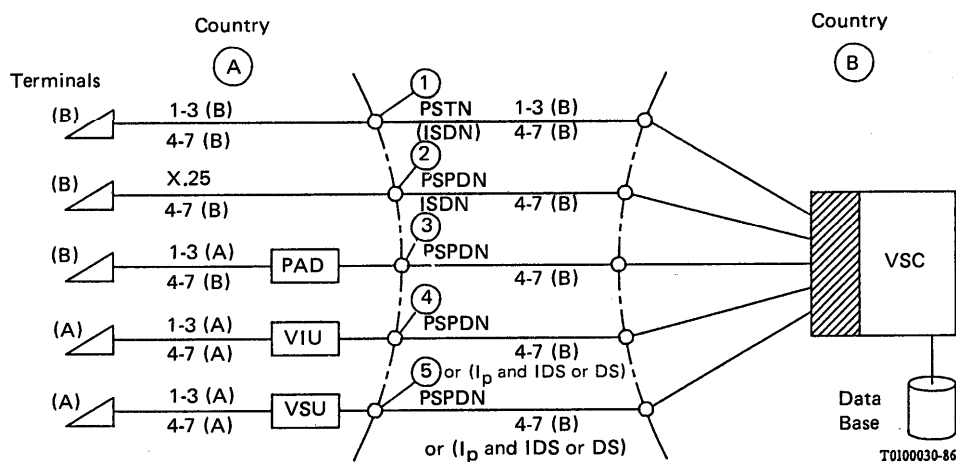
Configuration 1:



VG Videotex gateway
VSC Videotex service centre
(A) Protocol and data syntax determined by country A
(B) Protocol and data syntax determined by country B
(I_p) International interworking protocol defined in T.101
IDS Interworking data syntax defined in T.101
DS Data syntax I or II or III defined in T.101

The gateways are connected via the PSPDN, dedicated lines or others, but using CCITT Protocols on the layers 1-3. The international protocols, layers 4-7, are to be defined in Recommendation T.101.

Configuration 2:



Layers

1-3 (A) Protocol determined by country A
1-3 (B) Protocol determined by country B
(I_p) International Interworking protocol defined in T.101
VIU Videotex interface unit
VSU Videotex service unit
4-7 (A) Protocol and data syntax determined by country A
4-7 (B) Protocol and data syntax determined by country B
IDS Interworking data syntax defined in T.101
DS Data syntax of country B defined in T.101 (DS I, or DS II or DS III)

Case 2.1

A terminal in country A is connected to a Videotex service in country B directly over the international PSTN (or ISDN bearer services). The protocols and data syntax used are those determined by the Videotex service in country B.

Case 2.2

A terminal in country A is connected to a Videotex service in country B via the PSPDN (or ISDN bearer services). The protocols and data syntax used are those determined by the Videotex service in country B.

Case 2.3

A terminal in country A is connected via a PAD in country A and the international PSPDN to a Videotex service in country B. On the international PSPDN the protocols used are X.75 and X.29 and the data syntax of country B.

In cases 2.1, 2.2 and 2.3 of configuration 2, where a terminal in country A is directly accessing a remote VSC in country B via standard telecommunications networks (PSTN, ISDN or PDN), the "videotex service" offered to the user and the "protocols" to be used are defined by the telecommunications networks and by the remote VSC.

Case 2.4

A terminal in country A is connected via a VIU in country A and the international PSPDN to a service in country B. On the international link the protocols used can be either the international interworking protocols to be specified in T.101 (preferred solution) or the protocols determined by the service in country B. The VIU will provide the necessary conversion of these protocols to support the terminal in country A.

Case 2.5

A terminal in country A is connected via a VSU in country A and the international PSPDN to a Videotex service in country B. On the international link the protocols used can be either the international interworking protocols specified in T.101 (preferred solution) or the protocols determined by the service in country B. The VSU will provide the necessary conversion for these protocols to support the terminal in country A and in addition will support application charging and accounting and may also provide user authentication and/or identification.

6 Intercommunication with other telematic services

6.1 Videotex-telex

Videotex-telex interworking may be provided to enable users to send messages by means of a Videotex service to terminals connected to the telex network.

6.1.1 In order to minimize telex network holding times and to enhance the service to the user, messages may be handled on a store-and-forward basis.

6.1.2 Only the graphic characters of the Videotex graphic character repertoire corresponding to International Telegraph Alphabet No. 2 can be included in messages transmitted to the telex network.

6.1.3 The message format may be limited by the Videotex display format.

6.2 Telex-Videotex

Two distinct facilities may be provided by means of telex-Videotex interworking.

6.2.1 Telex-Videotex message handling

This facility may be provided to enable users to send messages from terminals connected to the telex network to terminals accessing a Videotex service.

6.2.1.1 Since Videotex terminals may not be capable of auto-answer operation this facility may be provided on a store-and-retrieve basis. The possibilities of store-and-forward or real-time communication are for further study.

6.2.1.2 The format of messages transmitted from telex terminals cannot be preserved unless the sender restricts the message format to the width of the Videotex display.

6.2.2 *Telex-Videotex data base access*

This facility may be provided to enable users to access the Videotex service by means of terminals connected to the telex network.

6.2.2.1 The facility available to telex users will be severely limited by the character repertoire, the lack of any Videotex attributes and the transmission speed of telex.

6.2.2.2. The telex character repertoire does not include the * and # characters used to form user commands in many Videotex services.

6.3 *Videotex-Teletex*

Videotex-Teletex interworking may be provided to enable users to send messages by means of a Videotex service to Teletex terminals.

6.3.1 In order to comply with the operational characteristics of Teletex it will probably be necessary to handle messages on a store-and-forward basis.

6.3.2 The Teletex and Videotex graphic repertoires are largely identical. The following fallback representations of Videotex characters (Table 1/F.300) may be transcoded at a Videotex-Teletex interworking facility.

TABLE 1/F.300

Identifier	Videotex character	Fallback representation	
SM 30	←	<	SA 03
SM 31	→	>	SA 05
SM 32	↑	!	SP 03
SM 33	↓	!	SP 02
SP 19	‘	‘	SP 05
SP 20	’	’	SP 05
SP 21	“	”	SP 04
SP 22	”	”	SP 04
SM 12	—	—	SP 10
MG 01 to MG 63	Block graphics	/	SP 12

6.3.3 For Teletex terminals having the ability to present the Videotex character repertoire in its entirety the need for fallback representation disappears. Therefore on initial call establishment the terminal display/printing capabilities must be determined.

6.3.4 Possible conversion of the Videotex attribute control functions is for further study.

6.3.5 The message format may be limited by the Videotex display format.

6.4 *Teletex-Videotex*

Two distinct facilities may be provided by means of Teletex-Videotex interworking:

6.4.1 *Teletex-Videotex message handling*

This facility may be provided to enable users to send messages from Teletex terminals to terminals accessing a Videotex service.

6.4.1.1 Since Videotex terminals may not be capable of auto-answer operation this facility may be provided on a store-and-retrieve basis. The possibilities of store-and-forward or of real-time communication are for further study.

6.4.1.2 An interworking facility will need to transcode Teletex characters and control functions which are not in the Videotex repertoire.

6.4.1.3 The format of messages transmitted from Teletex terminals cannot be preserved unless the sender restricts the message format to the width of the Videotex display.

6.4.2 *Teletex-Videotex data base access*

This facility may be provided to enable users to access the Videotex service by means of Teletex terminals.

6.4.2.1 The facility available to Teletex users will be limited by the inability of basic Teletex to represent many of the attributes and graphic elements (e.g. DRCS, geometric) of Videotex. Some alphanumeric characters will have to be transmitted to Teletex terminals in a fall-back form (Table 1/F.300).

6.5 *Videotex-facsimile and facsimile-Videotex* (for further study).

7 **Quality of service**

7.1 *Provision, alteration, cessation and recovery of service*

Due to the differences between national policies for Videotex service provision, the definition of this parameter seems premature.

7.2 *Availability*

7.2.1 *Availability of service*

Service should preferably be available 24 hours per day. When a service is unavailable (e.g. scheduled closure or temporary failure), then the user should be informed of this and when the service will be (or is expected to be) available. This information should preferably be free of charge.

Administrations should provide a sufficient number of international access ports to accommodate the demand for international sessions, with a failure probability in the same range as for national service. This implies appropriate calibration of international links.

7.2.2 *Availability of applications*

Applications accessible via the international link should preferably be available 24 hours/day. Applications which are not available all the time should indicate their hours of availability. The user should be informed of these hours. This information should be also reported in the directory.

7.3 *Call establishment*

The time between the user request for a foreign service and the reception of the first response from this foreign service should typically be not more than 10 seconds.

Note — Further investigation is needed to insure that this value is compatible with the call establishment delay for international virtual circuits on PSPDN.

When the call cannot be established, the reason should be reported to the user in an understandable manner (e.g., foreign service not operating, temporary saturation, etc.). This should give guidance to the user about action to be taken (retry immediately, retry later, see network operator, etc.).

7.4 *Call retention*

The international session should not time-out in the event of a remote application not responding to a user's input in less than 10 minutes. This does not preclude local time-out for user's inactivity detection according to national practises.

All cases of accidental break of the international communication should be reported to the user, indicating the nature of the fault as far as possible.

7.5 Information transfer

7.5.1 Transmission characteristics

For all configurations the bit error rate above transport layer should be better than 10^{-6} but 10^{-8} should be aimed for (end to end). The statistical delays due to network errors should be in the range of 5-10 seconds.

In the case of transmission failure the user should be appropriately advised.

7.5.2 Response times

The median response time during the session should typically be less than 3 seconds for information retrieval and typically not more than 10 seconds in case of transactions. The response times in all cases include the network transmission delays. If conversion is provided then longer response times would be acceptable. Applications which take more than 10 seconds to respond should preferably send reassurance messages.

7.5.3 Data integrity

When interworking between two Videotex services using different data syntaxes, there could be some unavoidable degradation of the display quality due to the data syntax conversion process, but care must be taken to minimize loss of essential information. Textual information is considered to be essential information. Textual information limited to the following repertoire of characters and control functions will always be transcoded without suffering loss of information:

- i) characters of the basic 7 bit table of T.50, with the dollar sign (\$), but without "low-line";
- ii) common subset of the control functions as contained in Data Syntaxes I, II and III of Recommendation T.101.

When loss of textual information takes place in the conversion process, then some indication of this loss should be presented to the user. In the data syntax conversion process, there might be possible loss of time dynamic effects and the effects of timing controls such as "WAIT" command.

However, these may be legal, regulatory or commercial restrictions which lead to the suppression, addition or alteration of information. The user should be informed when this has occurred.

8 Tariffing implications

An international Videotex service would give rise to the following components of the charges. All components do not necessarily need to exist in all international Videotex service configurations:

- a) Communication Charge (e.g. PSPDN) (layers 1 to 3)
- b) Service Operating Charge
- c) Protocol and Data Syntax Conversion Charge (layers 4 to 7)
- d) Application Charge

Depending on the configurations used, these charges are collected by either country A or country B. In the case of Configuration 1, all charges are collected by country A. In the case of Configuration 2, the parties responsible for collecting the charges are indicated in Table 2/F.300 below.

TABLE 2/F.300

Configuration	Country responsible for collecting charges			Application
	Communica- tion	Service operation	Conversion (if required)	
2.1	A	B	B	B
2.2	A	B	B	B
2.3 (PAD)	A	B	B	B
2.4 (VIU)	A	B	A	B
2.5 (VSU)	A	A	A	A or B

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SECTION 4

TELEMATIC SERVICES, GENERAL

Recommendation F.350

APPLICATION OF SERIES T RECOMMENDATIONS

The CCITT,

considering

- (a) that Study Group I defines the basic and optional features to be offered by the various telematic Services;
- (b) that Study Group VIII defines the mandatory technical requirements for telematic equipment;
- (c) that Study Group VIII defines also optional technical capabilities which may be included in telematic equipment;
- (d) that there is a need to define how the mandatory and optional technical requirements should be applied;

unanimously agrees

that the Series T Recommendations shall be applied in accordance with this Recommendation.

1 CCITT recommended services defined in the Series F Recommendations, excluding Videotex

In order to ensure full end-to-end compatibility within a CCITT recommended service, equipment shall be capable of providing the mandatory technical requirements defined in the Series T Recommendations to which the Series F Service Recommendation refers.

2 Optional technical capabilities

Where optional technical capabilities are defined in CCITT Series T Recommendations, e.g. for use as national or regional options, the equipment shall be capable also of operating in the mandatory fallback mode. This mandatory fallback mode provides the basic features required by the relevant Series F Recommendation, and hence the mandatory technical requirements are met.

3 Non-standardized capabilities

These capabilities are not defined in CCITT Recommendations but are laid down by Administrations and/or individual manufacturers. Provision is made for the use of such non-standardized capabilities in the procedures detailed in the relevant Series T Recommendations.

Equipment shall be capable also of operating in the mandatory fallback mode which provides the basic features required by the relevant Series F Recommendation, and hence the mandatory technical requirements are met.

Note 1 – The term “mandatory technical requirements” covers the “basic functions” in Recommendation T.60, the “basic capabilities” in Recommendation T.62, the “recommended standards” in Recommendation T.4 and the “standard capabilities” in Recommendation T.30.

Note 2 – The term “optional technical capabilities” covers the “standardized optional functions” in Recommendation T.60, the “non-basic standardized capabilities” in Recommendation T.62 and the “recognized options” in Recommendation T.4.

Note 3 – The term “non-standardized capabilities” covers the “optional functions” in Recommendation T.60, the “non-basic capabilities” and “private use” in Recommendation T.62 and the “non-standard capabilities” in Recommendation T.30.

Recommendation F.351

GENERAL PRINCIPLES ON THE PRESENTATION OF TERMINAL IDENTIFICATION TO USERS OF THE TELEMATIC SERVICES

The CCITT,

considering

(a) that the terminal identification (TID) in the telematic services should provide the called subscriber not only with an unambiguous identification of the calling subscriber, but also with the essential information needed to establish a call to the former;

(b) that transfer of network addresses, terminal identifications and other session management functions are covered in Recommendations specific to individual networks and telematic services;

(c) that detailed provisions on TIDs and network addresses may be also found in specific Telematic service and network Recommendations and no modifications are necessary to the information carried by the communications protocol.

(d) that, from the operational viewpoint, it is acceptable for a subscriber to add selection digits to those presented in the TID,

recommends

that the following general principles on the identification of terminals in the telematic services (and, as appropriate, other terminals) should be applied to all new equipment, and to all existing equipment¹⁾.

1 The TID for telematic terminals on the PSTN shall precede the telephone country code with the escape code “9”.

2 The TID for telematic terminals on the ISDN shall precede the country code with the escape code “0”.

3 Table 1/F.351 shows examples of TIDs for telematic terminals on the CSPDN, PSPDN, PSTN and ISDN. The table also includes the dialling sequences from a terminal on one type of network to terminals on other types of networks.

It should be noted that it may be necessary to instruct users **NOT** to dial the escape code “9” for calls from PSTN and ISDN to PSTN, and “0” from PSTN and ISDN to ISDN.

¹⁾ The applicability of TID concept for existing G2/G3 terminals is not mandatory. In new G3 terminals the possibility to implement TID is to be encouraged.

TABLE 1/F.351

<div style="display: flex; align-items: center; justify-content: center;"> <div style="width: 50%; transform: rotate(-45deg);"></div> <div style="width: 50%; text-align: right;">Sink</div> </div>		Country B				
		Network	CSPDN (e.g. Canada)	PSPDN (e.g. Canada)	PSTN (e.g. France)	ISDN (e.g. France)
		TID	3029-1234567 = ABC	3028-1234567 = DEF	933-1234567890 = GHI	033-1234567890 = IKL
Country A	Dialling information to reach subscriber B	CSPDN	+ 3029-1234567 (Note 1)	+ 3028-1234567	+ 933-1234567890	+ 033-1234567890
		PSPDN	+ 3029-1234567	+ 3028-1234567	+ 933-1234567890	+ 033-1234567890
		PSTN	+ 3029-1234567	+ 3028-1234567	+ 33-1234567890 (Note 2)	+ 33-1234567890 (Note 2)
		ISDN	+ 3029-1234567	+ 3028-1234567	+ 33-1234567890 (Note 2)	+ 33-1234567890 (Note 2)

Note 1 – The + signifies national escape digit(s) requirement.

Note 2 – On calls from PSTN to PSTN and ISDN, and from ISDN to PSTN and ISDN the escape codes “9” and “0” may not be acceptable to the national PSTN and ISDN.

**PROVISION OF TELEMATIC AND DATA TRANSMISSION SERVICES
ON INTEGRATED SERVICES DIGITAL NETWORK (ISDN)**

The CCITT,

considering

(a) that the I-series of Recommendations apply to the general concept and to the network capabilities of an ISDN. Specifically, Recommendations I.210, I.211 and I.212 describe, in a general way, the principles of telecommunication services, the bearer services and the teleservices supported by an ISDN;

(b) that the F-series of Recommendations describe the operations and quality of Telematic services;

(c) that many countries wish to adopt a common strategy for introducing the non-voice Telematic services on ISDN;

(d) that there is a need to harmonize the service approach for Telematic services, specially the requirements for supplementary services;

(e) that intercommunication is required between the existing non-voice services on the dedicated networks and non-voice services in the ISDN;

(f) that there is a need to identify the priority for introducing non-voice Telematic services in the ISDN,

recommends

that the guidelines laid down in this Recommendation be followed in providing Telematic and data transmission services on ISDN.

1 Existing services provided on ISDN

When Telematic and data services are provided on ISDN, it is necessary to refer to the Recommendation of each service for service description:

- F.160 General operational provisions for the international facsimile services
- F.162 Operational requirements of an international store-and-forward facsimile switching service (COMFAX)
- F.170 Operational provisions for the international public facsimile service between public bureaux (bureaufax)
- F.180 General operational provisions for the international public facsimile service between subscribers' stations
- F.184 Operational provisions for the international public facsimile service between subscribers stations with Group 4 facsimile machines (Telefax 4) (formerly Recommendation F.161)
- F.190 Operational provisions for the international facsimile service between public bureaux and subscriber station and vice versa (Bureaufax-Telefax and vice versa)
- F.200 Teletex service
- F.201 Interworking between the Teletex service and the telex service – General principles
- F.202 Interworking between the telex service and the Teletex service – General procedures and operational requirements for the international interconnection of telex/Teletex conversion facilities.
- F.203 Network based storage for the Teletex service
- F.220 Service requirements unique to the processable mode number one (PM1) used within the Teletex service
- F.230 Service requirements unique to the mixed mode (MM) used within the Teletex service
- F.300 Videotex service
- F.400 Message Handling System and Service overview
- F.500 International public directory services

Existing services that may be provided on ISDN have to intercommunicate with the same services on existing networks including existing conversion facilities (see Table 1/F.353).

TABLE 1/F.353

Existing services on ISDN	Services on existing networks
Teletex	Teletex (PSTN, CSPDN, PSPDN)
Telex (see Note 1)	Telex Teletex (PSTN, CSPDN, PSPDN)
Telefax 2/3	Telefax 2/3 (PSTN)
Videotex	Videotex (PSTN, PSPDN)
MHS services	MHS S (PSTN, CSPDN, PSPDN)
Data transmission	Data transmission (PSTN, CSPDN, PSPDN)

ISDN Integrated Services Digital Network

PSTN Public Switched Telephone Network

CSPDN Circuit Switched Public Data Network

PSPDN Packet Switched Public Data Network

MHSS Message Handling System Services

Note 1 — Telex on the ISDN.

Note 2 — The migration from non-ISDN terminals to ISDN is a national matter.

Note 3 — If existing terminals migrate to ISDN, their compatibility with terminals on existing networks shall not be degraded.

Note 4 — Compatibility between ISDN terminals and existing terminals must be retained.

Where administrations offer the telex service on the ISDN, the following principles should be followed:

- i) Operational procedures should be in accordance with Recommendation F.60.
- ii) The telex terminal on the ISDN should be addressable, from international telex networks, by the F.69 telex destination code and a national telex number. The maximum length of the national telex number should be in accordance with the telex signalling requirements of the CCITT U-series of Recommendations.

2 New services¹⁾ provided on ISDN

New services that may be provided on ISDN with intercommunication requirements with other services on ISDN and on existing networks (see Table 2/F.353).

3 Teleservices classification

3.1 General principles

Teleservices classification allows structured approach of the compatibility problem between terminals of the Telematic services.

To ensure stability of the classification in the future, the list has been divided into major categories.

Each category contains a limited representative set of ISDN teleservices. The subsequent development of this list will take into account the new Telematic services which could be defined by the CCITT.

¹⁾ A new service is one that is not yet generally available on existing networks.

TABLE 2/F.353

New services on ISDN	Services on ISDN and existing networks
Teletex with mixed mode	Teletex (PSTN, CSPDN, PSPDN, ISDN) Telefax 4 (ISDN, CSPDN) Telex
Teletex with processable mode (PM1)	Teletex (PSTN, CSPDN, PSPDN, ISDN) Telefax 4 (ISDN, CSPDN) (Class II, III) Telex
Telefax 4 Class I	Telefax 3 (PSTN) Telefax 4 (CSPDN)
Telefax 4 Class II	Telefax 3 (PSTN) Telefax 4 (CSPDN) Teletex (PSTN, CSPDN, PSPDN, ISDN)
Telefax 4 Class III	Telefax 3 Telefax 4 Teletex (PSTN, CSPDN, PSPDN, ISDN)
Videotex 64 (see Note 1)	Videotex (PSTN, PSPDN, ISDN)

Note 1 — Videotex service using the full capacity of the 64 kbit/s B-channel of the ISDN access.

Note 2 — Additional intercommunication requirements may be identified subsequently.

A Telematic service is defined by its specific operational rules, by the list of supported standardized functionalities (applications or modes) and by the relevant communication protocols.

Each application or mode handles presentation schemes based on the user of one medium or several media which can be synchronized. A medium conveys the characteristics of information presented to the user.

The simplest and the most discriminant form of classification has to consider the media as the basic elements based upon which the categories are elaborated.

3.2 *Teleservices list*

The following list will be completed progressively taking into account the new services as they will appear in the next years.

Audio services

- Telephony
- Audio conference
- ... (other audio service)

Text and data services

- Telex
- Teletex
- Telefax 3
- Telefax 4
- Videotex
- Telewriting
- Data transmission
- MHS
- ... (other text and data service)

Video services (see Note)

- Videophone
- Video conference
- ... (other video service)

Multimedia services

- Audiovideography
- Audiography
- Telematic audio conference
- Telematic video conference
- Teleaction
- ... (other multimedia service)

Note – In this category, the sound is always and implicitly included.

4 Interworking requirements

4.1 General

Interworking of Telematic terminals with compatible terminals on ISDN is mandatory.

In order to maintain the defined quality of service, suitable selection mechanisms have to be implemented to guarantee access to compatible terminal.

4.2 Interworking with the Teletex service

Interworking between all terminals connected to different networks must be possible.

Real-time connection between Teletex terminals operating at different speeds is required for the duration of the call. The information on the successful transmission should be given by the receiving terminal to the sending terminal within the call.

The procedures for call set-up to terminals connected to different networks should be as similar as possible.

Interworking with international telex is mandatory.

4.3 Interworking within the Telefax 4 service

Interworking between all terminals connected to different types of networks must be possible.

Real-time connection between Telefax 4 terminals operating at different speeds is required for the duration of the call. The information on the successful transmission should be given by the receiving terminal to the sending terminal within the call.

The procedures for call set-up to terminals connected to different networks should be as similar as possible.

4.4 Interworking from Telefax 4 to Telefax 3

Interworking between Telefax 4 terminals and Telefax 3 terminals should be possible even if they are connected to different types of networks. The preferred method of interworking is to be provided by the inclusion of a Group 3 capability in the Group 4 terminal.

Real-time connection between Telefax terminals (Group 3 and Group 4) operating at different speeds is required for the duration of the call. The information on the successful transmission should be given by the receiving terminal to the sending terminal within the call. Interworking between Group 4 only terminals and Group 3 terminals could be resolved by using network units (store-and-forward or MH system). Further study on this is needed.

The procedure for call set-up to terminals connected to different networks shall be as similar as possible.

4.5 Additional interworking configurations

Other interworking configurations are for further study.

5 Assignment of priorities

The current assignment of priorities to the future work is:

- a) Priority for non-voice teleservices:
 - 1) existing Telematic services on ISDN,
 - 2) new non-voice Teleservices.
- b) Priority for bearer services:
 - 1) new bearer services on ISDN,
 - 2) use of bearer services of ISDN by existing terminals.

6 Introduction strategy guideline

These are strategic guidelines for the introduction of existing services on ISDN. The implementation is strictly a national matter; however, a measure of co-ordination is necessary internationally in order to provide users worldwide with attractive telecommunication services, appropriate intercommunication possibilities, and thereby to ensure financial success for the service providers.

Any existing service introduced on ISDN should have immediate access to the same service on existing networks.

There should be minimum changes in the user access procedures.

Any transition from existing to future international tariffs and accounting should be orderly.

The suggested provisional list of priorities for the implementation of existing services on ISDN is:

- 1) Teletex, Telefax, Videotex;
- 2) Data transmission;
- 3) Message Handling System Services;
- 4) Telex.

It is stressed once again that the priority of implementation is a national matter but it has significant international relevance.

Simultaneous implementation of existing services on ISDN in all countries is deemed desirable and efforts should be made to achieve this goal.

7 Bearer services for non-voice communications

Recommendation I.211 describes and defines a recommended set of bearer services and their bearer capabilities to be supported by an ISDN as a basis for defining the network capabilities required.

The purpose of this chapter is to indicate the recommended bearer services associated to non-voice Telematic teleservices:

7.1 Circuit mode bearer services

- 64 kbit/s unrestricted,
- 64 kbit/s (usable for speech information transfer),
- 64 kbit/s (usable for 3.1 kHz audio information transfer),
- 384 kbit/s unrestricted,
- 1536 kbit/s unrestricted,
- 1920 kbit/s unrestricted,
- 2×64 kbit/s unrestricted.

7.2 Packet-mode bearer services

- Virtual call and permanent virtual circuit (B or D channel);
- Connectionless packet bearer service on a D channel (further study needed);
- User signalling bearer service on a D channel (further study needed).

SECTION 5

DATA TRANSMISSION SERVICES

Recommendation F.600

SERVICE AND OPERATIONAL PRINCIPLES FOR PUBLIC DATA TRANSMISSION SERVICES

1 Introduction

1.1 Scope

These provisions fix the rules to be followed for International Public Data Transmission Services.

1.2 Definition

The definition of «public data transmission service» is a data transmission service established and operated by administration and provided by means of a public network. Circuit switched, packet switched, and leased circuit data transmission services are specified.

Note 1 – A public data transmission service may be subdivided into derived services.

Note 2 – A public data transmission service or a derived service consists of service elements forming a basic service and of other service elements which are called optional user facilities.

Note 3 – There is an implicit definition of data transmission services in Recommendations X.1 and X.2.

1.3 Issues of an essentially technical nature concerning International Public Data Transmission Services are dealt with in other CCITT Recommendations.

1.4 Issues of an essentially technical nature concerning compatibility of terminals and connected equipment are dealt with in Recommendations A.20 and A.21.

2 Terms

2.1 data transmission relations

A data transmission relation between two terminal countries exists when there is between them an exchange of data traffic (and normally a settlement of accounts).

2.2 primary route

The route normally used in a given relation.

2.3 alternative route

The route normally used when the primary route is not available for any reason.

2.4 data service calls

Those data calls that relate to the operation of the international telecommunications services.

2.5 Other terms

These are given in the appropriate CCITT Recommendations and publications.

3 Access to the service

3.1 Types of access

Two types of terminal can access the public data transmission service.

3.1.1 Terminals defined by ISO operating at OSI levels 1 to 3 (Recommendation A.20).

3.1.2 Other terminals (e.g., teletex terminals as defined by Study Group VIII) providing telematic services (Recommendation A.21) or other new as yet undefined CCITT services operating at OSI levels 1 to 7.

3.1.3 Access may be either packet mode (Recommendations X.25 or X.32) or start-stop mode (Recommendation X.28) terminals. Details of services offered are contained in Table 1/X.1, parts (c) and (d).

4 International data circuits/routes

4.1 An international route established and operated between Administrations for the specific purpose of providing public data transmission services. Circuit switched and/or packet switched data transmission techniques are feasible.

4.2 For each data transmission relation the Administrations concerned shall by mutual agreement decide upon the necessity and possibility of alternative data routes. In this respect Administrations should conform with the principles in the appropriate CCITT Recommendations.

4.3 The networks of the Administrations operating data services shall, as far as possible be directly connected using appropriate conversion facilities as necessary. If international transmit points are used, they should be restricted in principle to the definitions given in CCITT Recommendation X.92 and others.

4.4 In the event of interruption to the data transmission service every effort must be made to restore the service with minimum delay.

5 Duration of service

5.1 International data transmission services are in principle continuously available.

5.2 Services that are not available continuously are required to extend beyond the normal closing hours until calls in progress are terminated.

5.3 Each Administration shall designate universal time in all telecommunication activities. Recommendation B.11 refers.

6 Type of call

6.1 Data calls may originate on one data network (e.g. packet) and terminate on the same type of network. In addition it is possible that data calls may originate on one network e.g. telephone and terminate on another network e.g. packet. Possible routines may include:

- Telephone to/from packet;
- Packet to/from telex (Recommendation F.73);

- Circuit to/from packet;
- Telephone to/from telex.

Implementation to be subject to bilateral agreement between Administrations.

6.2 *Service calls*

- 6.2.1 In principle the use of data transmission services for service calls between Administrations concerned with the international data services should be excluded from international accounts.
- 6.2.2 Data service calls may only be originated as authorized by the respective Administrations.
- 6.2.3 Data service calls should as far as possible be made outside the busiest hours.
- 6.2.4 The identification of service calls is for further study.

7 **Modes of operation**

7.1 *General provisions*

- 7.1.1 The data transmission service should be operated in the automatic mode. It is noted that semi-automatic or manual operation may be necessary.
- 7.1.2 Administrations shall reach mutual agreement on the most appropriate method of operation to be applied in the case of the data transmission service concerned.

7.2 *Automatic operation*

- 7.2.1 In principle the data network of each Administration should be interconnected on an automatic basis permitting all subscribers to reach one another either directly or by automatic means.
- 7.2.2 To establish an international data call by automatic means the subscriber shall normally follow the appropriate CCITT Recommendation (e.g. X.121).
- 7.2.3 The duration of normal calls in the automatic service should not be limited.

7.3 *Semi-automatic and manual operation*

- 7.3.1 Semi-automatic and manual operation may be offered on an exceptional basis, subject to bilateral agreement.

8 **Directories — compilation and supply**

Note — This is for further study in conjunction with Question 14/I.

- 8.1 As far as possible each Administration shall make available a directory of its dedicated data subscribers which is updated at least once a year. Customers may elect to be excluded from the directory.
- 8.2 Printed directories for international use should not be larger than 216 × 297mm (A4).
- 8.3 The directories for international use shall be set up in Roman letters. The call number published shall be that which the calling subscriber has to transmit in order to obtain the called subscriber after he has followed the procedure prescribed in his own country to gain access to the destination country.
- 8.4 When directories are written in a language other than a language used in that country, they shall be accompanied by an explanatory note to facilitate the use of such directories. This note shall be drawn up in whatever official language of the Union has been agreed upon by the Administration concerned.
- 8.5 Each Administration will supply to the Administration with which data service exists, a number of copies of its subscribers directories. The number of such copies shall be fixed in advance by mutual agreement and shall be regarded as applying until a request to change it is received.

9 Call progress signals on public data networks

These are defined in Recommendation X.96. (The interpretation of these codes needs further consideration.)

10 Quality of service

The quality of service criteria for the various public data transmission services are to be defined separately in the F.600 series recommendations taking due account of existing CCITT Recommendations. The following are examples of service criteria which need to be covered in individual Recommendations:

- service availability;
- percentage of effective calls;
- data throughput;
- bit error rate;
- transmission delay;
- blocking aspects.

11 Provision of customer support

Administrations should provide customers with the following information:

- access and log-on procedures;
- explanation of call progress and error messages;
- fault reporting arrangements;
- disputed calls arrangements;
- directory facilities.

Recommendation F.601

SERVICE AND OPERATIONAL PRINCIPLES FOR PACKET-SWITCHED PUBLIC DATA NETWORKS

The CCITT

considering

(a) that Recommendation X.1 specifies the user classes of service applicable to networks offering packet-switched services;

(b) that Recommendation X.2 specifies the virtual call service as an essential service to be provided by all networks offering packet-switched services.

(c) that Recommendation X.25 specifies the DTE/DCE interface for packet mode terminals in networks providing packet-switched services.

(d) that Recommendation X.75 specifies signalling procedures between packet-switched networks.

(e) that Recommendation X.92 specifies hypothetical reference connections packet-switched services;

(f) that Recommendation X.96 specifies the call progress signals in public data networks;

(g) that Recommendation X.110 specifies the routing plan to be applied in the international portion of networks providing packet-switched services;

(h) that Recommendation X.121 specifies the international numbering plan for public data networks;

- (i) that Recommendation X.134 specifies boundaries and packet level reference events;
- (j) that Recommendation X.135 specifies the delay aspects of the grade of service in networks providing packet-switched services;
- (k) that Recommendation X.136 specifies the blocking aspects of the grade of service of networks providing packet-switched services;
- (l) that Recommendation X.137 specifies availability performance values for public data networks;
- (m) that Recommendation X.140 specifies the user-oriented quality of service parameters applicable to all services;
- (n) that Recommendation X.213 specifies the OSI network layer service;
- (o) that Recommendation F.600 specifies the general service and operational principles for public data transmission services.

unanimously declares

That the provisions specified in this Recommendation fix the rules to be followed for international data transmission services via packet-switched public data networks, PSPDN. The Recommendation covers service definitions, quality of service and provision of customer support aspects.

1 Introduction

1.1 Definition

1.1.1 The definition of packet-switched public data network (PSPDN) is found in Recommendation X.1.

1.1.2 Issues of an essentially technical nature concerning compatibility of terminals and connected equipment are dealt with in Recommendations A.20 and A.21.

1.2 Class of service (Recommendation X.2)

The definition of PSPDNs is found in Table 1/X.2.

1.3 Types of traffic

The packet-switched data transmission service accepts different types of traffic originated by the users either Permanent Virtual Circuits (PVC) or Virtual Calls (VC). The following table lists the most frequent of these types. Also indicated is a technical solution which could provide a definition of the corresponding type of traffic.

The following list is not exhaustive, but indicative only. New services may spawn different classifications, and possibly create the need to define new facilities in Recommendations X.25 and X.75.

<i>Traffic types</i>	<i>Possible technical solution</i>
Short transactions	Fast select with restriction process
Interactive (average duration and volume) transactions	No specific technical frame
Batch mode transactions	No specific technical frame
	Also possible on other services

The need to associate specific, or a group of specific, quality of service parameters to each of the perceived or identified traffic types is for further study.

2 Terms

2.1 data transmission relations

A data transmission relation between two terminal countries exists when there is between them an exchange of data traffic (and normally a settlement of accounts).

2.2 data service calls

Those data calls that relate to the operation of the international services via PSPDNs.

2.3 Other terms

These are given in the appropriate CCITT Recommendations in particular Annex A of Recommendation X.110.

3 Access to the service

Access can be either in a packet mode (Recommendations X.25 or X.32) or in a start-stop mode (Recommendation X.28). Details of services offered are contained in Table 1/X.1, parts (c) and (d).

3.1 Packet mode access

3.1.1 Access via X.25 DTEs

The access to a packet-switched public data network by means of equipment capable of handling X.25 is automatic. In general, there is no human intervention required.

3.1.2 Access via X.32 DTEs

The access to a packet-switched public data network by means of equipment capable of handling and interfacing to the network using Recommendation X.32 in general does need manual intervention. Where manual intervention is required the operational procedures should be standardized (according to Recommendation A.20), user friendly, and automatable.

3.2 Start-stop mode access

The access to a packet-switched public data network by means of equipment capable of handling and interfacing to the network via Packet Assembler/Disassembler equipment is referred to in Recommendations X.3, X.28 and X.29. This access method in general requires manual intervention. Where manual intervention is required the operational procedures should be standardized (according to Recommendation A.20) and user-friendly. For further study.

3.3 Access methods

Log-on procedures should be user-friendly and provide security of access. The access methods as specified in §§ 3.1.2 and 3.2 require manual intervention and hence standardized log-on procedures are desirable. The international log-on procedure standardization is for further study.

4 International data route

4.1 An international data route is established and operated between Administrations for the specific purpose of providing an international packet-switched public data service.

4.2 The networks of the Administrations operating PSPDNs should be directly connected when justified. If international transit points are used, they should be restricted to the definitions given in Recommendation X.92.

4.3 For each PSPDN relation, the Administrations concerned should provide alternative data routes where practical, in accordance with Recommendation X.110.

4.4 In the event of interruption to the international data route every effort must be made to restore the service with minimum delay, taking into account Recommendation X.137.

5 Duration of service

International PSPDNs are in principle continuously available.

6 Type of call

Types of call correspond to calls based on PVCs or on VCs. Calls based on VCs may be service calls or subscriber calls, the latter being included in international accounting.

6.1 Service calls

Service calls should be kept to a minimum and not hamper subscriber calls.

7 Modes of operation

7.1 General provisions

Administrations should provide PSPDN services in accordance with Recommendations X.25, X.28 and, if possible, Recommendation X.32 protocols.

7.2 Automatic operation

All call operations in the network are automatic (see Recommendations X.25, X.28, X.29, X.75, etc.). Call operations may be manual or automatic when initiated by the user from his DTE.

7.3 Semi-automatic and manual operation

Semi-automatic and manual operation are not available.

8 Directories – compilation and supply

See Recommendation F.600, § 8.

9 Call progress signals on PDNs

Call progress signals are defined in Recommendation X.96. The interpretation of these codes shall be user friendly and details are for further study.

10 Quality of service

The quality of service criteria for the PSPDNs to be defined under the following headings taking due account of existing CCITT Recommendations.

10.1 Service availability

Service availability is the ratio of aggregate time during which satisfactory or tolerable service is or could be provided to the total observation period, Recommendation X.137 refers. This is for further study.

10.2 Percentage of effective calls

Technical aspects are examined in Recommendation X.136. For further study.

10.3 Data throughput

Technical aspects are examined in Recommendation X.135. For further study.

10.4 Bit error rate

A bit error rate (BER) of at least 1 in 10^6 is required. (For further study with particular respect to the effect of access networks.)

10.5 Transmission delay

This should be expressed in milliseconds. See Recommendation X.135. For further study.

10.6 *Blocking aspects*

Recommendation X.136 sets forth values of unavailability of the packet-switched service due to network congestion.

The end to end user service blocking aspects with particular respect to the network used is for further study.

11 **Provisions of customer support**

11.1 *Procedures for updating customer information*

The provision of service information should be available to the user on request. This is for further study.

11.2 *Procedures for updating inter-administration information*

For further study.

11.3 *Procedures for handling customer international difficulties*

Administrations should provide customer support facilities, which may include a "Help Desk", to provide:

- accurate information from the operator at the time of problem;
- explanation of corrective action subsequent to failure;
- further assistance in the event of unresolved problems.

For further study.

SECTION 6

TELECONFERENCE SERVICE

Recommendation F.710

TELECONFERENCE SERVICE

1 Introduction

1.1 Scope

1.1.1 This Recommendation fixes the general rules to be followed in the international Teleconference Service (TCS), preferably to be provided on digital network.

1.1.2 Teleconference (TC) is an international telecommunication service, offered by Administrations, enabling conference conducted in real time between users placed in different locations, connected by terminals and telecommunication networks.

1.1.3 The TCS can be a multimedia service, i.e., several media could use the same transmission channel.

1.1.4 This Recommendation is a general Recommendation for teleconferencing services. Annex A is a table of present and future Recommendations on audiovisual services. AVxxx numbers are references for classification in this table and not actual Recommendations' numbers. This classification will be updated as the work progresses.

The services are described in Recommendations AV 100-series. The infrastructural needs are described in Recommendations AV 200-series. The facilities are described in Recommendations AV 300-series.

1.1.5 Computer conferencing and MHS do not constitute part of real-time teleconference service. However, the facilities of computer conferencing and MHS may additionally be used in a teleconference.

These services are not covered by this Recommendation.

1.2 Service definitions

1.2.1 General

1.2.1.1 The **teleconference service** provides the necessary arrangements for a real-time conferencing among single individuals or groups of individuals at two or more locations, by means of telecommunication networks.

The concept of conferencing implies that the exchange of speech signals is always provided for as a basic facility. The use of supplementary facilities, for the exchange of signals other than speech, is to be determined by the conference participants.

For the interconnection of terminal equipment at three or more locations, a specific interconnection facility is required, namely the Multipoint Control Unit (MCU), to which all locations are connected individually.

The MCU provides proper distribution of the various signals among the connected locations and takes part in maintaining the proper procedures among the connected terminals.

1.2.1.2 TCS is a real-time service which can be divided according to the following categories:

a) **audiographic conference service**¹⁾

A type of TCS in which audiosignals are exchanged together with non-voice information (data, text, graphic, etc.), except video and signalling.

The transmission of documents during a Teleconference will be supported by the use of the Recommendations such as in the T.400, T.500, T.600 series and the telewriting Recommendations.

Interworking and intercommunication between different types of audiographic conference is for further study.

b) **video conference service**

A type of TCS in which both voice and moving picture video information can be exchanged together with optional non-moving visual information, telematic information and signalling (speaker identification, floor request, etc.).

1.2.1.3 The terms used in this Recommendation have the meaning given in Annex B.

1.2.2 *Basic requirements*

The basic requirements of TCS are as follows:

- a) It is intended that the service should require no changes to the Recommendations for existing services or networks.
- b) With respect to the interworking/intercommunication of teleconference terminals, a basic level of capabilities is defined; this basic level corresponds to the default conditions.

High levels of intercommunication capabilities have to be negotiated via the teleconference protocol.

- c) It should be possible to extend TCS to any number of Administrations.
- d) It is for each Administration to decide on the network(s) on which TCS will be provided.
- e) It is essential at least to provide the intercommunication on Audio basis (Recommendation G.711).
- f) TCS indicated in § 1.2.1.2 as a) and b) in particular will provide the following basic functions:
 - f1) Conference management functions:
 - call set-up, call establishment and call clearing at network level;
 - handling of multipoint functions;
 - switching of proper channels to the various terminal and equipments during the call control phases of TCS (§ 3.2).

¹⁾ A Telephone Multipoint conference may be considered as a simple form of Audiographic conference. Other forms of Audiographic conference may imply loudspeaking terminals working in full duplex or half duplex mode, providing a considerably better sound quality than normal telephone (they may even contain wideband speech coding). Supporting signalling like request for floor, grant request for floor and speaker identification may also be present.

f2) Terminal management functions:

- handling and management of terminal functions like audio and video;
- handling and management of all telematic terminal-functions that can be used during the service, depending on the type of Teleconference service, e.g. communication function for:
 - using a telewriter
 - using a marker
 - using a facsimile
 - using a still picture
 - using a teletex
 - conference set-up and clearing
 - identification of speaker
 - floor request, grant floor request signalling
 - control of speakers microphone
 - line breakdown signalling
 - etc.

f3) Coordination and conference management and Terminal protocols in order to make available, during the various TCS phases, the service required (audio is presumed to be always available), e.g.:

- Telewriting
- Facsimile
- Teletex
- Still picture

All the above functions have to be accomplished in such a way that can be easily controlled by an actual participant in the conference, without special training²⁾.

f4) Local conductor functions:

- chairing the local meeting
- enabling/disabling local functions.

1.2.3 *Functional options*

1.2.3.1 Functional options like encryption may be provided in the terminal or by the network. The use may be made only by bilateral or multilateral agreement.

1.2.4 *Standardized options*

1.2.4.1 It shall be possible for more sophisticated terminals to provide particular facilities different from the basic ones (e.g. editing, autocal, set-up, etc.).

These optional facilities should be normalized. Some optional facilities have to be provided by network (supplementary services), e.g. Closed User Group (CUG). In general the supplementary services are the same as for telephony.

1.2.4.2 Since in the near future TCS will be increased by special services such as those given in the list of examples below, Administrations should give attention to their early introduction:

- Abbreviated Address Calling.
- Multiaddress Calling.
- Indication of Charge.

1.2.4.3 They may also be provided from TCS terminal instead of, or as well as, from the network.

²⁾ Personnel by Administrations should not be required.

1.2.4.4 By means of a negotiation procedure between terminals and, in multipoint connections, the MCU, terminals are aware of the facilities of the other terminal(s).

Note 1 — Administrations are encouraged to ensure that standardized and nationally defined options are used in such a way as to minimize the need for the introduction of private use option.

Note 2 — There is a need for further study as the service develops.

1.2.5 *Private use options*

1.2.5.1 These optional requirements should not be CCITT defined.

1.3 *Definition of terms used in TCS*

1.3.1 The terms listed in Annex B have the definitions given there when used in these provisions.

2 **Network requirements**

2.1 Ultimately the TCS is intended for ISDN. As long as ISDN is not universally available, it is the responsibility of Administrations to decide on which network(s) national TCS is to be provided.

2.2 TCS can be accessed via:

- a) Multiple of 64 kbit/s switched, semi-permanent and permanent connections in an ISDN.
- b) Multiple of 64 kbit/s switched, semi-permanent and permanent connections in a CSPDN.
- c) Multiple of 64 kbit/s connections in any other network if available.
- d) Switched semi-permanent and permanent connections at bit rates being multiples of 64 kbit/s.
- e) PSTN from some Administrations.

Note — The Packet Switched Public Data Network (PSPDN) and the Public Switched Telephone Network (PSTN) could be used in some cases to carry certain telematic services used in teleconferencing. The PSPDN is not capable of carrying audio and moving video. The use of different networks adopted for one terminal-connection must however be considered as an unwanted temporary solution to serve as a bridge from the existing situation to ISDN.

2.3 Interworking between different types of networks should be assured on international connections.

2.4 The international connections shall use international digital transmission facilities. Only by bilateral agreement the use of other means may be made where necessary.

2.5 For interworking between networks of different types, the same network(s) should be used for both traffic directions.

2.6 In the case of international interworking between TC terminals connected to dissimilar networks, Recommendation X.300 shall be applied where appropriate.

2.7 The network should not impose any limitation on optional and private use applications.

2.8 If satellite connections are used, then more than two hops are to be avoided.

3 **Operation of TCS**

3.1 *General*

3.1.1 TCS in the international connections shall use any of the following:

- reserved or semi-permanent connections (e.g. manual set-up);
- on demand connections (automatic switching);
- permanent connections (leased circuits).

See also Recommendations AV 111, 112, 113.

- 3.1.2 The communication ways should be:
- two ways alternate (TWA), (but always TWS for audio and moving video, if applicable);
 - two ways simultaneous (TWS).

See also Recommendations AV 111, 112, 113.

- 3.1.3 Interworking and intercommunication will be assured between:
- a) different types of network;
 - b) different terminals (e.g. with different transmission rates);
 - c) different kinds of service.

The extent and functionality for interworking are for further study.

In Recommendations AV 111, 112, 113, 240, 241 and 242 the detailed interworking possibilities are pointed out.

3.2 *Call operations*

- 3.2.1 The operations for each call may be divided in the following two phases:
- call control phase;
 - communication phase.

3.2.1.1 *Call control phase*

It comprises:

a) *Call set-up*

The network connections are established among the meeting locations either directly or through a connection between any meeting location and an MCU. Each meeting location and MCU is normally connected to a single network, ultimately this will be ISDN.

For the time being, however, connections to multiple networks may occur. They can be requested according to the telematic services used during TCS (e.g., PSTN for Audio plus CSDN for Teletex transmission).

In this phase any supplementary services to be used should be requested. For example:

- closed User Group (CUG);
- call Identification;
- charge Advise;
- reverse Charging.

The management of a teleconference is handled by the “conference conductor”. The control functions to manage the conference may be operated by the “conference conductor”, by the TCS operator, or by an automatic method offered through the MCU. The control functions offered to a teleconference may consist of any combination of the following, depending on the teleconference type, i.e., audio, audiographic or video. The control functions are the ability to:

- connect participants to a conference;
- re-connect a dropped teleconference participant;
- contact an operator for assistance;
- disconnect selected conference participants;
- identify participants on the teleconference or screen participants before connection to the teleconference;
- terminate the conference;
- perform other control functions required by the supplementary facilities if used.

b) *Intercommunication set-up*

Once the network connections have been established, the communication among the respective meeting locations takes place under the control of teleconferencing protocols (see Question 23, COM VIII).

c) *Communication termination*

A teleconference will terminate by one of the following methods:

- 1) The conference conductor determines the conference is over and proceeds to terminate it.
- 2) All of the conference participants hang up.
- 3) The MCU disconnects the participants (e.g., expiration of reservation time).

Individual locations may disconnect without terminating the conference.

d) *Clearing of connection*

The network clearing of connection is a matter of signalling procedures in the relevant networks and/or of Administrative procedures (e.g., in case of leased lines).

3.2.1.2 *Communication phase*

- a) At each meeting location the functions of "Conference conductor" and "Local conductor" can at the wish of the participants, be fulfilled (see Annex 2 for clarification of the terms "Conference conductor" and "Local conductor"). In this case the conference is termed "conducted". Only one of the local conductors can have the additional "role" of conference conductor.
- b) The main task of the conference conductor is to chair the meeting in the classical sense. The "buttonpushing" for the conductor must be kept to a minimum. Opening and closing of channels (for telewriter, facsimile, etc.) is done automatically. Only the microphones and/or the cameras of participants may be controlled by the conference conductor but like in normal meetings this should only be performed in large or very formal meeting. If the microphones and the cameras are not controlled by the conference conductor the conference is termed "non-conducted".
- c) The initial mode in the set-up phase and the fall back mode after change configuration is non-conducted.
- d) Also in this phase some supplementary services should be provided (left for further study).

3.3 *Basic call identification*

3.3.1 In Audiographic conferences and Videoconferences protocols are involved in sending and receiving of all audio modes, messages, documents, etc.

Exchange of addresses of transmitting and receiving terminals and/or MCU(s) is for further study.

3.4 *Communication related security*

3.4.1 It is essential to have TCS users' confidence that their teleconference will be secure. During both the call set-up phase and the communication phase, it will be the responsibility of the individual administrations to *offer* security mechanism based on bilateral or multilateral agreements. There are two levels of security which need to be addressed for teleconferencing:

- To safeguard privacy.
- To prevent unauthorized network access.

Basic requirements for both levels are for further study.

4 Quality of the service

4.1 *General*

4.1.1 The quality of the individual services should be the same as that for the individual services (in general this is prescribed in the appropriate Recommendations) comprised in the teleconference (e.g. Audio, Facsimile, Teletex, Videotex, Moving Picture Video, etc.).

4.2 *Maintenance*

4.2.1 Every Administration should provide for each TCS network a maintenance centre for assisting the operators, if necessary.

4.3 *Duration of service*

4.3.1 The international TCS, where it is possible, should be open continuously for 24 h/day.

5 Terminal

5.1 General

5.1.1 The terminal station (see Figure 1/F.710) is composed by:

- TC Common Box (TCCB).
- Associated equipments (AE).

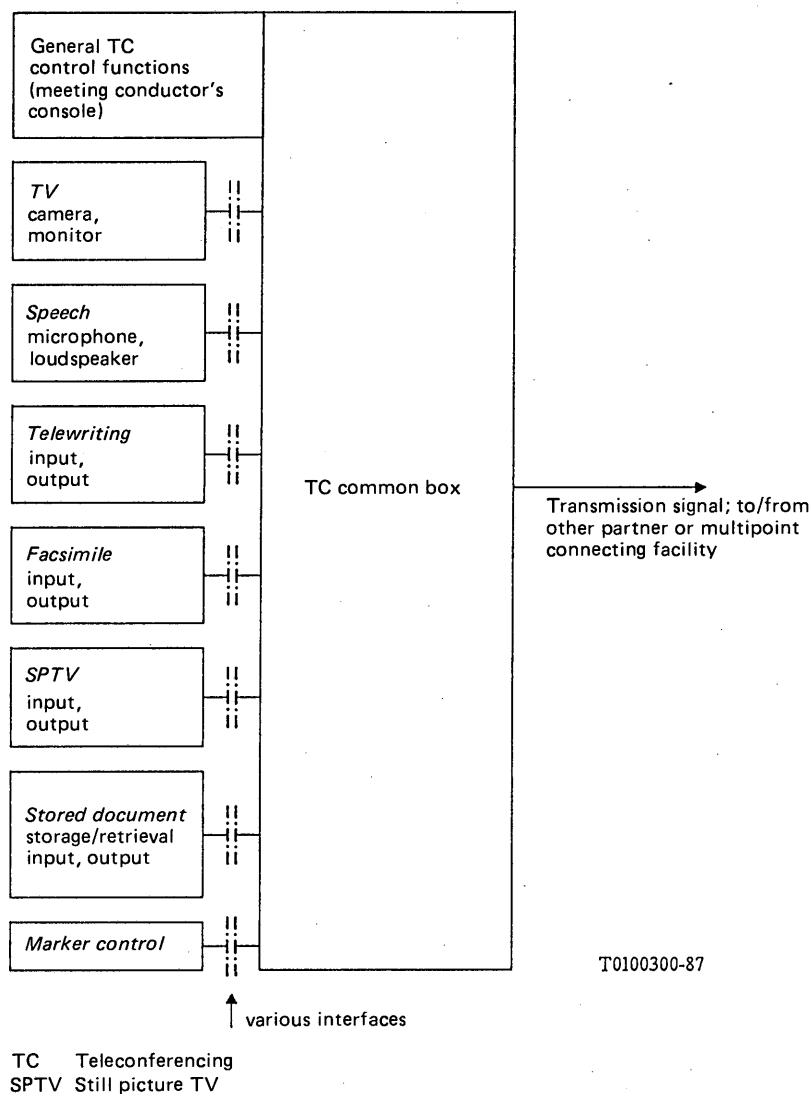


FIGURE 1/F.710

General illustration of TC common box and associated equipment

5.1.2 TCCB matches at one side (network side) the interface of the network, while at the other (user side) the interface of each AE.

5.1.3 AE are the application terminals.

5.1.4 The terminals will be described in Recommendations AV 310, 311, 312, 313 and 330.

5.2 *Control functions*

5.2.1 The control functions to provide are:

- a) General control functions (on/off switch, call set-up, volume control, floor request, grant floor request, etc.). Some of these functions are optional; this is a matter for further study.
- b) Control functions joined to AE.

5.2.1.1 The general control functions are joined to the handling of a command console.

There are two kinds of control functions to consider:

- The control functions of a local conductor (to be described).
- The control functions of the conference conductor (to be described).

5.2.1.2 The control functions joined to AE are those defined in the corresponding CCITT Recommendations.

5.2.1.3 The necessity for the conductor to handle controls should be kept to a minimum.

5.3 *TCCB identification*

5.3.1 Each TCCB shall have a unique identification (§ 3.3.1).

5.3.2 It is the responsibility of the conference conductor to verify the identification of connected TCCBs during the control phase of the call.

For this purpose the identification of connected terminals could be visualized to the conference conductor.

6 **Multipoint operation**

6.1 The international multipoint teleconference service is provided by means of one or more MCUs. Each MCU may serve one or more terminals and be interconnected with other MCUs.

6.2 *Multipoint audiographic teleconferencing*

The MCU provides the capability to interactively exchange audiovisual information among many connected terminals and/or other MCUs.

It can be located in a network or it can be considered as a part of terminal giving the possibility of multiple connections to the network.

Although particular attention must be paid to network topology in the case of satellite transmission, the basic functions of the MCU for a terrestrial or a satellite network are similar.

In order to provide the basic features in an international audiographic conference service the tasks to be performed by an MCU are:

- network access and interface;
- management of framing structure; multiplexing and demultiplexing;
- mixing of audio signals;
- processing of the subchannels;
- analysis of control messages;
- routing of signals to audiographic teleconference terminals and other MCUs;
- handling of encrypted signals;
- terminal interconnection;
- office automation facility;
- operator's console;
- notification to the "conference conductor" of a disconnected participant;
- reconnection of a disconnected participant to a conference;
- providing announcements to the conference participants whenever necessary.

A reservation system could be integrated into the MCU or it may be offered through a separate system connected to an MCU.

Reservations for a teleconference will be provided through a Reservation Centre.

6.3 *Multipoint videoconferencing*

The operating modes and consequently the switching decision criterion depend on the conception of the multipoint videoconference service of each Administration. Any solution, automatic or manual, can be implemented without altering the basic philosophy of multipoint videoconferencing. In each solution, the MCU provides each output port with the mixed audio signals from all other ports.

The minimum MCU working mode is as follows: the MCU, by comparing the incoming sound channels, selects the loudest speaker (called New Speaker or NS). A second channel is selected by the MCU being the previous loudest speaker (called Previous Speaker or PS). The NS is sent the PS channel and the other rooms are sent the NS channel. This mode is normally used when the multiconference is established.

The minimum MCU mode is automatic and doesn't require any extra facility. The basic functions of the MCU for terrestrial or satellite networks are identical. In order to provide the basic features in an international videoconference service, the MCU shall have the capability:

- to synchronize the incoming streams to a single pilot clock;
- to extract frame alignment in order to synchronize the different streams to the frame clock;
- to extract frame parity, multiframe and supermultiframe alignment from the signalling channel in order to access the codec-to-codec signalling channel in each incoming stream;
- to process this signalling channel;
- to process the sound channels in order to create an open sound system, in the case of unencrypted service;
- to decide image switching and dispatching according to a selection criterion (automatic or on request);
- to signal the decision of switching to the codecs in order to prepare them and to avoid any degradation during and after the switching;
- to multiplex the selected video channels with the open sound channel and the effective channel;
- to distribute the reconstructed streams to the corresponding access ports.

Procedures for multipoint operation (call set-up, protocols, etc.) and a description of the MCU are given in Recommendations AV 231, 232, 233 and 4xx (the matter should be extended for further study).

7 **Intercommunication**

Intercommunication of various kinds of TCS and between TCSs and other services (e.g. telephony or videophone) is described in Recommendations AV 240, 241, 242 (the matter should be extended for further study).

8 **Reservation of international teleconference**

8.1 *Audiographic teleconference*

In order to ensure the performance of an audiographic teleconference service for an appointed time, a reservation will be required at least for the MCU. Normally, reservation will be handled by the customer as the service will be an automatic one. Administrations may also provide a manual version of a reservation system. This process is normally left to each Administration; however, general guidelines for an harmonized operation of the international audiographic teleconference service follow below. The reservation is made through the operator service. The following information must be given by the convenor:

- list of participating terminals;
- starting time of the session;
- closing time of the session;
- symbolic name of the session;
- symbolic names of the terminals.

It will be possible for a convenor to access the Reservation Centre (RC) through an ordinary telephone connection to register a reservation for a conference. A data terminal can be used in an automatic system, alternatively, a reservation can be made by voice in a manually operating system. The RC determines which MCUs and which connections are required for the meeting and subsequently reserves these facilities. Each terminal will be notified of the MCU it has to connect to.

During a conference session the chairman may be able to access the reservation diary. In this way it will be possible during a conference to agree on a subsequent conference.

8.2 *Videoconference*

Due to the higher bit rates used for videoconference, a reservation will be required not only for the MCU but also at least for the international links in multipoint as well as in point-to-point conferences. Normally, the reservation of international videoconferences will be made manually. Administrations may also provide an automatic version of a reservation system for national videoconference or for the national part of international videoconferences.

The process of manual reservation of international point-to-point and multipoint videoconferences needs general guidelines to ensure a harmonized operation of the international videoconference service.

All reservation arrangements for international videoconferences are to be made by the National Reservation Office (NRO) of the participating Administrations. Negotiations are preferably carried out by telephone, but agreed reservations must be confirmed before the call.

The information needed for a reservation of a videoconference is similar to that needed for the reservation of an audiographic teleconference (details for further study).

The participating Administration in an international videoconference service must agree on the following items:

- minimum notice time for reservation;
- maximum notice time for reservation;
- minimum reservation time (duration of the session);
- acceptable increments for reservation;
- procedure for establishing a reservation between the NROs:
 - a) occasional use of booking
 - b) regular booking;
- procedure of last minute extensions;
- billing procedure.

(List not exhaustive, details for further study.)

9 **Operational and commercial aspects**

Matters of maintenance, tariff principles, etc. are for further study.

10 **Results of questionnaire on TCS**

The results are reported in Contribution COM I-98, 1985-1988 Study Period. (Responses to the questionnaire on Teleconference Service).

ANNEX A

(to Recommendation F.710)

Recommendations list for audiovisual service

A.1 *Service definition*

AV 100	General Recommendation for AV services	SG I
AV 110	Teleconference services	SG I
AV 111	Audiographic conference service	SG I
AV 112	Videoconference service	SG I
AV 120	Videophone service	SG I
AV 130	... (Other AV services)	SG I

A.2	<i>Infrastructure</i>	
AV 200	General Recommendation for AV services Infrastructure	SG XV/VIII
AV 210	Reference network configuration	SG XV
AV 220	General Recommendation for Frame Structure	SG XV/VIII
AV 221	Frame structure for a 64 kbit/s channel in audiovisual teleservices	SG XV/VIII
AV 222	Frame structure for 384-2048 kbit/s channels in audiovisual teleservices	SG XV
AV 223	... (Frame structure for higher bit/rates in audiovisual teleservices)	SG XV
AV 230	General Recommendation for AV system controls and indications	SG XV/VIII
AV 231	Multipoint Control Unit for 64 kbit/s	SG XV/VIII
AV 232	Multipoint Control Unit for 384-2048 kbit/s	SG XV
AV 233	... (Multipoint Control Unit for higher bit rates)	SG XV
AV 240	Intercommunication principle	
AV 241	Intercommunication between 64 kbit/s AV services using the Frame Structure of Recommendation AV 220	SG XV/VIII
AV 242	Intercommunication between 64 kbit/s AV services to Recommendation AV 220 and 64 kbit/s audio-only and data-only terminals	SG XV/VIII
AV 243	Interworking between higher bit rate AV and data-only terminals	SG XV/VIII
A.3	<i>Systems and terminal equipment</i>	
AV 300	General Recommendation for AV systems and terminals	
AV 301	General Recommendation on AV terminal equipment	
AV 310	Requirements for teleconferencing	
AV 311	Audiographic system and terminal requirements	SG XII/XV/VIII
AV 312	Videoconference system and terminal requirements	SG XV
AV 320	Requirements for videophone service	
AV 321	Audio	SG XII/XV
AV 323	Video	SG XV
AV 330	Facility coding	
A.4	<i>Protocols</i>	
AV 400	Protocol structure for Audiovisual services	SG I/XVIII/ XV/VIII
AV 410	Audio protocol for Audiovisual services	SG XVIII
AV 420	Video protocol for Audiovisual services	SG XV
AV 430	Graphics protocol for Audiovisual services	SG VIII
AV 431	Graphics terminal protocol	SG VIII
AV 451	Audiographic conference protocol	SG VIII
A.5	<i>Other requirements</i>	

ANNEX B

(to Recommendation F.710)

Definition of terms used in TCS

B.1 basic requirement

A service feature defined by CCITT as essential for the basic operational mode, available in terminal or network on an international basis.

B.2 communication

An exchange of information between two or more subscribers of a telecommunication network by agreed conventions.

B.3 conference

A meeting of a number of people in more than one location for discussion or consultation on subjects of common interest.

B.4 conference conductor

One who sets up, chairs and clears the conference. If necessary he coordinates and manages Network and Terminal functions such as giving the floor. All functions have to be accomplished in such a way that can be easily controlled by an actual participant in the conference, without special training (e.g. Administration's personnel should not be required).

B.5 marker

It is a conference tool used to draw attention to a particular part of a displayed image.

B.6 meeting

Coming together of a number of people at a certain time in a place to participate at a conference.

B.7 local conductor

Who has the main function in TCS to direct locally the conference. A meeting conductor may be provided for each meeting location. Every meeting conductor is identified by a number.

B.8 meeting location

A place in which a meeting is set up.

B.9 multipoint control unit (MCU)

A device which enables more than two teleconference terminals to be interconnected. It can be located in a network or it can be considered as a part of terminal giving the possibility of multiple connections to the network.

B.10 private use option

A service feature not defined by CCITT as an addition to the basic requirements, that may optionally be used by subscribers in the international TCS, but requiring always a previous agreement between subscribers.

B.11 standardized option

A service feature defined by CCITT as an addition to the basic requirements, that may optionally be used by subscribers in the international TCS. These options may be provided from the networks as well from the terminals.

B.12 telecommunications

All the transmissions, emissions, receptions of signals, writings, images, sounds of every nature by wires, electricity, or other electromagnetical systems.

B.13 telewriting

It is a text communication service which enables the transmission of graphic information to be displayed at the receiving side in accordance with the writing movements at the sending side. This display is normally effected on a real-time basis; a delay in the transmission may be included.

B.14 real-time conferencing

The concept of real-time conferencing implies:

- 1) The time required for the transmission of the various signals between the connected terminals is short in comparison to the human reaction times in conference situations.
- 2) The conferees participate simultaneously to the conference.

B.15 convenor

A person who arranges and reserves the conference facilities.

B.16 conducted conference

A conference where the conductor handles the (electronic) signals such as grant floor request (as a reaction on a floor request) and where the conductor opens and closes microphones of participants.

B.17 non-conducted conference

In this kind of conference no (electronic) conductor action is taken. All microphones are open or automatically switched by means of a voice switch for acoustic stability reason.

B.18 reservation office

A national administrative centre where reservations for connections and if applicable MCU(s) and other equipment are made.

B.19 maintenance centre

A national administrative centre where notification is taken from irregularities and from where action is taken for resolving these irregularities.

B.20 facsimile

Reproduction of all forms of graphics, handwritten or printed material, in the sense of a distant reproduction of the original within the limits and characteristics specified by the relevant recommendation.

B.21 intercommunication

Intercommunication in the teleconference area implies to have the capability (this capability could be distributed between networks or terminals) to translate the presentation of information given for a service to information available to be presented in another service and, if necessary, interworking between networks.

This is valid between services used in the TC environment and between TC service and another service.

B.22 interworking

The relationship between systems, networks, terminals and their components, primarily refers to signalling, protocols (lower levels) and other technical means for provisioning services.

BASIC NARROW BAND VIDEOPHONE SERVICE IN THE ISDN¹⁾

The CCITT,

considering

- (a) that considerable efforts have been undertaken worldwide in order to develop videophone equipment based on rapid improvements in the quality of video codec algorithms;
- (b) that videophones of some companies are already available on the market;
- (c) that first trials of videophone have been performed nationally as well as internationally;
- (d) that a number of countries intend to introduce the videophone service as soon as possible;
- (e) that the ISDN will be an appropriate network for providing the narrowband videophone service;
- (f) that ISDN trials are going on in a number of countries,

recognizes

the need for a standardized international videophone service, which will guarantee the compatibility of videophones on a worldwide basis and it therefore,

recommends

that the narrowband videophone service, where implemented, respect the requirements stated in this Recommendation.

1 Introduction

1.1 Scope

The narrowband videophone service is to be defined for networks providing 64 kbit/s channels. This Recommendation only deals with ISDN which is recognized as a strong candidate for providing this service.

1.2 Bearer capabilities

Videophone services requiring one or two 64 kbit/s channels are under study. If two rates are eventually standardized, it will become necessary to provide for basic intercommunication at the audiovisual qualities of the lower rate. Such basic intercommunication should be provided in the terminals.

2 Description of videophone service supported in the ISDN

2.1 Definition

The **videophone service** is a symmetrical, bidirectional, real-time, audiovisual teleservice in which speech and moving pictures are communicated; the picture information transmitted is sufficient for the adequate representation of fluid movements of persons.

2.2 Service description

The videophone service is likely to be used in much the same way as the telephone service for personal communication, the enhancement being in the visibility of the communication partners which implies a number of possible new applications.

¹⁾ This Recommendation may require further consideration, alignment and completion in the next study period.

A redundancy and irrelevance reduction technique (codec) in the terminal allows moving pictures to be displayed continuously in colour, even if transmission takes place at the comparatively low bit rate of the narrowband ISDN.

The speech quality of this new service must be at least as good as that applicable to the telephone service in the 64 kbit/s ISDN using a bandwidth of 3.1 kHz up to 7 kHz.

The videophone service is a teleservice, i.e. a fully standardized service as defined in Recommendations I.210 and I.240.

The basic videophone service is characterized by the continuous transmission of moving pictures simultaneously with the speech of the persons involved in the call (generally two in the case of a point-to-point connection) via one or two 64 kbit/s channels.

An optional enhancement available in some terminals provides for transmission of images of documents or other objects alternate to face-to-face communication. Transfer of documents at higher resolution may be an optional feature. Further study is required.

Two different types of calls should be possible: point-to-point calls (basic requirement) and multipoint calls.

Note — For multipoint calls a central facility is required for mixing speech signals and switching and/or combining video signals. This facility is to be defined in another Recommendation.

Videophone terminals must also be capable of supporting the telephone service.

In some installations a videophone will be attached to a passive bus configuration (S interface) along with terminals for other services.

Note — Speech supported only by still picture transmission and/or telewriting is *not* considered as part of the videophone service.

2.3 *Applications of the videophone service*

The examples given below are not exhaustive. Other enhanced videophone applications may emerge.

Examples:

- a) "Face-to-face" dialogues involving at least head-and-shoulder images.
- b) Dialogues including interactive viewing of documents such as sketches, diagrams or charts.
- c) Access of the user to a videoconference.
- d) Participation in videophone conferences.
- e) Audio-visual tele-education.
- f) Remote health "visiting" (limitations for further study).
- g) Deaf-and-dumb communication (limitations for further study).

2.4 *Necessary quality characteristics*

- Synchronism of speech and lip movement (lip synchronism)
(No subjectively discernible difference in the delay of the speech and video signal.)
- Sound quality
Speech quality as in the 64-kbit/s ISDN telephone service based on a 3.1 kHz or 7 kHz bandwidth.
- Optimization of the picture quality is under study, including the need for adequate representation of fluid movements.

The overall effect on quality by the delays introduced by video codecs and transmission facilities needs to be taken into account in the service. If satellite connections are used, then two or more hops are to be avoided, because increased delays may impair user acceptability. Further study is needed for establishing criteria for "acceptable" signal delays.

For the convenience of the user visual user guidance between the videophone system and the user should be preferably provided with the aid of alphanumeric display.

3 Intercommunication

- Intercommunication with the telephone service is essential.
- Intercommunication with the videoconference service and other audio and visual services is necessary (but for further study).
- Intercommunication between videophone services based on different bit rates is required.

3.1 Intercommunication with telephony

Considering the fact that at the beginning of the introduction of the videophone service the number of videophone subscribers compared to the number of telephone subscribers will be negligible, a fundamental requirement must be fulfilled in order to avoid that videophone subscribers could only communicate in a kind of a closed user group. It is *essential* that every videophone subscriber is able to reach from his videophone terminal every telephone subscriber. This condition must be met regardless of the technology (analogue, digital, ISDN) applied in the local exchange to which the other telephone subscriber is connected.

If in case of intercommunication a videophone connection cannot be provided, a telephone call should be immediately initiated. If then no connection results, an appropriate cause indication shall be given.

On the other hand, every telephone terminal must be able to reach every videophone terminal. (The videophone terminal will be a multiservice terminal, i.e. appropriate for videophone calls as well as for telephone calls.)

3.2 Intercommunication between different videophone services

Basic intercommunication between videophone services based on different bit rates will be provided at the audiovisual qualities of the lower bit order.

3.3 Intercommunication with other audiovisual and audiographic services

For further study.

4 Service operation

4.1 Call set-up

Two possibilities are required:

- Call set-up starting directly as videophone service.
- Call set-up by means of a service change, starting from the telephone service.

Several service changes between telephony and videophony must be possible during a single call.

4.1.1 Point-to-point videophone call

The call set-up procedure from the user's point of view must be as simple as possible in order to achieve a good acceptability.

Call set-up procedure from the user's point of view:

Case 1 – Videophone service from the very beginning

- e.g.:
- going off-hook
 - dialling tone
 - initialization of videocommunication
 - keying in the number of the called subscriber
 - videophone call

Case 2 – Telephone service first

- e.g.:
- going off-hook
 - dialling tone
 - keying in the number of the called subscriber
 - telephone call
 - initialization of videocommunication
 - videophone call

Note – Interruption of the audio connection recognizable for the users should be avoided when changing between the telephone call and the videophone call.

4.1.2 Multipoint videophone call

The multipoint videophone call is in other terms the supplementary service “Conference videophone call”. Conference facilities (three-party service, conference call) within the videophone service should be optionally provided. Appropriate support (network or user premises equipment) is necessary.

The procedure for operation of those conference calls is for further study.

4.2 Call release

In general, the release of a videophone call should be similar to the release of a telephone call; picture and sound are released simultaneously.

4.3 Change of service

- A service change will be controlled via the D-channel; thus several service changes are possible during a call provided an end-to-end 64 kbit/s transparent channel is available.
- Service change to and from videophony must be possible to other services which need a single B-channel or two B-channels.

Note – Details are for further study.

4.4 Addressing of terminals

Additional call set-up functions such as terminal selection on a passive bus, using multiple subscriber number may be offered. This is under study.

5 Controls and indications

5.1 User guidance

User guidance plays a major role in the acceptance of the videophone service by the subscriber. User guidance may take place in the form of a dialogue between the system and the user.

Information concerning the status of the call will be displayed on the screens or on other displays of the calling and the called users. Some standardization of icons is required.

The audible call progress signals used in the videophone service should comply to those of the telephone service.

User guidance may be based on the display of alphanumeric characters, e.g. on the screen, or by other visual means, and/or on audible announcements.

It must be possible for the sending user (calling as well as called user) to switch on and off the facility “suppressing the outgoing picture”.

In the case that one communication partner does not want to send his own picture to the other, a substitutional image or a suitable pictogram should be transmitted and displayed at the remote terminal.

Call set-up and user contact procedures may need harmonization with those used for voice services. This point is for further study.

5.2 *Additional items*

- The display of the called and calling subscribers' pictures on the screen should be possible, not necessarily simultaneously.
- The subscriber's own picture should be switchable on and off, as required.
- Hands-free communication and loudspeaking should be optionally possible.

6 **Supplementary services**

- Same as for telephony (including conference call). Further study required.
- Other supplementary services, e.g. "change of service including change of connection" have to be studied.

Recommendation F.730

SERVICE ORIENTED REQUIREMENTS FOR TELEWRITING APPLICATIONS

The CCITT,

considers

- (a) that telewriting could offer graphic-oriented communication on real time or store-and-forward basis;
- (b) that telewriting could serve as an optional facility to the general public telephone service, which could be of interest to several categories of users (e.g. deaf people, architects, advertising agencies, etc.);
- (c) that telewriting could support applications like educational communication services ("electronic blackboard");
- (d) that telewriting could be a facility within a teleconference service;
- (e) that telewriting could add a graphic-oriented facility to telematic services.

concludes

that telewriting can be applied as either a communication service or a communication technique within other services;

recommends

that the service oriented aspects of telewriting applications be in accordance with this Recommendation.

1 General

1.1 Scope

This Recommendation specifies the service-oriented requirements for the application of telewriting in combination with telephony.

Use of telewriting as an independent telecommunication service or in combination with other services than telephony is for further study.

The technical characteristics of telewriting are specified in Recommendation T.150.

1.2 Definition

Telewriting enables the transmission of graphic information to be displayed at the receiving side in accordance with the writing movements at the sending side. This display is normally effected on a real time basis; a delay in the transmission may be included.

1.3 *Applications*

1.3.1 Telewriting can support:

- a) explanatory information exchange;
- b) teleconferencing;
- c) distant teaching or lecturing;
- d) telecommunication between speech- and/or ear-handicapped people.

1.3.2 Applications in combination with services other than the telephone service and/or non-real time applications are for further study.

2 **General characteristics of telewriting**

2.1 The main characteristics of telewriting in this context are real time display and interactive communication during one session, which requires availability of a terminal at each side. Consequently, both sides of the connection will be able to contribute to the same image.

2.2 The presentation functionalities along with their attributes are described in Recommendation T.150. They allow mainly for:

- the generation, transfer and representation of curves of arbitrary shapes; the effect of the movement of the writing instrument at the sending side is retained during reproduction;
- marking single positions in a telewriting image by means of a cursor;
- erasure of all or part of a telewriting image.

2.3 The image input is provided by appropriate writing tools, such as a writing tablet and a writing pencil.

2.4 At the originators' terminal, the input information is made visible either by a display unit or on the writing tablet itself.

2.5 The reproduction at the recipients' terminal will take place on a screen, on paper or on any other means, normally resulting in a real time copy. The writing speed at the transmitting and receiving end should generally be the same.

2.6 In principle, any type of network can be used as a carrier for telewriting signals.

3 **Telewriting in combination with telephony**

3.1 The general characteristics are as mentioned in § 2.1.

3.2 The subset of presentation functionalities available are the default capabilities of the basic terminal as defined in Recommendation T.150.

3.3 The following terminal operating modes are defined:

- a) speech plus telewriting: speech signals and telewriting signals can be sent simultaneously;
- b) telewriting only: in this mode sending of speech signals is blocked, reception of speech signals is still possible.

3.4 The public switched telephone network is used for carrying the telewriting information. In practice, a 300 bps sub-channel derived from the available speech channel bandwidth is used.

Note – Use of the ISDN for carrying telewriting information is for further study.

3.5 The quality of service depends on the characteristics of the telephone network and of the telewriting equipment.

In case of simultaneous transmission of speech and telewriting signals, mutual interference should be relatively small. Faults caused by speech interference on the telewriting band are not tolerable. The influence of the telewriting signals on the quality of the speech conversation must be limited.

