RECOMMENDATION ITU-R V.662-3*

Terms and definitions

(1986-1990-1993-2000)

Scope

This text recommends the use of terms with the meanings given in the International Electrotechnical Vocabulary (IEV), and provides a comprehensive cross reference to the IEV.

The ITU Radiocommunication Assembly,

considering

a) that it is desirable to have, in addition to specific terminology texts produced by Study Groups, definitions of the general technical terms used in Radiocommunication Sector texts;

b) that the Radiocommunication Sector has cooperated with the International Electrotechnical Commission (IEC) in the production of the International Electrotechnical Vocabulary (IEV),

recommends

1 that administrations and recognized private operating agencies who are members of the Radiocommunication Sector, as well as the Radiocommunication Bureau, should use as far as possible, technical terms in the field of telecommunications with the meaning given in the IEV, the plan of which is given in Appendix 1 to this Recommendation;

2 that general terms common to several Study Groups should be used with the meaning given in Appendix 2 to this Recommendation, which is generally close to the meaning given in the IEV but adapted for Radiocommunication Sector needs.

NOTE 1 – The definitions given in the IEV Chapters, like those included in Appendix 2, are of a general nature; their purpose is that all Study Groups should use general terms with the same meaning. In certain cases they may be slightly different from more complete definitions prepared, or being prepared, by some Study Groups for their specific needs, but they are not in contradiction with the latter.

These definitions do not replace definitions contained in Recommendations of the ITU Sectors (or in the Radio Regulations (RR), the International Telecommunication Regulations or the ITU Convention or Constitution) which are to be used in their respective fields of application. It should be noted that a database of terms and abbreviations called SANCHO has been developed in ITU-T.

* This Recommendation was updated in 2005 for editorial reasons only.

KONINKLIJKE KPN N.V.
EXHIBIT 2004

Appendix 1

"Telecommunications" Parts of the International Electrotechnical Vocabulary (IEV)

The IEV is International Standard IEC 60050; it comprises a great number of parts (formerly chapters), published in separate fascicles. Parts of the 700 series deal with telecommunications.

The 700 series parts are as follows:

Parts and Sections	Status in 2000
701 – *Telecommunications, channels and networks*	Published in 1988
1 – Forms of telecommunications	
2 – Channels, circuits and networks	
3 – Use and operation of circuits and networks	
702 – *Oscillations, signals and related devices*	Published in 1992
1 – Frequencies	
2 – Oscillations and waves	
3 – Pulses	
4 – Signals; general terms	
5 – Discrete signals and digital signals; coding	
6 – Modulation and demodulation	
7 – Noise and interference	
8 – Transmission characteristics and performance; distortion	
9 – RLinear and non-linear networks and devices	
704 – *Transmission*	Published in 1993
01 to 08 – General aspects of transmission	
09 to 12 – Analogue transmission	
13 to 15 – Time division multiplexing	
16 to 21 – Digital transmission	
22 to 26 – Pulse code modulation	
705 – *Radio waves propagation*	Published in 1995
1 – Essential characteristics of electromagnetic fields and waves	
2 – Radiation, paths and velocity of electromagnetic waves	
3 – Electromagnetic properties of propagation media	
4 – Phenomena related to boundaries of propagation media	
5 – Tropospheric propagation and effects of the ground	
6 – Terrestrial ionized media	
7 – Effects of the ionosphere on radio wave propagation	
8 – Influence of propagation on radiocommunications	
712 – *Antennas*	Published in 1992
1 – Basic terms for antennas and antennas assemblies	
2 – Electrical or radiating characteristics of antenna	
3 – Types of antennas defined by their electrical or radiating characteristics	
4 – Antennas and antenna elements consisting mainly of radiating conductors	
5 – Antennas and antenna elements consisting mainly of radiating surfaces and apertures	
6 – Devices associated with antennas	

Parts and Sections	Status in 2000
713 – *Radiocommunications: transmitters, receivers, networks and operation*	Published in 1998
1 – Basic terms	
2 – Radio links and stations	
3 – Mobile radiocommunications	
4 – Radiodetermination and radionavigation	
5 – Other types of radiocommunication	
6 – Frequencies and channels	
7 – Modulation and signal processing	
8 – Transmitters and transceivers	
9 – Transmission characteristics	
10 – Radio reception and receivers	
11 – Radio-frequency noise and interference	
12 – Radio-frequency networks and operation	
714 – *Switching and signalling in telecommunications*	Published in 1992
01 – General terms	
02 to 05 – Switching functions and techniques	
06 to 14 – Switching functions and techniques	
15 and 16 – Control functions and techniques	
17 to 20 – Equipment and hardware	
21 to 24 – Executive software	
715 – *Telecommunication networks, teletraffic and operation*	Published in 1996
1 – Basic terms	
2 – Resources	
3 – Calls	
4 – Times and delays	
5 – Traffic	
6 – Circuit groups	
7 – Traffic engineering	
8 – Networks	
9 – Circuit switched networks	
10 – Message switched networks	
11 – Packet switched networks	
716 – *Integrated services digital networks (ISDN)*	Published in 1995
Part 1 – General aspects	
1 – General terms	
2 – Services	
3 – Networks	
4 – Access	
721 – *Telegraphy, facsimile and data communication*	Published in 1991
01 – Forms of telecommunications using discrete signals	
02 to 08 – Discrete signals and transmission using discrete signals	
09 to 12 – Telegraphy and data communication	
13 to 15 – Facsimile	
16 to 19 – Telegraph and data networks, switching, operation and sources	

Parts and Sections	Status in 2000
722 – *Telephony*	Published in 1992
1 – General terms	
2 – Telephone set components	
3 – Telephone set feeding and signalling	
4 – Telephone set types	
5 – Telephone set accessories	
6 – Telephone networks	
7 – Telephone exchanges	
8 – Private telephone systems	
10 – Telephone calls description	
12 – Local line networks	
13 – Telephone station usage	
15 – Transmission performance	
16 – Measuring apparatus	
17 – Telephonometry	
723 – *Broadcasting: sound, television, data*	Published in 1997 (Sections 1 to 9)
1 – General terms	
2 – Common sound/television broadcasting terms	
3 – Sound broadcasting	
4 – Television: General terms	
5 – Television: Picture analysis and display video signals	
6 – Picture quality and impairment	
7 – Equipment devices used in television	
8 – Specific terms for colour television systems	
9 – Cable distribution system	
10 – Digital television	Published in 1999 (Sections 10 and 11)
11 – Three-dimensional/stereoscopic television	
725 – *Space radiocommunications*	Second edition published in 1994
1 – Satellites, spacecraft and orbits	
2 – Space radiocommunication systems	
3 – Antennas and beams	
4 – Transmission	
726 – *Transmission lines and waveguides*	Published in 1982
01 – Transmission line, waveguide and cavity resonator configurations	
02 to 07 – Propagation in transmission lines and waveguides	
08 to 10 – Waveguide connections	
11 to 15 – Waveguide components	
16 to 18 – Non-reciprocal effects and devices	
19 to 21 – Measurements on transmission lines	
731 – *Optical fibre communication*	Published in 1991
1 – General concepts	
2 – Fibre construction and optical characteristics	
3 – Propagation characteristics	
4 – Cables	
5 – Connectors and couplers etc.	
6 – Optical sources and detectors	
7 – Measurement techniques	
8 – Systems	

Parts and Sections	Status in 2000
161* – *Electromagnetic compatibility*	Published in 1990
1 – Basic concepts	Amendment 1 published in 1997
2 – Waveforms	
3 – Interference control related terms	Amendment 2 published in 1998
4 – Measurements	
5 – Equipment classification	
6 – Receiver and transmitter terms	
7 – Power control and network impedances	
8 – Voltage changes and flicker	
191 – *Reliability, maintainability and quality of service*	Published in 1990 (Parts 1 and 2)
1 – Dependability – Common terms	Amendment 1 (Amendment to Part 1 and new Part 3) published in 1999
2 – Quality of service in telecommunications	
3 – Reliability and quality of service in electric power systems	

* Representatives of the ITU-R participated in the Working Group.

Appendix 2

General Terminology of Telecommunications

(Terms common to the Radiocommunication Sector and the Telecommunication Standardization Sector)

In order to assure that telecommunication terms employed by the ITU Sectors have the same meaning, the general terms used in the texts of different Study Groups together with their definitions, have been collected together.

The terms and definitions in this Appendix have been arranged according to subject as follows:

1 Forms of telecommunications.

2 Channels, circuits and networks.

3 Use and operation of circuits and networks.

4 Frequencies and bandwidths.

5 Oscillations and waves.

Administrations and Study Groups are invited to comment on these terms and definitions, and particularly, to forward to CCV their proposals for revision or for alternative applications, accompanied by appropriate justifications.

When examining these definitions, it should be borne in mind that Recommendation ITU-R V.573 on radiocommunication vocabulary contains terms relating more specifically to the Radiocommunication Sector.

The following Notes should also be taken into account:

NOTE 1 – Definitions of "forms of telecommunication" have been produced to be used by ITU Sectors Study Groups.

These definitions of "forms of telecommunication" are of a general nature and are not in contradiction with definitions of services presently specified by the ITU Sectors. Definitions of services are produced by the Study Group responsible for these services (mainly Telecommunication Standardization Study Groups 1 and 2 for telecommunication services and Radiocommunication Study Groups 10 and 11 for broadcasting services).

NOTE 2 – A number of terms in the Recommendation appear also in Article S1 of the RR with a different definition. These terms are identified by (RR . . ., MOD). Modifications are proposed for two reasons:

– some RR definitions only take into account regulatory aspects, while the proposed definitions are of a technical nature;

– some RR definitions give rise to difficulties of interpretation, in these cases the proposed modifications or additions may be useful later for draft revisions of the RR.

For regulatory applications, only the terms and definitions in the RR may be used.

NOTE 3 – Terms and definitions relating to the quality of service have not been included in this Recommendation because they usually have rather specific applications. However, the introduction to ITU-T Recommendation E.800 which contains some general information on all services, is given in Annex 1 to this Appendix.

1 Forms of telecommunications

1.01 information; *information; información*

Intelligence or knowledge capable of being represented in forms suitable for communication, storage or processing.

NOTE – Information may be represented for example by signs, symbols, pictures or sounds.

1.02 signal; *signal; señal*

A physical phenomenon one or more of whose characteristics may vary to represent information.

NOTE – The physical phenomenon may be for instance an electromagnetic wave or acoustic wave and the characteristic may be an electric field, a voltage or a sound pressure.

1.03 transmission; *transmission; transmisión*

The transfer of information from one point to one or more other points by means of signals.

NOTE 1 – Transmission can be effected directly or indirectly, with or without intermediate storage.

NOTE 2 – The use of the English word "transmission" in the sense of "emission" in radiocommunication and of "sending" is deprecated.

1.04 sending (in telecommunication), **transmission** (deprecated in this sense); *émission (en télécommunication); emisión (en telecomunicación)*

The production of a signal at an input port of a transmission line or into a transmission medium.

NOTE – In French the term "émission" has other meanings in radiocommunications, as given in Recommendation ITU-R V.573.

1.05 communication; *communication; comunicación*

Information transfer according to agreed conventions.

NOTE – In French and Spanish the corresponding terms "communication" and "comunicación" have additional specific meanings in telecommunications (see 3.05 and 3.02).

1.06 telecommunication; *télécommunication; telecomunicación*

Communication by wire, radio, optical or other electromagnetic systems.

NOTE – The following definition is given in the Constitution of the International Telecommunication Union (Geneva, 1992) (CS 1012) (and RR No. 1.3):

Any transmission, emission or reception of signs, signals, writings, images and sounds or intelligence of any nature by wire, radio, optical or other electromagnetic systems.

1.07 telephony; *téléphonie; telefonía*

A form of telecommunication primarily intended for the exchange of information in the form of speech.

NOTE – This is the definition given in the Constitution of the International Telecommunication Union (Geneva, 1992) (CS 1017) (RR No. 1.123).

1.08 telegraphy; *télégraphie; telegrafía*

A form of telecommunication in which the transmitted information is intended to be recorded on arrival as a graphic document; the transmitted information may sometimes be presented in an alternative form or may be stored for subsequent use.

NOTE 1 – A graphic document records information in a permanent form and is capable of being filed and consulted; for example, it may take the form of written or printed matter or of a fixed image.

NOTE 2 – This is the definition given in the Constitution of the International Telecommunication Union (Geneva, 1992) (CS 1016) (RR Nos. 1.117 and 1.117.1).

NOTE 3 – Telegraph does not include television or videography.

1.09 telex (service); *(service) télex; (servicio) télex*

A telegraph service enabling subscribers to communicate directly and temporarily with each other by means of start-stop apparatus and telecommunication circuits of the public telecommunication network.

1.10 facsimile; *télécopie; facsímil, fax*

A form of telecommunication for the reproduction at a distance of graphic documents in the form of other graphic documents geometrically similar to the original.

1.11 telewriting; *téléécriture; teleescritura*

A form of telecommunication for the purpose of transmitting graphical information as it is being manually written or drawn and for simultaneously generating a reproduction at the distant terminal either on a screen or in some other form.

NOTE – In cases where the reproduction at the receiving end is in the form of a graphic document, the term "téléautographie" can be employed in French.

1.12 data; *données; datos*

Information represented in a manner suitable for automatic processing.

1.13 data communication, data transmission (deprecated in this sense); *communication de données, transmission de données* (deprecated in this sense); *comunicación de datos, transmisión de datos* (deprecated in this sense)

A form of telecommunication intended for the transfer of information between data processing equipments.

1.14 data transmission; *transmission de données; transmisión de datos*

The conveying of data from one place to another by telecommunication.

NOTE – The term "data transmission" is deprecated in the sense of "data communication".

1.15 teleprocessing, teleinformatics; *téléinformatique, télétraitement; teleinformática, teleproceso*

The association of telecommunication and data processing techniques to process information at a distance.

1.16 television; *télévision; televisión*

A form of telecommunication for the transmission of signals representing scenes; images of the scenes being reproduced on a screen as they are received.

NOTE 1 – The received signals may be stored for subsequent display of the images on a screen.

NOTE 2 – This form of telecommunication finds major application in television broadcasting and the word "television" is often used without qualification to describe this application. The same technique is also used for industrial, scientific, medical and other applications; such applications are often referred to as "closed-circuit television".

1.17 still-picture television (SPTV); *télévision à images fixes; televisión de imágenes fijas*

Television in which the time interval between a displayed picture and the display of either an updated version of the same picture, or a new picture forming part of a sequence, exceeds (generally by an appreciable factor) the usual time interval between pictures.

NOTE – The question as to whether still-picture television includes certain modes in teletext, broadcast videography (see 1.20), is still under study.

1.18 telematics (services); *télématique (services de); telemática (servicios de)*

Telecommunication services supplementing conventional telegraphic or telephonic services, generally using teleprocessing techniques to permit a user to receive or send public or private information, or to effect operations such as file consultation, reservations, commercial or banking transactions.

Examples of telematics services: facsimile, teletex, videography, telewriting.

NOTE – Telematics services do not include broadcasting of sound or television programmes.

1.19 videography; *vidéographie; videografía*

A form of telecommunication in which information generally, in the form of digital data, is transmitted primarily in order to permit the selection and display of textual or pictorial information to a user on a visual display unit, for instance on the screen of a television receiver.

NOTE – The teletext service and various forms of telegraphy are not forms of videography.

1.20 teletext, broadcast videography; *vidéographie diffusée, télétexte; videografía radiodifundida, teletexto*

Videography in which information is broadcast utilizing the means of transmission used for normal television broadcasting and the desired part of this information may be selected by any user having suitable equipment.

NOTE 1 – Information may be transmitted simultaneously with normal television pictures.

NOTE 2 – The terms "teletext" and "teletex" refer to two different concepts.

Note by Secretariat – (In Report ITU-R BT.802, § 3.1, Radiocommunication Study Group 11 has provided the following definition for a teletext service:

"A digital data broadcasting service which may be transmitted either within the structure of an analogue television signal or by using digital modulation systems. The service is primarily intended to display text or pictorial material in two-dimensional form reconstructed from coded data on the screens of suitably equipped television receivers."

1.21 videotex, interactive videography; *vidéotex, vidéographie interactive; videotex, videografía interactiva*

Videography in which a telecommunication network is used for transmission of the user's requirements as well as the answers to his requests.

1.22 teletex (service); *(service) télétex; (servicio) teletex*

A telematics service for text transmission offering additional facilities to the telex service, in particular further typewriter functions and remote text processing facilities.

NOTE – The terms "teletex" and "teletext" refer to two different concepts.

1.23 video-telephony, viewphone, visual telephone; *visiophonie, vidéophonie* (deprecated); *videofonía, videotelefonía*

An association of telephone and television techniques which allows users to see each other during their telephone conversation.

1.24 still-picture video-telephony; *visiophonie à images fixes; videofonía de imágenes fijas*

Video-telephony in which the time interval between a displayed picture and the display of either an updated version of the same picture, or a new picture forming part of a sequence, exceeds (generally by an appreciable factor) the usual time interval between pictures.

1.25 teleconference; *téléconférence; teleconferencia*

A conference between more than two participants located in two or more different places and utilizing telecommunication facilities.

1.26 audioconference; *audioconférence; audioconferencia*

A teleconference in which participants are connected by telephone circuits; the transmission of other signals such as facsimile or telewriting signals may be possible in addition to speech signals.

1.27 videoconference; *visioconférence, vidéoconférence; videoconferencia*

A teleconference in which participants are connected by television circuits providing for the transmission of animated images in addition to that of speech and graphic documents.

1.28 telemetry, telemetering; *télémesure; telemedida*

A process in which measurements are made at some remote location and the results are transmitted by telecommunication.

1.29 telecommand; *télécommande; telemando*

The transmission of signals to initiate, modify or terminate functions of distant equipment.

1.30 telecontrol; *téléconduite; telecontrol*

The control of operational equipment at a distance using a combination of telemetry and telecommand.

1.31 teleguidance; *téléguidage; teleguiaje*

The guidance and control of distant mobile craft by telecommunication.

1.32 telemonitoring; *télésurveillance; telesupervisión*

The observation at a distance by telecommunication of industrial processes, operational equipment, natural phenomena or individuals.

1.33 remote alarm; *téléalarme; telealarma*

The alerting of a central point by telecommunication to the occurrence of an unwanted situation or event.

1.34 broadcasting; *télédiffusion; teledifusión*

A form of unidirectional telecommunication intended for a large number of users having appropriate receiving facilities, and carried out by means of radio or by cable networks.

NOTE – In English, it should be assumed that "broadcasting by radio waves" is intended where the word "broadcasting" is used without qualification, unless the context indicates the contrary.

Examples: Sound broadcasting or television broadcasting, teletext, the distribution of time signals and navigational warnings, the distribution of news from press agencies.

1.35 broadcasting (service); *radiodiffusion; radiodifusión*

Radiocommunication in which transmissions are intended for direct reception by the general public; these may include sound transmissions, television transmissions and other types of transmission.

NOTE – By common usage in French and Spanish the meaning of "radiodiffusion" and "radiodifusión" is frequently restricted to "sound broadcasting".

1.36 sound broadcasting (service); *radiodiffusion sonore; radiodifusión sonora*

A broadcasting service limited to sound programmes.

1.37 television broadcasting (service); *radiodiffusion visuelle, (radiodiffusion de) télévision; (radio-difusión de) televisión*

A broadcasting service of visual programmes with associated sounds.

1.38 cabled distribution; *télédistribution, câblodistribution* (Canada); *distribución por cable*

A form of telecommunication for the distribution of television or sound programmes over networks of cables to a number of users.

NOTE – Some systems may transmit other signals and provide return channels.

2 Channels, circuits and networks

2.01 (transmission) channel; *voie (de transmission); canal (de transmisión)*

A means of transmission of signals in one direction between two points.

NOTE 1 – Several channels may share a common path; for example each channel is allocated a particular frequency band or a particular time slot.

NOTE 2 – In some countries the term "communication channel" or its abbreviation "channel" is also used to mean "telecommunication circuit", i.e. to encompass the two directions of transmission. This usage is deprecated.

NOTE 3 – A transmission channel may be qualified by the nature of the transmitted signals, or by its bandwidth, or by its digit rate; for example: telephone channel, telegraph channel, data channel, 10 MHz channel, 34 Mbit/s channel.

2.02 telephone-type channel; *voie de type téléphonique; canal de tipo telefónico*

A transmission channel suitable for the transmission of speech but which is used for the transmission of other signals.

2.03 (telecommunication) circuit; *circuit (de télécommunication); circuito (de telecomunicación)*

A combination of two transmission channels, permitting transmission, in both directions between two points, of the signals exchanged between the same terminals.

NOTE 1 – If the telecommunication is by nature unidirectional, e.g. long-distance television transmission, the term "circuit" is sometimes used to designate the single transmission channel providing the facility, but this usage is deprecated.

NOTE 2 – A telecommunication circuit may be qualified by the nature or characteristics of the transmitted signals; for example: telephone circuit, telegraph circuit, data circuit, digital circuit.

NOTE 3 – Such characteristics of the transmission channels as bandwidth, digit rate, may be different in the two directions of transmission.

NOTE 4 – In telephony, usage of the term "telephone circuit" is generally limited to a telecommunication circuit directly connecting two switching centres.

2.04 telephone-type circuit; *circuit de type téléphonique; circuito de tipo telefónico*

A pair of associated telephone-type channels permitting transmission in both directions between two points.

2.05 (frequency) channel; *canal (de fréquences); canal (de frecuencias)*

Part of the frequency spectrum intended to be used for the transmission of signals and which may be defined by two specified limits, or by its centre frequency and the associated bandwidth, or by any equivalent indication.

NOTE 1 – A frequency channel may be time-shared in order to allow communication in both directions by simplex operation.

NOTE 2 – The use of the term "channel" to mean "telecommunication circuit" is deprecated.

NOTE 3 – The term "radio-frequency channel" used in radiocommunication is defined in Recommendation ITU-R V.573.

2.06 link; *liaison; enlace*

A means of telecommunication with specified characteristics between two points.

NOTE – The type of the transmission path or the capacity is normally indicated, e.g. radio link, coaxial link, broadband link.

2.07 point-to-point communication; *communication point à point; comunicación punto a punto*

Communication provided by a link, for example, a radio-relay link between two stations located at specified fixed points.

2.08 point-to-multipoint communication; *communication point à multipoint; comunicación punto a multipunto*

Communication provided by links, for example, radio-relay links between a single station located at a specified fixed point and a number of stations located at specified fixed points.

2.09 point-to-area communication*; *communication point à zone; comunicación punto a zona*

Communication provided by links between a station located at a specified fixed point and any number of stations located at non-specified points in a given area which is the *coverage area* of the station located at the fixed point.

NOTE – When point-to-area communication involves unidirectional links from a single fixed point to a number of points, this type of communication is commonly referred to as "broadcasting" (see term 1.34).

2.10 telecommunication network, telecommunication system (United States of America); *réseau de télécommunication; red de telecomunicación*

All the means of providing telecommunication services between a number of locations where equipment provides access to these services.

2.11 (telecommunication) terminal; *terminal (de télécommunication); terminal (de telecomunicación)*

An equipment connected to a telecommunication network to provide access to one or more specific services.

NOTE – The term may be qualified to indicate the type of service or user, e.g. "data terminal", "subscriber's terminal".

2.12 subscriber's line, subscriber loop; *ligne d'abonné, ligne de rattachement; línea de abonado, bucle de abonado*

A link between equipment in a subscriber's premises and the telecommunication centre providing the required services.

2.13 port (of a network); *accès (d'un réseau), porte* (term not to be used in this sense); *puerta (de una red)*

A termination through which signals can enter or leave a network.

2.14 transmission path; *trajet de transmission; trayecto de transmisión*

The course taken by a signal during its transmission between two points.

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* This type of communication, which is mainly used by broadcast and mobile services, is included here for comparison with terms 2.07 and 2.08.

2.15 interface; *interface; interfaz*

A boundary between two systems or between two parts of the same system, defined by the specification of suitable characteristics, usually for the purpose of ensuring format, function, signal and interconnection compatibility at the boundary.

NOTE – An interface may be defined, for example, at a plug and socket connection, at the aperture of an antenna or between layers of a hierarchical system.

2.16 ** **distribution link;** *liaison de distribution; enlace de distribución*

A link for the transmission of sound or television broadcasting programmes to the users, generally from a programme production centre, when no further post-production processing is intended.

2.17 ** **primary distribution link;** *liaison de distribution primaire; enlace de distribución primaria*

The part of a distribution link from a programme production centre to either a broadcast transmitting centre or the head-end of a cabled distribution network.

2.18 ** **secondary distribution link;** *liaison de distribution secondaire; enlace de distribución secundaria*

The part of a distribution link from the head-end of a cabled distribution network to the users.

2.19 ** **contribution link;** *liaison de contribution; enlace de contribución*

A link for the transmission of sound or television broadcasting signals to a programme production centre.

3 Use and operation of circuits and networks

3.01 connection; *chaîne de connexion; cadena de conexión*

A temporary association of transmission channels or telecommunication circuits, switching and other functional units set up to provide for the transfer of information between two or more points in a telecommunication network.

3.02 (complete) connection; *chaîne de connexion complète, (chemin de) communication; cadena de conexión completa, (camino de) comunicación*

A connection between users' terminals.

NOTE – In French and in Spanish, the terms "communication" and "comunicación", have also a more general meaning (see § 1.05).

3.03 switching (in telecommunication); *commutation (en télécommunication); conmutación (en telecomunicación)*

The process of temporarily associating functional units, transmission channels or telecommunication circuits for the purpose of providing a desired telecommunication facility.

3.04 call attempt (by a user); *(tentative d') appel (par un usager); (tentativa de) llamada (por un usuario)*

A single sequence of operations made by a user of a telecommunication network trying to obtain the desired user, terminal or service.

NOTE – This definition differs slightly from the definition of the same term which appears in ITU-T Recommendation P.10 (§ 21 – Telephone calls description).

** Draft definitions of the terms "distribution", "primary distribution", "secondary distribution" and "contribution" are being studied within Telecommunication Standardization Study Group 9, in conjunction with the other Study Groups concerned.

3.05 call; *communication; comunicación*

The establishment and use of a complete connection, following a call attempt.

NOTE – In French and in Spanish, the terms "communication" and "comunicación", have also a more general meaning (see § 1.05).

3.06 conversation (in telecommunication); *conversation (en télécommunication); conversación (en telecomunicación)*

An exchange of information between terminals.

3.07 code; *code; código*

A system of rules defining a one-to-one correspondence between information and its representation by characters, symbols or signal elements.

3.08 modulation; *modulation; modulación*

A process by which a quantity which characterizes an oscillation or wave follows the variations of a signal or of another oscillation or wave.

NOTE – Modulation may be intentional or unintentional.

3.09 carrier; *porteuse; portadora*

An oscillation or wave, usually periodic, some characteristic of which is intended to be constrained by modulation to follow the values of a signal or of another oscillation.

3.10 carrier (component); *(composante) porteuse; portadora (componente)*

In a modulated oscillation or wave, the spectral component having the frequency of the periodic oscillation or wave prior to modulation.

3.11 multiplexing; *multiplexage; multiplexación*

A reversible process for assembling signals from several separate sources into a single composite signal for transmission over a common transmission channel; this process is equivalent to dividing the common channel into distinct channels for transmitting independent signals in the same direction.

3.12 demultiplexing; *démultiplexage; demultiplexación*

A process applied to a composite signal formed by multiplexing, for recovering the original independent signals or groups of these signals.

NOTE – Demultiplexing may be partial, for instance for extracting a group from a supergroup of telephony channels.

3.13 multiple access; *accès multiple; acceso múltiple*

Any technique whereby a number of terminals are able to share the transmission capacity of a link in a predetermined manner or in accordance with traffic demand.

3.14 space division; *répartition spatiale; división espacial*

A technique whereby a separate individual transmission path is used for each transmission channel for example in multiplexing, switching or multiple access operations.

3.15 time division; *répartition temporelle; división en el tiempo*

A technique whereby a separate distinct recurrent time interval is used for each transmission channel, for example in multiplexing, switching or multiple access operations.

3.16 **frequency division;** *répartition en fréquence, répartition fréquentielle; división en frecuencia*

A technique whereby a separate distinct frequency band is used for each transmission channel, for example in multiplexing, switching or multiple access operations.

3.17 **code division;** *répartition en code; división por código*

A technique whereby orthogonal signals are used to provide distinct transmission channels, for example in multiplexing, switching or multiple access operations; such signals being distinguishable even when they share the same frequency bands and the same time intervals.

3.18 **simplex, half duplex** (deprecated); **simplex,** *à l'alternat, semi-duplex* (deprecated in this sense); *simplex, semiduplex*

Designating or pertaining to a method of operation in which information can be transmitted in either direction, but not simultaneously, between two points.

3.19 **duplex, full duplex** (deprecated); *duplex, bilatéral simultané; dúplex*

Designating or pertaining to a mode of operation by which information can be transmitted in both directions simultaneously between two points.

3.20 **unidirectional; unilatéral, unidirectionnel, simplex** (term deprecated in this sense); *unidireccional, unilateral*

Pertaining to a link where the transfer of users' information is possible in one preassigned direction only.

NOTE – This term should not be used to describe the direction of call set-ups.

3.21 **bidirectional;** *bilatéral, bidirectionnel, duplex* (term deprecated in this sense); *bidireccional, bilateral*

Pertaining to a link where the transfer of users' information is possible simultaneously in both directions between two points.

NOTE 1 – The transmission channel capacity and signalling rate are not necessarily the same in both directions.

NOTE 2 – This term should not be used to describe the directions of call set-ups.

3.22 **one way;** *à sens unique, spécialisé* (term deprecated in this sense)*; de sentido único*

Pertaining to an operational mode in which the call set-ups always occur in one direction.

NOTE – This term should not be used to describe the direction of transfer of users' information.

3.23 **both-way;** *à double sens, mixte; de doble sentido*

Pertaining to an operational mode in which the call set-ups occur in both directions.

NOTE 1 – The amount of traffic flowing is not necessarily the same in both directions.

NOTE 2 – These terms should not be used to describe the direction of transfer of users' information.

NOTE 3 – The term “two-way” is sometimes used in English in place of “both-way”; this usage is not recommended.

4 Frequencies and bandwidths

4.01 **frequency band;** *bande de fréquences; banda de frecuencias*

A continuous set of frequencies lying between two specified limiting frequencies.

NOTE – A frequency band is characterized by two values which define its position in the frequency spectrum, for example, its lower and upper limiting frequencies.

4.02 **(frequency) bandwidth;** *largeur de bande (de fréquences); anchura de banda (de frecuencias)*

The quantitative difference between the limiting frequencies of a frequency band.

NOTE 1 – The term "bandwidth" is usually associated with a qualification, for example:

– baseband bandwidth;

– necessary bandwidth;

– bandwidth of an amplifier or other device.

NOTE 2 – A bandwidth is defined by a single value and does not depend upon the position of the band in the frequency spectrum.

4.03 **baseband;** *bande de base; banda de base*

1 The frequency band occupied by one signal, or by a number of multiplexed signals intended to be conveyed by a radio transmission system or a line transmission system.

NOTE 1 – In the case of radiocommunication, the baseband signal constitutes the signal modulating the transmitter.

NOTE 2 – The following definition given in IEV Chapter 702, was also found to be acceptable.

2 That frequency band occupied by one signal or by a number of multiplexed signals at specified input and output points of a transmission system.

NOTE 1 – In the case of a radiocommunication, the baseband is that band which is occupied by the signal modulating the transmitter.

NOTE 2 – When the transmission involves multiple modulation, it is generally considered that the baseband is that band occupied by the signal which is applied to the first modulation stage and not the band occupied by an intermediate modulated signal.

4.04 ***x* dB bandwidth** (of a signal); *largeur de bande à «x dB» (d'un signal); anchura de banda entre puntos a "x dB" (de una señal)*

The width of a frequency band such that beyond its lower and upper limits any spectral line or any power spectral density of the spectrum of a signal is at least *x* dB lower than a reference level specified for the type of signal considered.

4.05 **frequency departure;** *écart de fréquence, déviation de fréquence* (term deprecated in this sense); *desajuste de frecuencia*

An unintentional frequency separation from a stated frequency.

4.06 **frequency shift;** *déplacement de fréquence; desplazamiento de frecuencia*

An intentional frequency change produced by modulation, or an unintentional change due to a natural phenomenon.

4.07 **frequency drift;** *dérive de fréquence; deriva de frecuencia*

An undesired progressive and slow change in frequency with time.

4.08 **frequency offset;** *décalage de fréquence; separación de frecuencia*

A small intentional frequency change for purposes other than that of modulation.

NOTE – A frequency offset may be effected, for example, as a means of avoiding or minimizing interference.

5 Oscillations and waves

5.01 **attenuation, loss;** *affaiblissement, atténuation; atenuación, pérdida*

1 A decrease between two points of an electric, electromagnetic or acoustic power.

2 The quantitative expression of a power decrease, by the ratio of the values at two points of a power or of a quantity related to power in a well-defined manner.

NOTE 1 – By extension, the words "attenuation" or "loss" may represent the ratio of powers in a given situation and in a reference condition; for example "insertion loss".

NOTE 2 – Although the term "loss" is not synonymous in English with "attenuation" in every context, it is used to express the ratio of two powers in certain specified conditions as for example in "insertion loss" and "return loss" equivalent in French to "affaiblissement d'insertion" and "facteur d'adaptation".

NOTE 3 – Attenuation is generally expressed in logarithmic units by a positive value. In some cases, attenuation could be used instead of gain, when the logarithmic unit value of a gain is negative.

5.02 **gain;** *gain; ganancia*

1 An increase between two points of an electric, electromagnetic, or acoustic power.

2 The quantitative expression of a power increase, by the ratio of the values at two points of a power or of a quantity related to power in a well-defined manner.

NOTE 1 – By extension, the word "gain" may represent the ratio of powers in a given situation and in a reference condition; for example the "gain of an antenna".

NOTE 2 – Gain is generally expressed in logarithmic units by a positive or negative value. When a gain has a negative value in logarithmic units, attenuation may be used instead of gain.

5.03 **propagation coefficient, propagation constant** (deprecated term); *exposant linéique de propagation, constante de propagation* (deprecated term); *coeficiente de propagación, constante de propagación* (deprecated term)

(Symbol: γ)

Limit of the quotient of the natural logarithm of the ratio of values of a specified component of an electromagnetic field, at two points aligned in the direction of propagation of a guided or plane wave of given frequency, or of a wave practically plane in a limited space domain, by the distance of the two points when this distance tends to zero.

NOTE – The propagation coefficient is usually a complex function of frequency and has the dimension of the reciprocal of a distance.

5.04 **attenuation coefficient, attenuation constant** (deprecated term); *affaiblissement linéique, constante d'affaiblissement* (deprecated term); *coeficiente de atenuación, constante de atenuación* (deprecated term)

(Symbol: α)

1 The real part of a propagation coefficient.

2 Limit of the quotient of attenuation between two points on the axis of a transmission line or waveguide by the distance between the points when this distance tends to zero.

5.05 **phase-change coefficient, phase constant** (deprecated term); *déphasage linéique, constante de phase* (deprecated term); *coeficiente del desfasaje, constante de fase* (deprecated term)

(Symbol: β)

1 The imaginary part of a propagation coefficient.

2 Limit of the quotient of the phase change of a field quantity between two points on the axis of a transmission line or waveguide by the distance between the points when this distance tends to zero.

5.06 **phase delay;** *temps de propagation de phase; retardo de fase*

The time taken by a mobile point, associated with a sinusoidal travelling wave and defined by a constant real phase of a field quantity, to move between two given points in a propagation medium.

NOTE – The phase delay is the time duration between the instants when a wave front of a sinusoidal travelling wave, defined by a specific phase, passes two given points in space.

5.07 **group delay;** *temps de propagation de groupe; retardo de grupo*

The propagation time between two points of a signal which may be ideally represented by two superimposed sinusoidal waves of equal amplitude and slightly different frequencies approaching a common limiting value.

NOTE – In a homogeneous medium, or on a uniform line, the group delay is equal to the derivative with respect to the angular frequency of the difference, at the same time, of the phases at the two points of the common limit wave.

5.08 **noise** (in telecommunication); *bruit (en télécommunication); ruido (en telecomunicación)*

Any variable physical phenomenon apparently not conveying information and which may be superimposed on, or combined with, a wanted signal.

NOTE – The term "radio-frequency noise" is defined in Recommendation ITU-R V.573.

5.09 **interference** (to a wanted signal); *brouillage (d'un signal utile); interferencia (a una señal útil)*

Disturbance of the reception of a wanted signal caused by interfering signals, noise or electromagnetic disturbance.

NOTE – The term "radio-frequency interference" is defined in Recommendation ITU-R V.573.

5.10 **bit error ratio (BER);** *taux d'erreur binaire (TEB); proporción de bits erróneos (BER)*

For a binary digital signal, the ratio of the number of errored bits received to the total number of bits received over a given time interval.

5.11 **residual bit error ratio (RBER);** *taux d'erreur binaire résiduel (TEBR); proporción de bits erróneos residual (BER-R)*

Bit error ratio in the absence of fading, including allowance for system inherent errors, environment, aging effects and long-term interference.

5.12 **errored second (ES);** *seconde avec erreurs (SE); seconde entachée d'erreurs (SE); segundo con errores (SE)*

Time interval of 1 s during which a given digital signal is received with one or more errors.

NOTE – According to ITU-T Recommendations, an errored second is defined for each direction of a 64 kbit/s circuit-switched connection.

5.13 **severely errored second (SES);** *seconde gravement entachée d'erreurs (SGE); segundo con muchos errores (SME)*

Time interval of 1 s during which a given digital signal is received with an error ratio greater than a specified value.

NOTE – According to ITU-T Recommendations, a severely errored second is defined for each direction of a 64 kbit/s circuit-switched connection and the specified BER value is 1×10^{-3}.

5.14 **degraded minute (DM);** *minute dégradée (MD); minuto degradado (MD)*

Time interval comprising m seconds, 60 of them being not severely errored seconds but for which the error ratio is greater than a specified value.

NOTE 1 – According to ITU-T Recommendations, a degraded minute is defined for each direction of a 64 kbit/s circuit-switched connection and the specified BER value is 1×10^{-6}.

NOTE 2 – If the time interval includes n severely errored seconds, $m = 60 + n$.

Annex 1
to Appendix 2

Quality of service and dependability vocabulary

General guide to concepts (extract from Recommendation ITU-T E.800)

Figure 1 (Performance Concepts) is a framework intended to provide a general guide to the factors which contribute collectively to the overall quality of service as perceived by the user of a telecommunication service. The terms in the diagram can be thought of as generally applying either to the quality of service levels actually achieved in practice, to objectives which represent quality of service goals, or to requirements which reflect design specifications.

The figure is structured to show that one quality of service factor can depend on a number of others. It is important to note – although it is not explicitly stated in any of the definitions contained in this document – that the value of a characteristic measure of a particular factor may depend directly on corresponding values of other factors which contribute to it. This necessitates, whenever the value of a measure is given, that all of the conditions having an impact on that value be clearly stated.

The essential aspect of the global evaluation of a service is the opinion of the users of the service. The result of this evaluation expresses the users' degrees of satisfaction. This Recommendation provides a framework for:

1) the quality of service concept;

2) relating quality of service and network performance;

3) a set of performance measures.

It is obvious that a service can be used only if it is provided, and it is desirable that the provider has a detailed knowledge about the quality of the offered service. From the provider's viewpoint, network performance is a concept by which network characteristics can be defined, measured and controlled to achieve a satisfactory level of service quality. It is up to the Service Provider to combine different network performance parameters in such a way that the economic requirements of the Service Provider as well as the satisfaction of the User are both fulfilled.

In the utilization of a service the User normally identifies the Service Provider only. The User's degree of satisfaction with the service provided depends on quality of service, that is on the latter's perception of the following service performance:

– the support;

– the operability;

– the serveability;

– the security.

All are dependent on network characteristics[1)]. However, the serveability performance is the most generally affected. It is further subdivided into three terms:

– service accessibility performance;

– service retainability performance;

– service integrity performance.

Serveability performance depends on trafficability performance and its influencing factors of resourcing and facility, dependability and transmission performance (of which propagation performance is a subset), as shown in Figure 1. The trafficability performance is described in terms of losses and delay times. Dependability is the combined aspects of availability, reliability, maintainability and maintenance support performance and relates to the ability of an item to be in a state to perform a required function. Propagation performance refers to the ability of the transmitting medium to transmit the signal within intended tolerances.

The resources and facilities box includes planning performance, provisioning performance and the related administrative functions. This spotlights the importance of the network planning and provisioning aspects, etc. to the overall quality of service results. These items are for further study.

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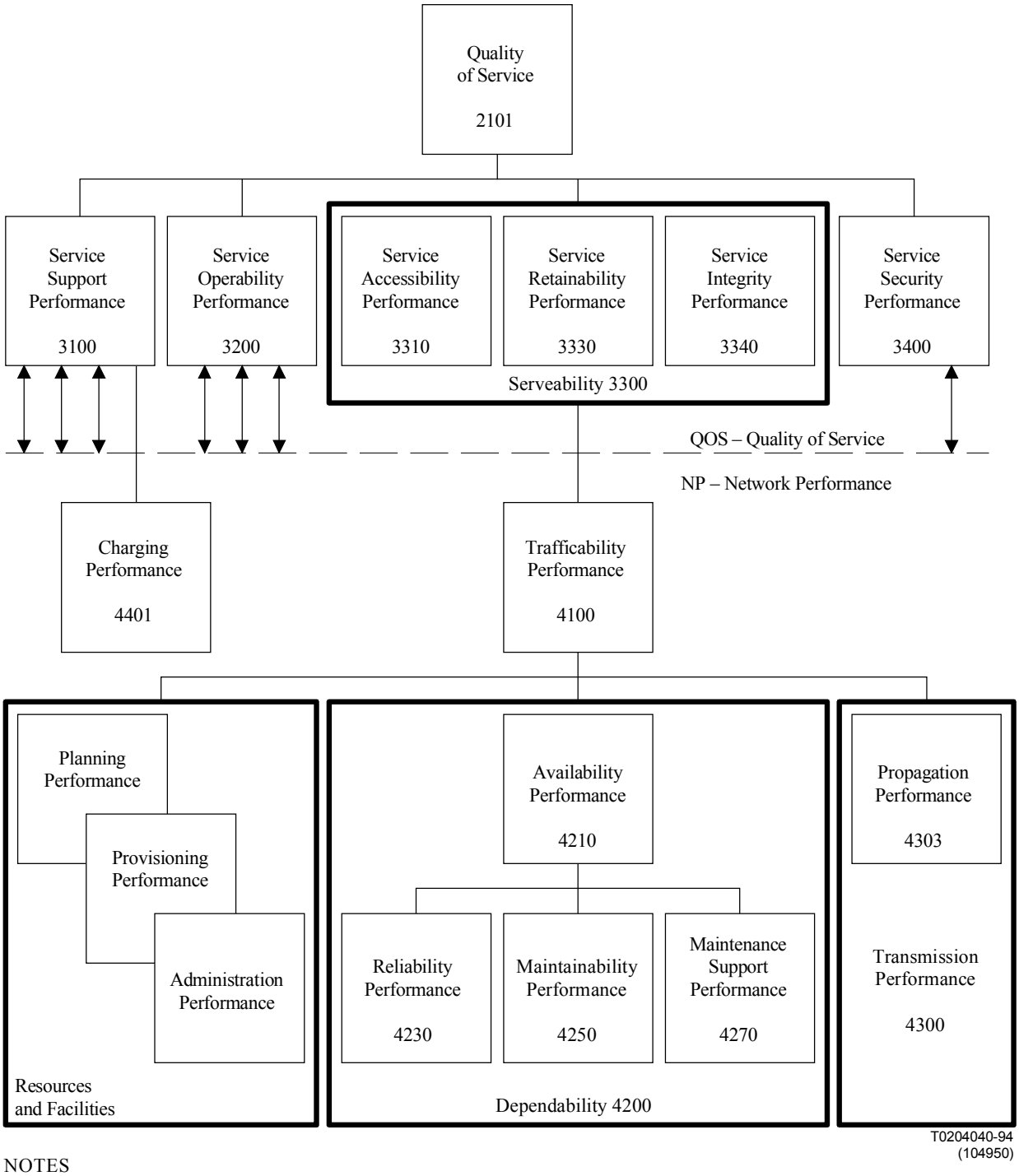
1) The service support performance may depend on certain aspects of the network performance, for example through the charging correctness performance.



NOTES

1 Each concept may effect the one above collectively or individually.

2 For the sake of clarity not all relationships are indicated, though they may be implied on the figure.

FIGURE 1/E.800

Performance concepts