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Technical Report

Access and Terminals (AT);
Relationship between installations, cabling and
communications systems;
Standardization work published and in development;
Part 1: Overview, common and generic aspects;
Sub-part 1: Generalities, common view of the set of documents

ETSI

Reference

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Contents

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Foreword

This Technical Report (TR) has been produced by ETSI Technical Committee Access and Terminals (AT).

The present document is part 1, sub-part 1 of a multi-part deliverable covering the relationship between installations, cabling and communications systems; Standardization work published and in development, as identified below:

Part 1: **"Overview, common and generic aspects";**

Sub-part 1:"Generalities, common view of the set of documents";

Sub-part 2: "Operators";

Sub-part 3: "Professional";

Sub-part 4: "Residential and small business";

Part 2: "Legacy PSTN (POTS/analogue and ISDN/digital)";

Part 3: "Legacy HFC networks";

Part 4: "Balanced cabling networks for broadband terminals";

Part 5: "Optical fibre cabling networks";

Part 6: "Radio networks";

Part 7: "Power line networks".

Work on parts 2, 3, 6 and 7 and their sub-parts has not yet been initiated but is proposed to start in the near future.

Introduction

This multi-part deliverable is a result of the increasing interaction of the different parts of the ICT sector (hardware, middleware, software, communication services) demonstrating the increasing intention of independence between infrastructures and services provided for the user. There is widespread agreement that convergence is occurring at the technological level. That is to say that digital technology now allows both traditional and new communication services - whether voice, data, sound or pictures - to be equally provided over different basic infrastructures (installations, interfaces and design of the transmission path).

Service providers wish to take the best advantage of the existing and future infrastructures to facilitate the maximum possible flow of services and contents for the widest possible population. To reach this goal it is extremely urgent and important that experts on the basic infrastructures collect the maximum possible information on applications and equipment and particularly on the standardization available in this area.

Additionally, the recent developments of services, applications and contents result in an increased demand for reliability, quality and performance. New technologies allow performance to increase at a very high pace at decreasing costs. Finally the liberalized market for terminals, PC's and other informatics' devices, home equipment and more recently for public networks, underlines the need of a common understanding among players in the market. Only standards can produce this common understanding.

The present document aims to offer a contribution to this standardization process and establishes the initial basis for a common work in the area of Installations and Cabling, where CENELEC and ETSI have common interests since in principle, with the ICT converging effects, it becomes increasingly hard to standardize installations and cabling without having a major support from the Telecommunications and Broadcasting standards organizations.

The present document has been produced by ETSI Technical Committee Access and Terminals (AT) in close collaboration with the Co-ordination Group on Installations and Cabling (CG IC) and CENELEC TC 215. Other ETSI and Cenelec Technical Bodies were invited to participate and are likely to collaborate in a later phase.

It is therefore aimed that the series of informative documents produced by ETSI enhances and facilitates the standardization process of installations and cabling going in CENELEC, particularly the production of normative documents.

The present document belongs to a multi-part document set. Some parts or sub-parts are not yet published or even not initiated by the date of publication of the present document which has as major task to describe in a comprehensive manner the overall planned activity. It is therefore essential to explicitly cite each one of the parts by listing their titles or foreseen titles and this is done in clause 4.

The multi-part deliverable represents a set of cohesive interwoven information that has jointly evolved to present different developments in installations and cabling in their progress towards NGN.

The documents listed in clause 4 are not all formally initiated at present but there is a clear intention to initiate them as soon as the workload will allow. The document list was produced after a careful debate and the associated planning (see clause C.3) will need to be revised regularly.

The multi-part deliverable describes the relevant information from the communications technologies related to cabling and installations. It also studies the impact of installations and cabling on communications systems.

The multi-part deliverable discusses evolving technologies and focuses on their consequences for standardization of installations, cabling techniques and equipment.

The convergence process of optimization in installation techniques will occur during a long period. The study will investigate possibilities and suggest solutions for an adequate evolution.

1   Scope

The present document gives an overview of the set of documents relevant for installations, interfaces and cabling for communications infrastructures and studies common and generic aspects.

This multi-part deliverable studies the relationship between installations, cabling, their interfaces and other aspects of communications infrastructures. It identifies standardization work published and in development. It also provides guidance for standardization work needed for implementation of communications networks.

It is not the goal of this multi-part deliverable to provide detailed standardized solutions.

This multi-part deliverable will be used to properly implement services, applications and content on infrastructure.

2   References

For the purposes of this Technical Report (TR) the following references apply:

[1]   Directive 1999/5/EC of the European Parliament and of the Council of 9 March 1999 on radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity (R&TTE Directive).

[2]   Directive 2002/19/EC of the European Parliament and of the Council of 7 March 2002 on access to, and interconnection of, electronic communications networks and associated facilities (Access Directive).

[3]   Directive 2002/21/EC of the European Parliament and of the Council of 7 March 2002 on a common regulatory framework for electronic communications networks and services (Framework Directive).

[4]   Directive 2002/22/EC of the European Parliament and of the Council of 7 march 2002 on universal service and users' rights relating to electronic communications networks and services (Universal Service Directive).

[5]   ETSI EG 201 730: "Terminals' access to Public Telecommunications Networks; Application of the Directive 1999/5/EC (R&TTE), article 4.2; Guidelines for the publication of interface specifications".

[6]   ETSI EG 202 306: "Transmission and Multiplexing (TM); Access networks for residential customers".

NOTE: This reference is believed to be not up to date but builds an extremely important base for a general overview of a very wide range of access technologies.

[7]   CENELEC EN 50173: "Information technology - Generic cabling systems".

[8]   CENELEC EN 50174: "Information technology - Cabling installation".

[9]   CENELEC EN 50310: "Application of equipotential bonding and earthing in buildings with information technology equipment".

[10]   CENELEC EN 50098: "Customer premises cabling for Information Technology".

[11]   CENELEC EN 50090-9: "Home and Building Electronic Systems (HBES)".

[12]   CENELEC EN 50346: "Information technology - Cabling installation - Testing of installed cabling".

[13]   ITU-T Recommendation Y.101: "Global Information Infrastructure terminology: Terms and definitions".

[14]   ITU-T Recommendation G.902: "Framework Recommendation on functional access networks (AN) - Architecture and functions, access types, management and service node aspects".

[15]   ITU-T Recommendation I.112: "Vocabulary of terms for ISDNs".

3   Definitions, abbreviations and schematic assistance

3.1   Definitions

For the purposes of the present document, the following terms and definitions apply:

> NOTE: The schematic of figure 1 helps understanding many of the definitions related with relevant points and areas of the installation.

access network: an implementation comprising those entities (such as cable plant, transmission facilities, etc.) which provide the required transport bearer capabilities for the provision of telecommunication services between a Service Node Interface (SNI) and each of the associated User Network Interfaces (UNI) or External Network Test Interface device (ENTI)

> NOTE: The UNI is in regulatory European terms (R&TTE 1999/5 EC and the Universal Service Directives 2002/22/EC) normally designated as Network Termination Point (NTP).

broadband terminals: any customer owned equipment provided with an interface for the connection to communications broadband system (e.g. xDSL NTE or the Access Network End System directly)

cabling: system of telecommunications cables, cords and connecting hardware that can support the connection of information technology equipment (EN 50173)

communications infrastructure: collection of networks, end user equipment, information, and human resources which can be used to access valuable information, communicate with each other, work, learn, receive entertainment from it, at any time and from any place, with affordable cost on a global scale (see ITU-T Recommendation Y.101)

core network: portion of the delivery system composed of networks, systems equipment and infrastructures, connecting the service providers to the access network (see also backbone network) ITU-T Recommendation Y.101

customer network: network between a UNI or ENTI, as appropriate, and one or several communication terminal outlets together with the attached terminal equipment

delivery access: sub-part of the access network between a sub-distributor (outside distribution cabinet) and a last subscribers' concentration point (distribution box)

distribution access: sub-part of the access network between a sub-distributor (outside distribution cabinet) and UNI or ENTI (as appropriate)

edge: networks between two Service Node Interface (SNI)

External Network Test Interface (ENTI): a point near or in the customer premises (inside or outside the customer network) accessible to the network operator or service provider for testing purposes

installation: procedure covering the design, specification, implementation and operation of information technology cabling as defined in EN 50174 series standards

Network Termination Point (NTP): physical point at which a subscriber is provided with access to a public communications network

> NOTE: This is based on Universal Service and R&TTE Directives. See also the series of EG 201 730 [5] offering guidance on the requirements applicable to the NTP.

penetration point: point of the communication infrastructure penetration into the building, house or professional premises

residential building backbone: the part of the residential network from building distributor (operators' cable-head included) to the external network test interface (ENTI)

residential network: network including the cabling and attached equipment between a UNI and ENTI

Service Network Interface (SNI): interface which provides customer access to a service node

NOTE: From ITU-T Recommendation G.902 [14].

terminal access: sub-part of the access network between a subscribers' last concentration point (distribution box) and a UNI

transport access: sub-part of the access network between a Service Node Interface (SNI) and one or several sub-distributors (outside distribution cabinets)

User Network Interface (UNI): interface between the terminal equipment and a network termination at which interface the access protocols apply

NOTE: From ITU-T Recommendation I.112 [15].

3.2   Abbreviations

NOTE: The schematic of figure 1 helps understanding many of the definitions related with relevant points and areas of the installation.

For the purposes of the present document, the following abbreviations apply:

ADSL	Asymmetrical Digital Subscriber Line
CATV	Common Antenna TeleVision
ENTI	External Network Test Interface
HFC	Hybrid Fibre/Coaxial
ICT	Information and Communication Technology
IEC	International Electrotechnical Commission
IPR	Intellectual Property Rights
ISDN	Integrated Services Digital Network
ITU	International Telecommunications Union
NTE	Network Terminating Equipment
NTP	Network Termination Point
POTS	Plain Old Telephony Service
PSTN	Public Switched Telephone Network
R&TTE	Radio and Telecommunications Terminal Equipment
SNI	Service Node Interface
UNI	User Network Interface
VDSL	Very high speed Digital Subscriber Line
xDSL	x (a number of) Digital Subscriber Line (technologies)

3.3 Schematic assistance
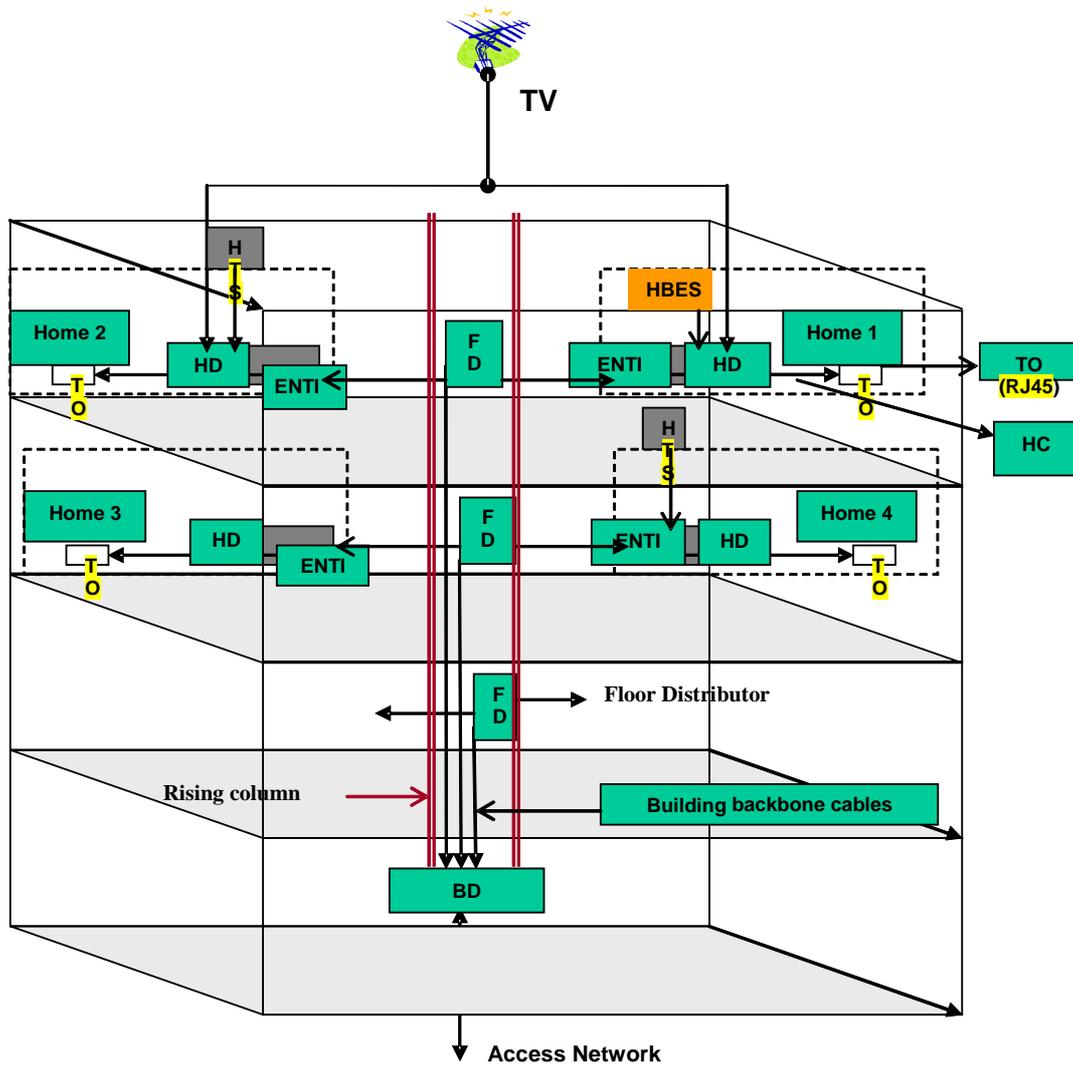
ENTI = External Network Test Interface
HTS = Home Technical Space
HD = Home Distributor
HBES = Home and Building Electronic Systems
TV = UHF/VHF or Satellite TeleVision
TO = Telecommunication Outlet (RJ45)
HC = Home Cable

Figure 1a: Typical building network

ENTI = External Network Test Interface
HTS = Home Technical Space
HD = Home Distributor
HES = Home Electronic System
TV = UHF/VHF or Satellite Television
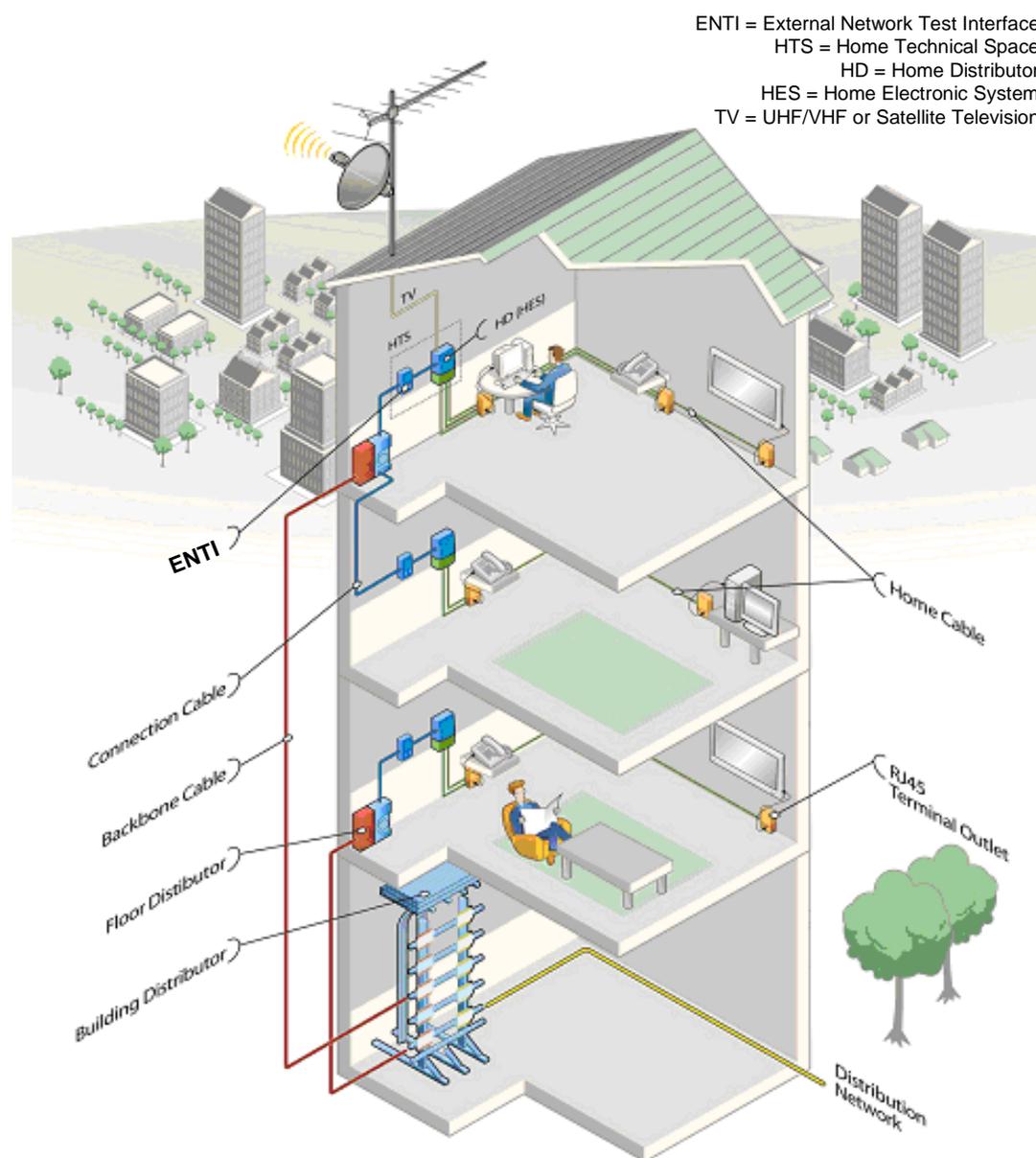
Figure 1b: Typical building network

4 Overview of the multi-part document

The present document is intended to provide and maintain an overview of all the other parts of the series to facilitate the complete, correct and updated consultation of the whole multi-part document.

NOTE 1: The following clauses give an overview of the different parts of this multi-part document. For detailed information each one of the parts has to be consulted.

NOTE 2: New parts may be created in the future and any changes will be reflected in the present document. In particular, the extension of the set of documents to cover wireless and installations and cabling in interconnected networks might be useful but needs additional collaboration from an extended base of experts.

This multi-part deliverable focuses on the best practice for cabling and installations independently from the ownership of these infrastructures. Should the ownership of the installations be a matter for analysis it is strongly recommended to take in consideration the EG 201 730 [5] series of documents which studies the regulatory implications associated to the definition of the NTP for different technologies.

> NOTE 3: Requirements for, and the definition of, NTP are specified in Universal Service (2002/22/EC) [4] and R&TTE (1999/5/EC) [1] Directives. See also the series of EG 201 730 [5] offering guidance on the requirements applicable to the NTP.

The installation in the context of the present set of documents and in line with the EN 50174 series of standards is associated to procedures for application of information technology cabling covering:

- design: the selection of cabling components and their configuration;

- specification: the detailed requirement for the cabling, its accommodation and associated building services addressing specific environment(s) identified within the premises together with the quality assurance requirements to be applied;

- implementation: the physical installation in accordance with the requirements of the specification;

- operation: the management of connectivity and the maintenance of transmission performance during the life of the cabling.

A mapping showing the correspondence between the parts of this multi-part deliverable and application cases and configurations is shown in clause 7.

4.1   Part 1: Overview, common and generic aspects

4.1.1   Sub-part 1: Generalities, common view of the set of documents

The present document.

4.1.2   Sub-part 2: Operators

This sub-part presents general information on "operators' networks".

EG 202 306 [6] (a report with a wide scope covering access technologies) is very useful but some relevant information is unlikely to be sufficiently updated. This and many more documents need an updating study guiding communications and installations experts.

4.1.3   Sub-part 3: Professional

This sub-part presents general information on "professional networks", i.e. within office premises, industrial premises, data centres and others.

4.1.4   Sub-part 4: Residential and small business

This sub-part presents general information on "residential networks" including multi-tenant user facilities.

4.2   Part 2: Legacy PSTN (POTS/analogue and ISDN/digital)

This subset of documents studies should cover the most common existing installations used for traditional telecommunications services.

4.2.1   Sub-part 1: Legacy operators

It is recognized that, although new technologies better fit users' needs, operators may be obliged to support some level of POTS or ISDN service.

As a result some installations from the past may still be in service and impact the availability of some types of services in the areas served by those installations. These infrastructures will be studied only as far, and in as much depth, as the workload of the experts allows.

4.2.2   Sub-part 2: Professional

This sub-part covers commercial and industrial premises together with hotels, airports and many other similar buildings where users are assumed to have common, better performing, networks.

4.2.3   Sub-part 3: Residential and small business

Unfortunately there is still a significant percentage of home installations that have been changed by the user and as a result restrict the capability of the infrastructure to support upgraded type of services. In some cases the only possibility for upgrading the installation will be a total renewal of the cabling and installation techniques.

This sub-part will refer to the relevant documents guiding on residential and small business installations and offering suggestions for upgrading the infrastructures. Existing POTS equipment installations, including references to EG 201 120, TBR 21 and ES 203 021 series as well as ISDN installations should be described. Possible enhancements to use DSL or Ethernet connections may be discussed. The detailed discussions on DSL and Ethernet connections and installations will be made in part 4.

4.3   Part 3: Legacy HFC networks

4.3.1   Sub-part 1: Operators

This sub-part studies "operators' networks" using HFC installations and cabling for broadband terminals communication systems.

4.3.2   Sub-part 2: Professional

This sub-part studies professional applications of HFC installations and cabling for broadband terminals communication systems, i.e. CATV infrastructures used for business networks.

This study will take in consideration the multiple applications and the different levels of requirement applicable to professional systems.

4.3.3   Sub-part 3: Residential and small business

This sub-part studies private and small business applications with HFC installations and cabling for broadband terminals communication systems, i.e. CATV infrastructures used for home or small business networks.

This study will take in consideration the multiple applications and technologies increasingly used by the consumer and the needs for the interconnection of different types of infrastructures.

4.4   Part 4: Balanced cabling networks

The sub-parts of TR 105 174-4 will discuss balanced cabling installations intended for broadband communications and HBES and the impact they have on services provided. It makes reference to standardization available and in development.

4.4.1 Sub-part 1: Operators

This sub-part studies installations and cabling for balanced cabling communications systems serving broadband terminals within "operators' networks" together with operators' and related premises.

4.4.2 Sub-part 2: Professional

This sub-part studies installations and cabling for balanced cabling communications systems serving broadband terminals and HBES within "professional" premises.

4.4.3 Sub-part 3: Residential and small business

This sub-part studies installations and cabling for balanced cabling communications systems serving broadband terminals and HBES within residential and small business premises.

4.5 Part 5: Optical fibre cabling networks

The sub-parts of TR 105 174-5 will discuss optical fibre installations and the impact they have on services provided. It makes reference to standardization available and in development. The significance of the different standards (and current work) in ETSI, CENELEC, IEC, and ITU-T shall be discussed.

4.5.1 Sub-part 1: Operators

This sub-part studies installations and cabling for optical fibre communication systems within "operators' networks" together with operators' and related premises.

The document needs to consider new agreements concerning different parts of the operator network and impact on optical fibre cabling, installation and interfaces.

4.5.2 Sub-part 2: Professional

This sub-part studies installations and cabling for optical fibre communication systems within "professional" premises.

The impact of the standards EN 50173-1, EN 50174-1, 2 and 3 on professional facilities will be studied.

4.5.3 Sub-part 3: Residential and small business

This sub-part studies installations and cabling for optical fibre communication systems within residential and small business premises.

The impact of FTTH, FTTP, FTTC and FTTx will be studied and the associated standards identified.

4.6 Part 6: Radio networks

The sub-parts of TR 105 174-6 will be based on the EG 200 053, updating ETR 053 (report on Radio Site Engineering) and will focus on discussions of the impact between installations and communications provided.

4.6.1 Sub-part 1: Operators

This sub-part studies installations and cabling for radio communication systems within "operators' networks" together with operators' and related premises.

4.6.2 Sub-part 2: Professional

This sub-part studies installations and cabling for radio communication systems within "professional" premises.

4.6.3   Sub-part 3: Residential and small business

This sub-part studies installations and cabling for radio communication systems within residential and small business premises.

4.7   Part 7: Power line networks

4.7.1   Sub-part 1: Operators

This sub-part studies installations and cabling for power line communication systems within "operators' networks" together with operators' and related premises.

4.7.2   Sub-part 2: Professional

This sub-part studies installations and cabling for power line communication systems within "professional" premises.

4.7.3   Sub-part 3: Residential and small business

This sub-part studies installations and cabling for power line communication systems within residential and small business premises.

5   Future developments in the series of documents

New parts may be created in the future and any changes will be reflected in the present document.

Annex A:
Generic information and guidance CENELEC standards

Table A.1 was copied from
http://www.cenelec.org/Cenelec/Technical+work/TC+web+sites/TC215/TC+215+Relationship+of+standards.htm and
offers generic information and guidance on CENELEC standards in the context of the present document. This
information may be updated directly on the CENELEC web page.

**Table A.1: Relationship between European standards on Information Technology Cabling
(including important clauses of these standards) produced by CENELEC TC215**

Building design phase	Cabling design phase	Planning phase	Implementation phase	Operation phase
EN 50310 [9] 5.2: Common bonding network (CBN) within a building 6.3: AC distribution system and bonding of the protective conductor (TN-S)	Series EN 50173 [7] or (and) EN 50098-1 [10] or (and) EN 50098-2 [10] or (and) Other application standards	EN 50174-1 [8] 4: Specification considerations 5: Quality assurance 7: Cabling administration and EN 50174-2 [8] 4: Safety requirements 5: General installation practices for metallic and optical fibre cabling 6: Additional installation practice for metallic cabling 7: Additional installation practice for optical fibre cabling and EN 50174-3 [8] and (for equipotential bonding) EN 50310 [9] 5.2: Common bonding network (CBN) within a building 6.3: AC distribution system and bonding of the protective conductor (TN-S)	EN 50174-1 [8] 6: Documentation 7: Cabling administration and EN 50174-2 [8] 4: Safety requirements 5: General installation practices for metallic and optical fibre cabling 6: Additional installation practice for metallic cabling 7: Additional installation practice for optical fibre cabling and EN 50174-3 [8] and (for equipotential bonding) EN 50310 [9] 5.2: Common bonding network (CBN) within a building 6.3: AC distribution system and bonding of the protective conductor (TN-S)	EN 50174-1 [8] 5: Quality assurance 7: Cabling administration 8: Repair and maintenance
NOTE: For HBES EN 50090-9-1 [11] applies.				

Table A.2 provides details of the standards referenced from table A.1.

Table A.2: EN Titles and cross-references

European Standard	Title / Remark	International cross-reference
EN 50098-1:1998 [10]	Customer premises cabling for Information Technology - Part 1: ISDN basic access	ISO/IEC 14709-1:1997 Ed 1 equivalent to EN 50098-1:1994
EN 50098-1:1998/A1:2002 [10]	NOTE: This amendment introduces the ISDN star-configuration in addition to the classical ISDN bus variants linking dedicated ISDN cabling with the principles of generic cabling of EN 50173-1.	ISO/IEC 14709-1:200X will align international standard with the EN
EN 50098-2:1996 [10]	Customer premises cabling for information Technology - Part 2: 2 048 kbit/s ISDN primary access and leased line network interface	ISO/IEC 14709-2:1998 Ed 1
EN 50173-1:2002 [7]	Information technology - Generic cabling systems - Part 1: General requirements and office areas	ISO/IEC 11801:2002 Ed 2
EN 50174-1:2000 [8]	Information technology - Cabling installation - Part 1: Specification and quality assurance	
EN 50174-2:2000 [8]	Information technology - Cabling installation - Part 2: Installation planning and practices inside buildings	
EN 50174-3:2003 [8]	Information technology - Cabling installation - Part 3: Installation planning and practices outside buildings	
EN 50310:2000 [9]	Application of equipotential bonding and earthing in buildings with information technology equipment	
EN 50346:2002 [12]	Information technology - Cabling installation - Testing of installed cabling	
EN 50090-9-2 [11]	Home and Building Electronic Systems (HBES) Part 9-1: Installation requirements - Generic cabling for HBES Class 1 Twisted Pair	

Annex B:
Mapping the parts to typical applications

B.1   Introduction

Figure B.1 shows an example of the inter-relationships between operator, professional and residential networks in a variety of premises and ownership situations. The conventional operator provision to residential or small business premises is shown as is a similar provision to a data centre. Multi-building industrial premises are shown with a professional network linking the buildings. Multi-campus premises are shown, which could be residential, small business or professional in nature with professional networks linking Campus A to Campus B.
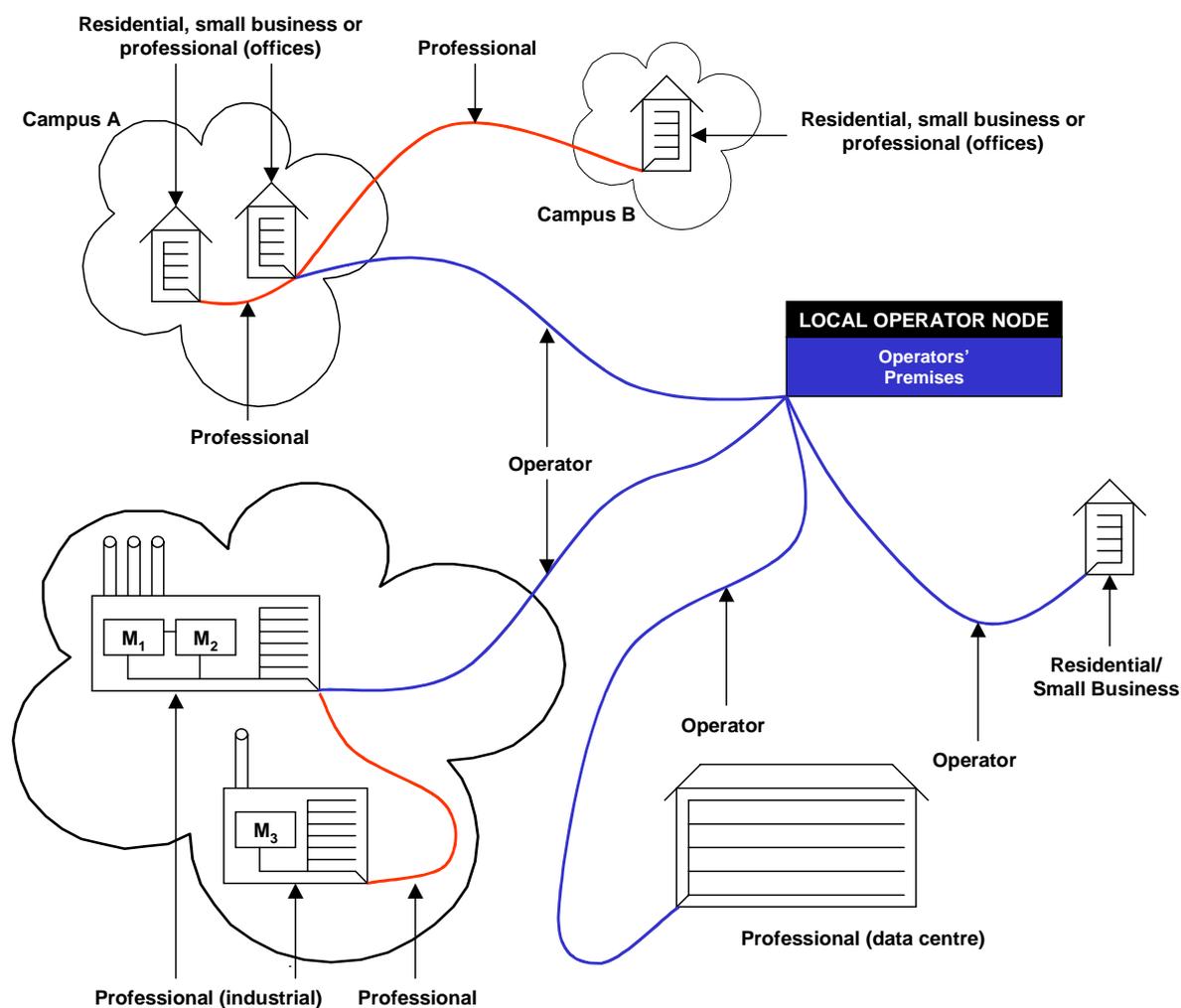
Figure B.1: Examples of networks and ownerships within premises

B.2 Present situation

Table B.1 describes the typical mapping of applications on cabling technologies in current use.

Table B.1: Application mapping on current cabling technologies

Support type ➔ / User to be served ➔ / Application ⬇	Unbalanced pair (see note 1) Group 1			Balanced pair (see note 2) Group 2			Coaxial Group 3			Fibre Group 4		
	Professional	Residential	Operators	Professional	Residential	Operators	Professional	Residential	Operators	Professional	Residential	Operators
Telephony (< 20 kHz)	--	XX	--	XXX	XXX	XXX	(red)	(red)	(red)	(red)	(red)	(red)
Data & voice ISDN (< 300 kHz)	--	X	--	XXX	XXX	XXX	(red)	(red)	(red)	(red)	(red)	(red)
Broadband < 2,2 MHz (ADSL2+)	--	0	--	XXX	XX	XX	(red)	(red)	(red)	(red)	(red)	(red)
Broadband < 12 MHz (VDSL1)	--	--	--	XX	X	XX	(red)	(red)	(red)	(red)	(red)	(red)
Broadband < 30 MHz (VDSL2)	--	--	--	XX	X	XX	(red)	(red)	(red)	(red)	(red)	(red)
Broadband 100 MHz	--	--	--	X	0	X	(red)	XXX	XXX	XXX	XXX	XXX
Broadband 250 MHz	--	--	--	X	--	X	(red)	XXX	XXX	XXX	XXX	XXX
Broadband 600 MHz	(red)	(red)	(red)	--	(red)	--	(red)	XXX	XXX	XXX	XXX	XXX
Broadband 900 MHz	(red)	(red)	(red)	--	(red)	--	(red)	XXX	XXX	XXX	XXX	XXX
Broadband 2,2 GHz	(red)	(red)	(red)	--	(red)	--	(red)	XXX	XXX	XXX	XXX	XXX

NOTE 1: Cables having no defined balance characteristics.
NOTE 2: Cables having defined balance characteristics.

Key	
--	Not used
0	No application support
X	Minimum application support
XX	Limited application support (e.g. length restrictions may apply)
XXX	General application support
(red)	Not used due to technical or economical reasons

B.3 Future converging scenarios

Table B.2 describes the typical mapping of applications on cabling technologies for future use.

Table B.2: Application mapping on future cabling technologies

Support type ➜	Professional			Residential			Operators		
User to be served ➜ / Application ⬇	Balanced pair (see note)	Coaxial	Fibre	Balanced pair (see note)	Coaxial	Fibre	Balanced pair (see note)	Coaxial	Fibre
Telephony (< 20 kHz)	XXX			XXX			XXX		
Data & voice ISDN (< 300 kHz)	XXX			XXX			XXX		
Broadband < 2,2 MHz (ADSL2+)	XXX			XXX			XXX		
Broadband < 12 MHz (VDSL1)	XXX			XXX			XXX		
Broadband < 30 MHz (VDSL2)	XXX			XXX			XXX		
Broadband 100 MHz	XXX		XXX	XXX	XXX	XXX	XXX	XXX	XXX
Broadband 250 MHz	XXX		XXX	XXX	XXX	XXX	X	XXX	XXX
Broadband 600 MHz	XXX		XXX	XXX	XXX	XXX		XXX	XXX
Broadband 900 MHz	XX		XXX	XXX	XXX	XXX		XXX	XXX
Broadband 2,2 GHz	--		XXX	--	XXX	XXX		XXX	XXX
NOTE: The level of support depends upon the performance of the cables used.									

Key	
--	Not used
0	Not recommended
X	Not preferred
XX	Recommended
XXX	Recommended and preferred
🟥	Not used due to technical or economical reasons

Annex C:
Setting priorities

C.1   Importance of standardization

Regardless of where they are, customers should, in principle, perceive the same quality of telecommunication services.

This applies to quality of service (QoS) and the transmission rates. The installation and operation of telecommunication lines are essential elements to determine the performance of the connections.

Customers are primarily interested in the prices and services specified in the "General Terms and Conditions" of their carrier.

Moreover, customers are interested in the performance and attributes of their terminal devices, such as features, ease of use. Access and installation technologies (hardware and software) are issues more concerning professionals but increasingly invading the "do-it yourself markets". In this context, public available standardization is increasingly important for the distribution channels to satisfy the users' needs still respecting the state of the art.

In contrast, customers are mostly indifferent to operators' internal processes and the technology used in the operator's infrastructure (access and core networks).

C.2   Way forward

The "consideration of benefits for the customer (customer perspective)" is the crucial core element for the standardization.

Tasks suggested:

A team of experts should find out which elements (e.g. technical developments, processes, laws or contractual terms and conditions) have a particularly strong impact on customer benefits.

Furthermore, the elements proposed should be examined with regard to their stability over time.

   NOTE: High stability is determined by technologies and developments with low rates of change. Standardization
            can have a stabilization effect. Only those elements for which high stability can be envisaged should be
            taken with high priority into consideration for the standardization work.

A portfolio analysis using the elements entered on the figure C.1 is helpful in finding possible standardization elements.
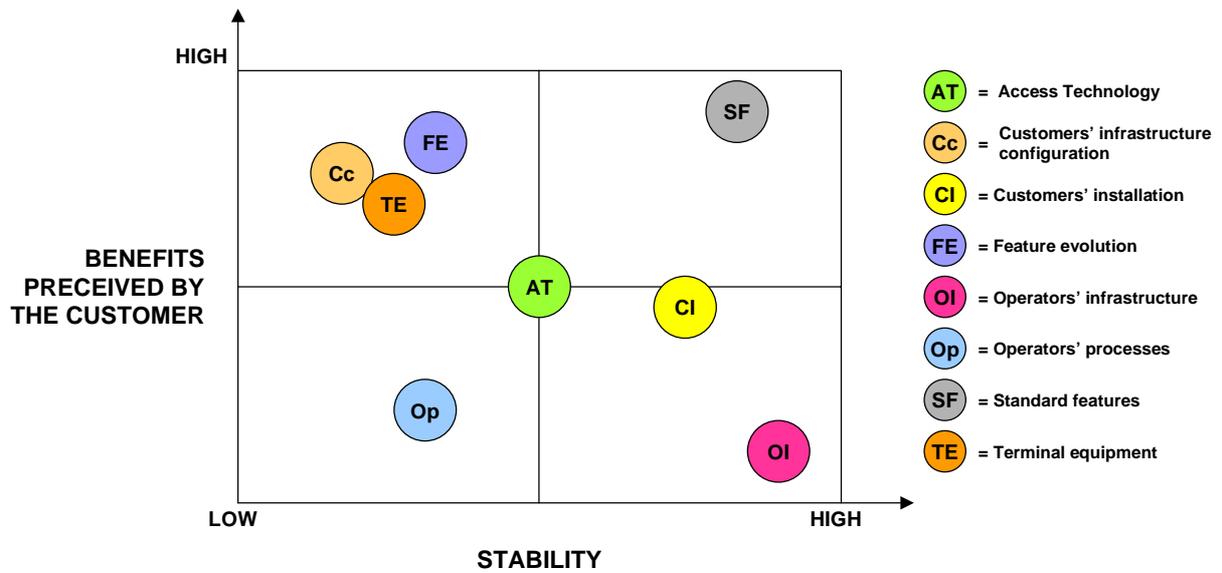
Figure C.1: Some changing areas determining communications systems and services, their stability and the corresponding benefits perceived by the consumer

C.3   General roadmap

For guidance, the initial general roadmap of this multi-part document is described in the following table.

Document Reference	Need identified	Date of creation of Work Item	Date Work Item adopted by Technical Body	Start of work date	ToC and Scope	Stable Draft	WG approval	Technical Body approval	Rapporteur
Part 1: Overview, common and generic aspects									
Sub-part 1: Generalities, common view of the set of documents	2005-04-11	2005-04-11	2005-04-11	2005-04-11	2005-04-11	2006-03-17	2006-03-21	2006-04-07	France Télécom
Sub-part 2: Operators	2005-10-11	2005-10-11	2005-10-30	2005-10-11	2006-05-19	2006-09-15	2006-11-10	2006-11-23	France Télécom
Sub-part 3: Professional	2005-10-11	2005-10-11	2005-10-30	2005-10-11	2006-05-19	2006-09-15	2006-11-10	2006-11-23	France Télécom
Sub-part 4: Residential and small business	2005-10-11	2005-10-11	2005-10-30	2005-10-11	2006-05-19	2006-09-15	2006-11-10	2006-11-23	France Télécom
Part 2: Legacy PSTN (POTS/analogue and ISDN/digital)									
Sub-part 1: Operators	2005-10-11	Pending	Pending	Pending	Pending	Pending	Pending	Pending	Deutsche Telekom
Sub-part 2: Professional	2005-10-11	Pending	Pending	Pending	Pending	Pending	Pending	Pending	Deutsche Telekom
Sub-part 3: Residential and small business	2005-10-11	Pending	Pending	Pending	Pending	Pending	Pending	Pending	Deutsche Telekom
Part 3: Legacy HFC networks									
Sub-part 1: Operators	2005-10-11	Pending	Pending	Pending	Pending	Pending	Pending	Pending	Pending
Sub-part 2: Professional	2005-10-11	Pending	Pending	Pending	Pending	Pending	Pending	Pending	Pending
Sub-part 3: Residential and small business	2005-10-11	Pending	Pending	Pending	Pending	Pending	Pending	Pending	Pending
Part 4: Balanced cable networks									
Sub-part 1: Operators	2005-10-11	2005-11-25	2005-11-25	2005-11-25	2006-05-19	2006-09-15	2006-11-10	2006-11-23	France Télécom
Sub-part 2: Professional	2005-10-11	2005-11-25	2005-11-25	2005-11-25	2006-05-19	2006-09-15	2006-11-10	2006-11-23	France Télécom
Sub-part 3: Residential and small business	2005-10-11	2005-11-25	2005-11-25	2005-11-25	2006-05-19	2006-09-15	2006-11-10	2006-11-23	France Télécom
Part 5: Optical fibre cable networks									
Sub-part 1: Operators	2005-10-11	2005-11-25	2005-11-25	2005-11-25	2006-05-19	2006-09-15	2006-11-10	2006-11-23	Huber + Suhner AG
Sub-part 2: Professional	2005-10-11	2005-11-25	2005-11-25	2005-11-25	2006-05-19	2006-09-15	2006-11-10	2006-11-23	Huber + Suhner AG
Sub-part 3: Residential and small business	2005-10-11	2005-11-25	2005-11-25	2005-11-25	2006-05-19	2006-09-15	2006-11-10	2006-11-23	Huber + Suhner AG
Part 6: Radio networks									
Sub-part 1: Operators	2005-10-11	Pending	Pending	Pending	Pending	Pending	Pending	Pending	Pending
Sub-part 2: Professional	2005-10-11	Pending	Pending	Pending	Pending	Pending	Pending	Pending	Pending
Sub-part 3: Residential and small business	2005-10-11	Pending	Pending	Pending	Pending	Pending	Pending	Pending	Pending
Part 7: Power line networks									
Sub-part 1: Operators	2005-10-11	Pending	Pending	Pending	Pending	Pending	Pending	Pending	Pending
Sub-part 2: Professional	2005-10-11	Pending	Pending	Pending	Pending	Pending	Pending	Pending	Pending
Sub-part 3: Residential and small business	2005-10-11	Pending	Pending	Pending	Pending	Pending	Pending	Pending	Pending

Annex D:
Example of residential building networks: a special part of communication networks

A residential network using the technologies referred in the table would be correctly implemented within the building and the components, equipment and devices would be properly installed and maintained according to figure 1.

Residential building networks using the technologies referred in the table should be classified to define all technical user solutions as detailed in table D.1.

Table D.1: Classification of residential building network Table

Cable level definition	Backbone cabling	Backbone applications	"In Home" cabling system from ENTI to the user outlet	BCT	ICT	Applications
Level 0	POTS and ISDN	POTS and ISDN	POTS and ISDN		x	POTS and ISDN Universal Service
Level 1	Unscreened	ADSL 1 and 2	Unscreened Grade1 (see note)		xx	< 1 Gb/s ADSL 1 and 2
Level 2	Screened	ADSL 1 and 2 VDSL 1 and 2	Screened Grade 1 (see note)		xxx	< 1 Gb/s ADSL 1 and 2 VDSL 1 and 2
Level 3	Screened	ADSL 1 and 2 VDSL 1 and 2	Screened Grade 2 (see note)	x	xxx	< 1 Gb/s ADSL 1 and 2 VDSL 1 and 2
Level 4	Screened	ADSL 1 and 2 VDSL 1 and 2	Screened Grade 3 (see note)	xx	xxx	< 10 Gb/s ADSL 1 and 2 VDSL 1 and 2 VHF/UHF TV
Level 5	Optical fibre	IP	Optical cable Grade 4 (see note)		xxxx	> 10 Gb/s ADSL 1 and 2 VDSL 1 and 2 DSL TV
NOTE: These terms may be found in UTE C 90483.						

History

Document history		
V1.1.1	September 2006	Publication