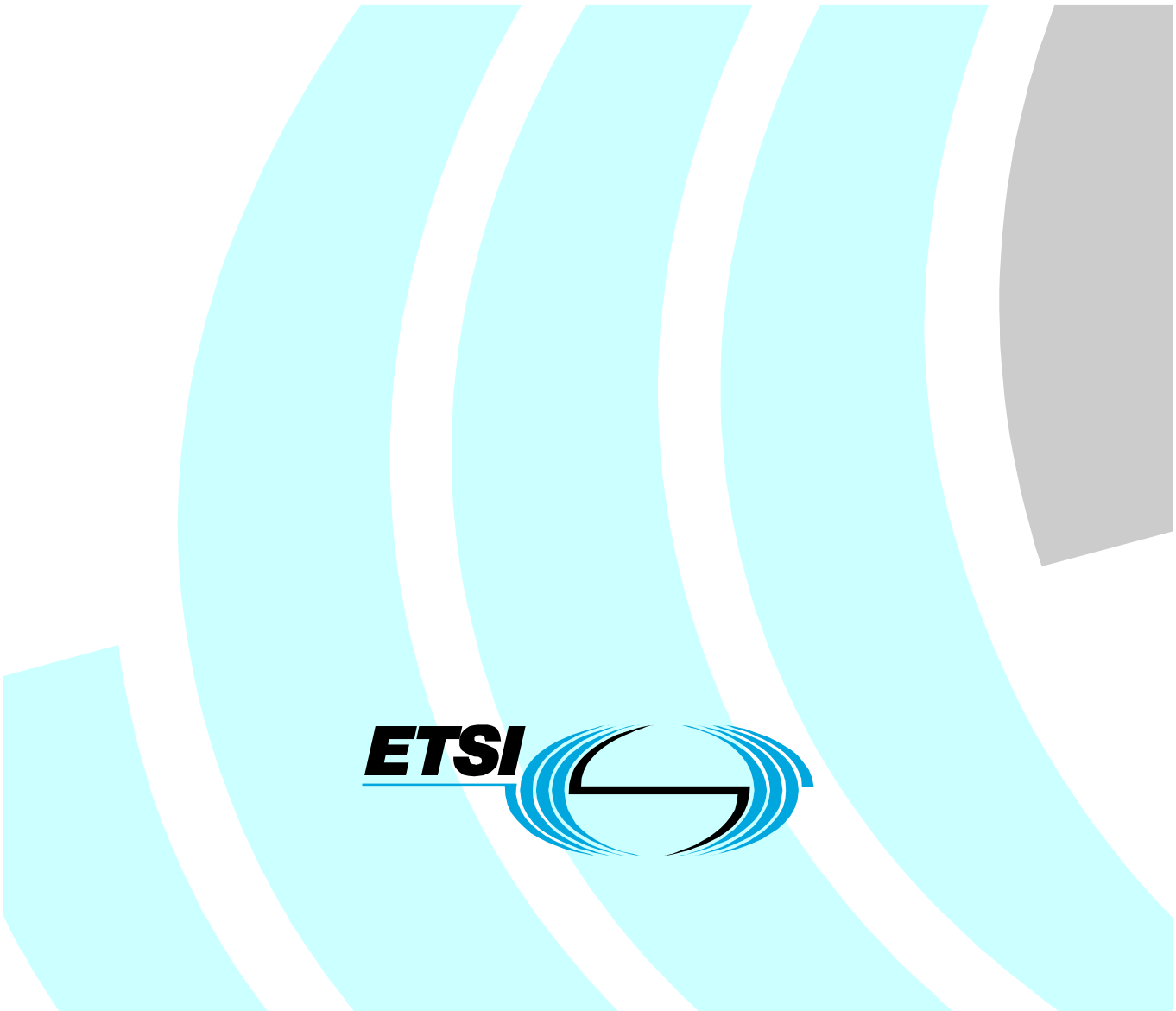
ETSI SR 002 211 V1.1.1 (2004-02)

Special Report

List of standards and/or specifications for electronic communications networks, services and associated facilities and services; in accordance with Article 17 of Directive 2002/21/EC



Reference
DSR/OCG-00011

Keywords
interoperability, interworking, regulation

ETSI

650 Route des Lucioles
F-06921 Sophia Antipolis Cedex - FRANCE

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

Siret N° 348 623 562 00017 - NAF 742 C
Association à but non lucratif enregistrée à la
Sous-Préfecture de Grasse (06) N° 7803/88

Contents

Intellectual Property Rights 7
Foreword 7
Introduction 7
1 Scope 9
2 References 9
3 Definitions and abbreviations 12
3.1 Definitions 12
3.2 Abbreviations 14
4 Interpretation of requirements within EU regulatory framework directives 18
4.1 Introduction 18
4.2 New EU Regulatory Framework 18
4.2.1 Basic principles 18
4.2.2 Convergence and the new regulatory framework 19
4.2.3 New regulatory framework package 19
4.2.4 Interoperability 20
4.2.4.1 Application Program Interfaces (APIs) 21
4.2.4.1.1 Open platforms 21
4.2.4.1.2 Open standards 21
4.2.4.1.3 Open API standards 21
4.2.5 Reference Functional Architecture models 21
4.3 Standardization and regulation 23
4.3.1 Interaction 23
4.3.2 Standardization as a regulatory "tool" 24
4.3.3 New challenges for regulation 24
4.3.3.1 Example#1 - Mobile networks 24
4.3.3.2 Example#2 - IPv6 24
4.3.3.3 Example#3 - NGN 25
4.4 Relationship to Radio Equipment and Telecommunications Terminal Equipment (R&TTE) Directive 1999/5/EC 25
4.5 Directives repealed by the new Regulatory Framework 28
5 Information Society services 28
6 Analysis of Framework Directive (2002/21/EC) with respect to standardization 30
6.1 Introduction 30
6.2 Rationale 31
6.3 Interpretation 32
6.3.1 Article 8: Policy objectives and regulatory Principles 32
6.3.2 Article 17: Standardization 33
6.3.3 Article 18: Interoperability of digital interactive television services 34
6.3.4 Article 19: Harmonization procedures 35
6.3.5 Article 26: Repeal 35
6.3.6 Article 27: Transitional measures 36
6.3.7 Recommendation 4 of R-LAN access to public ECNs and ECSs (2003/203/EC) 36
6.4 Justification 36
6.5 Caveats 37
6.5.1 Article 2 37
6.5.2 Article 18 37
7 Analysis of Authorisation Directive (2002/20/EC) with respect to standardization 37
7.1 Introduction 37
7.2 Rationale 39
7.3 Interpretation 39
7.3.1 Article 4: Minimum list of rights derived from the general authorization 39

7.3.2 Article 6: Conditions attached to the general authorization and to the rights of use for radio frequencies and for numbers, and specific obligations 40
7.3.3 Annex 40
7.4 Justification 41
7.5 Caveats 42
7.5.1 General 42
7.5.2 Lawful interception standardization 42

8 Analysis of Access Directive (2002/19/EC) with respect to standardization 42
8.1 Introduction 42
8.2 Rationale 44
8.3 Interpretation 45
8.3.1 Article 4.2: Rights and obligations for undertakings 45
8.3.2 Article 5: Powers and responsibilities of the national regulatory authorities with regard to access and interconnection 45
8.3.3 Article 7: Review of former obligations for access and interconnection 46
8.3.4 Article 9: Obligation of transparency 46
8.3.5 Article 12: Obligations of access to, and use of, specific network facilities 47
8.3.6 Annex I: Conditions for access to digital television and radio services broadcast to viewers and listeners in the community 48
8.3.7 Annex II: Minimum list of items to be included in a reference offer for unbundled access to thetwisted metallic pair local loop to be published by notified operators 49
8.4 Justification 50
8.5 Caveats 50
8.5.1 General 50

9 Analysis of the Universal Service Directive (2002/22/EC) with respect to standardization 51
9.1 Introduction 51
9.2 Rationale 52
9.3 Interpretation 53
9.3.1 Article 4: Provision of access at a fixed location 53
9.3.2 Article 7: Special measures for disabled users 54
9.3.3 Article 10: Control of expenditure 54
9.3.4 Article 11: Quality of service of designated undertakings 55
9.3.5 Article 15: Review of the scope of universal service 55
9.3.6 Article 16: Review of obligations 56
9.3.7 Article 18: Regulatory controls on the minimum set of leased lines 56
9.3.8 Article 19: Carrier selection and carrier pre-selection 57
9.3.9 Article 21: Transparency and publication of information 57
9.3.10 Article 22: Quality of Service (QoS) 57
9.3.11 Article 23: Integrity of the network 58
9.3.12 Article 24: Interoperability of consumer digital television equipment 58
9.3.13 Article 25: Operator assistance and directory enquiry services 58
9.3.14 Article 26: Single European emergency call number 59
9.3.15 Article 27: European telephone access codes 59
9.3.16 Article 28: Non-geographic numbers 60
9.3.17 Article 29: Provision of additional facilities 60
9.3.18 Article 30: Number portability 60
9.3.19 Article 35: Technical adjustment 61
9.3.20 Annex I: Description of facilities and services referred to in Articles 10 and 29 61
9.3.21 Annex II: Information to be published in accordance with Article 21 62
9.3.22 Annex III: Quality of Service parameters 63
9.3.23 Annex VI: Interoperability of digital consumer equipment referred to in Article 24 63
9.3.24 Annex VII: Conditions for the minimum set of leased lines referred to in Article 18 64
9.3.25 Annex to Commission Decision 2003/548/EC: List of standards and/or specifications for electronic communications networks, services and associated facilities and services 65
9.4 Justification 66
9.5 Caveats 68
9.5.1 General 68
9.5.2 Article 4 68
9.5.3 Article 21 68
9.5.4 Article 30 68

9.5.5 Annex II 68

10 Analysis of Directive on privacy and electronic communications (2002/58/EC) with respect to standardization 69
10.1 Introduction 69
10.2 Rationale 70
10.3 Interpretation 71
10.3.1 Article 3: Services concerned 71
10.3.2 Article 4: Security 71
10.3.3 Article 5: Confidentiality of the communications 71
10.3.4 Article 6: Traffic data 72
10.3.5 Article 7: Itemized billing 72
10.3.6 Article 8: Presentation and restriction of calling and connected line identification 72
10.3.7 Article 9: Location data other than traffic data 73
10.3.8 Article 10: Exceptions 74
10.3.9 Article 11: Automatic call forwarding 74
10.3.10 Article 13: Unsolicited communications 74
10.3.10.1 Definitions of SPAM as applied to email 75
10.3.11 Article 14: Technical features and standardization 75
10.3.12 Article 15: Application of certain provisions of Directive 95/46/EC 75
10.4 Justification 76
10.5 Caveats 76
10.5.1 General 76
10.5.2 Articles 6, 7 and 8 77
10.5.3 Article 11 77
10.5.4 Article 13 77

Annex A: List of standards and/or specifications 78

A.1 Introduction 78
A.1.1 Internet specifications 78
A.1.2 Structure of tables 79

A.2 Authorisation Directive (2002/20/EC) 79
A.2.1 Lawful Interception 79

A.3 Access Directive (2002/19/EC) 79
A.3.1 Application Program Interfaces (APIs) 79
A.3.2 Interconnection 82
A.3.3 Access to network facilities and services 88
A.3.4 Unbundled Access to the Local loop 91
A.3.5 Leased lines 92
A.3.5.1 Analogue leased lines 92
A.3.5.2 Digital Leased Lines 93
A.3.5.3 Bitstream access 94

A.4 Universal Service Directive (2002/22/EC) 94
A.4.1 Access to PATS at a fixed location and telephony tones 94
A.4.2 Special measures for disabled users 97
A.4.3 Control of expenditure 97
A.4.3.1 Outgoing Call Barring 98
A.4.3.2 Incoming Call Barring 99
A.4.3.3 Advice of Charge (AoC) 99
A.4.4 Quality of Service (QoS) 100
A.4.4.1 Quality of Service (parameters) 101
A.4.4.2 Grade of Service 102
A.4.5 Carrier selection and carrier pre-selection 102
A.4.6 Transparency of prices and tariffs 103
A.4.7 Integrity of the network 103
A.4.8 Interoperability of consumer television equipment 104
A.4.9 Directory enquiry services 104
A.4.10 Single European Emergency Call Number 105
A.4.10.1 Access to Emergency Services 105
A.4.10.2 Caller location 106

A.4.11 European telephone access code ("3883") 106
A.4.12 Non-geographic numbers 107
A.4.13 Provision of additional facilities 107
A.4.13.1 DTMF 107
A.4.13.2 Calling-Line Identification Presentation (CLIP) 108
A.4.13.3 Calling-Line Identification Restriction (CLIR) 109
A.4.14 Number portability 110

A.5 Directive on privacy and electronic communications (2002/58/EC) 111
A.5.1 Security 111
A.5.1.1 Security Analysis 111
A.5.1.2 Network Information Security (NIS) 112
A.5.2 Presentation and Restriction of Calling and Connected line Identification 113
A.5.2.1 Calling-Line Identification Presentation (CLIP) 113
A.5.2.2 Calling-Line Identification Restriction (CLIR) 114
A.5.3 Location data for public telephone services 115
A.5.4 Automatic Call Forwarding 115
A.5.5 Unsolicited communications 116
A.5.5.1 Anonymous Call Rejection 116
A.5.5.2 Consumer equipment - SIM card 117

Annex B: Human Factors 118

B.1 General 118

B.2 Standards and guidelines for disabled access to ICT 118

Annex C: Areas for future standardization 120

C.1 Introduction 120

C.2 Modelling of the new regulatory regime for the NGN 120
C.2.1 Actors and actions in the NRR 120
C.2.2 Base NRR model 122
C.2.3 Attributes and operations derived from NRR 125
C.2.3.1 Extension of base ECS model 125
C.2.3.2 Extension of base ECN model 125
C.2.4 Role of standards in respect of the NRR model 127

Annex D: Full list of Articles by Directive 128

Annex E: Main changes from the previous EU regulatory regime 136

E.1 General authorization regime 136

E.2 Procedures to determine effective competition 136

E.3 Markets defined according to competition law principles 136

E.4 Ex-ante regulation 138

E.5 Definition of SMP 138

E.6 Harmonization goals 138

E.7 Recognition of only two fundamental types of providers 138
E.7.1 Electronic communications networks (ECNs) and providers of Electronic Communications Services (ECSs) 139

Annex F: Standards and Specifications 141

Annex G: Bibliography 143

History 144

Intellectual Property Rights

IPRs essential or potentially essential to the present document may have been declared to ETSI. The information pertaining to these essential IPRs, if any, is publicly available for **ETSI members and non-members**, and can be found in ETSI SR 000 314: *"Intellectual Property Rights (IPRs); Essential, or potentially Essential, IPRs notified to ETSI in respect of ETSI standards"*, which is available from the ETSI Secretariat. Latest updates are available on the ETSI Web server (http://webapp.etsi.org/IPR/home.asp).

Pursuant to the ETSI IPR Policy, no investigation, including IPR searches, has been carried out by ETSI. No guarantee can be given as to the existence of other IPRs not referenced in ETSI SR 000 314 (or the updates on the ETSI Web server) which are, or may be, or may become, essential to the present document.

Foreword

This Special Report (SR) has been produced by Advisory Committee Operational Co-ordination Group (OCG).

NOTE: The SR type of deliverable was chosen to publish the contents of the study because the information is not specifically technical and is an integration of information from many sources. The current version of the present document was published after endorsement by the ETSI Operational Co-ordination Group, which represents all technical bodies of ETSI.

Warning

The main section of the present document covers background explanation regarding the Framework Directives (and specific Directives) and provides the rationale, interpretations and also the justifications that have been used as the basis for preparing the revised list of standards under Article 17 of the Framework Directive [3]. The list of standards as currently included within Annex A may be subject to revision based upon agreement to the interpretations provided in clauses 6 through 10.

Introduction

EC mandate M/328 invited the European Standards Organisations (ESOs), CEN, CENELEC and ETSI, to analyse the existing list of standards/specifications published in the Official Journal of the European Communities (OJEC) [28] at the end of 2002 in support of Article 17 of the Framework Directive (2002/21/EC [3]). In addition the mandate requested the ESOs to propose revisions to the list where necessary, these revisions to take into account the technology neutral definitions of electronic communications services and networks within the scope of the new regulatory framework.

- Document structure - Guidance to readers:
  - The present document has been structured to show the process followed to arrive at the list of standards and is further explained below.
- Clause 4: Background explanatory text:
  - General explanation of previous legislation and need for new framework.
  - Highlights the previous EU regulatory regime of sixteen (16) Directives reduced to just five (5) Directives
  - Relationship with other Directives
- Clause 5: Information Society services:
  - General explanation of what is meant by, and included within Information Society services.

- Clauses 6 through 10: Analysis of new regulatory framework Directives:
  - There are sections for each Directive and within those are sub-sections covering:
    1) **Introduction:** Outline of the purpose and objectives that the Directive introduces;
    2) **Rationale:** Identification of those Articles that have relevance to standardization and Article 17 Framework Directive (2002/21/EC [3]);
    3) **Interpretation:** With a view to those Articles selected under the rationale, an interpretation has been provided in an attempt to explain the intent of the requirements and any measures required from a standardization perspective. In some instances the text of the Article is not clear and therefore questions have been identified for further clarification from Commission Services;
    4) **Justification:** Having regard to the interpretation of each Article, the items included within the justification table are a result of the exercise to identify those areas where standardization could assist NRAs in enabling competition when performing their tasks of implementing national regulation and when dealing with disputes relating to ECNs and/or ECSs.
    5) **Caveats:** Where the interpretation of each Article has raised uncertainty these uncertainties are presented as caveats against the justifications made in clause 4.

It should be appreciated that standardization has a role to play, but is only one of the tools available to NRAs. A means, or facility, to provide arbitration in the case of disputes at national and pan-European level will also need to be addressed.

- Annexes:
- Annex A contains the Article 17 Framework Directive (2002/21/EC [3]) list of standards that are justified under the new EU Regulatory Framework to stimulate competition within the various markets. The role of standards within the new EU Regulatory Framework is two fold:
  1) To provide NRAs with the tools to stimulate competition where deemed necessary - as industry agreed/adopted standards are usually developed in advance of market deployment and are therefore an essential means to facilitate harmonized implementation of an interface, protocol or service prior to deployment within an ECN or ECS.
  2) Standards may be a useful tool to NRAs in matters of dispute or in correcting distortion of the market.
- Annex B contains those standards and specifications specific to Human Factors assisting in the access to and support of services by all members of the European Community, whether young or old, able bodied, partially or fully disabled.
- Annex C contains the areas for future standardization, identifying those areas requiring further development to support the specific justifications identified under each of the Directives.
- Annex D contains the full list of all Articles from each Directive with indication of why specific Articles had been selected (Y) to be included within the rationale sub-section in the main text. This also highlights, for information, those Articles not included (N).
- Annex E contains an overview of the main changes from the previous EU Regulatory regime.
- Annex F provides an explanantion of the different types of standards and specifications and identifies the level by which they are approved and voted upon.

1 Scope

The present document is the result of analysis of the existing list of standards/specifications published in the OJEC at the end of 2002 in support of Article 17 of the Framework Directive (2002/21/EC [3]). The present document proposes a first revision of the Article 17 list of standards to encourage the harmonized provision of networks and services, to the extent strictly necessary to ensure interoperability of services, and to improve freedom of choice for users under the new regulatory framework for electronic communications services, networks and associated facilities and services.

2 References

For the purposes of this Special Report (SR) the following references apply:

[1] Directive 2002/19/EC of the European Parliament and of the Council on access to, and interconnection of, electronic communications networks and associated facilities (Access Directive - OJ L 108, 24.04.2002).

[2] Directive 2002/20/EC of the European Parliament and of the Council on the authorization of electronic communications networks and services (Authorisation Directive - OJ L 108, 24.04.2002).

[3] Directive 2002/21/EC of the European Parliament and of the Council on a common regulatory framework for electronic communications networks and services (Framework Directive - OJ L 108, 24.04.2002).

[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 - OJ L 108, 24.04.2002).

[5] Directive 2002/58/EC of the European Parliament and of the Council of 12 July 2002 concerning the processing of personal data and the protection of privacy in the electronic communications sector (Directive on privacy and electronic communications - OJ L 201, 31.07.2002).

[6] Commission Recommendation 2000/417/EC of 25 May 2000 on unbundled access to the local loop: enabling the competitive provision of a full range of electronic communications services includingbroadband multimedia and high-speed Internet (OJ L 156, 29.06.2000).

[7] Regulation EC/2887/2000 of the European Parliament and of the Council of 18 December 2000 on unbundled access to the local loop (OJ L 336, 30.12.2000).

[8] Directive 95/47/EC of the European Parliament and of the Council of 24 October 1995 on the use of standards for the transmission of television signals (Television standards Directive - OJ L 281, 23.11.1995).

[9] 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.

[10] Commission Directive 2002/77/EC of 16 September 2002 on competition in the markets for electronic communications networks and services (OJ L 249, 17.09.2002).

[11] Decision 676/2002/EC of the European Parliament and of the Council of 7 March 2002 on a regulatory framework for radio spectrum policy in the European Community (Radio Spectrum Decision - OJ L108, 24.04.2002).

[12] Commission Recommendation 2003/311/EC of 11 February 2003 on relevant product and service markets within the electronic communications sector susceptible to *ex ante* regulation in accordance with Directive 2002/21/EC of the European Parliament and of the Council on a common regulatory framework for electronic communication networks and services (C(2003)497, OJ L 114).

[13] Commission guidelines 2002/C 165/03 of 11 July 2002 on market analysis and the assessment of significant market power under the Community regulatory framework for electronic communications networks and services.

[14] Commission Recommendation 2003/203/EC of 20 March 2003 on the harmonization of the provision of public R-LAN access to public electronic communications networks and services in the Community (OJ L 078).

[15] Commission Decision 2003/548/EC of 24 July 2003 on the minimum set of leased lines with harmonized characteristics and associated standards referred to in Article 18 of the Universal Service Directive (OJ L 186, 25.07.2003, p. 43).

[16] Commission Directive 90/388/EEC of 28 June 1990 on competition in the markets for telecommunications services (OJ C 257).

[17] Council Directive 90/387/EEC of 28 June 1990 on the establishment of the internal market for telecommunications services through the implementation of open network provision (OJ C 39).

[18] Directive 95/51/EC of 18 October 1995 amending Directive 90/388/EEC with regard to the abolition of the restrictions on the use of cable television networks for the provision of already liberalized telecommunications services (OJ L 256, 26.10.1995, p. 49).

[19] Commission Directive 96/2/EC of 16 January 1996 amending Directive 90/388/EEC with regard to mobile and personal communications (OJ L 20, 26.01.1996, p. 59).

[20] Commission Directive 96/19/EC of 13 March 1996 amending Directive 90/388/EEC with regard to the implementation of full competition in telecommunications markets (OJ 174, 22.03.1996, p. 13).

[21] Commission Recommendation 2003/558/EC of 25 July 2003 on the processing of caller location information in electronic communication networks for the purpose of location-enhanced emergency call services (OJ L 189, 29.07.2003, p. 49).

[22] Directive 98/10/EC of the European Parliament and the Council of 26 February 1998 on the application of Open Network Provision (ONP) to voice telephony and on universal service for telecommunication in a competitive environment (OJ L 101, 01.04.1998, p. 24), as amended by Commission Decision 2001/22/EC of 22 December 2000 on amendment of Annex III of the Directive 98/10/EC of the European Parliament and the Council (OJ L 5, 10.01.2001, p. 12).

[23] Commission Directive 1999/64/EC of 23 June 1999 amending Directive 90/388/EEC in order to ensure that telecommunications networks and cable TV networks owned by a single operator are separate legal entities (OJ L 175, 10.07.1999, p. 39).

[24] Council Directive 92/44/EEC of 5 June 1992 on the application of open network provision to leased lines (OJ L 165, 19.06.1992, p. 27), as amended by Directive 97/51/EC of the European Parliament and the Council amending Council Directives 90/387/EEC and 92/44/EEC for the purpose of adaptation to a competitive environment in telecommunications (OJ L 295, 29/10/1997, p. 23), as amended by Commission Decision 98/80/EC of 7 January 1998 on amendment of Annex II to Council Directive 92/44/EEC (OJ L 14, 20.01.1998, p. 27).

[25] Commission Directive 94/46/EC of 13 October 1994 amending Directive 88/301/EEC and Directive 90/388/EEC in particular with regard to satellite communications (OJ L 268, 19.10.1994, p. 15).

[26] Directive 97/66/EC of the European Parliamant and of the Council of 15 December 1997 concerning the processing of personal data and the protection of privacy in the telecommunications sector (OJ L 24, 30.01/1998, p. 1).

[27] Directive 95/46/EC of the European Parliament and of the Council of 24 October 1995 on the protection of individuals with regard to the processing of personal data and on the free movement of such data (OJ L 281, 23.11.1995, p. 31).

[28] List of standards and/or specifications for electronic communications networks, services and associated facilities and services (OJ C 331, 31.12.2002, p. 32).

[29] ETSI SR 002 298 (V1.1.1): "Response from CEN and ETSI to the "Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions: Network and Information Security: Proposal for a European Policy Approach".

[30] ETSI TR 102 282: "Standardization Work Programme in support of digital interactive television and the effective implementation of Article 18 of Directive 2002/21/EC".

[31] Directive 98/34/EC of the European Parliament and of the Council laying down a procedure for the provision of information in the field of technical standards and regulations and of rules on information society services

[32] Coucil Decision 91/396/EEC of 29 July 1991 on the introduction of a single European emergency call number.

[33] Council Decision 92/264/EEC of 11 May 1992 on the introduction of a standard international telephone access code in the Community.

[34] Directive 97/13/EC of the European Parliament and of the Council of 10 April 1997 on a common framework for general authorizations and individual licences in the field of telecommunications services.

[35] Directive 97/33/EC of the European Parliament and of the Council of 30 June 1997 on interconnection in Telecommunications with regard to ensuring universal service and interoperability through application of the principles of Open Network Provision (ONP).

[36] Council Directive 89/336/EEC of 3 May 1989 on the approximation of the laws of the Member States relating to electromagnetic compatibility.

[37] ETSI ETR 207: "Public Switched Telephone Network (PSTN); Alternative sender for multifrequency signalling system to be used for push-button telephones [CEPT Recommendation T/STI 46-04 E (1986)]".

[38] CENELEC EN 50049-1 (1997): "Domestic and similar electronic equipment interconnection requirements: Peritelevision connector".

NOTE: Please be informed that some references contained in this Special Report are not mentioned in this clause. Their titles can be found within the tables.

3 Definitions and abbreviations

Definitions and abbreviations extracted from referenced ETSI deliverables can be viewed via the Terms and Definitions Interactive Database (TEDDI) (http://webapp.etsi.org/Teddi/).

NOTE: The format of the definitions in this clause do not follow the recommendations made under the ETSI drafting rules, but because they are drawn from non-ETSI sources they maintain the format of the source. In each case the source is identified in parentheses at the end of the definition.

3.1 Definitions

For the purposes of the present document, the following terms and definitions are taken from the Regulatory Framework Directives (see specific Directive) and apply:

access: means the making available of facilities and/or services, to another undertaking, under defined conditions, on either an exclusive or non-exclusive basis, for the purpose of providing electronic communications services. It covers inter alia: access to network elements and associated facilities, which may involve the connection of equipment, by fixed or non-fixed means (in particular this includes access to the local loop and to facilities and services necessary to provide services over the local loop), access to physical infrastructure including buildings, ducts and masts; access to relevant software systems including operational support systems, access to number translation or systems offering equivalent functionality, access to fixed and mobile networks, in particular for roaming, access to conditional access systems for digital television services; access to virtual network services (Access Directive 2002/19/EC [1])

NOTE: According to Article 1, Paragraph 2 of the Access Directive 2002/19/EC [1], "*Access in this Directive does not refer to access by end-users*." Therefore this definition does not necessarily apply to the complete set of e-communications Directives, i.e. the Framework Directive 2002/21/EC [3] and the associated "specific Directives" as defined in Article 2, paragraph (l) of the Framework Directive 2002/21/EC [3].

associated facilities: means those facilities associated with an electronic communications network and/or an electronic communications service which enable and/or support the provision of services via that network and/or service. It includes conditional access systems and electronic programme guides (Framework Directive 2002/21/EC [3])

Application program interface (API): means the software interfaces between applications, made available by broadcasters or service providers, and the resources in the enhanced digital television equipment for digital television and radio services (Framework Directive 2002/21/EC [3])

call: means a connection established by means of a publicly available telephone service allowing two-way communication in real time (Directive on privacy and electronic communications 2002/58/EC [5])

communication: means any information exchanged or conveyed between a finite number of parties by means of a publicly available electronic communications service. This does not include any information conveyed as part of a broadcasting service to the public over an electronic communications network except to the extent that the information can be related to the identifiable subscriber or user receiving the information (Directive on privacy and electronic communications 2002/58/EC [5])

conditional access system: means any technical measure and/or arrangement whereby access to a protected radio or television broadcasting service in intelligible form is made conditional upon subscription or other form of prior individual authorization (Framework Directive 2002/21/EC [3])

consent: by a user or subscriber corresponds to the data subject's consent in Directive 95/46/EC [27] (Directive on privacy and electronic communications 2002/58/EC [5])

electronic mail: means any text, voice, sound or image message sent over a public communications network which can be stored in the network or in the recipient's terminal equipment until it is collected by the recipient (Directive on privacy and electronic communications 2002/58/EC [5])

electronic communications network: means transmission systems and, where applicable, switching or routing equipment and other resources which permit the conveyance of signals by wire, by radio, by optical or by other electromagnetic means, including satellite networks, fixed (circuit- and packet-switched, including Internet) and mobile terrestrial networks, electricity cable systems, to the extent that they are used for the purpose of transmitting signals, networks used for radio and television broadcasting, and cable television networks, irrespective of the type of information conveyed (Framework Directive 2002/21/EC [3])

electronic communications service: means a service normally provided for remuneration which consists wholly or mainly in the conveyance of signals on electronic communications networks, including telecommunications services and transmission services in networks used for broadcasting, but exclude services providing, or exercising editorial control over, content transmitted using electronic communications networks and services; it does not include information society services, as defined in Article 1 of Directive 98/34/EC, which do not consist wholly or mainly in the conveyance of signals on electronic communications networks (Framework Directive 2002/21/EC [3])

end-user: means a user not providing public communications networks or publicly available electronic communications services (Framework Directive 2002/21/EC [3])

enhanced digital television equipment: means set-top boxes intended for connection to television sets or integrated digital television sets, able to receive digital interactive television services (Framework Directive 2002/21/EC [3])

general authorization: means a legal framework established by the Member State ensuring rights for the provision of electronic communications networks or services and laying down sector specific obligations that may apply to all or to specific types of electronic communications networks and services, in accordance with this Authorisation Directive (Authorisation Directive - 2002/20/EC [2])

geographic number: means a number from the national numbering plan where part of its digit structure contains geographic significance used for routing calls to the physical location of the Network Termination Point (NTP) (Universal Service Directive 2002/22/EC [4])

harmful interference: means interference which endangers the functioning of a radionavigation service or of other safety services or which otherwise seriously degrades, obstructs or repeatedly interrupts a radiocommunications service operating in accordance with the applicable Community or national regulations (Authorisation Directive 2002/20/EC [2])

interconnection: means the physical and logical linking of public communications networks used by the same or a different undertaking in order to allow the users of one undertaking to communicate with users of the same or another undertaking, or to access services provided by another undertaking. Services may be provided by the parties involved or other parties who have access to the network. Interconnection is a specific type of access implemented between public network operators (Access Directive 2002/19/EC [1])

location data: means any data processed in an electronic communications network, indicating the geographic position of the terminal equipment of a user of a publicly available electronic communications service (Directive on privacy and electronic communications 2002/58/EC [5])

national regulatory authority: means the body or bodies charged by a Member State with any of the regulatory tasks assigned in this Directive and the Specific Directives (Framework Directive 2002/21/EC [3])

network and information security: ability of a network or an information system to resist, at a given level of confidence, accidental events or malicious actions. Such events or actions could compromise the availability, authenticity, integrity and confidentiality of stored or transmitted data as well as related services offered via these networks and systems

Network termination point (NTP): means the physical point at which a subscriber is provided with access to a public communications network; in the case of networks involving switching or routing, the NTP is identified by means of a specific network address, which may be linked to a subscriber number or name (Universal Service Directive 2002/22/EC [4])

non-geographic numbers: means a number from the national numbering plan that is not a geographic number. It includes inter alia mobile, freephone and premium rate numbers (Universal Service Directive 2002/22/EC [4])

provision of an electronic communications network: means the establishment, operation, control or making available of such a network (Framework Directive 2002/21/EC [3])

public communications network: means an electronic communications network used wholly or mainly for the provision of publicly available electronic communications services (Framework Directive 2002/21/EC [3])

public pay telephone: means a telephone available to the general public, for the use of which the means of payment may include coins and/or credit/debit cards and/or pre-payment cards, including cards for use with dialing codes (Universal Service Directive 2002/22/EC [4])

public telephone network: means an electronic communications network which is used to provide publicly available telephone services; it supports the transfer between network termination points of speech communications, and also other forms of communication, such as facsimile and data (Universal Service Directive 2002/22/EC [4])

publicly available: in the context of referencing documents within ETSI deliverables, a document that may be obtained from the source organization by any person (with or without payment), simply by quoting the reference given in the ETSI deliverable to the source organization or other typical supplier (e.g. National Standards Organization, Library, etc.)

publicly available telephone service: means a service available to the public for originating and receiving national and international calls and access to emergency services through a number or numbers in a national or international telephone numbering plan, and in addition may, where relevant, include one or more of the following services: the provision of operator assistance, directory enquiry services, directories, provision of public pay phones, provision of service under special terms, provision of special facilities for customers with disabilities or with special social needs and/or the provision of non-geographic services (Universal Service Directive 2002/22/EC [4])

specific directives: means Directive 2002/20/EC (Authorisation Directive), Directive 2002/19/EC [1] (Access Directive), Directive 2002/22/EC [4] (Universal Service Directive) and Directive 97/66/EC [26] (Framework Directive 2002/21/EC [3])

subscriber: means any natural person or legal entity who or which is party to a contract with the provider of publicly available electronic communications services for the supply of such services (Framework Directive 2002/21/EC [3])

traffic data: means any data processed for the purpose of the conveyance of a communication on an electronic communications network or for the billing thereof (Directive on privacy and electronic communications 2002/58/EC [5])

transnational markets: means markets identified in accordance with Article 15(4) covering the Community or a substantial part thereof (Framework Directive 2002/21/EC [3])

user (in general): means a legal entity or natural person using or requesting a publicly available electronic communications service (Framework Directive 2002/21/EC [3])

user (in the context of privacy): means any natural person using a publicly available electronic communications service, for private or business purposes, without necessarily having subscribed to this service (Directive on privacy and electronic communications 2002/58/EC [5])

value added service: means any service which requires the processing of traffic data or location data other than traffic data beyond what is necessary for the transmission of a communication or the billing thereof (Directive on privacy and electronic communications 2002/58/EC [5])

3.2 Abbreviations

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

3GPP	3rd Generation Partnership Project
ACR	Anonymous Call Rejection
ADSL	Asymmetrical Digital Subscriber Line
AN	Access Network
ANF	Additional Network Feature
ANF-ISIGC	Additional Network Feature - Inter-System Interface Group Call
ANF-ISIIC	Additional Network Feature - Inter-System Interface Individual Call
ANF-ISIMM	Additional Network Feature - Inter-System Interface Mobility Management
AoC	Advice of Charge
AoC-S	Advice Of Charge at call Setup time
API	Application Program Interface
ATM	Asynchronous Transfer Mode
BIC	Barring of Incoming Calls
B-ISDN	Broadband Intehrated Services Network
BOC	Barring of Outgoing Calls
BPSK	Binary Phase Shift Keying
BRAN	Broadban Radio Access Network
CAI	Charge Advise Information

CAMEL	Customized Applications for Mobile network Enhanced Logic
CAP	CAMEL Application Part
CATV	CAble TeleVision
CB	Call Barring
CEN	European Committee for Standardization
CENELEC	European Committee for Electrotechnical Standardization
CEPT	European Conference of Postal and Telecommunications Administrations
CI	Common Interface
CLI	Calling Line Identification
CLIP	Calling Line Identity Presentation
CLIR	Calling Line Identity Restriction
CMS	Call Management Server
CN	Core Network
COCOM	The Communications Committee (Article 22 Framework Directive 2003/21/EC [3])
COLR	Connected Line Identification Restriction
CP	Content Provider
DAB	Digital Audio Broadcasting
DAM	DECT Authentication Module
DCE	Data Circuit-terminating Equipment
DECT	Digital Enhanced Cordless Telecomunications
DLC	Data Link Control
DSL	Digital Subscriber Line
DTMF	Dual Tone Multi-Frequency
DTV	Digital Television
DVB	Digital Video Broadcasting
DVB-C	Digital Video Broadcasting - Cable
DVB-CI	Digital Video Broadcasting - Common Interface
DVB-CS	Digital Video Broadcasting - Circuit Switched (baseline system for SMATV distribution systems)
DVB-MC	Digital Video Broadcasting - Microwave Circuit (specification for MVDS (Microwave Multipoint Distribution Systems) in the frequency range below 10 GHz)
DVB-MS	Digital Video Distribution - Multipoint System / MVDS
DVB-MT	Digital Video Broadcasting - Microwave Terrestrial (OFDM modulation for microwave digital terrestrial television)
DVB-S	Digital Video Broadcasting - Satellite
DVB-SI	Digital Video Broadcasting - Service Information system
DVB-SIM	Digital Video Broadcasting - SIMulcrypt group
DVB-T	Digital Video Broadcasting - Terrestrial
EC	European Commission
ECN	Electronic Communication Network
ECN&S	Electronic Communication Network(s) and Service(s)
ECP	Electronic Communication Provider
ECS	Electronic Communication Service
EEC	European Economic Community
EG	ETSI Guide
eMLPP	enhanced Multi-Level Precedence and Pre-emption service
EN	European Standard (Telecommunication Series)
ENTF	European Numbering Task Force
ENUM	Electronic NUMbering
EPG	Electronic Programming Guide
ES	ETSI Standard
ESO	European Standardization Organizations
ETNO	European Telecommunications Network Operators' association
ETNS	European Telephony Numbering Space
ETP	European Telecommunication Platform
ETR	ETSI Technical Report
ETS	European Telecommunication Standard
ETSI	European Telecommunications Standards Institute
EU	European Union
FIGS	Fraud Information Gathering System
FTTH	Fibre To The Home
FWA	Fixed Wireless Access
GERAN	GSM / EDGE Radio Access Network

GPRS	General Packet Radio Service
GRX	GPRS Roaming eXchange node
GSM	Global System for Mobile communications
GSS	Gateway Station System
HDSL	High bit rate Digital Subscriber Line
HF	Human Factors
HIPERLAN	HIgh PErformance Radio Local Area Network
IAB	Interactive Advertizing Bureau
ICT	Information and Communication Technologies
IEC	International Electrotechnical Committee
IEEE	Institute for Electrical and Electronics Engineers
IEPS	International Emergency Preference Scheme
IETF	Internet Engineering Task Force
IN	Intelligent Network
INAP	Intelligent Network Application Part
IP	Internet Protocol
ISDN	Integrated Services Digital Network
ISDN-BRA	Integrated Services Digital Network - Basic Rate Access
ISI	Inter-System Interface
ISO	International Organization for Standardization
ISUP	ISDN User Part
IT	Information Technology
ITU	International Telecommunication Union
ITU-R	International Telecommunication Union – Radiocommunication standardization sector
ITU-T	International Telecommunication Union - Telecommunication standardization sector
IWP	InterWorking Profile
LCS	LoCation Services
LE	Local Exchange
LEA	Law Enforcement Agency
LI	Lawul Interception
LIF	Location Interoperability Forum
MAC	Medium Access Layer
MAP	Mobile Application Part
MES	Mobile Earth Station
MGCP	Media Gateway Control Protocol
MHP	Multimedia Home Platform
MMI	Man-Machine Interface
MMS	Multimedia Message Service
MNP	Mobile Number Portability
MOT	Multimedia Object Transfer protocol
MPEG	Motion Picture Experts Group
MS	Mobile Station
MTP	Message Transfer Part
MVNO	Mobile Virtual Network Operator
NGN	Next Generation Networks
NIS	Network Information Security
NITZ	Network Identity and Time Zone
NRA	National Regulatory Authority
NRR	New Regulatory Regime
NTP	Network Termination Point
NUTS	Nomenclature of Territorial Units for Statistics
NWK	NetWorK
OCB	Outgoing Call Barring
OCB-F	Outgoing Call Barring - Fixed
OCB-UC	Outgoing Call Barring - User Controlled
OCG ECN&S	Operational Co-ordination Group Electronic Communication Networks and Services
OCG	Operational Co-ordination Group
ODB	Operator Determined Barring
OFDM	Orthogonal Frequency Division Multiplexing
OJEC	Official Journal of the European Communities
ONP	Open Network Provision
OSA	Open Service Access

OSS	Open Source Software
OSS	Operational System Support
PAMR	Public Access Mobile Radio
PAS	Publicly Available Standards (and/or Specifications)
PATS	Publicly Available Telephony Service
PC	Priority Call
PECN	Public Electronic Communication Network
PECS	Public Electronic Communication Service
PLMN	Public Land Mobile Network
PLT	PowerLine Telecommunication
PRM	Protocol Reference Model
PSAP	Public Safety Answering Point
PSTN	Public Switched Telephone Network
PTN	Public Telecommunication Network
QoS	Quality of Service
R&TTE	Radio and Telecommunications Terminal Equipment
RAP	Radio in the local loop Access Profile
R-LAN	Radio - Local Area Network
RLL	Radio in the Local Loop
RR	Regulatory Regime
RRA	Regional Regulatory Authority
SC	Switching Center
SCCP	Signalling Connection Control Part
SDH	Synchronous Digital Hierarchy
SDSL	Symmetrical Digital Subscriber Line
SIM	Subscriber Identity Module
SIM-API	Subscriber Identity Module - Application Programming Interface
SIM-ME	Subscriber Identity Module - Mobile Equipment
SIP	Session Initiation Protocol
SLA	Service Level Agreement
SM	Short Message
SMP	Significant Market Power
SMS	Short Message Service
SN	Service Node
SNA	Short Number Addressing
SP	Service Provider
SPAN	Services and Protocols for Advanced Networks
SS7	Signalling System No.7
STF	Specialist Task Force
STM	Synchronous Transport Mode
TBR	ETSI Technical Basis for Regulation
TCAM	Telecommunication Conformity Assessment and Market surveillance committee
TETRA	TErrestrial European Trunked RAdio
TGCP	Trunking Gateway Control Protocol
TIPHON	Telecommunications and Internet Protocol Harmonization Over Networks
TMN	Telecomunications Management Network
TPI	Talking Party Identification
TR	ETSI Technical Report
TS	ETSI Technical Specification
TV	TeleVision
UBE	Unsolicited Bulk Email
UCI	Universal Communications Identifier
UE	User Equipment
UI	User Interaction
UMTS	Universal Mobile Telecommunications System
UPT	Universal Personal Telecommunications
USD	Universal Service Directive
USO	Universal Service Obligations
UTRAN	UMTS Radio Access Network
V+D	Voice plus Data
VASP	Value Added Service Provider
VC	Virtual Container

VDSL	Very high speed Digital Subscriber Line
WAP	Wireless Access Protocol
XML	eXtended Mark up Language

4 Interpretation of requirements within EU regulatory framework directives

4.1 Introduction

The purpose of the present document is to provide a common interpretation of the Articles and therefore the requirements that have been defined within the specific Directives and the associated Commission Decisions and Recommendations that have been published in the Official Journal of the European Community. The present document also provides general guidance to show the rationale used to identify specific standards according to Article 17 (Directive 2002/21/EC [3]) and the justifications given within the specific Directives.

NOTE: The interpretations presented in this clause are made from the viewpoint of the impact upon standardization and do not replace any official interpretation issued by either Commission Services or COCOM.

It is intended that the interpretations provided with the present document will be updated to reflect clarifications provided by Commission Services and the list of standards updated accordingly. It should also be appreciated that the present document is the first step and as standards evolve, typically the adoption of standards within ECNs also lag behind the publication of standards. The list of standards as reflected within the present document will therefore require periodic review to ensure it is aligned with the current evolution.

4.2 New EU Regulatory Framework

4.2.1 Basic principles

In the consultation on the new regulatory framework, the European Commission identified five basic principles:

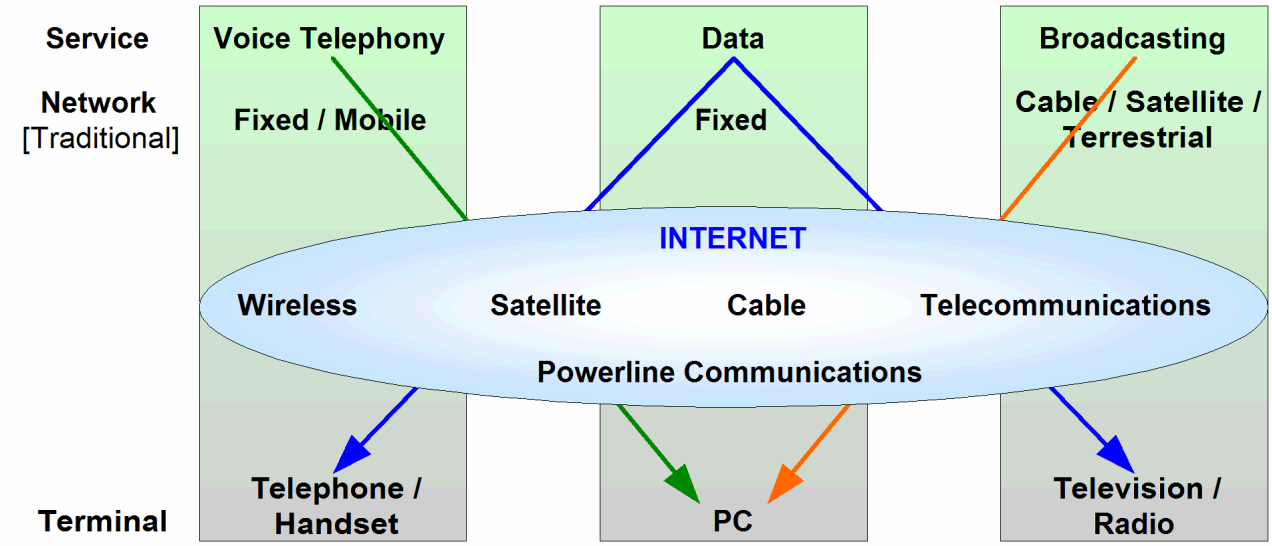
- **Regulation should be kept to a minimum:**
  - This means that regulation should be maintained when competition is not effective, and should be withdrawn when competition is effective. Emerging markets are in general not regulated (providing there is no leverage of market power from adjacent markets) but if effective competition does not emerge regulation can be imposed.
- **Regulation should be based on clearly defined policy objectives:**
  - Objectives to be followed by NRAs are made explicit in the Article 8 of the Framework Directive.
- **Regulation should strike the right balance between flexibility and legal certainty:**
  - The new package addresses this by having clear and transparent procedures for NRAs to follow.
- **Regulation should evolve towards technological neutrality:**
  - The new framework moves away from network-specific regulation to an approach whereby NRAs analyse markets using competition law methodology, irrespective of the underlying infrastructure. Nevertheless there remains some technologically specific regulation for the time being (e.g. unbundling is limited to metallic local loops).
- **Regulation may be agreed globally, regionally or nationally:**
  - But should be enforced as closely as is practicable to the activities being regulated.

4.2.2 Convergence and the new regulatory framework

The spirit of the new regulatory framework is the freedom to "enterprise" and the driver for this has been the growing convergence of telecommunications, broadcasting and IT sectors (i.e. the trend for similar services to be delivered over different types of networks), in particular the convergence of fixed, mobile, terrestrial and satellite communications. Since all content can be delivered now over all network types, it no longer makes sense to have separate rules for different forms of communication. All these spheres are gathered together in the new regulatory concept of electronic communications, which embraces the conveyance of signals by any form of electrical, magnetic or electro-magnetic energy.

The new regulatory framework applies to all transmission infrastructures, irrespective of the types of services carried over them (a "horizontal" approach). It therefore covers all electronic communications networks (including those used to carry broadcasting content such as Cable Television (CATV) networks, terrestrial broadcasting networks, and satellite broadcasting networks), associated facilities and electronic communications services. This means that services such as interactive television, electronic programme guides; e-mail, SMS as well as traditional telephony are all brought under the same regulatory umbrella. It should be noted that content services (e.g. broadcast content, e-commerce services) are outside the scope of the framework. Thus the regulation of content broadcast over electronic communications networks (e.g. radio and television programmes or TV bouquets) remains outside the scope of the framework.

The new framework is intended to be technology-neutral and more able to adapt to what will continue to be a technologically dynamic sector.



Source: Based upon presentations provided by the European Commission

Figure 1: Convergence is a reality

4.2.3 New regulatory framework package

The basis for the new regulatory framework is through five major new EU Communications Directives that are intended to converge and harmonize communication regulation throughout the community. The five directives are:

- Directive 2002/21/EC [3] on a common regulatory framework for electronic communications networks and services (the Framework Directive);
- Directive 2002/20/EC [2] on the authorization of electronic communications networks and services (the Authorisation Directive);
- Directive 2002/19/EC [1] on access to, and interconnection of, electronic communications networks and associated facilities (the Access Directive);
- Directive 2002/22/EC [4] on universal service and users' rights relating to electronic communications networks and services (the Universal Service Directive);

- Directive 2002/58/EC [5] concerning the processing of personal data and the protection of privacy in the electronic communications sector (the Privacy Directive).

In addition, there is a further Directive 2002/77/EC (Article 86) [10] consolidating the existing "liberalization" directives applicable to telecommunications.

Finally, there is also a Commission Decision on a regulatory framework for radio spectrum policy in the European Community (Radio Spectrum Decision - Decision 676/2002/EC [11]), which establish a policy and legal framework in the Community in order to achieve the harmonization of the use of the radio spectrum.

There is also the unbundling of the local loop regulation and other documents related to this nucleus of directives.

4.2.4 Interoperability

Whereas Interceonnection is defined in clause 3.1 there is no common definition for interoperability. The definition that follows is used in the remainder of the present document:

Interoperability: ability to provide successful communication between end-users across a mixed environment of different domains (including instances when an end-user is roaming between domains), networks, facilities, equipment, etc. from different manufacturers and (or) providers without a requirement for user or operator configuration.

In this context the communication is meant between end-users or between an end-user and a service provider.

- For a **network operator**, this means the ability to inter-work with other networks and provide seamless services to users.
- For a **content provider or service provider**, it implies the ability to be able to run an application or service on any suitable delivery platform.
- For a **consumer**, interoperability means the ability to acquire the relevant terminal device "and begin to consume and pay for services, without having prior knowledge which services would be consumed, in a simple way".

The interconnection of networks, interoperability of services and technical compatibility of equipment have been the primary tools to liberalize and harmonize the EU telecommunications sector over the last two decades and remain important for achieving a pan-European market.

Interoperability and inter-working of networks, services and terminals are desirable, but an Information Society does not depend on total interconnection/interoperability/inter-working between all terminals, services and networks, as long as consumers have choices as to their services and the platforms over which they can access their desired services.

The interoperability guarantee pinpoints several criteria associated with the standardization process.

- Specification and standards quality with consequential attributes of:
  - low risk of differing interpretations;
  - consensus among the players;
  - upstream compatibility;
  - investment durability.
- Identification of equipment interfaces.
- Agreement between players on "mandatory" and optional specifications.
- Adherence to the above documents (result of consensus) by the majority of market players (equipment suppliers/operators).
- The availability of test and certification procedures to ensure compliance with the specifications.

4.2.4.1 Application Program Interfaces (APIs)

Interoperability of services provided over networks typically requires access to the interface software of the application - the Application Program Interface (API). Third parties that wish to develop interoperable services require access to the technical specifications of APIs and to the developmental tools needed to design new services and to operate them over the platform.

4.2.4.1.1 Open platforms

Open platforms are associated with greater freedom of choice for citizens to applications and services of the Information Society. The isolated "islands of connectivity" analogy could progressively become more inter-operable, provided that third parties have access to proprietary APIs. The openness of a service delivery platform is determined by its APIs, which may use open standards, open source software or proprietary technology.

4.2.4.1.2 Open standards

Open standards are consensus-based (involving all stakeholders, including consumer organization representatives), publicly available, transparently agreed and commercially exploitable on a fair, reasonable and non-discriminatory basis. Open standards are developed by a large grouping of different industry representatives that agree and maintain the standards.

4.2.4.1.3 Open API standards

Open API standards are those that have been agreed in an open standards environment with a view to open platforms. The development and implementation of such consensus-based, open, standards rely on market players seeing such an approach as being in their best commercial interest, usually because common standards will in the long term promote and enlarge the market.

APIs may be based on Open Source Software (OSS). OSS is mostly free to use, change, study, copy and re-distribute, where the code is openly published without fail. It is often developed and exchanged by voluntary efforts. The third party access to the technical specifications of APIs needed to design new services and to operate them over the platform is available with open source software, thus leading to an open service delivery platform.

4.2.5 Reference Functional Architecture models

In order to identify the points for interconnection or access to network functions and/or facilities it is necessary to understand the functional architecture of a given ECN. This assumption is made regardless of whether the internal communications or structure of the ECN is proprietary, or in fact follows a standardized model. Viewing each ECN with the black box approach, it is necessary to identify the standardized interfaces (whether physical or logical) at the edges of the ECN to enable interconnection with other ECNs and therefore ensure interoperability of services.

The standards listed in table 1 are those relating to either the functional, protocol or system of a particular technology that have been published by an ESO. Those technologies without any standard or specification identified have no published functional architecture.

Table 1: Reference Functional Architecture Models

Applicability	Reference	Notes
Cable	ETSI TS 101 909-2 (V1.2.1)	Digital Broadband Cable Access to the Public Telecommunications Network; IP Multimedia Time Critical Services; Part 2: Architectural framework for the delivery of time critical services over Cable Television (CATV) networks using cable modems

Applicability	Reference	Notes
DECT	ETSI EN 300 175-1 (V1.7.1)	Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 1: Overview
	ETSI EN 300 175-2 (V1.7.1)	Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 2: Physical Layer (PHL)
	ETSI EN 300 175-3 (V1.7.1)	Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 3: Medium Access Control (MAC) layer
	ETSI EN 300 175-4 (V1.7.1)	Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 4: Data Link Control (DLC) layer
	ETSI EN 300 175-5 (V1.7.1)	Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 5: Network (NWK) layer
Digital Broadcast (TV and Radio)	ETSI TS 101 197 (V1.2.1)	Digital Video Broadcasting (DVB); DVB SimulCrypt; Head-end architecture and synchronization
	ETSI TR 102 033 (V1.1.1)	Digital Video Broadcasting (DVB); Architectural framework for the delivery of DVB-services over IP-based networks
	ETSI TR 101 200 (V1.1.1)	A guideline for the use of DVB specifications and standards
GSM/UMTS	ETSI TS 100 528 (V8.3.0)	Digital cellular telecommunications system (Phase 2+); GSM Public Land Mobile Network (PLMN) Connection Types (3GPP TS 03.10 version 8.3.0 Release 1999)
	ETSI TS 122 001 (V3.2.0)	Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Principles of circuit telecommunication services supported by a Public Land Mobile Network (PLMN) (3GPP TS 22.001 version 3.2.0 Release 1999)
	ETSI TS 122 002 (V3.6.0)	Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Circuit Bearer Services (BS) supported by a Public Land Mobile Network (PLMN) (3GPP TS 22.002 version 3.6.0 Release 1999)
	ETSI TS 122 003 (V3.3.0)	Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Circuit Teleservices supported by a Public Land Mobile Network (PLMN) (3GPP TS 22.003 version 3.3.0 Release 1999)
	ETSI TS 123 002 (V3.5.0)	Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Network architecture (3GPP TS 23.002 version 3.5.0 Release 1999)
	ETSI TS 123 101 (V3.1.0)	Universal Mobile Telecommunications System (UMTS); General UMTS Architecture (3GPP TS 23.101 version 3.1.0 Release 1999)
	ETSI TS 123 110 (V3.4.0)	Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); UMTS access stratum services and functions (3GPP TS 23.110 version 3.4.0 Release 1999)
	ETSI TS 123 121 (V3.6.0)	Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Architectural requirements for release 1999 (3GPP TS 23.121 version 3.6.0 Release 1999)
	ETSI TS 124 002 (V3.1.1)	Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); GSM-UMTS Public Land Mobile Network (PLMN) access reference configuration (3GPP TS 24.002 version 3.1.1 Release 1999)
ISDN	ETSI EG 201 992 (V1.1.1)	Services and Protocols for Advanced Networks (SPAN); Intelligent Networks (IN); Architectures and signalling requirements for IN-based networks interworking with IP-based networks
	ETSI ETS 300 354 (Edition 1)	Broadband Integrated Services Digital Network (B-ISDN); B-ISDN Protocol Reference Model (PRM)
PLT	ETSI TS 101 896 (V1.1.1)	Powerline Telecommunications (PLT); Reference network architecture model; PLT phase 1
PSTN	Not available	

Applicability	Reference	Notes
Satellite	ETSI TS 101 376-3-1 (V1.1.1)	GEO-Mobile Radio Interface Specifications; Part 3: Network specifications; Sub-part 1: Network functions; GMR-1 03.001
	ETSI TS 101 376-3-2 (V1.1.1)	GEO-Mobile Radio Interface Specifications; Part 3: Network specifications; Sub-part 2: Network architecture; GMR-1 03.002
	ETSI TS 101 377-3-1 (V1.1.1)	GEO-Mobile Radio Interface Specifications; Part 3: Network specifications; Sub-part 1: Network functions; GMR-2 03.001
	ETSI TS 101 377-3-2 (V1.1.1)	GEO-Mobile Radio Interface Specifications; Part 3: Network specifications; Sub-part 2: Network architecture; GMR-2 03.002
TETRA	Not available	
Wireless (incl. Local Loop)	ETSI TR 102 003 (V1.1.1)	Broadband Radio Access Networks (BRAN); HIPERACCESS; System Overview
	ETSI EN 300 197 (V1.6.1)	Fixed Radio Systems; Point-to-point equipment; Parameters for radio systems for the transmission of digital signals operating at 32 GHz and 38 GHz
	ETSI EN 300 198 (V1.5.1)	Fixed Radio Systems; Point-to-point equipment; Parameters for radio systems for the transmission of digital signals operating at 23 GHz
	ETSI EN 300 234 (V1.3.2)	Fixed Radio Systems; Point-to-point equipment; High capacity digital radio systems carrying 1 × STM-1 signals and operating in frequency bands with about 30 MHz channel spacing and alternated arrangements
Comments:	The following are considered as being outside the current scope of the present document: GSM-R as it is an application that utilizes GSM standards. Private and Corporate Networks have been excluded in accordance with guidance provided by the European Commission. MESA reference architecture standard was not published at the time of publishing the present document. The technologies covered within the present document have been limited to those standards and/or specifications published by ESOs only, future work will address those standardized by non-ESOs.	

4.3 Standardization and regulation

4.3.1 Interaction

NOTE: Text based upon presentations provided by l'Autorité de Régulation des Télécommunications "Workshop - Standards and Regulation".

Standardization is driven by the market players on a voluntary basis and is closely linked to the optimization of trade in a global society. It is a response to a number of factors such as market liberalization, changes in technology, competition etc and is becoming an unavoidable process in an ever increasing number of areas, underpinning advances in the overall economy as a result.

The Regulator applies the principal of technological neutrality, which has been confirmed within the future European Regulatory framework. However, he must also stay attuned to the issues and consequences of standardization, which impact the prospects for market development and the rate at which it will develop. Being upstream from the regulatory process, it must also take into account the goals of competition.

Standardization helps to remove technical entry barriers and open up new markets and economic models. It indirectly creates economies of scale and requires multiple representation to be able to respond to the goals of competition i.e. operators, equipment suppliers, service providers, intermediaries and government departments.

The regulatory process is positioned primarily as a downstream user from the standardization process: mandates conferred on European standardization organizations, Community authority guidelines or Commission study groups, etc.

It is because of this that the "frame" Directive 2002/21/EC [3] for electronic communication networks and services confirms that standardization essentially remains a market driven process. It reinforces the European institutional organizations CEN, CENELEC and ETSI in their role and encourages the use of standards or specifications, which have been adopted by these organizations or, in their absence, by world authorities. The ITU, ISO or IEC ensure service inter-working and enhance the end user's freedom of choice.

4.3.2 Standardization as a regulatory "tool"

Standardization is a key element in economic and commercial exchange (opening new markets, establishing economies of scale, etc.) and is regularly at the heart of problems confronting the Regulator. Beyond the questions associated with the management and regulation of the frequency spectrum, there are several recent examples, which illustrate the interaction and issues linking standardization and regulation, e.g. the UMTS deployment timetable, which remains dependent on the inter-working of several regional standardization organizations, or the ENUM protocol, which originated with IETF, pinpoints what is at stake when numbering, addressing and naming systems converge.

Standardization effectively provides a multiple supplier choice (for terminals, infrastructure equipment and network) via standardized interfaces thereby contributing to lower costs, service and network inter-working, etc.

It provides the opportunity for a wealth of players (operators, equipment suppliers, service providers) to contribute to the market development.

Even if the market guides standardization, certain basic rules are essential to the success of the process. i.e. transparency, openness, impartiality, continuity, access to publications, rules for patents, efficiency, responsibility and consistency. A framework of co-regulation implies compliance with the criteria of transparency, openness, the guarantee of multiple contributions and consensus.

4.3.3 New challenges for regulation

4.3.3.1 Example#1 - Mobile networks

In the mobile area the service specifications and standards come from several organizations:

- 3GPP;
- OMA (which includes different Fora such as the WAP forum);
- IETF;
- LIF;
- Wireless village;
- etc.

Despite collaboration between them overlap in certain areas is evident. The test and certification procedures are driven by each body independently. In addition the existence of proprietary standards cannot be excluded. This can lead to a terminal using the 3GPP specifications (transferred to ETSI) for the network and protocol aspects, in addition to WAP forum standards, Java standards, etc.

As the service offering is enhanced the terminal equipment, which mirrors the service function (and as a result are becoming increasingly complex), integrates functions that correspond to these new or enhanced services with the functions required to support the older services. The R&TTE Directive stimulates innovation in the terminal area and the new EU Regulatory Framework reinforces this.

The success of UMTS (3rd generation mobile) is closely linked to the success of discussions between all the players in the value chain. In the first instance, having a wide variety of inputs into the standardization working groups is still the best way of guaranteeing that the market development principles of competition will be taken into account sufficiently early.

4.3.3.2 Example#2 - IPv6

The arrival of IPv6 could lead to increased competition in existing markets relying on Internet access, but it could also create bottlenecks particularly in the operating systems or in the IP backbone at the end of the deployment phase. In addition, the IP address allocation procedures differ from the number allocation procedures in that the principle of separating the regulatory and operational functions is not applied. It is this principle, which in practice, ensures that the principles of objectivity and non-discrimination are truly guaranteed.

The new protocol is suitable for widespread distribution of the Internet. Going beyond the address resources (which will reduce the notion of "scarce resource"), the intrinsic IPv6 characteristics will be capable of meeting the constraints imposed by new applications i.e. roaming, security, real time, end-to-end service quality and the commercial development of the Internet in the overall economy. In all cases, NRAs will need to create awareness with regard to new topics and also promote the development of the Internet and encourage competition in the various forms of access.

4.3.3.3 Example#3 - NGN

There are several background trends (deregulation and the introduction of competition, development of new services, evolution in the use of the access network and the arrival of broadband) which have brought about a progressive transformation of telecommunications networks towards Next Generation Networks (NGN).

Since Next Generation Networks represent a vision and a market concept rather than a specific technology, no single definition of NGN exists so far. However, it is generally acknowledged that the architecture of NGNs rely on a few general principles mentioned below: a shared core network for all access and service types, open standardized interfaces between the different network layers (transport, control and services), support for user adaptable interfaces as well as variable access network capacity and type.

NGN will very probably lead to a consolidation of traditional roles of players in a telecommunication market into new partnerships which could become powerful entities in controlling both the NGN infrastructure and the services offered over NGN. Role sharing and revenue redistribution between NGN players will determine the success of next generation networks and the service evolution. In view of this, the operators will seek control over the data flows so that they can segment their offer and not be reduced to the status of "common" pipe suppliers. This observation highlights the issues surrounding the definition of the interfaces between the network operators and the service providers (control/service interfaces). Interconnection issues will move away from simple traffic exchange to higher-level interconnection of services. In NGN, issues of market power and dominant position are more likely to appear at the level of services interconnection.

There presently appear to be two opposing alternatives in the discussions related to next generation networks. The first effectively announces standardized interfaces between network operators and service providers prefiguring increasing competition in this area. The second puts the terminal at the centre of the service offering, with the network becoming transparent in nature. In these circumstances, the role of standards organizations such as the ITU or ETSI would appear to be essential to coordinate the different initiatives, encourage interoperability and define the tools, which will allow the value to be shared between the players.

4.4 Relationship to Radio Equipment and Telecommunications Terminal Equipment (R&TTE) Directive 1999/5/EC

The R&TTE Directive 1999/5/EC [9] entered into force throughout the European Community on 7 April 1999 and was both an enhancement and relaxation from the earlier legislative measures covering Telecommunications Terminals and Satellite Earth Stations. Further regularly updated information can be found on following addresses:

- http://www.europa.eu.int/comm/enterprise/rtte/guides.htm
- http://portal.etsi.org/erm/kta/R&TTE/rtte.asp

In simplistic terms, the R&TTE Directive 1999/5/EC [9]:

- covers in its scope (up to some exceptions according to Article 1 and Annex 1 of Directive 1999/5/EC [9]):
  1) all radio equipment;
  2) all telecommunications terminal equipment;
- and specifies the mechanisms for:
  1) placing all radio equipment (terminals and base stations) and all telecommunications terminal equipment on the market (largely based upon manufacturers' declaration of conformity); and

2) network operators to declare the network interface technical characteristics (network interfaces Article 4.2 - Directive 1999/5/ EC [9]) in sufficient detail to enable manufacturers to design terminals to inter-work with the network, this applies to both radio (including mobile and satellite), fixed and cable public networks.

3) Radio interfaces to be harmonized or published by national authorities according Article 4.1.

Figure 2 demonstrates that whilst the Radio Equipment (Network, Terminals and others not related with Telecom) as well as the Telecommunications Terminal Equipment are within the scope of the R&TTE Directive 1999/5/EC [9], the services provided to Telecom Terminals and the communications networks are not. The figure illustrates that the Telecommunication access presented to end-user terminal equipment together with core network of public networks are covered within the scope of the new EU Regulatory Framework (New Regulatory Regime "NRR").

As seen from the regulatory point of view, the NTP (Network Termination Point) defines the border line between the terminals and the networks. While the R&TTE Directive 1999/5/EC [9] requires the NTP to be specified and publicly available (Article 4.2) to facilitate the interoperation and appropriate design of the terminals, the Universal Service Directive 2002/22/EC [4] recommends and may require only specific implementations for some types of ECNs and ECS', i.e. the fulfilment of some standards. The combinations of the application of both directives should ensure appropriate availability of services to the user in one competitive environment. Both Directives allow for later measures in case the market players would not be serving appropriately the needs of the community.

For Radio Equipment and Networks there is no border line, both the R&TTE Directive 1999/5/EC [9] and the new EU Framework and associated specific Directives apply.

In addition, the Low Voltage and EMC Directives apply to all types of equipment and go beyond communications networks. Somehow the two first essential requirements of the R&TTE Directive 1999/5/EC [9] coincide with the requirements of the Low Voltage and EMC Directives.

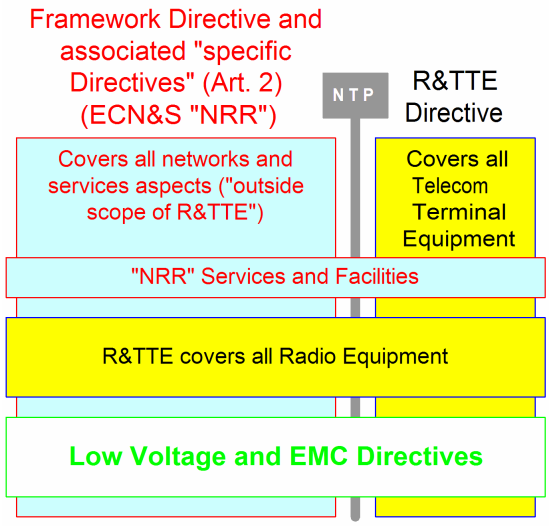


Figure 2: R&TTE Directive versus ECN&S Directives

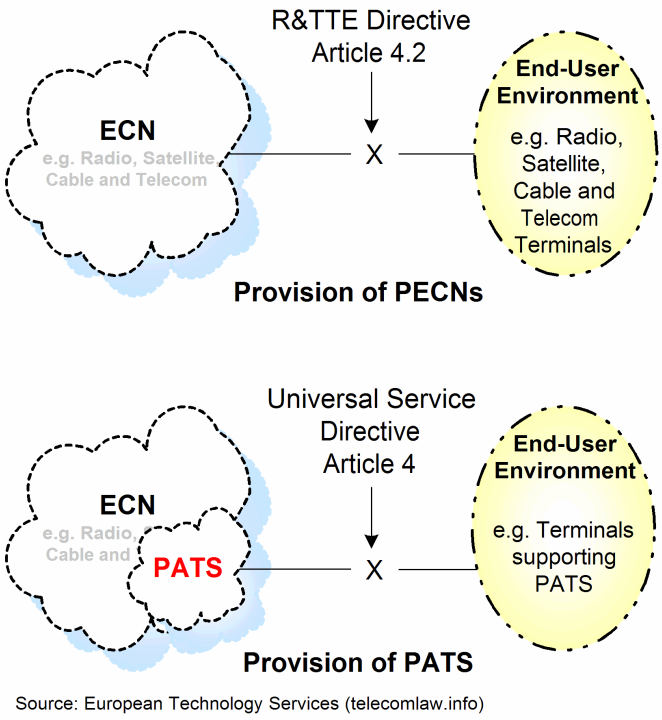
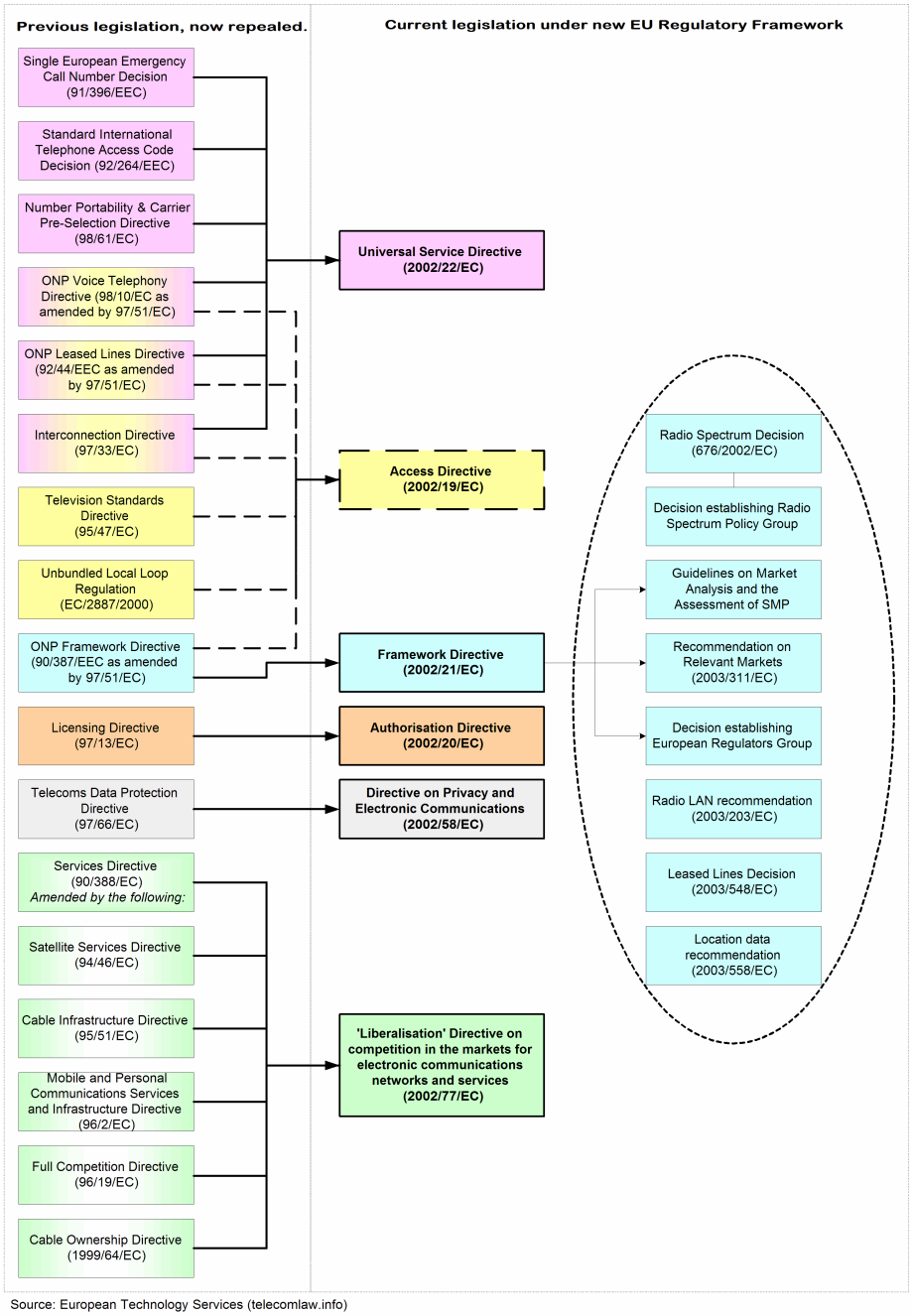


Figure 3: R&TTE Directive Article 4.2 versus ECN&S Universal Service Directive Article 4

Figure 3 shows a comparision of Article 4 of the Universal Service Directive 2002/22/EC [4] and Article 4.2 of the R&TTE Directive 1999/5/EC [9]. It should be recognized that whilst Article 4.2 of the R&TTE Directive 1999/5/EC [9] places an obligation on Public ECNs (Network Operators), to publish and make publicly available the interface technical characteristics for each of the end-user access points (NTP) to their network irrespective of the services provided. In clause 9 further explanation is provided for Article 4 of the Universal Service Directive 2002/22/EC [4], in that there is justification for a requirement, in relation to the provision of PATS at a fixed location, that PATS services are provided over a standardized interface (for any given technology), to ensure interoperability and freedom of choice for the user.

4.5 Directives repealed by the new Regulatory Framework



Source: European Technology Services (telecomlaw.info)

Figure 4: Previous legislation repealed by new EU Regulatory Framework

5 Information Society services

Achieving widespread access by all citizens, including the disabled and handicapped, to new services and applications of the Information Society is one of the crucial goals of the EU for the coming decade. During that period, multiple access platforms will become available, using different access methods for delivery of services to a wide variety of end user terminals.

In future, once a multi-platform environment is the norm, users are expected to want to access the same digital services and content in a variety of situations and locations, using different devices and network connections. For the multi-platform environment to proliferate and for the platforms themselves to complement each other, the regulatory environment must favour technologically neutral conditions for competition, without giving preference to one platform over others.

The goal of the present document is to identify the relevant standards and specifications, which will be a tool for NRAs to facilitate access to Information Society services via open platforms.

Several commercial factors will affect access to Information Society services, and will determine widespread access to Information Society services:

- The "openness" of 3G and DTV platforms.
- The development of attractive consumer services.
- The creation of a secure environment to inspire consumer confidence.
- An environment of regulatory clarity for new electronic services is equally important.

The term "*An Information Society for All*" conveys the idea that sooner or later everyone in society will routinely access and make use of digital (i.e. electronic) services. This transformation of our everyday lives, whether in administrations, or businesses, as citizens, in homes or at schools will be driven by investment and innovation in new digital technologies that will be transformed into everyday services that people want to use. This Communication focuses on the platforms for delivering services, i.e. the means for service delivery throughout the value chain, rather than the variety of services themselves.

The Information Society infrastructure and multi-platform access: anyone will be able to access any information or communicate with any individual or any appliance for business, family or entertainment purposes, independently of their location, in all modalities they need, only limited by rights, whether commercial or legal, or by the functionality of their system and equipment.

Black boxes: Communications infrastructures of today are characterized by a number of more or less isolated "islands of connectivity". Some of these islands have a (nearly) global reach, such as the telephone network, but may be limited in functionality (e.g. voice or narrow band data). Others have broadband capacity but are limited in a geographical sense, because the services are only offered locally.

There is a trend towards growing interoperability between these "islands". This evolution is:

- Partly of a **technological** nature: the digitalization of existing networks contributes substantially to the possibility to make them interoperable;
- Partly **market driven**: users want to have the possibility to access services offered by different service providers on several devices in different places and situations; and
- Partly **regulatory**: the new EU regulatory framework aims to create a level playing field with technologically neutral regulation that encourages a competitive multi-platform environment to emerge.

The term "information society service" is defined in EU legislation as:

- "any service normally provided for remuneration, at a distance, by electronic means and at the individual request of a recipient of services".

Information Society services can therefore cover at least:

(1) on-line transactional services, e.g. buying goods on-line; and

(2) information, research and other on-line services, such as, Internet banking, travel timetables, catalogues, libraries and interactive games.

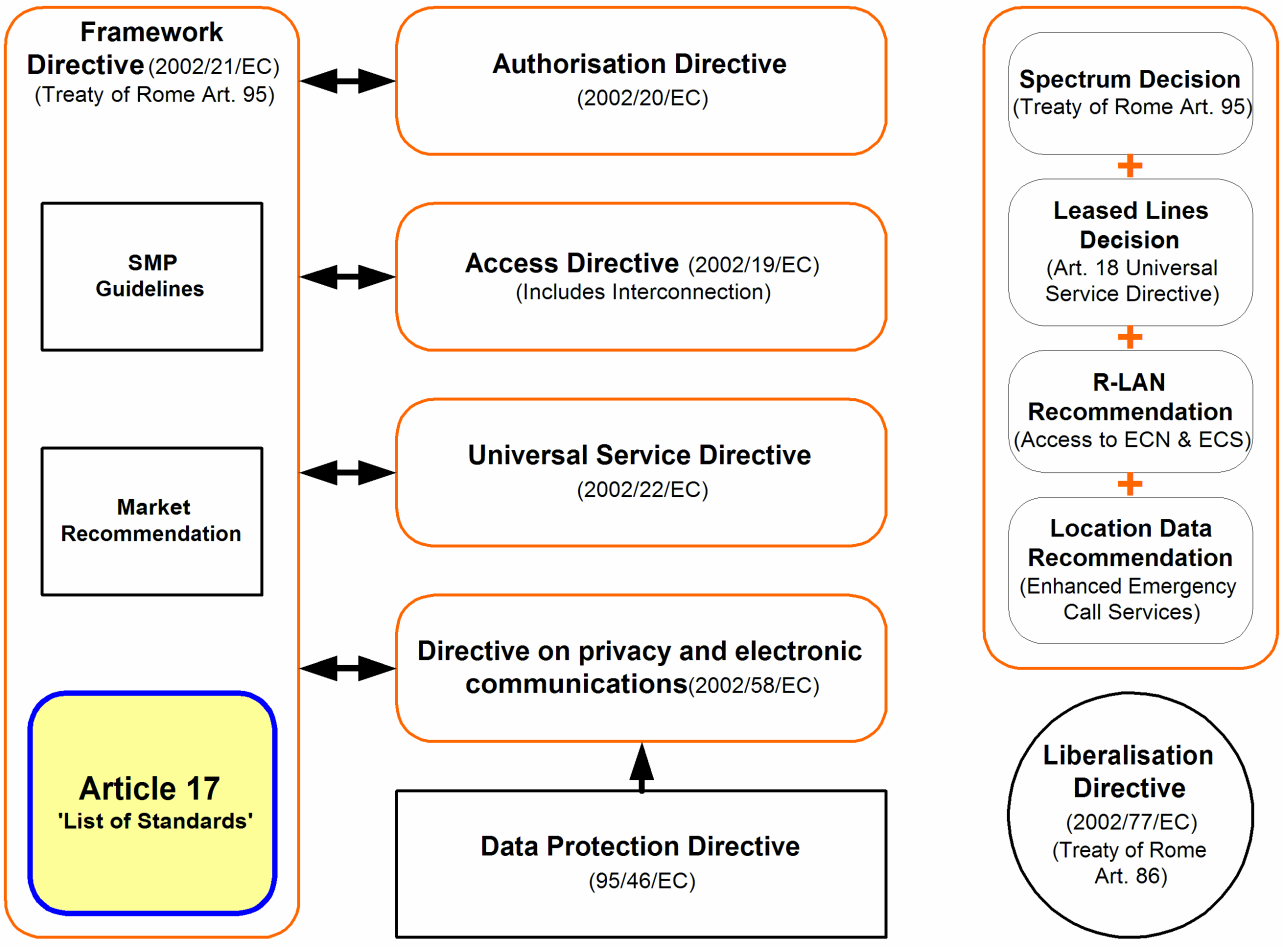
By way of contrast, activities such as the physical delivery of goods, the provision of services off-line, or services which by their very nature cannot be carried out at a distance and by electronic means, such as on-site auditing of company accounts or rendering medical advice that requires the physical examination of a patient, are not Information Society services.

6 Analysis of Framework Directive (2002/21/EC) with respect to standardization

6.1 Introduction

The Framework Directive provides the overall structure for the new regulatory regime and sets out the fundamental rules and objectives that read across all the new directives. It contains a series of provisions that underpin all the specific directives.

It seeks to respond to the convergence phenomenon by covering all electronic communications networks and services within its scope. It sets out a number of principles and objectives for regulators to follow, as well as a series of tasks in respect of management of scarce resources such as radio spectrum and numbering. Finally it contains a number of horizontal provisions common to more than one measure envisaged in the package of working documents.



Source: Based upon presentations by the European Commission

Figure 5: Interaction of the Framework Directive to the new EU regulatory regime

Under the provisions provided for in Article 86 Treaty of Rome (Treaty establishing the European Community) the Liberalization Directive consolidates the previous liberalization directives (see also clause 4.5):

- Services Directive of June 1990 (90/388/EEC [16]);
- Satellite Directive of October 1994 (94/46/EC [25]);
- Cable TV Networks Directive of October 1995 (95/51/EC [18]);
- Mobile Directive of January 1996 (96/2/EC [19]);

- Full Competition Directive of March 1996 (96/19/EC [20]);
- Amending Directive of June 1999 ensuring that telecommunications networks and cable TV networks owned by a single operator are separate legal entities (1999/64/EC [23]).

The Liberalization Directive clarifies the rules, makes them more functional and moves further towards the elimination of exclusive or special rights for the provision of telecommunications services:

- It bans licences in favour of authorizations for the provision of electronic communications services and establishment and provision of electronic communications networks.
- It reaffirms the principle of prohibition on exclusive and special rights, and clearly extends it to radio frequencies.
- It maintains the obligation to ensure that dominant providers of electronic communications services operate their public electronic communications network and Cable Television (CATV) network under separate legal entities.

6.2 Rationale

The following Articles are considered to be relevant to the objectives of the present document.

Table 2: Relevant Articles under Framework Directive

Article	Chapter	Title	Comments
1	Scope, aim and definition	Scope and aim	This is an introduction, which is further explained in Recitals
2	Scope, aim and definition	Definitions	Definitions are included within the present document
8	Tasks of NRA	Policy objectives and regulatory Principles	Underlying requirement for Article 17
17	General provisions	Standardization	Legal basis for the list of standards and/or specifications
18	General provisions	Interoperability of digital interactive television services	Taking into account the interoperability aspect of digital consumer equipment
19	General provisions	Harmonization Procedures	Legal basis for introducing harmonization
26	Final provisions	Repeal	Confirmation of those Directives and legislative measures that no longer apply in their entirety under new Regulatory Framework
27	Final provisions	Transitional measures	

Table 3: Relevant recommendations under R-LAN access to public ECNs and ECSs (2003/203/EC [14])

Rec.	Chapter	Title	Comments
4	-	-	Pursuant to Article 19 of Framework Directive on harmonization

6.3 Interpretation

6.3.1 Article 8: Policy objectives and regulatory Principles

Article 8 states:

"1. Member States shall ensure that in carrying out the regulatory tasks specified in this Directive and the Specific Directives, the national regulatory authorities take all reasonable measures which are aimed at achieving the objectives set out in paragraphs 2, 3 and 4. Such measures shall be proportionate to those objectives.
Member States shall ensure that in carrying out the regulatory tasks specified in this Directive and the Specific Directives, in particular those designed to ensure effective competition, national regulatory authorities take the utmost account of the desirability of making regulations technologically neutral.
National regulatory authorities may contribute within their competencies to ensuring the implementation of policies aimed at the promotion of cultural and linguistic diversity, as well as media pluralism.

2. The national regulatory authorities shall promote competition in the provision of electronic communications networks, electronic communications services and associated facilities and services by inter alias:

   (a) Ensuring that users, including disabled users, derive maximum benefit in terms of choice, price, and quality;

   (b) Ensuring that there is no distortion or restriction of competition in the electronic communications sector;

   (c) Encouraging efficient investment in infrastructure, and promoting innovation; and

   (d) Encouraging efficient use and ensuring the effective management of radio frequencies and numbering resources.

3. The national regulatory authorities shall contribute to the development of the internal market by inter alias:

   (a) Removing remaining obstacles to the provision of electronic communications networks, associated facilities and services and electronic communications services at European level;

   (b) Encouraging the establishment and development of trans-European networks and the interoperability of pan-European services, and end-to-end connectivity;

   (c) Ensuring that, in similar circumstances, there is no discrimination in the treatment of undertakings providing electronic communications networks and services;

   (d) Cooperating with each other and with the Commission in a transparent manner to ensure the development of consistent regulatory practice and the consistent application of this Directive and the Specific Directives.

4. The national regulatory authorities shall promote the interests of the citizens of the European Union by inter alias:

   (a) Ensuring all citizens have access to a universal service specified in Directive 2002/22/EC [4] (Universal Service Directive);

   (b) Ensuring a high level of protection for consumers in their dealings with suppliers, in particular by ensuring the availability of simple and inexpensive dispute resolution procedures carried out by a body that is independent of the parties involved;

   (c) Contributing to ensuring a high level of protection of personal data and privacy;

   (d) Promoting the provision of clear information, in particular requiring transparency of tariffs and conditions for using publicly available electronic communications services;

   (e) Addressing the needs of specific social groups, in particular disabled users; and

   (f) Ensuring that the integrity and security of public communications networks are maintained."

Table 4: Interpretation of Article 8 Framework Directive

Article 8 highlights that the main objectives of the framework are to: - Create a set of rules that are sufficiently flexible; - Deal with changing electronic communications markets and their degree of competition; - Encourage competition; - Improve the functioning of the internal market; - Guarantee basic user interests (freedom of choice) that would not be guaranteed by market forces. One of the means is through the implementation of open network provision. This Article underlines the requirement for Article 17: Interoperability of services. Standards may be used to increase competition through the specification of interfaces (whether physical or logical).

6.3.2 Article 17: Standardization

Article 17 states:

"1. The Commission, acting in accordance with the procedure referred to in Article 22(2), shall draw up and publish in the Official Journal of the European Communities a list of standards and/or specifications to serve as a basis for encouraging the harmonized provision of electronic communications networks, electronic communications services and associated facilities and services. Where necessary, the Commission may, acting in accordance with the procedure referred to in Article 22(2) and following consultation of the Committee established by Directive 98/34/EC [31], request that standards be drawn up by the European standards organizations European Committee for Standardization (CEN), European Committee for Electrotechnical Standardization CENELEC), and European Telecommunications Standards Institute (ETSI)).

2. Member States shall encourage the use of the standards and/or specifications referred to in paragraph 1, for the provision of services, technical interfaces and/or network functions, to the extent strictly necessary to ensure interoperability of services and to improve freedom of choice for users.

   As long as standards and/or specifications have not been published in accordance with paragraph 1, Member States shall encourage the implementation of standards and/or specifications adopted by the European standards organizations.

   In the absence of such standards and/or specifications, Member States shall encourage the implementation of international standards or recommendations adopted by the International Telecommunication Union (ITU), the International Organization for Standardization (ISO) or the International Electrotechnical Commission (IEC).

   Where international standards exist, Member States shall encourage the European standards organizations to use them, or the relevant parts of them, as a basis for the standards they develop, except where such international standards or relevant parts would be ineffective.

3. If the standards and/or specifications referred to in paragraph 1 have not been adequately implemented so that interoperability of services in one or more Member States cannot be ensured, the implementation of such standards and/or specifications may be made compulsory under the procedure laid down in paragraph 4, to the extent strictly necessary to ensure such interoperability and to improve freedom of choice for users.

4. Where the Commission intends to make the implementation of certain standards and/or specifications compulsory, it shall publish a notice in the Official Journal of the European Communities and invite public comment by all parties concerned. The Commission, acting in accordance with the procedure referred to in Article 22(3), shall make implementation of the relevant standards compulsory by making reference to them as compulsory standards in the list of standards and/or specifications published in the Official Journal of the European Communities.

5. Where the Commission considers that standards and/or specifications referred to in paragraph 1 no longer contribute to the provision of harmonized electronic communications services, or that they no longer meet consumers' needs or are hampering technological development, it shall, acting in accordance with the procedure referred to in Article 22(2), remove them from the list of standards and/or specifications referred to in paragraph 1.

6. Where the Commission considers that standards and/or specifications referred to in paragraph 4 no longer contribute to the provision of harmonized electronic communications services, or that they no longer meet consumers' needs or are hampering technological development, it shall, acting in accordance with the procedure referred to in Article 22(3), remove them from this list of standards and/or specifications referred to in paragraph 1.

7. This Article does not apply in respect of any of the essential requirements, interface specifications or harmonized standards to which the provisions of Directive 1999/5/EC [9] apply."

Table 5: Interpretation of Article 17 Framework Directive

Article 17 provides the basis for publishing a list of standards and/or specifications to encourage harmonization and the interoperability of ECNs, ECSs and associated facilities and services as prescribed within the specific Directives. NRAs may use those standards and/or specifications (refer to clause 4.1.7) that have been published under Article 17 by the European Commission, when deciding to introduce the appropriate ex-ante controls or requiring ECPs to make the necessary declarations under the various Directives. The tasks of the NRA are eased through the fact that interfaces are standardized to promote a common implementation within the market; which supports the concept for interconnection of 'black boxes' within or at the edge of ECNs, allowing for the transparency of services as seen by the end-user. Article 17(2) places and obligation on Member States to encourage the use of the standards and/or specifications to the extent strictly necessary to ensure interoperability of services and to improve freedom of choice for users (refer to clause 4.2.4). Articles 17(3) and 17(4) provide the Commission with the ability to make any standard and/or specification on the list compulsory after a public consultation. Articles 17(5) and 17(6) provide for the Commission to withdraw standards and/or specifications from the list.

6.3.3 Article 18: Interoperability of digital interactive television services

Article 18 states:

"1. In order to promote the free flow of information, media pluralism and cultural diversity, Member States shall encourage, in accordance with the provisions of Article 17(2):

   (a) providers of digital interactive television services for distribution to the public in the Community on digital interactive television platforms, regardless of the transmission mode, to use an open API;

   (b) providers of all enhanced digital television equipment deployed for the reception of digital interactive television services on interactive digital television platforms to comply with an open API in accordance with the minimum requirements of the relevant standards or specifications.

2. Without prejudice to Article 5(1)(b) of Directive 2002/19/ EC [1] (Access Directive), Member States shall encourage proprietors of APIs to make available on fair, reasonable and non-discriminatory terms, and against appropriate remuneration, all such information as is necessary to enable providers of digital interactive television services to provide all services supported by the API in a fully functional form.

3. Within one year after the date of application referred to in Article 28(1), second subparagraph, the Commission shall examine the effects of this Article. If interoperability and freedom of choice for users have not been adequately achieved in one or more Member States, the Commission may take action in accordance with the procedure laid down in Articles 17(3) and (4)."

Table 6: Interpretation of Article 18 Framework Directive

Member states must now encourage - all providers of digital interactive television services; and - all providers of enhanced digital TV equipment. to use of an open API as listed under Article 17. Article 18(3) stipulates that the Commission reserves the right to impose compulsory standards and/or specifications from the list of standards, to ensure interoperability and freedom of choice for users.
NOTE: Further studies specific to Article 18 have been made under EC Mandate M/331 and published in TR 102 282 [30].

6.3.4 Article 19: Harmonization procedures

Article 19 states:

"1. Where the Commission, acting in accordance with the procedure referred to in Article 22(2), issues recommendations to Member States on the harmonized application of the provisions in this Directive and the Specific Directives in order to further the achievement of the objectives set out in Article 8, Member States shall ensure that national regulatory authorities take the utmost account of those recommendations in carrying out their tasks. Where a national regulatory authority chooses not to follow a recommendation, it shall inform the Commission giving the reasoning for its position.

2. Where the Commission finds that divergence at national level in regulations aimed at implementing Article 10(4) creates a barrier to the single market, the Commission may, acting in accordance with the procedure referred to in Article 22(3), take the appropriate technical implementing measures."

Table 7: Interpretation of Article 19 Framework Directive

Article 19 is the mechanism by which the Commission can introduce new measures allowing a common and harmonized application of the new Regulatory Framework Directives, in particular publication in accordance with Article 17.

6.3.5 Article 26: Repeal

Article 26 states:

"The following Directives and Decisions are hereby repealed with effect from the date of application referred to in Article 28(1), second subparagraph:

- Directive 90/387/EEC [17];
- Council Decision 91/396/EEC [32] of 29 July 1991 on the introduction of a single European emergency call number (1);
- Council Directive 92/44/EEC [24] of 5 June 1992 on the application of open network provision to leased lines (2);
- Council Decision 92/264/EEC [33] of 11 May 1992 on the introduction of a standard international telephone access code in the Community (3);
- Directive 95/47/EC [8];
- Directive 97/13/EC [34];
- Directive 97/33/EC [35];
- Directive 98/10/EC [22] of the European Parliament and of the Council of 26 February 1998 on the application of open network provision (ONP) to voice telephony and on universal service for telecommunications in a competitive environment (4)."

Table 8: Interpretation of Article 26 Framework Directive

Article 26 clearly defines the Directives and Decisions that have been repealed. However, provisions in Article 7 of the Access (Directive 2002/19/EC [1]) and Article 16 of the Universal Service (Directive 2002/22/EC [4]) Directives refer to obligations that the National Regulatory Authorities shall maintain and therefore the standards and/or specifications that were applicable to those specific obligations must be maintained within the list, until such time that the NRAs have performed market analysis under Article 15 (Directive 2002/21/EC [3]) and a decision reached regarding those standards. This is further explained within Article 27 defining the transitional measures.

6.3.6 Article 27: Transitional measures

Article 27 states:

"Member States shall maintain all obligations under national law referred to in Article 7 of Directive 2002/19/EC [1] (Access Directive) and Article 16 of Directive 2002/22/EC [4] (Universal Service Directive) until such time as a determination is made in respect of those obligations by a national regulatory authority in accordance with Article 16 of this Directive.

Operators of fixed public telephone networks that were designated by their national regulatory authority as having significant market power in the provision of fixed public telephone networks and services under Annex I, Part 1 of Directive 97/33/EC [35] or Directive 98/10/EC [22] shall continue to be considered "notified operators" for the purposes of Regulation (EC) No 2887/2000 until such a time as the market analysis procedure referred to in Article 16 has been completed.

Thereafter they shall cease to be considered 'notified operators' for the purposes of the Regulation."

Table 9: Interpretation of Article 27 Framework Directive

Article 27 defines the transitional measures relating to the maintenance of obligations under previous Directives and repeated within the Access and Universal Service Directives.

6.3.7 Recommendation 4 of R-LAN access to public ECNs and ECSs (2003/203/EC)

The recommendations state:

"HEREBY RECOMMENDS
[…]

4. That Member States should pay special attention to the requirements of Articles 4 and 5 of Directive 97/66/EC [26] and the equivalent provisions in Directive 2002/58/EC [5], which regulate security and confidentiality of public communications networks and services."

Table 10: Interpretation of recommendation

Pursuant to the principles of Article 19 of the Framework Directive (2002/21/EC [3]) on harmonization and the general authorization procedure with the Authorisation Directive (2002/20/EC [2]) the European Commission recommends access to public ECNs and ECSs by public R-LANs. However, it further recommends taking into consideration appropriate safeguards ensuring end-users rights in relation to Security and Privacy.

6.4 Justification

Table 11 specifies the justifications for Article 17 (Directive 2002/21/EC [3]) standardization requirements based upon the rationale and interpretations given for those Articles identified under the Framework Directive (2002/21/EC [3]).

Table 11: Directive 2002/21/EC [3] - Justifications

Item	Article	Justification
1	8	a) Freedom of choice for users in terms of choice, price and quality. b) Interoperability of ECNs, associated facilities and services and ECSs at European level. c) Interoperability of pan-European services, end-to-end connectivity of trans-European networks. d) Ensuring the access to a Universal service for all citizens. e) Ensuring a high level of protection of personal data and privacy. f) Provision of information on transparency of tariffs and conditions for using publicly available ECSs. g) Addressing the needs of specific social groups, in particular disabled users. h) Ensuring the integrity and security of public communications networks.

Item	Article	Justification
2	17	A list of standards and/or specifications to encourage harmonization and the interoperability of ECNs, ECSs and associated facilities and services as prescribed within the specific Directives. Specifically relating to: a) interoperability of services: i) access; ii) interconnection; iii) inter-working; iv) open interfaces. b) freedom of choice for users. c) adherence to EU IPR policy.
3	18	a) Interoperability of digital interactive television services. b) Provision of open APIs.
4	26	Maintenance of standards and/or specifications applicable under previous ONP legislation, until such time that the NRAs have performed market analysis under Article 15 (2002/21/EC [3]).

Table 12: Commission Recommendation 2003/203/EC [14] - Justifications

Item	Rec.	Justification
1	4	Access to PECNs and PECSs by Public R-LANs

6.5 Caveats

6.5.1 Article 2

The definition of Electronic Communications Service excludes Information Society services, which includes e-Commerce. Clarification is sought from Commission Services in respect of Electronic Signatures and Security mechanisms that are used to facilitate secure transactions within such services as e-Commerce.

6.5.2 Article 18

In relation to justification in table 11 item 3b, the term "open" is used in the respect of open APIs used ultimately in this context for implementation within broadcast receivers. However, STF 254 in consultation with STF 255 is acutely aware that the Broadcast industry is divided in its interpretation to the definition of openness in relation to such technical interfaces. Given that in other areas throughout the Directives the premise for some interpretations have aligned with those in Competition Law (e.g. SMP), would it be correct to assume that 'open' in this context would best also to be defined in relation to Competition Law principles? Ideally, it would be best for Commission Services to provide the legal intent for this term as it has wider impact on standardization in relation to Article 17. STF 254 and STF 255 are aligned on these points.

7 Analysis of Authorisation Directive (2002/20/EC) with respect to standardization

7.1 Introduction

The Authorisation Directive (2002/20/EC [2]) introduces the concept where a general authorization will be issued by NRAs to Electronic Communication Providers to replace the previous national licensing regimes. This new concept establishes a system whereby any person will be generally authorized to provide communication services and/or networks without the requirement for prior approval to provide specific or additional services.

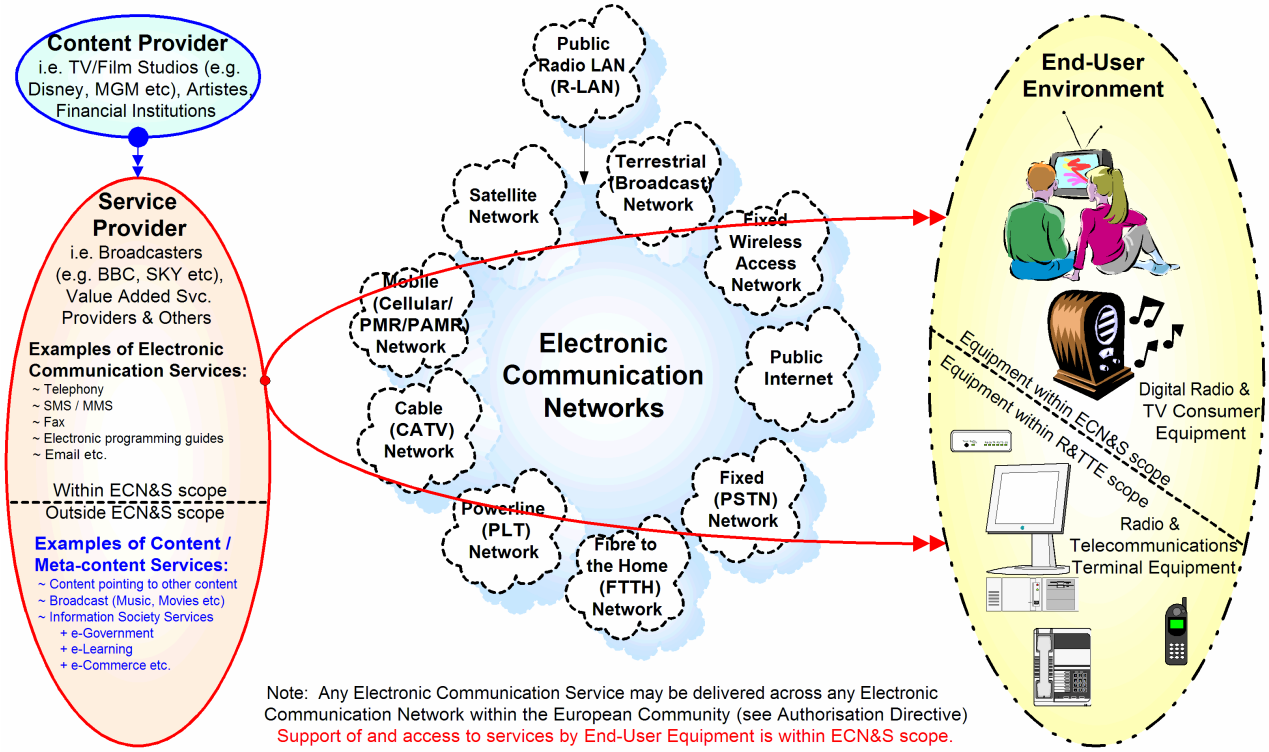


Figure 6: Principle of the Authorisation Directive to Electronic Communication Networks and Services

The Authorisation Directive (2002/20/EC [2]) introduces the following principles:

- Establishment of a general authorization regime for electronic communication activities (Article 3). However, certain activities will require individual authorization by NRAs:
  - Creation and operation of a public network.
  - Provision of a public telephone service.
  - Provision of services using radio frequencies.
  - Creation of an independent network.
- Regime of rights of use for radio frequencies and numbers (Article 5).
- Member States may introduce secondary trading in frequencies (Article 5).
- Rights of inspection and powers of sanction of the NRAs (Article 10).
- Charges and fees (Articles 12 and 13).
- Transitional provisions for existing authorizations (Article 17).

The principle of general authorization highlights the basis for interconnection of services and interconnection of networks. One of the key tools within the NRAs' "tool box" to facilitate interconnection is the list of standards produced under Article 17 (2002/21/EC [3]).

7.2 Rationale

The following Articles are considered to be relevant to the objectives of the present document.

Table 13: Relevant Articles under the Authorisation Directive

Article	Chapter	Title	Comments
1	-	Objective and scope	This is an introduction, which is further explained in Recitals
2	-	Definitions	Definitions are included within the present document
4	-	Minimum list of rights derived from the general authorization	General rights to provide electronic communications Clauses 1(a) and 2
6	-	Conditions attached to the general authorization and to the rights of use for radio frequencies and for numbers and specific obligations	Clause 6(1)
Annex	-	-	Part A 3; 6; 7; 8; 11; 12; 14; 15; 16 and 18 Part C 3 and 4

7.3 Interpretation

7.3.1 Article 4: Minimum list of rights derived from the general authorization

Article 4 states:

"1. Undertakings authorized pursuant to Article 3, shall have the right to:

(a) provide electronic communications networks and services;

[…]

2. When such undertakings provide electronic communications networks or services to the public the general authorization shall also give them the right to:

(a) negotiate interconnection with and where applicable obtain access to or interconnection from other providers of publicly available communications networks and services covered by a general authorization anywhere in the Community under the conditions of and in accordance with Directive 2002/19/EC [1] (Access Directive);

(b) be given an opportunity to be designated to provide different elements of a universal service and/or to cover different parts of the national territory in accordance with Directive 2002/22/EC [4] 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) (1)."

Table 14: Interpretation of Article 4 Authorisation Directive

Article 4 defines the general rights to provide electronic communications throughout the European Community and the opportunity for ECPs to be designated to provide elements of a Universal Service in accordance with the Universal Service Directive. Once an ECP has been granted the right to provide electronic communications networks and services, ECPs with SMP may be required by NRAs (subject to market analysis) to allow access and interconnection to their network to encourage competition.

7.3.2 Article 6: Conditions attached to the general authorization and to the rights of use for radio frequencies and for numbers, and specific obligations

Article 6 states:

"1. The general authorization for the provision of electronic communications networks or services and the rights of use for radio frequencies and rights of use for numbers may be subject only to the conditions listed respectively in parts A, B and C of the Annex. Such conditions shall be objectively justified in relation to the network or service concerned, non-discriminatory, proportionate and transparent."

Table 15: Interpretation of Article 6 Authorisation Directive

Having access to the end-users requires access to certain elements of an ECN for interoperability; such facilities may include number translation. Standardization of the interface to such facilities will therefore bring value to the market and NRAs when considering access to these facilities and will support the "black box" approach within an ECN.

7.3.3 Annex

"The conditions listed in this Annex provide the maximum list of conditions which may be attached to general authorizations (Part A), rights to use radio frequencies (Part B) and rights to use numbers (Part C) as referred to in Articles 6(1) and 11(1)(a).

A. Conditions which may be attached to a general authorization

[…]

3. Interoperability of services and interconnection of networks in conformity with Directive 2002/19/EC (Access Directive).

[…]

6. Must carry obligations in conformity with Directive 2002/22/EC [4] (Universal Service Directive).

7. Personal data and privacy protection specific to the electronic communications sector in conformity with Directive 97/66/EC [26] of the European Parliament and of the Council of 15 December 1997 concerning the processing of personal data and the protection of privacy in the telecommunications sector (1).

8. Consumer protection rules specific to the electronic communications sector including conditions in conformity with Directive 2002/22/EC [4] (Universal Service Directive).

[…]

11. Enabling of legal interception by competent national authorities in conformity with Directive 97/66/EC [26] and Directive 95/46/EC [27] of the European Parliament and of the Council of 24 October 1995 on the protection of individuals with regard to the processing of personal data and on the free movement of such data (4).

12. Terms of use during major disasters to ensure communications between emergency services and authorities and broadcasts to the general public.

[…]

14. Access obligations other than those provided for in Article 6(2) of this Directive applying to undertakings providing electronic communications networks or services, in conformity with Directive 2002/19/EC [1] (Access Directive).

15. Maintenance of the integrity of public communications networks in accordance with Directive 2002/19/EC [1] (Access Directive) and Directive 2002/22/EC [4] (Universal Service Directive) including by conditions to prevent electromagnetic interference between electronic communications networks and/or services in accordance with Council Directive 89/336/EEC [36] of 3 May 1989 on the approximation of the laws of the Member States relating to electromagnetic compatibility (1).

16. Security of public networks against unauthorized access according to Directive 97/66/EC [26].

[…]

18. Measures designed to ensure compliance with the standards and/or specifications referred to in Article 17 of Directive 2002/21/EC [3] (Framework Directive).

[…]

C. Conditions which may be attached to rights of use for numbers.

[…]

3. Number portability requirements in conformity with Directive 2002/22/EC [4] (Universal Service Directive).

4. Obligation to provide public directory subscriber information for the purposes of Articles 5 and 25 of Directive 2002/22/EC [4] (Universal Service Directive).

Table 16: Interpretation of Annex to Authorisation Directive

While Article 4 of the Authorisation Directive provides the minimum list of rights for ECPs, this Annex lists the maximum list of conditions and will also serve as a basis for inclusion of standards and/or specifications on the Article 17 list to assist NRAs when considering technical solutions to ensure competition. This approach further supports the "black box" approach to ECNs.

7.4 Justification

Table 17 specifies the justifications for Article 17 (2002/21/EC [3]) standardization requirements based upon the rationale and interpretations given for those Articles identified under the Authorisation Directive (2002/20/EC [2]).

Table 17: Directive 2002/20/EC [2] - Justifications

Item	Article	Justification
1	6	Access by third parties to certain elements of an ECNs for interoperability.
2	Annex	Conditions that may be attached to general authorization: a) Interoperability of services (in conformity with Access Directive - 2002/19/EC [1]). b) Interconnection of networks (in conformity with Access Directive - 2002/19/EC [1]). c) Obligations in conformity with Universal Service Directive - 2002/22/EC [4]. d) Ensuring personal data and privacy protection (in conformity with Directive 97/66/EC - processing of personal data and the protection of privacy in the telecommunication sector). e) Ensuring consumer protection rules (in conformity with Universal Service Directive - 2002/22/EC [4]). f) Enabling of legal interception by competent national authorities (in conformity with Directive 97/66/EC [26]). g) Ensuring communications between emergency services and authorities and broadcasts to the general public during major disasters. h) Access obligations other than provided in Article 6(2) of the Authorisation Directive applying to undertakings providing ECNs or services (in conformity with Access Directive - 2002/19/EC [1]). i) Maintenance of integrity of public communications networks (in conformity with Access Directive - 2002/19/EC [1]). j) Ensuring conditions to prevent electromagnetic interference between ECNs and services (in accordance with Council Directive 89/336/EEC [36]). k) Security of public networks against unauthorized access (according to Directive 97/66/EC [26]). l) Ensuring compliance with the standards and/or specifications referred to in Article 17 of Framework Directive - 2002/21/EC [3].

7.5 Caveats

7.5.1 General

Most of the conditions attached to General Authorization are provided for in other directives within the new Framework or under other regulation and do not require specific identification of standards in the list of standards in accordance with Article 17 of the Framework Directive (2002/21/EC [3]).

7.5.2 Lawful interception standardization

The provision of lawful interception standards does not appear to be directly supported by the following statement in Article 17 of the Framework Directive (2002/21/EC [3]) "Member States shall encourage the use of the standards and/or specifications … to the extent strictly necessary to ensure interoperability of services and to improve freedom of choice for users" as standards in this area affect neither interoperability of services nor consumer choice.

8 Analysis of Access Directive (2002/19/EC) with respect to standardization

8.1 Introduction

The Access Directive (2002/19/EC [1]) relates both to access and to interconnection of electronic communications networks and associated facilities. It sets out the terms on which providers may access each other's networks and services with a view to providing publicly available electronic communication services. Access and interconnection are related but different concepts.

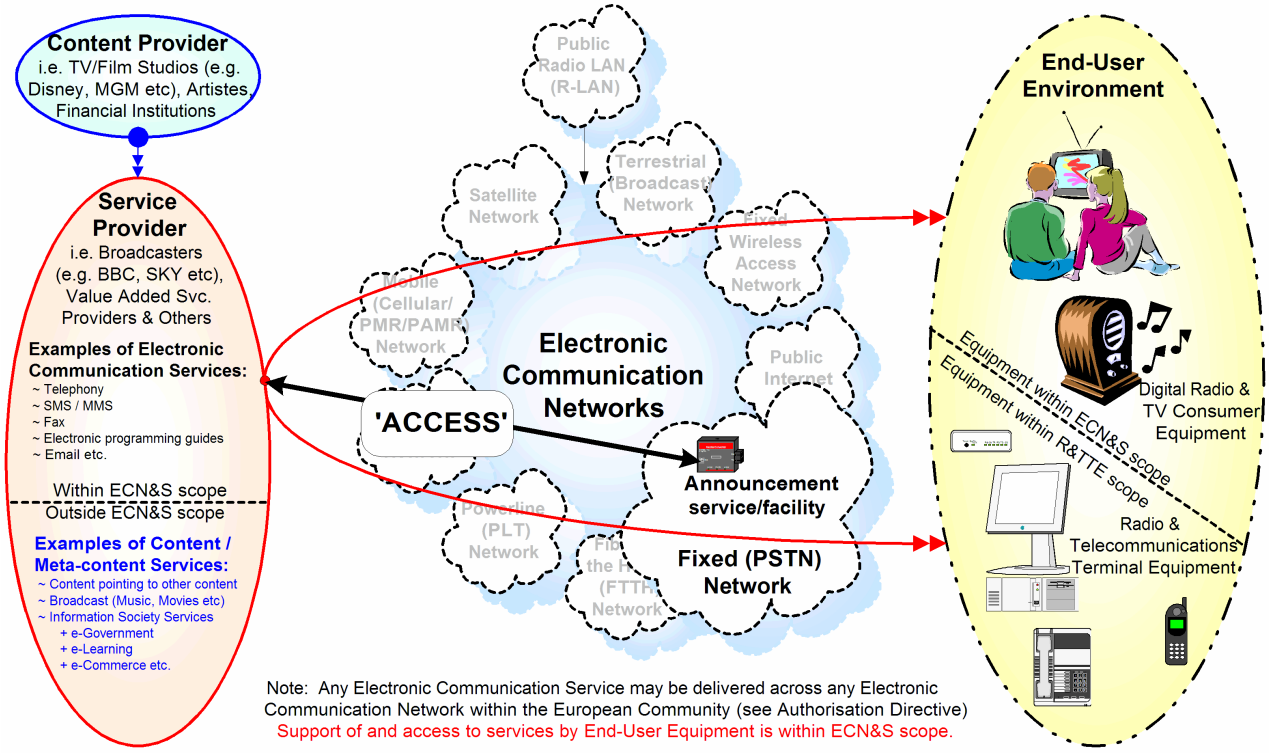


Figure 7: Principle of the term Access to Electronic Communication Networks and Services

"Access" - is a widely used term and could refer to the connection of a subscriber or to a third party service provider. Access as defined within the new Regulatory Framework does not refer to access to the end-user, but the making available of facilities and/or services, to another Electronic Communication Provider, under defined conditions, on either an exclusive or non-exclusive basis, for the purpose of providing electronic communications services. Access will undoubtedly and increasingly be realized through APIs and concerns the vertical hand-off to the content layer.

The typical examples (see note) of access are:

a) unbundled local loops (individual network components enabling maximum use by the purchasing operators' of its own facilities and technology whilst having access to the customer over the "last mile" of an SMP operator's network);

b) interconnection including partial private circuits and ATM xDSL interconnection (enabling one operator to connect its network to another to enable its users to communicate with those on the other network);

c) wholesale ADSL services (an end-to-end service provider product allowing the purchaser to deliver their own "value added" services such as Internet access over the provider's network);

d) reseller products such as calls and access (providing an end-to-end technical solution while permitting the purchasing undertaking (known as "systemless" service providers under the previous regime) to take on non-communications functions such as marketing and customer service including billing and technical support;

e) access to digital TV platforms (conditional access) (an 'associated facility' enabling a content or service provider to provide services to end-users);

f) co-location facilities or access to operational support systems or billing/other information (associated facilities which support the provision of other wholesale products such as unbundled local loops);

g) open access to technical interfaces, protocols or other key technologies that are indispensable for the interoperability of services or virtual network services.

NOTE: OFTEL (UK) "Imposing access obligations under the new EU Directives" (18 December 2002).

As explained in clause E.3, Access (and interconnection) are just one element of the toolbox available to NRAs to stimulate and encourage competition.

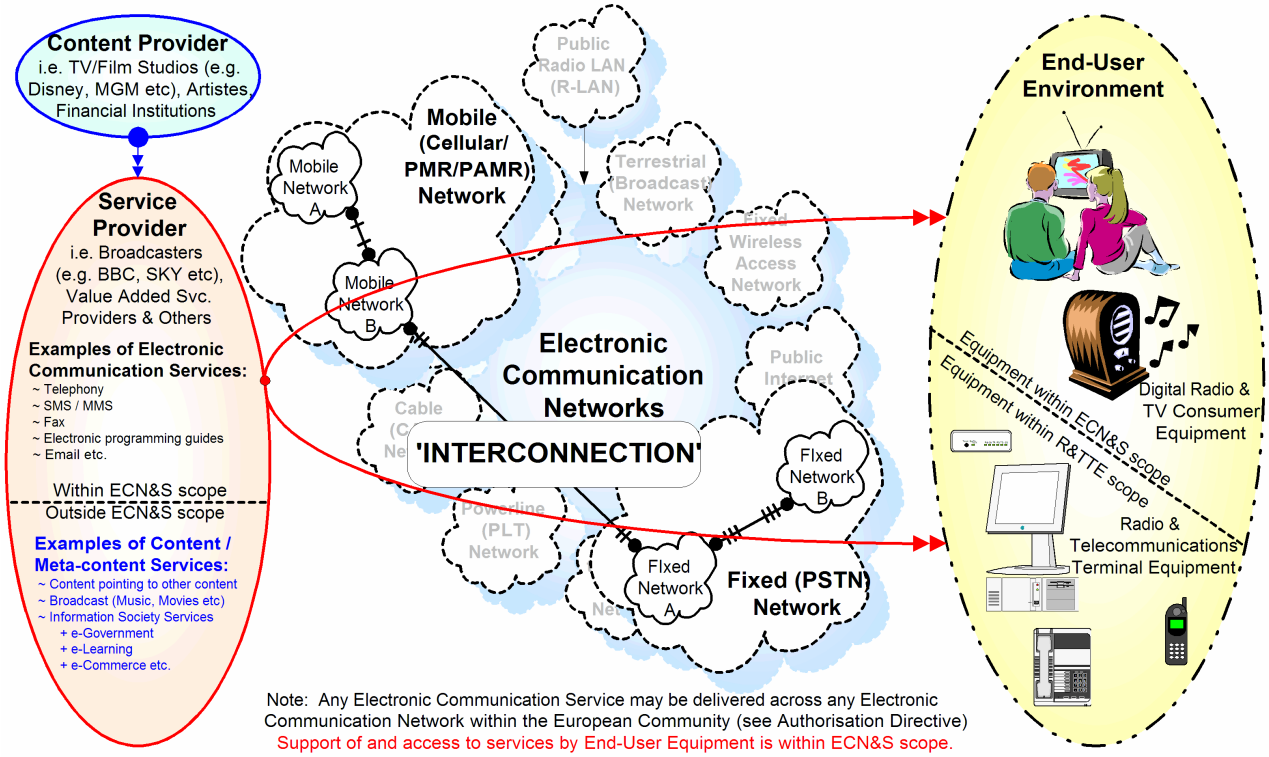


Figure 8: Principle of the term Interconnection to Electronic Communication Networks and Services

"Interconnection" as depicted in figure 8 may be implemented between either the same or different types of ECN and requires a common interface (whether electrical, magnetic, electro-magnetic energy, signalling or protocol) to facilitate the interconnection. It is like peering and concerns a horizontal hand-off.

Table 18: Examples of Access / Interconnection when providing a Telephony Service

Associated facility / service	Access or interconnection
Number Translation	Access
User Location Data	Access for emergency services only, provided via interconnect to PSAP
Announcement Service (server)	Access
Call metering (information transferred via signalling)	Access and interconnection
…	

Table 19: Examples of Access / Interconnection when providing an Short Message Service

Associated facility / service	Access or interconnection
SM - SC	Access
Cell Broadcast Service	Access
…	

8.2 Rationale

The following Articles are considered to be relevant to the objectives of the present document.

Table 20: Relevant Articles under Access Directive

Article	Chapter	Title	Comments
1	Scope, aim and definition	Objective and scope	This is an introduction, which is further explained in Recitals
2	Scope, aim and definition	Definitions	Definitions are included within the present document
4	General provisions	Rights and obligations for undertakings	Article 4.2 applies
5	General provisions	Powers and responsibilities of the national regulatory authorities with regard to access and interconnection	Identifies how and when Article17 list (Framework Directive - 2002/21/EC [3]) will be used
7	Obligations on operators and market review procedures	Review of former obligations for access and interconnection	Clause 7.1 To maintain previous obligations (Lease Line requirements, etc.)
9	Obligations on operators and market review procedures	Obligation of transparency	Declaration against Article 17 list.
12	Obligations on operators and market review procedures	Obligations of access to, and use of, specific network facilities	As a basis for Article17 list (Framework Directive) 1: (a); (e); (g); (h); (i) 2: (f)
-	Annex I	Conditions for access to digital TV and radio services broadcast to viewers and listeners in the community	
-	Annex II	Minimum list of items to be included in a reference offer for unbundled access to the twisted metallic pair local loop to be published by notified operators	As a basis for Article17 list (Framework Directive) A, C and D.1

8.3 Interpretation

8.3.1 Article 4.2: Rights and obligations for undertakings

Article 4.2 states:

"Public electronic communications networks established for the distribution of digital television services shall be capable of distributing wide-screen television services and programmes. Network operators that receive and redistribute wide-screen television services or programmes shall maintain that wide-screen format."

Table 21: Interpretation of Article 4.2 Access Directive

Services are transmitted as information via communication networks, and as such should not be modified. The term "undertakings" has been interpreted for the purposes of the present document to mean Electronic Communication Providers (ECPs).

8.3.2 Article 5: Powers and responsibilities of the national regulatory authorities with regard to access and interconnection

Article 5 states:

"1. National regulatory authorities shall, acting in pursuit of the objectives set out in Article 8 of Directive 2002/21/EC [3] (Framework Directive), encourage and where appropriate ensure, in accordance with the provisions of this Directive, adequate access and interconnection, and interoperability of services, exercising their responsibility in a way that promotes efficiency, sustainable competition, and gives the maximum benefit to end-users.

In particular, without prejudice to measures that may be taken regarding undertakings with significant market power in accordance with Article 8, national regulatory authorities shall be able to impose:

(a) to the extent that is necessary to ensure end-to-end connectivity, obligations on undertakings that control access to end-users, including in justified cases the obligation to interconnect their networks where this is not already the case;

(b) to the extent that is necessary to ensure accessibility for end-users to digital radio and television broadcasting services specified by the Member State, obligations on operators to provide access to the other facilities referred to in Annex I, Part II on fair, reasonable and non-discriminatory terms.

2. When imposing obligations on an operator to provide access in accordance with Article 12, national regulatory authorities may lay down technical or operational conditions to be met by the provider and/or beneficiaries of such access, in accordance with Community law, where necessary to ensure normal operation of the network. Conditions that refer to implementation of specific technical standards or specifications shall respect Article 17 of Directive 2002/21/EC [3] (Framework Directive).

3. Obligations and conditions imposed in accordance with paragraphs 1 and 2 shall be objective, transparent, proportionate and non-discriminatory, and shall be implemented in accordance with the procedures referred to in Articles 6 and 7 of Directive 2002/21/EC [3] (Framework Directive). (1) See page 51 of this Official Journal.

4. With regard to access and interconnection, Member States shall ensure that the national regulatory authority is empowered to intervene at its own initiative where justified or, in the absence of agreement between undertakings, at the request of either of the parties involved, in order to secure the policy objectives of Article 8 of Directive 2002/21/EC [3] (Framework Directive), in accordance with the provisions of this Directive and the procedures referred to in Articles 6 and 7, 20 and 21 of Directive 2002/21/EC [3] (Framework Directive)."

Table 22: Interpretation of Article 5 Access Directive

Further to the market analysis performed by an NRA and subject to its decision of which element to use within its toolbox, NRAs may define technical and operational conditions for third parties to access to the operator facilities. Technical conditions may include the obligations to provide access conformant to relevant standards or specifications published pursuant to Article 17. The NRA will make sure that technical and operational conditions are met.

8.3.3 Article 7: Review of former obligations for access and interconnection

Article 7 states:

"1. Member States shall maintain all obligations on undertakings providing public communications networks and/or services concerning access and interconnection that were in force prior to the date of entry into force of this Directive under Articles 4, 6, 7, 8, 11, 12 and 14 of Directive 97/33/EC [35], Article 16 of Directive 98/10/EC [22], and Articles 7 and 8 of Directive 92/44/EC [24], until such time as these obligations have been reviewed and a determination made in accordance with paragraph 3. […]."

Table 23: Interpretation of Article 7 Access Directive

Provisions in Article 7 (Access Directive - 2002/19/EC [1]) and Article 16 of the Universal Service Directive (2002/22/EC [4]) refer to obligations that the National Regulatory Authorities shall maintain, despite the fact that the Directives have been repealed under Article 26 of the Framework Directive (2002/21/EC [3]). Therefore the standards and/or specifications that were applicable to those specific obligations must be maintained within the list, such as Leased Lines, at least until such time that the NRAs have performed market analysis under Article 15 of the Framework Directive (2002/21/EC [3]) and a decision reached regarding those standards. Enabling NRAs to utilize those identified standards as part of their toolbox. This is further explained within Article 27 of the Framework Directive (2002/21/EC [3]) defining the transitional measures.

8.3.4 Article 9: Obligation of transparency

Article 9 states:

"1. National regulatory authorities may, in accordance with the provisions of Article 8, impose obligations for transparency in relation to interconnection and/or access, requiring operators to make public specified information, such as accounting information, technical specifications, network characteristics, terms and conditions for supply and use, and prices.

2. In particular where an operator has obligations of non-discrimination, national regulatory authorities may require that operator to publish a reference offer, which shall be sufficiently unbundled to ensure that undertakings are not required to pay for facilities which are not necessary for the service requested, giving a description of the relevant offerings broken down into components according to market needs, and the associated terms and conditions including prices. The national regulatory authority shall, inter alia, be able to impose changes to reference offers to give effect to obligations imposed under this Directive.

3. National regulatory authorities may specify the precise information to be made available, the level of detail required and the manner of publication.

4. Notwithstanding paragraph 3, where an operator has obligations under Article 12 concerning unbundled access to the twisted metallic pair local loop, national regulatory authorities shall ensure the publication of a reference offer containing at least the elements set out in Annex II.

5. In the light of market and technological developments, Annex II may be amended in accordance with the procedure referred to in Article 14(3)."

Table 24: Interpretation of Article 9 Access Directive

Transparency of terms and conditions for access and interconnection, including prices, serve to speed-up negotiation, avoid disputes and give confidence to market players that a service is not being provided on discriminatory terms. Openness and transparency of technical interfaces are particularly important in ensuring interoperability. In order for an NRA to ensure interoperability, they may use the list of standards under Article 17 (Framework Directive - 2002/21/EC [3]) to show that openness and transparency is effective.

8.3.5 Article 12: Obligations of access to, and use of, specific network facilities

Article 12 states:

"1. A national regulatory authority may, in accordance with the provisions of Article 8, impose obligations on operators to meet reasonable requests for access to, and use of, specific network elements and associated facilities, inter alia in situations where the national regulatory authority considers that denial of access or unreasonable terms and conditions having a similar effect would hinder the emergence of a sustainable competitive market at the retail level, or would not be in the end-user's interest.

Operators may be required inter alia:

(a) to give third parties access to specified network elements and/or facilities, including unbundled access to the local loop;

[…]

(e) to grant open access to technical interfaces, protocols or other key technologies that are indispensable for the interoperability of services or virtual network services;

[…]

(g) to provide specified services needed to ensure interoperability of end-to-end services to users, including facilities for intelligent network services or roaming on mobile networks;

(h) to provide access to operational support systems or similar software systems necessary to ensure fair competition in the provision of services;

(i) to interconnect networks or network facilities.

National regulatory authorities may attach to those obligations conditions covering fairness, reasonableness and timeliness.

2. When national regulatory authorities are considering whether to impose the obligations referred in paragraph 1, and in particular when assessing whether such obligations would be proportionate to the objectives set out in Article 8 of Directive 2002/21/EC [3] (Framework Directive), they shall take account in particular of the following factors:

[…]

(f) the provision of pan-European services.

Table 25: Interpretation of Article 12 Access Directive

The sub parts of Article 12, as listed above, are regarded as being the basis for identifying those elements within ECNs that ECPs may require either access to, or interconnection with. Correspondingly Article 9 of the Authorisation Directive (2002/20/EC [2]) specifies that the NRAs are required to provide Electronic Communication Providers with a standard declaration relating to their rights for access and interconnection. Article 12 will be used extensively in the preparation of the present document, when reviewing each of the network types (Mobile, Fixed and Cable) to identify standards and/or specifications for inclusion within the Article 17 list. Identification of standard access points is important to the success of ensuring interoperability. Whilst mandating access to a network infrastructure can be justified as a means of increasing competition, NRAs will need to balance the rights of an infrastructure owner to exploit its infrastructure for its own benefit, and the rights of other service providers to access facilities that are essential for the provision of competing services. Any such measures will be subject to the results of market analysis and the other options/elements open to the NRA to facilitate competition.

8.3.6 Annex I: Conditions for access to digital television and radio services broadcast to viewers and listeners in the community

Annex I states:

"Part I: Conditions for conditional access systems to be applied in accordance with Article 6(1).

In relation to conditional access to digital television and radio services broadcast to viewers and listeners in the Community, irrespective of the means of transmission, Member States must ensure in accordance with Article 6 that the following conditions apply:

(a) conditional access systems operated on the market in the Community are to have the necessary technical capability for cost-effective transcontrol allowing the possibility for full control by network operators at local or regional level of the services using such conditional access systems;

(b) all operators of conditional access services, irrespective of the means of transmission, who provide access services to digital television and radio services and whose access services broadcasters depend on to reach any group of potential viewers or listeners are to:

- offer to all broadcasters, on a fair, reasonable and non-discriminatory basis compatible with Community competition law, technical services enabling the broadcasters' digitally-transmitted services to be received by viewers or listeners authorized by means of decoders administered by the service operators, and comply with Community competition law;
- keep separate financial accounts regarding their activity as conditional access providers.

(c) when granting licences to manufacturers of consumer equipment, holders of industrial property rights to conditional access products and systems are to ensure that this is done on fair, reasonable and non-discriminatory terms. Taking into account technical and commercial factors, holders of rights are not to subject the granting of licences to conditions prohibiting, deterring or discouraging the inclusion in the same product of:

- a common interface allowing connection with several other access systems; or
- means specific to another access system, provided that the licensee complies with the relevant and reasonable conditions ensuring, as far as he is concerned, the security of transactions of conditional access system operators.

Part II: Other facilities to which conditions may be applied under Article 5(1)(b):

(a) Access to application program interfaces (APIs);

(b) Access to electronic programme guides (EPGs)."

Table 26: Interpretation of Annex I Access Directive

Annex I together with Article 12, will be used as the basis for identifying those elements within Conditional Access systems that are required to have standards and/or specifications listed under Article 17.

8.3.7 Annex II: Minimum list of items to be included in a reference offer for unbundled access to thetwisted metallic pair local loop to be published by notified operators

Annex II states:

"For the purposes of this Annex the following definitions apply:

(a) "local sub-loop" means a partial local loop connecting the network termination point at the subscriber's premises to a concentration point or a specified intermediate access point in the fixed public telephone network;

(b) "unbundled access to the local loop" means full unbundled access to the local loop and shared access to the local loop; it does not entail a change in ownership of the local loop;

(c) "full unbundled access to the local loop" means the provision to a beneficiary of access to the local loop or local sub-loop of the notified operator authorizing the use of the full frequency spectrum of the twisted metallic pair;

(d) "shared access to the local loop" means the provision to a beneficiary of access to the local loop or local sub-loop of the notified operator, authorizing the use of the non-voice band frequency spectrum of the twisted metallic pair; the local loop continues to be used by the notified operator to provide the telephone service to the public;

A. Conditions for unbundled access to the local loop:

1. Network elements to which access is offered covering in particular the following elements:

   (a) access to local loops;

   (b) access to non-voice band frequency spectrum of a local loop, in the case of shared access to the local loop;

2. Information concerning the locations of physical access sites (1), availability of local loops in specific parts of the access network;

3. Technical conditions related to access and use of local loops, including the technical characteristics of the twisted metallic pair in the local loop;

4. Ordering and provisioning procedures, usage restrictions.

[B …]

C. Information systems:

Conditions for access to notified operator's operational support systems, information systems or databases for pre-ordering, provisioning, ordering, maintenance and repair requests and billing.

D. Supply conditions:

1. Lead time for responding to requests for supply of services and facilities; Service Level Agreements (SLAs), fault resolution, procedures to return to a normal level of service and quality of service parameters."

Table 27: Interpretation of Annex II Access Directive

The sub parts of Annex I, as listed above, together with Article 12 are regarded as being the basis for identifying those elements within ECNs that ECPs may require either access to, or interconnection with, in order to facilitate local loop unbundling.

8.4 Justification

Table 28 specifies the justifications for Article 17 (2002/21/EC [3]) standardization requirements based upon the rationale and interpretations given for those Articles identified under the Access Directive (2002/19/EC [1]).

Table 28: Directive 2002/19/EC [1] - Justifications

Item	Article	Justification
1	4.2	Transparent redistribution of digital TV services and programmes when provided in wide-screen format.
2	5.1	Measures that may be taken by NRAs in a way that promotes efficiency, sustainable competition and gives maximum benefit to end-users (in accordance with Article 8) to encourage and where appropriate ensure: a) end-to-end connectivity; b) adequate access; c) adequate interconnection; d) adequate interoperability; e) accessibility for end-users to digital radio and television broadcasting services.
3	5.2	a) Technical or operational conditions for an access to ensure normal operation of the network. b) Conditions for implementation of specific standards or specifications (with respect to Article 17 - 2002/21/EC [3]).
4	7	Maintenance of obligations by NRAs under previous Directives, until completion of Market Analysis
5	12	a) Access of third parties to specified network elements and/or facilities, including unbundled access to the local loop. b) Open access to technical interfaces, protocols or other key technologies to ensure the interoperability of services or virtual network services: i) Open access to technical interfaces to ensure the interoperability of services or virtual network services. ii) Open access to protocols to ensure the interoperability of services or virtual network services. iii) Open access to key technologies to ensure the interoperability of services or virtual network services. c) Specified services for the interoperability of end-to-end services to users, including facilities for intelligent network services or roaming on mobile networks. d) Access to operational support systems or similar software systems. e) Interconnection of networks or network facilities. f) Provision of pan-European services.
6	Annex I	a) Conditional access to digital TV and radio services broadcast to end-users. b) Access to application program interfaces (APIs). c) Access to electronic programme guides (EPGs).
7	Annex II	a) Access to local loops. b) Access to non-voice band frequency spectrum of a local loop, in the case of shared access to the local loop. c) Access and use of local loops. d) Technical characteristics of the twisted metallic pair in the local loop. e) Access to notified operator's operational support systems, information systems or databases for pre-ordering, provisioning, ordering, maintenance and repair requests and billing.

8.5 Caveats

8.5.1 General

Recital (Whereas: (1)) in the Access Directive (2002/19/EC [1] states "Non-public networks do not have obligations under this Directive except where, in benefiting from access to public networks, they may be subject to conditions laid down by member states". However, with respect that private and corporate networks are outside the scope of the present document, further clarification is requested to understand what is meant by the term "benefiting from access to public networks" such that this can be used as basis for further analysis of the identified Articles on the various network technologies.

It is assumed that the standards bodies cannot restrict the application of technology and as such the standards are neutral of business type. Hence, for example, whilst TETRA is primarily employed in "private" networks there is no restriction on its use in "public" networks, or whilst DECT is primarily used in consumer or business premises there is no restriction on its use as part of a "public" network.

9 Analysis of the Universal Service Directive (2002/22/EC) with respect to standardization

9.1 Introduction

The Universal Service Directive (2002/22/EC [4]) concerns, among others, the universal service obligations including social obligations (Chapter II), the regulatory control on undertaking with SMP in specific markets (Chapter III), and the end users interests and rights (Chapter IV) - a basic set of services that must be provided to end-users. The rationale behind regulatory intervention with respect to the end users interests and rights is that the revenues from telecommunications services to certain groups of customers are less than the cost of provision. This is why in a fully commercial world these customers would not receive service. However, wider economic and social benefits justify the provision of telecommunications service to these customers (for example, improved employment, economic benefits to rural or isolated areas that would not have access to telecommunications, social benefits of integration of customers with society in general, etc.).

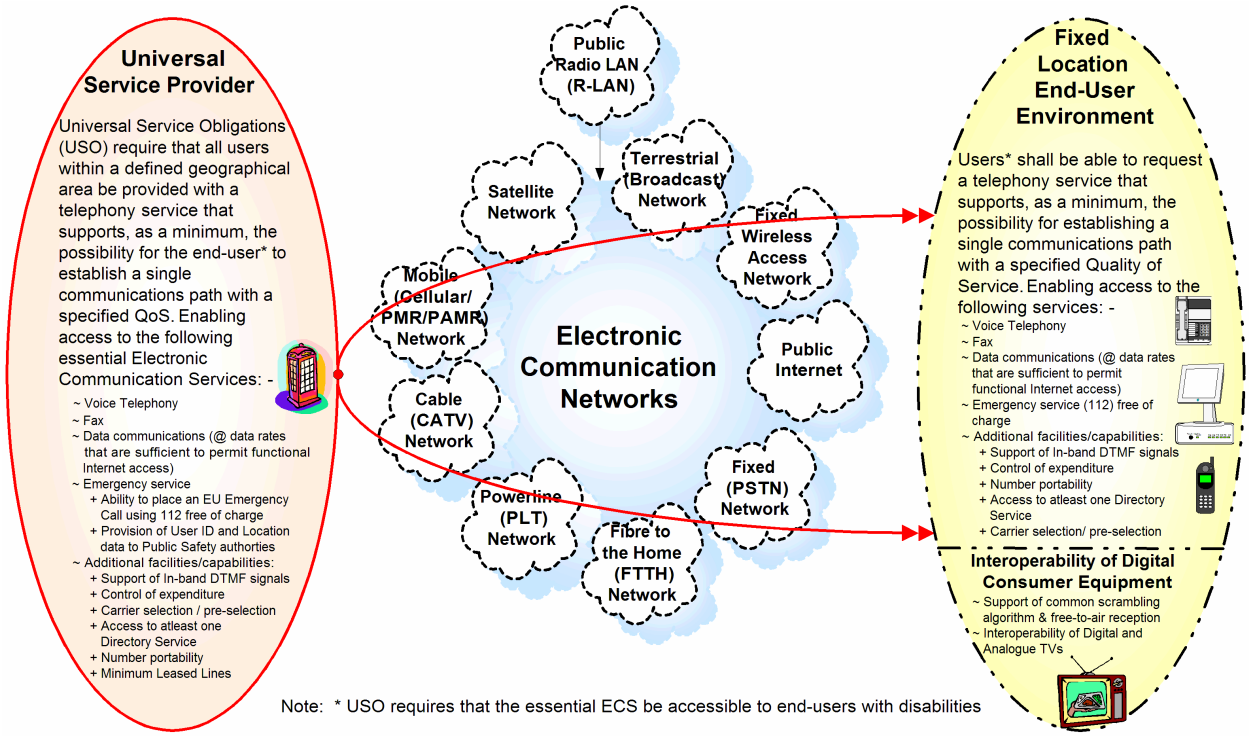


Figure 9: Principles of the Universal Service Directive to Electronic Communication Networks and Services

Universal Service aspects that are of interest to the European Commission for inclusion in the voluntary part of the list and/or specifications include:

- The harmonized provision of leased lines beyond the minimum set (covers leased lines up to and including 2,048 kbit/s).
- Number portability.
- Carrier (pre-)selection for fixed networks.
- Access to emergency services and the making available of caller location information.

- Calling line identification and support of DTMF tones.

The specific areas of interest include requirements for access and usability by disabled users and users with special social needs, transparency of prices and tariffs, privacy, reliability, security and network integrity.

9.2 Rationale

The following Articles are considered to be relevant to the objectives of the present document.

Table 29: Relevant Articles under the Universal Service Directive

Article	Chapter	Title	Comments
1	Scope, aim and definition	Objective and scope	This is an introduction, which is further explained in Recitals
2	Scope, aim and definition	Definitions	Definitions are included within the present document
4	Universal service obligations including social obligations	Provision of access at a fixed location	Covers access to Universal Service and provides the description of Universal service
7	Universal service obligations including social obligations	Special measures for disabled users	
10	Universal service obligations including social obligations	Control of expenditure	Annex II, Improves freedom of choice for users.
11	Universal service obligations including social obligations	Quality of service of designated undertakings	Annex III: QoS parameters
15	Universal service obligations including social obligations	Review of the scope of universal service	Clause 1(a) and 1(b)
16	Chapter III	Review of obligations	Requirements under Article 16 1(c) relating to maintenance of obligations imposed for leased lines
18	Regulatory controls on undertakings with significant market power in specific markets	Regulatory controls on the minimum set of leased lines	Specific reference to Article 17
19	Regulatory controls on undertakings with significant market power in specific markets	Carrier selection and carrier pre-selection	Freedom of choice
21	End-User Interest and rights	Transparency and publication of information	Annex II, Improves freedom of choice for users.
22	End-User Interest and rights	Quality of Service	Up to date information for end-users on the quality of services; Annex III may be used where appropriate
23	End-User Interest and rights	Integrity of the network	Ask for a clarification regarding the definition of integrity

Article	Chapter	Title	Comments
24	End-User Interest and rights	Interoperability of consumer digital television equipment	Interoperability
25	End-User Interest and rights	Operator assistance and directory enquiry services	Provision of access to information, privacy and electronic communications
26	End-User Interest and rights	Single European emergency call number	Universal service: 112, has an impact on priority status
27	End-User Interest and rights	European telephone access code	All providers of public telephone networks to handle all calls to the European Telephony Numbering Space (ETNS)
28	End-User Interest and rights	Non-geographic numbers	Improves freedom of choice for users
29	End-User Interest and rights	Provision of additional facilities	Annex I
30	End-User Interest and rights	Number portability	Improves freedom of choice for users
35	General and Final Provisions	Technical adjustment	Annexes I, II, III, VI, and VII
-	Annex I	Description of facilities and services referred to in Article 10 (Control of expenditure) and Article 29 (Additional Facilities)	Part A: (b); Part B: (a); (b)
-	Annex II	Information to be published in accordance with Article 21 (Transparency and publication of information)	Freedom of choice.
-	Annex III	Quality of service parameters	Articles 11 and 22 if appropriate
-	Annex VI	Interoperability of digital consumer equipment referred to in Article 24	Access Directive
-	Annex VII	Conditions for the minimum set of leased lines referred to in Article 18	Leased Lines

Table 30: Relevant Articles under Decision 2003/548/EC [15] on the minimum set of leased lines referred to in Article 18 of the Universal Service Directive

Article	Chapter	Title	Comments
Annex	-	List of standards and/or specifications for electronic communications networks, services and associated facilities and services	List of leased line standards to be included

9.3 Interpretation

9.3.1 Article 4: Provision of access at a fixed location

Article 4 states:

"1. Member States shall ensure that all reasonable requests for connection at a fixed location to the public telephone network and for access to publicly available telephone services at a fixed location are met by at least one undertaking.

2. The connection provided shall be capable of allowing end-users to make and receive local, national and international telephone calls, facsimile communications and data communications, at data rates that are sufficient to permit functional Internet access, taking into account prevailing technologies used by the majority of subscribers and technological feasibility."

Table 31: Interpretation of Article 4 Universal Service Directive

In a competitive market, certain obligations should apply to all ECPs providing publicly available telephone services (PATS) at fixed locations and others should apply only to ECPs enjoying significant market power or which have been designated as a universal service operator. Recital (8) in the Universal Service Directive (2002/22/EC [4]) further explains that any technology may be considered for use in meeting the requirements to provide PATS.

9.3.2 Article 7: Special measures for disabled users

Article 7 states:

"1. Member States shall, where appropriate, take specific measures for disabled end-users in order to ensure access to and affordability of publicly available telephone services, including access to emergency services, directory enquiry services and directories, equivalent to that enjoyed by other end-users.

2. Member States may take specific measures, in the light of national conditions, to ensure that disabled end-users can also take advantage of the choice of undertakings and service providers available to the majority of end-users."

Table 32: Interpretation of Article 7 Universal Service Directive

Disabled users should have access to Publicly Available Telephone Services (PATS). Specific measures for disabled users should be used by the Member States, they can include, as appropriate, making available accessible public telephones, public text telephones or equivalent measures for deaf or speech-impaired people, providing services such as directory enquiry services or equivalent measures free of charge for blind or partially sighted people, and providing itemized bills in alternative format on request for blind or partially sighted people. Specific measures may also need to be taken to enable disabled users and users with special social needs to access emergency services "112" and to give them a similar possibility to choose between different operators or service providers as other consumers.

9.3.3 Article 10: Control of expenditure

Article 10 states:

"1. Member States shall ensure that designated undertakings, in providing facilities and services additional to those referred to in Articles 4, 5, 6, 7 and 9(2), establish terms and conditions in such a way that the subscriber is not obliged to pay for facilities or services which are not necessary or not required for the service requested.

2. Member States shall ensure that designated undertakings with obligations under Articles 4, 5, 6, 7 and 9(2) provide the specific facilities and services set out in Annex I, Part A, in order that subscribers can monitor and control expenditure and avoid unwarranted disconnection of service.

3. Member States shall ensure that the relevant authority is able to waive the requirements of paragraph 2 in all or part of its national territory if it is satisfied that the facility is widely available."

Table 33: Interpretation of Article 10 Universal Service Directive

The affordability of telephone service is related to the information which users receive regarding telephone usage expenses as well as the relative cost of telephone usage compared to other services, and is also related to their ability to control expenditure. Affordability therefore means giving power to consumers through obligations imposed on ECPs designated as having universal service obligations. This relates to Annex II, to improve the freedom of choice for the users.

9.3.4 Article 11: Quality of service of designated undertakings

Article 11 states:

"1. National regulatory authorities shall ensure that all designated undertakings with obligations under Articles 4, 5, 6, 7 and 9(2) publish adequate and up-to-date information concerning their performance in the provision of universal service, based on the quality of service parameters, definitions and measurement methods set out in Annex III. The published information shall also be supplied to the national regulatory authority.

2. National regulatory authorities may specify, inter alia, additional quality of service standards, where relevant parameters have been developed, to assess the performance of undertakings in the provision of services to disabled end-users and disabled consumers. National regulatory authorities shall ensure that information concerning the performance of undertakings in relation to these parameters is also published and made available to the national regulatory authority.

3. National regulatory authorities may, in addition, specify the content, form and manner of information to be published, in order to ensure that end-users and consumers have access to comprehensive, comparable and user-friendly information.

4. National regulatory authorities shall be able to set performance targets for those undertakings with universal service obligations at least under Article 4. In so doing, national regulatory authorities shall take account of views of interested parties, in particular as referred to in Article 33.

5. Member States shall ensure that national regulatory authorities are able to monitor compliance with these performance targets by designated undertakings.

6. Persistent failure by an undertaking to meet performance accordance with Directive 2002/20/EC [2] of the European Parliament and of the Council of 7 March 2002 on the authorization of electronic communications networks and services (Authorisation Directive) (1). National regulatory authorities shall be able to order independent audits or similar reviews of the performance data, paid for by the undertaking concerned, in order to ensure the accuracy and comparability of the data made available by undertakings with universal service obligations."

Table 34: Interpretation of Article 11 Universal Service Directive

Quality is a key factor in a competitive market. NRAs should be able to monitor the achieved quality for undertakings, which have been designated as having universal service obligations. Annex III provides a list of nine Quality of Service parameters and therefore NRAs may specify additional Quality of Service standards, where these have been developed to cover additional parameters.
NOTE 1: The term "Grade of service" is applied to cover those aspects of reliability, service availability, service recovery and similar that are contained within a service contract. NOTE 2: The term "Quality of Service" is most often used in ETSI specifications to address the dynamic aspects of a service and may include for example the mouth-to-ear performance of a telephone call.

9.3.5 Article 15: Review of the scope of universal service

Article 15 states:

"1. The Commission shall periodically review the scope of universal service, in particular with a view to proposing to the European Parliament and the Council that the scope be changed or redefined. A review shall be carried out, on the first occasion within two years after the date of application referred to in Article 38(1), second subparagraph, and subsequently every three years.

2. This review shall be undertaken in the light of social, economic and technological developments, taking into account, inter alia, mobility and data rates in the light of the prevailing technologies used by the majority of subscribers. The review process shall be undertaken in accordance with Annex V. The Commission shall submit a report to the European Parliament and the Council regarding the outcome of the review."

Table 35: Interpretation of Article 15 Universal Service Directive

As communications markets have and continue to evolve in terms of services used and technical means to deliver them to the users, the current list of standards under the Universal service directive can evolve taking into account the prevailing technologies and the risk of social exclusion for those who cannot afford them.

9.3.6 Article 16: Review of obligations

Article 16 states:

"1. Member States shall maintain all obligations relating to:

[…]

(c) leased lines, imposed under Articles 3, 4, 6, 7, 8 and 10 of Directive 92/44/EEC [24],

[…]

until a review has been carried out and a determination made in accordance with the procedure in paragraph 3 of this Article."

Table 36: Interpretation of Article 16 Universal Service Directive

Member States' NRAs will need to continue to impose the requirements for Leased Lines until such time as they have completed their Market Analysis and therefore those standards appearing on the original ONP list of standards will need to be maintained on any future revision (refer also to 9.3.25).

9.3.7 Article 18: Regulatory controls on the minimum set of leased lines

Article 18 states:

"1. Where, as a result of the market analysis carried out in accordance with Article 16(3), a national regulatory authority determines that the market for the provision of part or all of the minimum set of leased lines is not effectively competitive, it shall identify undertakings with significant market power in the provision of those specific elements of the minimum set of leased lines services in all or part of its territory in accordance with Article 14 of Directive 2002/21/EC [3] (Framework Directive). The national regulatory authority shall impose obligations regarding the provision of the minimum set of leased lines, as identified in the list of standards published in the Official Journal of the European Communities in accordance with Article 17 of Directive 2002/21/EC [3] (Framework Directive), and the conditions for such provision set out in Annex VII to this Directive, on such undertakings in relation to those specific leased line markets.

2. Where as a result of the market analysis carried out in accordance with Article 16(3), a national regulatory authority determines that a relevant market for the provision of leased lines in the minimum set is effectively competitive, it shall withdraw the obligations referred to in paragraph 1 in relation to this specific leased line market.

3. The minimum set of leased lines with harmonized characteristics, and associated standards, shall be published in the Official Journal of the European Communities as part of the list of standards referred to in Article 17 of Directive 2002/21/EC [3] (Framework Directive). The Commission may adopt amendments necessary to adapt the minimum set of leased lines to new technical developments and to changes in market demand, including the possible deletion of certain types of leased line from the minimum set, acting in accordance with the procedure referred to in Article 37(2) of this Directive."

Table 37: Interpretation of Article 18 Universal Service Directive

If the market for the provision of part or all of the minimum set of leased lines is not competitive, NRA's shall impose obligations on such ECPs in relation to specific leased line markets. The minimum set of Leased Line services (such as published in the OJEC) are mandatory services to be provided, until NRAs in accordance with market analysis procedures show otherwise (for example if they can be substituted by other technologies such as DSL).

9.3.8 Article 19: Carrier selection and carrier pre-selection

Article 19 states:

"1. National regulatory authorities shall require undertakings notified as having significant market power for the provision of connection to and use of the public telephone network at a fixed location in accordance with Article 16(3) to enable their subscribers to access the services of any interconnected provider of publicly available telephone services:

(a) on a call-by-call basis by dialling a carrier selection code; and

(b) by means of pre-selection, with a facility to override any pre-selected choice on a call-by-call basis by dialling a carrier selection code.

2. User requirements for these facilities to be implemented on other networks or in other ways shall be assessed in accordance with the market analysis procedure laid down in Article 16 of Directive 2002/21/EC [3] (Framework Directive) and implemented in accordance with Article 12 of Directive 2002/19/EC [1] (Access Directive).

3. National regulatory authorities shall ensure that pricing for access and interconnection related to the provision of the facilities in paragraph 1 is cost oriented and that direct charges to subscribers, if any, do not act as a disincentive for the use of these facilities."

Table 38: Interpretation of Article 19 Universal Service Directive

A subscriber should have the freedom of choice to access the services of any interconnected provider of publicly available telephone services on a call-by-call basis (carrier selection) or by means of pre-selection

9.3.9 Article 21: Transparency and publication of information

Article 21 states:

"1. Member States shall ensure that transparent and up-to-date information on applicable prices and tariffs, and on standard terms and conditions, in respect of access to and use of publicly available telephone services is available to end-users and consumers, in accordance with the provisions of Annex II.

2. National regulatory authorities shall encourage the provision of information to enable end-users, as far as appropriate, and consumers to make an independent evaluation of the cost of alternative usage patterns, by means of, for instance, interactive guides."

Table 39: Interpretation of Article 21 Universal Service Directive

To allow end users to know ahead of time the price they will have to pay for a communication, even more so if it is an international communication. The price of a single call may indeed depend not only on time, duration and destination, but also on other factors like number of calls made to a certain country, volume discounts, etc. Knowledge on such information improves the freedom of choice for the user and may be provided, by means, for instance, interactive guides, etc.

9.3.10 Article 22: Quality of Service (QoS)

Article 22 states:

"1. Member States shall ensure that national regulatory authorities are, after taking account of the views of interested parties, able to require undertakings that provide publicly available electronic communications services to publish comparable, adequate and up-to-date information for end-users on the quality of their services. The information shall, on request, also be supplied to the national regulatory authority in advance of its publication.

2. National regulatory authorities may specify, inter alia, the quality of service parameters to be measured, and the content, form and manner of information to be published, in order to ensure that end-users have access to comprehensive, comparable and user-friendly information. Where appropriate, the parameters, definitions and measurement methods given in Annex III could be used."

Table 40: Interpretation of Article 22 Universal Service Directive

Quality of Service should be measurable to allow a comparison between service providers. With regard to Recital (31) end-users should be able to compare the publicly available information provided on Quality of Service for each Service Provider regardless of the Member State territory. This would infer that Member States should ensure the use of harmonized standards when defining the parameters and performing measurement methods. This would also infer that a harmonized format of such publicly available information is used to assist end-users in their comparison.
NOTE: See also comments regarding subtly of "Quality of Service" and "Grade of Service" under Article 11.

9.3.11 Article 23: Integrity of the network

Article 23 states: "Member States shall take all necessary steps to ensure the integrity of the public telephone network at fixed locations and, in the event of catastrophic network breakdown or in cases of force majeure, the availability of the public telephone network and publicly available telephone services at fixed locations. Member States shall ensure that undertakings providing publicly available telephone services at fixed locations take all reasonable steps to ensure uninterrupted access to emergency services."

Table 41: Interpretation of Article 23 Universal Service Directive

A public telephone network and publicly available telephone services should always be available at a fixed location to ensure uninterrupted access to emergency services. This infers that ECNs with Universal Service Obligations should ensure that analogue line powered voice terminals are provided with power either by the network or via battery back-up locally in the event of local power failure.

9.3.12 Article 24: Interoperability of consumer digital television equipment

Article 24 states:

"In accordance with the provisions of Annex VI, Member States shall ensure the interoperability of the consumer digital television equipment referred to therein."

Table 42: Interpretation of Article 24 Universal Service Directive

Article 24 sets out the legal basis for Member States to ensure the provisions of Annex VI are met.

9.3.13 Article 25: Operator assistance and directory enquiry services

Article 25 states:

"1. Member States shall ensure that subscribers to publicly available telephone services have the right to have an entry in the publicly available directory referred to in Article 5(1)(a).

2. Member States shall ensure that all undertakings which assign telephone numbers to subscribers meet all reasonable requests to make available, for the purposes of the provision of publicly available directory enquiry services and directories, the relevant information in an agreed format on terms which are fair, objective, cost oriented and non-discriminatory.

3. Member States shall ensure that all end-users provided with a connection to the public telephone network can access operator assistance services and directory enquiry services in accordance with Article 5(1)(b).

4. Member States shall not maintain any regulatory restrictions which prevent end-users in one Member State from accessing directly the directory enquiry service in another Member State.

5. Paragraphs 1, 2, 3 and 4 apply subject to the requirements of Community legislation on the protection of personal data and privacy and, in particular, Article 11 of Directive 97/66/EC [26]."

Table 43: Interpretation of Article 25 Universal Service Directive

Article 25 defines the requirements for end-users' choice regarding access to and inclusion within a directory enquiry service, it furthers defines that Directory Services may be accessed by end-users in another member state provided that in all instances the provisions of the Privacy Directive (2002/58/EC [5]) are maintained.

9.3.14 Article 26: Single European emergency call number

Article 26 states:

"1. Member States shall ensure that, in addition to any other national emergency call numbers specified by the national regulatory authorities, all end-users of publicly available telephone services, including users of public pay telephones, are able to call the emergency services free of charge, by using the single European emergency call number "112".

2. Member States shall ensure that calls to the single European emergency call number "112" are appropriately answered and handled in a manner best suited to the national organization of emergency systems and within the technological possibilities of the networks.

3. Member States shall ensure that undertakings which operate public telephone networks make caller location information available to authorities handling emergencies, to the extent technically feasible, for all calls to the single European emergency call number "112".

4. Member States shall ensure that citizens are adequately informed about the existence and use of the single European emergency call number "112"."

Table 44: Interpretation of Article 26 Universal Service Directive

Article 26 specifies that calls placed to the European emergency call number "112" should be free of charge; caller location information should be available to the emergency services and progressively support simultaneous handling of several languages over the networks. The "112" provisions apply to all public network operators [Provider of PECNs], either implicitly or explicitly.

9.3.15 Article 27: European telephone access codes

Article 27 states:

"1. Member States shall ensure that the "00" code is the standard international access code. Special arrangements for making calls between adjacent locations across borders between Member States may be established or continued. The end-users of publicly available telephone services in the locations concerned shall be fully informed of such arrangements.

2. Member States shall ensure that all undertakings that operate public telephone networks handle all calls to the European telephony numbering space, without prejudice to the need for an undertaking that operates a public telephone network to recover the cost of the conveyance of calls on its network."

Table 45: Interpretation of Article 27 Universal Service Directive

Easy access to international telephone services is vital for European citizens and European businesses. Code "00" has already been established as the standard international telephone access code for the Community. Special arrangements for making calls between adjacent locations across borders between Member States may be established or continued. Code "3883" has also been assigned to the European Telephony Numbering Space (ETNS). In order to ensure connection of calls to the ETNS, undertakings operating public telephone networks should ensure that calls using "3883" are directly or indirectly interconnected to ETNS serving networks specified in the relevant European Telecommunications Standards Institute (ETSI) standards.

9.3.16 Article 28: Non-geographic numbers

Article 28 states:

"Member States shall ensure that end-users from other Member States are able to access non-geographic numbers within their territory where technically and economically feasible, except where a called subscriber has chosen for commercial reasons to limit access by calling parties located in specific geographical areas."

Table 46: Interpretation of Article 28 Universal Service Directive

EXAMPLE:	a UK subscriber (end-user) has rented/purchased a non-geographic number where they pay either part or the whole cost of the call being placed to them (local rate, national rate, free phone, etc.). The requirement is that, if the owner of that non-geographic number has not chosen to limit (for financial reasons) reception of calls from within their own geographic area (country); then Member States shall ensure that a call to that number in the UK from another Member State is possible.

9.3.17 Article 29: Provision of additional facilities

Article 29 states:

"1. Member States shall ensure that national regulatory authorities are able to require all undertakings that operate public telephone networks to make available to end-users the facilities listed in Annex I, Part B, subject to technical feasibility and economic viability.

2. A Member State may decide to waive paragraph 1 in all or part of its territory if it considers, after taking into account the views of interested parties, that there is sufficient access to these facilities.

3. Without prejudice to Article 10(2), Member States may impose the obligations in Annex I, Part A, point (e), concerning disconnection as a general requirement on all undertakings."

Table 47: Interpretation of Article 29 Universal Service Directive

Article 29 and Annex I Part B state that when technically feasible, DTMF signalling (end-to-end) and Calling Line Identification (CLI) should be provided across Member State boundaries.

9.3.18 Article 30: Number portability

Article 30 states:

"1. Member States shall ensure that all subscribers of publicly available telephone services, including mobile services, who so request can retain their number(s) independently of the undertaking providing the service:

(a) in the case of geographic numbers, at a specific location; and

(b) in the case of non-geographic numbers, at any location.

This paragraph does not apply to the porting of numbers between networks providing services at a fixed location and mobile networks.

2. National regulatory authorities shall ensure that pricing for interconnection related to the provision of number portability is cost oriented and that direct charges to subscribers, if any, do not act as a disincentive for the use of these facilities.

3. National regulatory authorities shall not impose retail tariffs for the porting of numbers in a manner that would distort competition, such as by setting specific or common retail tariffs."

Table 48: Interpretation of Article 30 Universal Service Directive

Number portability is a key facilitator of consumer choice and effective competition in a competitive telecommunications environment such that end-users who so request should be able to retain their number(s) on the public telephone network independently of the organization providing service. **The Universal Service Directive (2002/22/EC [4]) does not cover the provision of this facility between connections to the public telephone network at fixed and non-fixed locations.**

9.3.19 Article 35: Technical adjustment

Article 35 states:

"Amendments necessary to adapt Annexes I, II, III, VI and VII to technological developments or to changes in market demand shall be adopted by the Commission, acting in accordance with the procedure referred to in Article 37(2)."

Table 49: Interpretation of Article 35 Universal Service Directive

Electronic communications networks should make the necessary adjustments to be measured against the "features" listed in the Universal Services Directive: - Control of expenditure, provide additional facilities (DTMF and Calling line identification), Transparency and publication of information, Quality of Service parameters, Interoperability of digital consumer equipment, and provision of a minimum set of leased lines.

9.3.20 Annex I: Description of facilities and services referred to in Articles 10 and 29

Annex I states:

DESCRIPTION OF FACILITIES AND SERVICES REFERRED TO IN ARTICLE 10 (CONTROL OF EXPENDITURE) AND ARTICLE 29 (ADDITIONAL FACILITIES)

Part A: Facilities and services referred to in Article 10:

[…]

(b) Selective call barring for outgoing calls, free of charge I.e. the facility whereby the subscriber can, on request to the telephone service provider, bar outgoing calls of defined types or to defined types of numbers free of charge.

Part B: List of facilities referred to in Article 29

(a) Tone dialling or DTMF (dual-tone multi-frequency operation) I.e. the public telephone network supports the use of DTMF tones as defined in ETSI ETR 207 [37] for end-to-end signalling throughout the network both within a Member State and between Member States.

(b) Calling-line identification:

- i.e. the calling party's number is presented to the called party prior to the call being established.
- This facility should be provided in accordance with relevant legislation on protection of personal data and privacy, in particular Directive 97/66/EC [26].

To the extent technically feasible, operators should provide data and signals to facilitate the offering of calling-line identity and tone dialling cross Member State boundaries."

Table 50: Interpretation of Annex I Universal Service Directive

Affordability for individual consumers is related to their ability to monitor and control their expenditure. Control of expenditure (Article 10) is provided to the end user through the barring of certain calls of defined types (e.g. premium numbers) or numbers. Additional facilities (Article 29): Tone dialling and calling line identification facilities are normally available on modern telephone exchanges and can therefore increasingly be provided at little or no expense. Tone dialling is increasingly being used for User Interaction (UI) with special services and facilities, including value added services, and the absence of this facility can prevent the user from making use of these services.

9.3.21 Annex II: Information to be published in accordance with Article 21

Annex II states:

"INFORMATION TO BE PUBLISHED IN ACCORDANCE WITH ARTICLE 21 (TRANSPARENCY AND PUBLICATION OF INFORMATION)

The national regulatory authority has a responsibility to ensure that the information in this annex is published, in accordance with Article 21. It is for the national regulatory authority to decide which information is to be published by the undertakings providing public telephone networks and/or publicly available telephone services and which information is to be published by the national regulatory authority itself, so as to ensure that consumers are able to make informed choices.

1. Name(s) and address(es) of undertaking(s)

   i.e. names and head office addresses of undertakings providing public telephone networks and/or publicly available telephone services.

2. Publicly available telephone services offered:

   2.1. Scope of the publicly available telephone service.
   Description of the publicly available telephone services offered, indicating what is included in the subscription charge and the periodic rental charge (e.g. operator services, directories, directory enquiry services, selective call barring, itemized billing, maintenance, etc.).

   2.2. Standard tariffs covering access, all types of usage charges, maintenance, and including details of standard discounts applied and special and targeted tariff schemes.

   2.3. Compensation/refund policy, including specific details of any compensation/refund schemes offered.

   2.4. Types of maintenance service offered.

   2.5. Standard contract conditions, including any minimum contractual period, if relevant.

3. Dispute settlement mechanisms including those developed by the undertaking.

4. Information about rights as regards universal service, including the facilities and services mentioned in Annex I."

Table 51: Interpretation of Annex II Universal Service Directive

Annex II shows clearly the information to presented by ECPs providing PATS, standards and/or specifications that would assist ECPs in presenting such information in a harmonized format will be included with the Article 17 list.

9.3.22 Annex III: Quality of Service parameters

Annex III states:

"Supply-time and Quality of Service parameters, definitions and measurement methods referred to Articles 11 and 22.

Parameter (see note 1)	Definition (see note 3)	Measurement method (see note 3)
Supply time for initial connection	ETSI EG 201 769-1	ETSI EG 201 769-1
Fault rate per access line	ETSI EG 201 769-1	ETSI EG 201 769-1
Fault repair time	ETSI EG 201 769-1	ETSI EG 201 769-1
Unsuccessful call ratio (see note 2)	ETSI EG 201 769-1	ETSI EG 201 769-1
Call set up time (see note 2)	ETSI EG 201 769-1	ETSI EG 201 769-1
Response times for operator services	ETSI EG 201 769-1	ETSI EG 201 769-1
Response times for directory enquiry services	ETSI EG 201 769-1	ETSI EG 201 769-1
Proportion of coin and card operated public pay telephones in working order	ETSI EG 201 769-1	ETSI EG 201 769-1
Bill correctness complaints	ETSI EG 201 769-1	ETSI EG 201 769-1
NOTE 1: Parameters should allow for performance to be analysed at a regional level (i.e. no less than Level 2 in the Nomenclature of Territorial Units for Statistics (NUTS) established by Eurostat). NOTE 2: Member States may decide not to require that up-to-date information concerning the performance for these two parameters be kept, if evidence is available to show that performance in these two areas is satisfactory. NOTE 3: Version number of ETSI EG 201 769-1 is V1.1.1 (April 2000)."		

Table 52: Interpretation of Annex III Universal Service Directive

Annex III provides a list of nine Quality of Service parameters. The listed standard defines and specifies the measurement methods for a limited range of parameters, but sets neither the limits nor performance targets to be met and hence does not enable NRAs to assess how well ECPs achieve compliance to these QoS parameters.
NOTE: ETSI EG 201 769-1 has been replaced by ETSI EG 201 769, but the technical content is the same.

9.3.23 Annex VI: Interoperability of digital consumer equipment referred to in Article 24

Annex VI states:

"1. The common scrambling algorithm and free-to-air reception

All consumer equipment intended for the reception of digital television signals, for sale or rent or otherwise made available in the Community, capable of descrambling digital television signals, is to possess the capability to:

- allow the descrambling of such signals according to the common European scrambling algorithm as administered by a recognized European standards organization, currently ETSI;

- display signals that have been transmitted in clear provided that, in the event that such equipment is rented, the rentee is in compliance with the relevant rental agreement.

2. Interoperability for analogue and digital television sets

Any analogue television set with an integral screen of visible diagonal greater than 42 cm which is put on the market for sale or rent in the Community is to be fitted with at least one open interface socket, as standardized by a recognized European standards organization, e.g. as given in the CENELEC EN 50049-1 (1997) [38] standard, permitting simple connection of peripherals, especially additional decoders and digital receivers.

Any digital television set with an integral screen of visible diagonal greater than 30 cm which is put on the market for sale or rent in the Community is to be fitted with at least one open interface socket (either standardized by, or conforming to a standard adopted by, a recognized European standards organization, or conforming to an industry-wide specification) e.g. the DVB common interface connector, permitting simple connection of peripherals, and able to pass all the elements of a digital television signal, including information relating to interactive and conditionally accessed services."

Table 53: Interpretation of Annex VI Universal Service Directive

Annex VI stipulates that consumer equipment intended for the reception of digital television signals are compliant with the common European scrambling algorithm, as specified in the Article 17 list of standards. Analogue Television sets with an integral diagonal visible screen greater than 42 cm must be fitted with at least one European standardized open interface socket. Digital Television sets with an integral diagonal visible screen greater than 30 cm must be fitted with at least one open interface socket that conforms to either European standard or industry-wide specification.

9.3.24 Annex VII: Conditions for the minimum set of leased lines referred to in Article 18

Annex VII states:

"NOTE: In accordance with the procedure in Article 18, provision of the minimum set of leased lines under the conditions established by Directive 92/44/EC [24] should continue until such time as the national regulatory authority determines that there is effective competition in the relevant leased lines market.

National regulatory authorities are to ensure that provision of the minimum set of leased lines referred to in Article 18 follows the basic principles of non-discrimination, cost orientation and transparency.

1. Non discrimination

   National regulatory authorities are to ensure that the organizations identified as having significant market power pursuant to Article 18(1) adhere to the principle of non-discrimination when providing leased lines referred to in Article 18. Those organizations are to apply similar conditions in similar circumstances to organizations providing similar services, and are to provide leased lines to others under the same conditions and of the same quality as they provide for their own services, or those of their subsidiaries or partners, where applicable.

2. Cost orientation

   National regulatory authorities are, where appropriate, to ensure that tariffs for leased lines referred to in Article 18 follow the basic principles of cost orientation.

   To this end, national regulatory authorities are to ensure that undertakings identified as having significant market power pursuant to Article 18(1) formulate and put in practice a suitable cost accounting system.

   National regulatory authorities are to keep available, with an adequate level of detail, information on the cost accounting systems applied by such undertakings. They are to submit this information to the Commission on request.

3. Transparency

   National regulatory authorities are to ensure that the following information in respect of the minimum set of leased lines referred to in Article 18 is published in an easily accessible form.

   3.1. Technical characteristics, including the physical and electrical characteristics as well as the detailed technical and performance specifications which apply at the network termination point.

   3.2. Tariffs, including the initial connection charges, the periodic rental charges and other charges. Where tariffs are differentiated, this must be indicated. Where, in response to a particular request, an organization identified as having significant market power pursuant to Article 18(1) considers it unreasonable to provide a leased line in the minimum set under its published tariffs and supply conditions, it must seek the agreement of the national regulatory authority to vary those conditions in that case.

   3.3. Supply conditions, including at least the following elements:

   - information concerning the ordering procedure;
   - the typical delivery period, which is the period, counted from the date when the user has made a firm request for a leased line, in which 95 % of all leased lines of the same type have been put through to the customers.

This period will be established on the basis of the actual delivery periods of leased lines during a recent time interval of reasonable duration. The calculation must not include cases where late delivery periods were requested by users:

- the contractual period, which includes the period which is in general laid down in the contract and the minimum contractual period which the user is obliged to accept;

- the typical repair time, which is the period, counted from the time when a failure message has been given to the responsible unit within the undertaking identified as having significant market power pursuant to Article 18(1) up to the moment in which 80 % of all leased lines of the same type have been re-established and in appropriate cases notified back in operation to the users. Where different classes of quality of repair are offered for the same type of leased lines, the different typical repair times shall be published

- any refund procedure.

In addition where a Member State considers that the achieved performance for the provision of the minimum set of leased lines does not meet users' needs, it may define appropriate targets for the supply conditions listed above."

Table 54: Interpretation of Annex VII Universal Service Directive

Until the effective competition in the relevant leased lines market has been determined by NRAs (refer to Article 15 - 2002/21/EC [3]), the obligations with the provision of the minimum set of leased lines must be maintained. The provision of the minimum set of leased lines has to be based on principles of non-discrimination (ECNs should provide the leased lines to others under the same conditions and of the same quality as they provide for their own services), cost-orientation (tariffs for leased lines should be based on the suitable cost accounting system), transparency.
NOTE: It is the responsibility of NRA's to publish technical characteristics, tariffs, supply conditions for the minimum set of leased lines.

9.3.25 Annex to Commission Decision 2003/548/EC: List of standards and/or specifications for electronic communications networks, services and associated facilities and services

The Annex states:

"Mandatory part

Identification of the minimum set of leased lines

[…]

Identification of the minimum set of leased lines with harmonized characteristics and associated standards

ANALOGUE LEASED LINES

Leased line type	Reference	Notes
Ordinary quality voice bandwidth (a)	- 2 wire:ETSI EN 300 448; or - 4 wire:ETSI EN 300 451	Connection characteristics and network interface presentation
Special quality voice bandwidth (b)	- 2 wire:ETSI EN 300 449; or - 4 wire:ETSI EN 300 452	Connection characteristics and network interface presentation
(a) Leased lines meeting the requirements of ETSI ETS 300 448 (2 wire) or ETSI ETS 300 451 (4 wire)are deemed to comply with the requirements for this type of leased line. (b) Leased lines meeting the requirements of ETSI ETS 300 449 (2 wire) or ETSI ETS 300 452 (4 wire)are deemed to comply with the requirements for this type of leased line.		

DIGITAL LEASED LINES

Leased line type	Reference	Notes
64 kbit/s (c)	- ETSI EN 300 288 - ETSI EN 300 289	Network interface presentation Connection characteristics
2 048 kbit/s - E1 (unstructured) (d)	- ETSI EN 300 418 - ETSI EN 300 247	Network interface presentation Connection characteristics
2 048 kbit/s - E1 (structured) (e)	- ETSI EN 300 418 - ETSI EN 300 419	Network interface presentation Connection characteristics
(c) Leased lines meeting the requirements of ETSI ETS 300 288, ETSI ETS 300 288/A1 and ETSI ETS 300 289 are deemed to comply with the requirements for this type of leased line. (d) Leased lines meeting the requirements of ETSI ETS 300 418, ETSI ETS 300 247 and ETSI ETS 300 247/A1 are deemed to comply with the requirements for this type of leased line. (e) Leased lines meeting the requirements of ETSI ETS 300 418 and ETSI ETS 300 419 are deemed to comply with the requirements for this type of leased line.		

Table 55: Interpretation of Annex to Decision 2003/548/EC [15]

Until such time that the effective competition in the relevant leased line markets has been determined by NRAs (refer to Article 15 - 2002/21/EC [3]), the obligations for the provision of the minimum set of leased lines must be maintained. Consequently the information provided in Decision 2003/548/EC [15] will be included within the list of standards under Article 17 - 2002/21/EC [3].

9.4 Justification

Table 56 specifies the justifications for Article 17 (2002/21/EC [3]) standardization requirements based upon the rationale and interpretations given for those Articles identified under the Universal Service Directive (2002/22/EC [4]). Table 57 specifies the justifications identified under the Commission Decision 2003/548/EC [15].

Table 56: Directive 2002/22/EC [4] - Justifications

Item	Article	Justification
1	4	ECPs providing connection to PATS and access to PATS at a fixed location to end-users with the ability to: a) make and receive local, national and international: i) telephone calls; ii) facsimile communications; iii) data communications (at data rates sufficient to permit functional Internet access).
2	7	Access to publicly available telephone services (PATS) for disabled users: a) Public telephones, public text telephones or equivalent measures for deaf or speech-impaired people (including support of text telephones by PATS); b) Services such as directory enquiry services or equivalent measures for blind or partially sighted people; c) Emergency services "112" for disabled users and users with special social needs; d) Freedom of choice for disabled users between different operators or service providers.
3	10	Ability of users to control expenditure (freedom of choice for users) (referred to in Annex I, Part A).
4	11	Presentation of information relating to the quality of services enabling comparison between service providers by end-users (enabling freedom of choice) as presented to the NRA by ECPs: i) Harmonized definition of QoS parameters and measurement methods; ii) Harmonized performance targets for QoS; iii) Harmonized format for presentation of QoS information to end-users.
5	12	Ability of users to access additional facilities (referred to in Annex I, Part B)
6	16	Requirements relating to leased lines imposed under Articles 3, 4, 6, 7, 8 and 10 of ONP Directive 92/44/EEC [24].
7	18	a) Obligations regarding the provision of part or all of the minimum set of leased lines (referred to in Annex VII). b) The minimum set of leased lines with harmonized characteristics and associated standards.
8	19	Carrier selection and pre-selection (freedom of choice for users): a) Carrier selection (call-by-call basis by dialling a carrier selection code); b) Pre-selection (with facility to override any pre-selected choice on a call-by-call basis).

Item	Article	Justification
9	21	The provision of information in respect of access to and use of publicly available telephone services (prices, tariffs, standard terms and conditions) (freedom of choice for users).
10	22	Presentation of information relating to the quality of services enabling comparison between service providers by end-users (enabling freedom of choice): i) Harmonized definition of QoS parameters and measurement methods. ii) Harmonized performance targets for QoS. iii) Harmonized format for presentation of QoS information to end-users.
11	23	Availability of the PTN and PATS at fixed locations to ensure uninterrupted access to emergency services.
12	24	Interoperability of consumer digital television equipment (in accordance with Annex VI).
13	25	a) Access to publicly available directory enquiry services and directories by end-users in an agreed format (provided the Privacy Directive - 2002/58/EC [5] is respected). b) Accessibility of operator assistance services and directory enquiry by end-users provided with a connection to the public telephone network (provided the Privacy Directive - 2002/58/EC [5] is respected). c) Accessibility of the directory enquiry service in another Member State (provided the Privacy Directive - 2002/58/EC [5] is respected).
14	26	a) Access to emergency services using the single European emergency call number "112" by end-users of PECNs (free of charge). b) Provision of Caller Location Information (CLI) to the emergency services by PECNs, in relation to a "112" call originated from an end-user.
15	27	Interconnection of calls using "3883": a) Direct interconnection by PTNs to ETNS serving networks. b) Indirect interconnection by PTNs to ETNS serving networks.
16	28	Ability to place calls to non-geographic numbers in one Member State by end-users in another Member State (freedom of choice).
17	29	PTNs support of Tone dialling, DTMF end-to-end signalling, and CLI (See item 18, Annex I Part B).
18	30	Number portability between PATS (freedom of choice): a) At a specific location (in the case of geographic numbers). b) At any location (in the case of non-geographic numbers). But not between ECNs providing PATS at a fixed and non-fixed location.
19	Annex I	a) Part A: Service features referred to in Article 10: i) Selective call barring for outgoing calls. b) Part B: Technical facilities referred to in Article 29: i) Tone dialling or DTMF (dual-tone multi-frequency operation). ii) DTMF end-to-end signalling. iii) Calling-line identification.
20	Annex II	Information to be presented to consumers to enable freedom of choice in respect of providing PTNs and/or PATS': a) Scope (description) of the publicly available telephone service. b) Standard, special and targeted tariff schemes. c) Compensation/refund policy. d) Maintenance service. e) Standard contract conditions, including any minimum contract period. f) Dispute settlement mechanisms. g) Information about rights as regards universal service, including the facilities and services mentioned in Annex I.
21	Annex III	QoS parameters (referred to in Articles 11 and 22).
22	Annex VI	Interoperability of digital consumer equipment (referred to in Article 24): a) Common European scrambling algorithm(s). b) Analogue Television set interoperability using a European standardized open interface (socket). c) Digital Television set interoperability using an open interface socket that conforms to either a European standard or industry-wide specification.
23	Annex VII	Conditions for the minimum set of leased lines (referred to in Article 18): a) Technical characteristics, including the physical and electrical characteristics at the network termination point. b) Technical and performance specifications at the network termination point.

Table 57: Decision 2003/548/EC [15] - Justifications

Item	Article	Justification
1	Annex	The minimum set of leased lines with harmonized characteristics and associated standards

9.5 Caveats

9.5.1 General

Recital (8) excludes ISDN from Universal Service but this recital conflilcts with the aim to be technology neutral in the regulation. Can Basic Rate ISDN or any other available technology offered by ECNs be used by ECPs to deliver PATS (Publicly Available Telephony Service)?

Universal Service definitions should confine themselves as they do throughout all the Directives with non-technical matters. Recital (8) specifically states that ISDN is excluded because it provides two voice channels is potentially flawed when considering advice provided in ECN&S#3(03)10 (item 1/2) (see Annex B) relating to alternative technologies and generally to be technology neutral. The definitions should concentrate upon specifying that the minimum requirement under USO is to provide a basic telephony **service** that supports, as a minimum, the possibility for the end-user to establish a single communications path with a specified Quality of Service level. How this is achieved is then a matter for operators and service providers, where specifications or standards are specified within the Article 17 list of standards for each of the different technical implementations (e.g. ISDN, Fixed Wireless Access (FWA), PLT or Cellular, etc.).

9.5.2 Article 4

The definition of PATS as given in Article 4 may potential be interpreted slightly differently when considering the definition of a "Call" as given in the Privacy Directive - 2002/58/EC [5].

9.5.3 Article 21

The provision of pricing data to consumers in sufficient detail to allow consumers to evaluate service offerings from different providers does not of itself require a technical standard. However a standard means of presenting data to the consumer needs to be considered.

9.5.4 Article 30

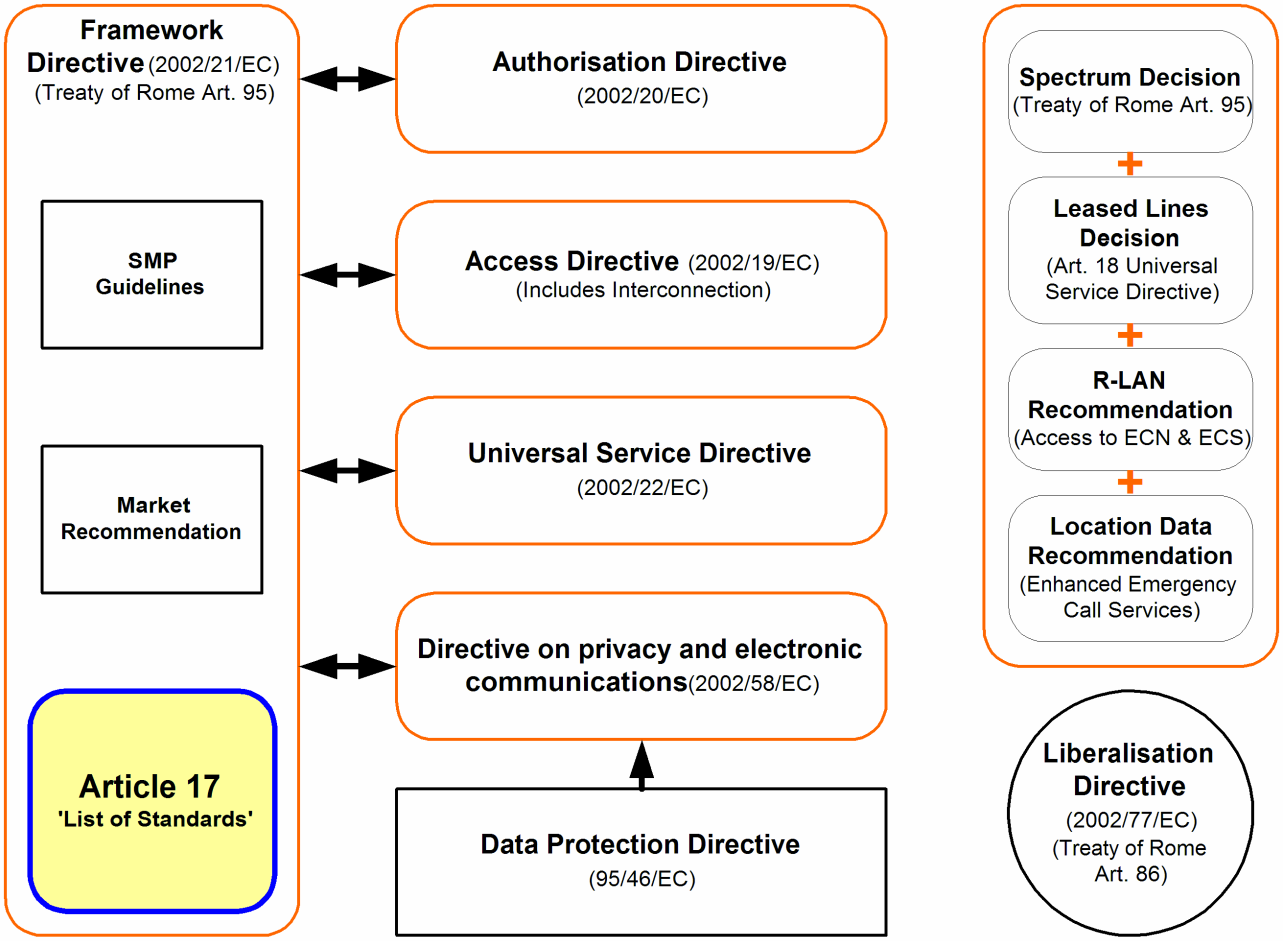
It is not clear if the provisions made in Article 27 are maintained in Article 30. In other words it is not clear if the obligations to support number portability extend to the ETNS.

9.5.5 Annex II

Further clarification is sought in relation to the associated level detail that is required when providing a description of PATS, to ensure a consistent approach by NRAs across the European Community.

10 Analysis of Directive on privacy and electronic communications (2002/58/EC) with respect to standardization

10.1 Introduction



Source: Based upon presentations by the European Commission

Figure 10: Principles of the Directive on privacy and electronic communications to Electronic Communication Networks and Services

The Directive harmonizes the provisions of the Member States required to ensure an equivalent level of protection of fundamental rights and freedoms, and in particular the right to privacy, with respect to the processing of personal data in the electronic communication sector and to ensure the free movement of such data and of electronic communication equipment and services in the Community.

The Directive updates the previous Data Protection Directive (97/66/EC [26]) in the light of new technologies and ensures that the privacy rules that apply to phone and fax services also apply to e-mail and use of the Internet. The aim is to protect the confidentiality of communications, to set conditions on the use of traffic, location and subscriber data, and subscriber directories, and to regulate the use of communications networks for unsolicited direct marketing by phone, fax, e-mail and SMS (commonly referred to as SPAM or as junk-mail).

NOTE: The term traffic is interpreted here as meaning signalling related to the provision of a user service.

There are new provisions in the Directive on:

- Value added services based on traffic and location data - allowing the provision of value added services based on traffic or location data, by network or service providers on their own or in conjunction with third parties. There is no restriction on the type of services that may be provided as long as subscribers give their consent and are informed of the data processing implications.

- Unsolicited commercial e-mail and SMS - is now subject to a prior consent requirement ("opt-in"), so that unsolicited commercial e-mails may not be sent without the prior consent of the addressee, except in the context of an existing customer relationship, where companies may continue to e-mail on an "opt-out" basis.

- Cookies and similar internet tracking devices - used to access and store data on internet linked computer terminals are now subject to a new transparency requirement - anyone who uses them on a website or as part of another online service must normally provide information and a chance to refuse to subscribers or users who are not content to accept them.

- Subscriber directories - Subscribers will have a stronger right to decide whether they want to be listed in subscriber directories or not, and they must be given clear information about the directories in question, including any reverse search-type functions which allow directory users to identify names/addresses by searching against numbers rather than the other way round.

Other changes are related to data retention, on which the Directive now explicitly allows the retention of traffic data (e.g. records of the length, origin and destination of phone calls) for national security and law enforcement purposes, once it is no longer required for billing or other essential management purposes, provided that any measures taken by Member States (such as the data retention provisions that have been included within the UK Anti-Terrorism, Crime and Security Act 2001) are proportionate and necessary.

This Directive is of interest to phone/internet users, communications network and service providers, website and online content businesses, subscriber directory providers and anyone who direct markets by phone, fax, SMS or e-mail.

This Directive shall not apply to activities which fall outside the scope of the Treaty establishing the European Community, such as those covered by Titles V and VI of the Treaty on European Union, and in any case to activities concerning public security, defence, State security (including the economic well-being of the State when the activities relate to State security matters) and the activities of the State in areas of criminal law.

While presentation and restriction of calling and connected line identification, exceptions for emergency calls, and automatic call forwarding apply to subscriber lines connected to digital exchanges; it is not mandatory to subscriber lines connected to analogue exchanges if it is not technically possible or if it requires a disproportionate economic effort.

10.2 Rationale

The following Articles are considered to be relevant to the objectives of the present document.

Table 58: Relevant Articles under Privacy Directive

Article	Title	Comments
1	Scope and aim	This is an introduction, which is further explained in Recitals.
2	Definitions	Definitions are included within the present document.
3	Services concerned	To be included in the introduction. CLIP, CLIP and automatic call forwarding: mandatory on digital networks and conditional on analogue networks.
4	Security	This requires that ECS operators have knowledge of the threats to their systems and the consequent risk when such threats are acted upon. Similarly for ECN providers.
5	Confidentiality of the communications	Article 5.3: Freedom of choice relating to storage of data, or user information related to privacy and data protection.
6	Traffic data	Article 6.3: how is the user to withdraw his consent for the processing of traffic data at any time.
7	Itemized billing	Freedom of choice. On itemized billing (OSS). e.g roaming calls with CLIP of the caller. Make sure N° not published on the itemized bill.
8	Presentation and restriction of calling and connected line identification	Related to privacy.
9	Location data other than traffic data	Related to privacy.

Article	Title	Comments
10	Exceptions	Emergency calls must carry CLIP and Location.
11	Automatic call forwarding	Related to privacy.
13	Unsolicited communications	Article 13.4: Function to be provided by the network facility to block unsolicited mails.
14	Technical features and standardization	Any standardization in support of the directive shall not inhibit free circulation and use of equipment in and between member states.
15	Application of certain provisions of Directive 95/46/EC [27]	Provides the exceptions to Articles 5, 6, 8 and 9.

10.3 Interpretation

10.3.1 Article 3: Services concerned

Article 3 identifies the services in respect of which the privacy directive applies and allows for exceptions to Articles 8, 10 and 11 for analogue subscriber lines.

10.3.2 Article 4: Security

Article 4 states:

"1. The provider of a publicly available electronic communications service must take appropriate technical and organizational measures to safeguard security of its services,if necessary in conjunction with the provider of the public communications network with respect to network security.Having regard to the state of the art and the cost of their implementation, these measures shall ensure a level of security appropriate to the risk presented.

2. In case of a particular risk of a breach of the security of the network,the provider of a publicly available electronic communications service must inform the subscribers concerning such risk and,where the risk lies outside the scope of the measures to be taken by the service provider,of any possible remedies,including an indication of the likely costs involved."

Table 59: Interpretation of Article 4 of the Privacy directive

Article 4, Part 1, implies that in order to determine that the security of a system has been breached that the ECS or ECN provider has calculated the risk to the system through a systemic threat and risk analysis and is actively monitoring the system to determine when it is under attack and when the level of acceptable risk has been breached.

10.3.3 Article 5: Confidentiality of the communications

Article 5 states:

"[…]

3. Member States shall ensure that the use of electronic communications networks to store information or to gain access to information stored in the terminal equipment of a subscriber or user is only allowed on condition that the subscriber or user concerned is provided with clear and comprehensive information in accordance with Directive 95/46/EC [27], inter alia about the purposes of the processing, and is offered the right to refuse such processing by the data controller. This shall not prevent any technical storage or access for the sole purpose of carrying out or facilitating the transmission of a communication over an electronic communications network, or as strictly necessary in order to provide an information society service explicitly requested by the subscriber or user. "

Article 5.3 introduces new transparency and consent controls on the use of cookies and similar tracking devices; the implementing provisions are set out in Regulation 5 of the draft Privacy Regulations.

Confidentiality services provide the means by which sensitive information held on one system, or transmitted between two points across a network, is prevented from being disclosed to individuals not authorized to see it.

Table 60: Interpretation of Article 5 Privacy Directive

So-called spyware, web bugs, hidden identifiers and other similar devices can enter the user's terminal without their knowledge in order to gain access to information, to store hidden information or to trace the activities of the user and may seriously intrude upon the privacy of these users. The use of such devices should be allowed only for legitimate purposes, with the knowledge and consent of the users concerned. The release of data made available by such devices should only be made only with the consent of the user concerned. The user should also have the right to withdraw consent.

10.3.4 Article 6: Traffic data

Article 6 states:

"[…]

3. For the purpose of marketing electronic communications services or for the provision of value added services, the provider of a publicly available electronic communications service may process the data referred to in paragraph 1 to the extent and for the duration necessary for such services or marketing, if the subscriber or user to whom the data relate has given his/her consent. Users or subscribers shall be given the possibility to withdraw their consent for the processing of traffic data at any time."

Table 61: Interpretation of Article 6 Privacy Directive

Traffic data is interpreted as being the signalling required to establish communication rather than the content of the communication. A subscriber should be able to know at all times, which marketing service they have agreed to, and have the possibility to remove their consent. This is not the same as an end-user notifying the Data Protection Commissioner, in their Member State, that they do not wish to receive any unsolicited telephone calls, faxes, email or SMS text messages to their identified number. Article 6 introduces the ability for the end-user to remove consent on a per service basis (e.g. entering or sending a pre-defined code for that service via SMS).

10.3.5 Article 7: Itemized billing

Article 7 states:

"1. Subscribers shall have the right to receive non-itemized bills.

2. Member States shall apply national provisions in order to reconcile the rights of subscribers receiving itemized bills with the right to privacy of calling users and called subscribers, for example by ensuring that sufficient alternative privacy enhancing methods of communications or payments are available to such users and subscribers."

Table 62: Interpretation of Article 7 Privacy Directive

The subscriber must have the possibility to check the accuracy of the fees charged by the service provider, but this may jeopardize the privacy of the users of publicly available electronic communication services.

10.3.6 Article 8: Presentation and restriction of calling and connected line identification

Article 8 states:

"1. Where presentation of calling line identification is offered, the service provider must offer the calling user the possibility, using a simple means and free of charge, of preventing the presentation of the calling line identification on a per-call basis. The calling subscriber must have this possibility on a per-line basis.

2. Where presentation of calling line identification is offered, the service provider must offer the called subscriber the possibility, using a simple means and free of charge for reasonable use of this function, of preventing the presentation of the calling line identification of incoming calls.

3. Where presentation of calling line identification is offered and where the calling line identification is presented prior to the call being established, the service provider must offer the called subscriber the possibility, using a simple means, of rejecting incoming calls where the presentation of the calling line identification has been prevented by the calling user or subscriber.

4. Where presentation of connected line identification is offered, the service provider must offer the called subscriber the possibility, using a simple means and free of charge, of preventing the presentation of the connected line identification to the calling user.

5. Paragraph 1 shall also apply with regard to calls to third countries originating in the Community. Paragraphs 2,3 and 4 shall also apply to incoming calls originating in third countries.

6. Member States shall ensure that where presentation of calling and/or connected line identification is offered, the providers of publicly available electronic communications services inform the public thereof and of the possibilities set out in paragraphs 1, 2, 3 and 4."

Table 63: Interpretation of Article 8 Privacy Directive

Subscribers should know the choices they have regarding privacy facilities offered by the providers of publicly available electronic communication services. Article 8 shall apply to digital subscriber lines as identified in Article 3.

10.3.7 Article 9: Location data other than traffic data

Article 9 states:

"1. Where location data other than traffic data, relating to users or subscribers of public communications networks or publicly available electronic communications services, can be processed, such data may only be processed when they are made anonymous, or with the consent of the users or subscribers to the extent and for the duration necessary for the provision of a value added service. The service provider must inform the users or subscribers, prior to obtaining their consent, of the type of location data other than traffic data which will be processed, of the purposes and duration of the processing and whether the data will be transmitted to a third party for the purpose of providing the value added service. Users or subscribers shall be given the possibility to withdraw their consent for the processing of location data other than traffic data at any time.

2. Where consent of the users or subscribers has been obtained for the processing of location data other than traffic data, the user or subscriber must continue to have the possibility, using a simple means and free of charge, of temporarily refusing the processing of such data for each connection to the network or for each transmission of a communication.

3. Processing of location data other than traffic data in accordance with paragraphs 1 and 2 must be restricted to persons acting under the authority of the provider of the public communications network or publicly available communications service or of the third party providing the value added service, and must be restricted to what is necessary for the purposes of providing the value added service."

Table 64: Interpretation of Article 9 Privacy Directive

In digital mobile networks, location data giving the geographic position of the terminal equipment of the mobile user are processed to enable the transmission of communications. Processing of such data for value added services should only be allowed where subscribers have given their consent. Further guidance of these points is given in Commission Recommendation 2003/558/EC [21].

10.3.8 Article 10: Exceptions

Article 10 states:

"Member States shall ensure that there are transparent procedures governing the way in which a provider of a public communications network and/or a publicly available electronic communications service may override:

(a) the elimination of the presentation of calling line identification, on a temporary basis, upon application of a subscriber requesting the tracing of malicious or nuisance calls. In this case, in accordance with national law, the data containing the identification of the calling subscriber will be stored and be made available by the provider of a public communications network and/or publicly available electronic communications service;

(b) the elimination of the presentation of calling line identification and the temporary denial or absence of consent of a subscriber or user for the processing of location data, on a per-line basis for organizations dealing with emergency calls and recognized as such by a Member State, including law enforcement agencies, ambulance services and fire brigades, for the purpose of responding to such calls."

Table 65: Interpretation of Article 10 Privacy Directive

User and subscriber rights to privacy may be restricted with regard to CLI where this is necessary to allow emergency services to carry out their tasks as effectively as possible. Restrictions on privacy may also apply when there is need to trace nuisance and malicious calls. Article 10 shall apply to digital subscriber lines as identified in Article 3.

10.3.9 Article 11: Automatic call forwarding

Article 11 states:

"Member States shall ensure that any subscriber has the possibility, using a simple means and free of charge, of stopping automatic call forwarding by a third party to the subscriber's terminal."

Table 66: Interpretation of Article 11 Privacy Directive

Article 11 introduces the requirement for a facility to remove Automatic Call Forwarding directly on the network facility or block incoming calls from the forwarding party at the instigation of the subscriber that is receiving the forwarded calls. Article 11 shall apply to digital subscriber lines as identified in Article 3.

10.3.10 Article 13: Unsolicited communications

Article 13 states:

"[…]

4. In any event, the practice of sending electronic mail for purposes of direct marketing disguising or concealing the identity of the sender on whose behalf the communication is made, or without a valid address to which the recipient may send a request that such communications cease, shall be prohibited."

Table 67: Interpretation of Article 13 Privacy Directive

The Electronic Communication Network should provide a network facility to block unsolicited emails ("spam"). Comment: With regard to the effectiveness of technical mechanisms that can be introduced within an ECN or ECS to control "spam" ("control" not "eliminate") the consensus is that with current technology, blocking between 85% and 90% of the spam with minimal false positives along the way is the best that can be achieved. There are potential ways to achieve this control on both the server and client side, but this also raises the question of private network resources (email gateways / servers) connected to a Public Electronic Communication Network (PECN). For example, a favoured mechanism for "spammers" (those who send unsolicited email) to deliver or disguise the identity of the originator is to relay email via a private network email server that has an "open relay" (see note) configuration problem.
NOTE: Open relay is when an email server receives email that has been routed to its domain, but when processing the message header discovers that the addressee is not a valid user under that domain. It then re-sends (relays) the email back out to the PECN (Internet), with the message ID field for that email consequently being updated to show that is was routed via that mail server and the domain is removed from the address: - Address format example from a spammer: target.user@address.com@openrelayserver.com. - Address format example after being relayed: target.user@address.com.

10.3.10.1 Definitions of SPAM as applied to email

The following definitions are taken from "www.spamhaus.org":

Spam is a synonym for Unsolicited Bulk Email ("UBE"). Unsolicited means that the Recipient has not granted verifiable permission for the message to be sent. Bulk means that the message is sent as part of a larger collection of messages, all having substantively identical content. A message is Spam only if it is both Unsolicited and Bulk.

Unsolicited Email is normal email (examples include first contact enquiries, job enquiries, sales enquiries, etc.)

Bulk Email is normal email (examples include subscriber newsletters, discussion lists, information lists, etc.).

An electronic message is "spam" IF:

(1) the recipient's personal identity and context are irrelevant because the message is equally applicable to many other potential recipients; AND

(2) the recipient has not verifiably granted deliberate, explicit, and still-revocable permission for it to be sent; AND

(3) the transmission and reception of the message appears to the recipient to give a disproportionate benefit to the sender.

10.3.11 Article 14: Technical features and standardization

The content of Article 14 requests that any technical feature provided to implement the measures required by the remainder of the directive do not impede the free circulation of equipment in and between member states. The implication of this is that any technical measure is endorsed before publication by member states. This further suggests that standards developed to implement measures should be of type EN and subject to Public Enquiry.

10.3.12 Article 15: Application of certain provisions of Directive 95/46/EC

Article 15 states:

"1. Member States may adopt legislative measures to restrict the scope of the rights and obligations provided for in Article 5, Article 6, Article 8(1), (2), (3) and (4), and Article 9 of this Directive when such restriction constitutes a necessary, appropriate and proportionate measure within a democratic society to safeguard national security (i.e. State security), defence, public security, and the prevention, investigation, detection and prosecution of criminal offences or of unauthorized use of the electronic communication system, as referred to in Article 13(1)of Directive 95/46/EC [27].To this end, Member States may, inter alia ,adopt legislative measures providing for the retention of data for a limited period justified on the grounds laid down in this paragraph. All the measures referred to in this paragraph shall be in accordance with the general principles of Community law, including those referred to in Articles 6(1) and (2) of the Treaty on European Union."

Table 68

Possibility for Member States to take the necessary measures for the protection of public security, defence, State security (including the economic well-being of the State when the activities relate to State security matters) and the enforcement of criminal law. Such measures include Lawful Interception, as well as technical storage.

10.4 Justification

Table 69 specifies the justifications for Article 17 (2002/21/EC [3]) standardization requirements based upon the rationale and interpretations given for those Articles identified under the Directive on privacy and electronic communications (2002/58/EC [5]).

Table 69: Directive 2002/58/EC [5] - Justifications

Item	Article	Justification
1	4	Addressed in NIS report to provide assurance of security to network and service users.
2	5	Exercise of freedom of choice by an end-user (or subscriber) relating to the processing of stored of data, or user information related to the transmission of communication over an ECN or stored within terminal equipment, including but not limited to information society services.
3	6	Ability for the end-user to remove consent to use of personal data at any time and on a per service basis.
4	7	Provision of privacy enhancing methods of communications or payments related to itemized billing
5	8	a) Rejecting incoming calls where the presentation of the CLI has been prevented by the calling user or subscriber. b) Restriction of calling and connected line identification (CLIR and COLR).
6	9	a) Possibility for the end-user to refuse processing of location data other than traffic data. b) Processing of location data other than traffic data to what is necessary for the purposes of providing the value added service.
7	10	a) Possibility to restrict user and subscriber rights to privacy with regard to CLI for emergency services. b) Possibility to restrict user and subscriber rights to privacy for the purpose of tracing nuisance and malicious calls.
8	11	Possibility for a subscriber to stop automatic forwarding of calls by a third party to the subscriber's terminal.
9	13	Provision of a network facility to block unsolicited emails.
10	15	Exceptions for the provision of measures in the protection of public security, defence, State security: a) Lawful Interception (in so far as ability to provide interconnection to Law Enforcement Authorities and Law Enforcement Monitoring Facilities).

10.5 Caveats

10.5.1 General

Only those breaches of privacy that may be considered malicious can be provisioned against in system design, although regulation also has to consider non-malicious breaches of the requirements of the privacy directive. As an example given that software and signalling systems are prone to failure then any failure and the recovery of that failure also has to respect the requirements outlined in the privacy directive. In addressing Article 4 wherein there is a requirement to understand the risk to a system and to note when it is under attack prior to informing subscribers it is noted that whilst security assurance levels are described for equipment in IT scenarios (e.g. Common Criteria Equipment Assurance Levels) that similar assurance levels are not described for ICT systems.

Many of the provisions in technical standards related to security of data apply to data in transit and provide for confidentiality, integrity and authenticity. These measures ensure that data is not liable to eavesdropping or alteration and may also provide authentication of source and destination to ensure that data destined for party A is only received by party A and that party A can detect any alteration of the data from what was originally sent. However the privacy directive primarily addresses the end-use of data and in particular aims to prevent non-consensual use of data by the recipient.

10.5.2 Articles 6, 7 and 8

In Article 7(2) there is no mention of post call processing of CLIP/CLIR data (e.g. to respect the withholding of identity in itemized billing), Articles 6 and 8 are also not clear about this provision. This is especially critical where Caller Line Identification data should be available in the Call Data Record (CDR) for possible billing disputes, albeit there is currently no standardized implementation for CDRs.

The issue is primarily of concern in those instances when end-users are roaming and are charged (billed) for the onward portion of the call from their home network to the roamed network, in such instances the itemized bill for such calls could potentially identify the calling party - also if a unique reference is not provided then the user would have difficulty deciding whether to dispute the charge as being valid (or not).

10.5.3 Article 11

Article 11 introduces the requirement for a facility to remove Automatic Call Forwarding directly on the network facility or block incoming calls from the forwarding party at the instigation of the subscriber that is receiving those forwarded calls. The mechanisms to achieve this using standardized communications protocols within ECNs and ECSs become complex when considering that rights for access and interconnection to a remote network may not be granted for such administration (particularly given the risk criteria assessed in accordance with Article 4).

10.5.4 Article 13

Whilst proprietary technical means exist to assist algorithms that identify and filter spam emails the legal framework for application of such means in face of processing error is uncertain.

Article 13 supports the legal instruments under which spammers may be prosecuted but does not seem to imply technical provision.

Annex A:
List of standards and/or specifications

A.1 Introduction

The standards and specifications identified in this annex have been selected based upon the analysis and justifications given in the main body of the present document. Figure A.1 offers a simplified view of the interpretations of "Access" and "Interconnection" based upon identification of the roles of ECS, ECN, content provider and consumer equipment.

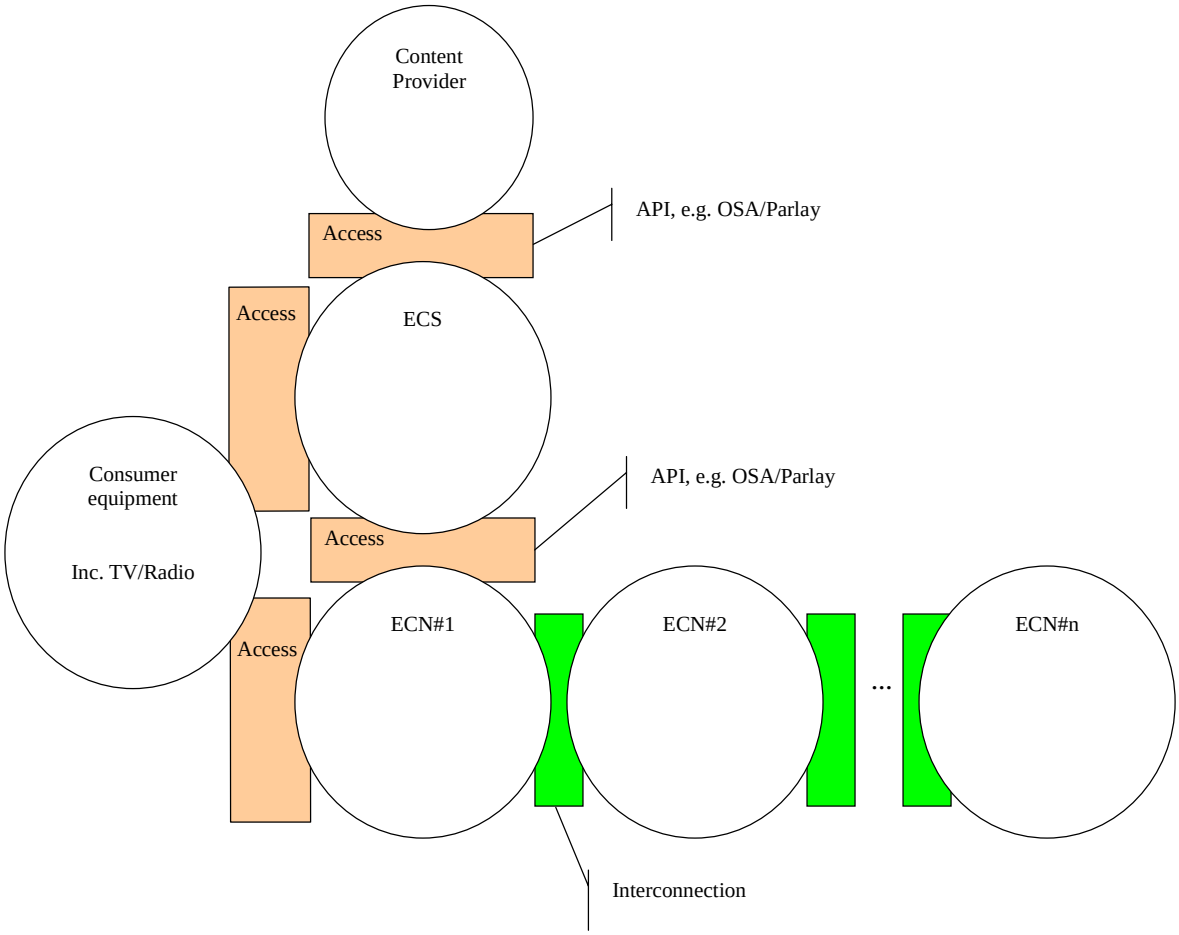


Figure A.1: Outline model of standards applicability

Whilst consumer equipment is mainly out of scope of the list of standards presented in this annex (although provisions of the R&TTE Directive do deal with regulatory aspects of terminals) there are some aspects of terminal equipment that are considered. These aspects include those dealing with interoperability of consumer television equipment, with Human Factors, and with many of the aspects related to security.

The list of standards are classified by technology and this classification may be removed on review and publication in the Official Journal.

A.1.1 Internet specifications

The specifications developed by the IETF and used in The Internet are widely referenced by existing ETSI specifications in respect of specific services and capabilities. Only where IETF specifications directly address any justified element of the Framework Directive are such specifications directly named in the tables of this annex.

A.1.2 Structure of tables

The tables presented in this annex are structured with the left hand column identifying the base technology. Where the identified standard applies to more than one technology it is placed in the Generic grouping and such entries apply to all technologies.

Whilst there are some technologies that have been reflected in the various tables, it should be recognized that these currently reflect those that have been formally standardized by either ESOs, IEC, ISO or the ITU. For example in the Satellite area the GMR specifications define just one of several alternative Mobile Satellite Services (MSS) technologies that can be used to provide these services. Future revisions of the present document will consider those technological solutions that have been standardized by other bodies.

The standards that appear in the tables of this annex provide capabilities over and above those required for the justification. This is most obvious in the specifications of those supplementary services required in accordance with the provisions of the Universal Service Directive (USD) (2002/22/EC [4]) wherein the detail protocol specification is common to both those services required in USD (2002/22/EC [4]) and to all other non-USD services.

A.2 Authorisation Directive (2002/20/EC)

The specifications listed in the tables that follow identify standards that implement requirements identified and justified in the analysis found in clause 7 and summarized in the table of justifications found in clause 7.4 (table 17).

A.2.1 Lawful Interception

NOTE: If the caveat cited in clause 7.5.2 is upheld then table A.2.1 does not apply under Article 17 of the Framework Directive.

Table A.2.1: Lawful Interception

Applicability	Reference	Notes
Generic	ETSI ES 201 671 (V2.1.1)	Telecommunications security; Lawful Interception (LI); Handover interface for the lawful interception of telecommunications traffic
GSM/UMTS	Not available	National LEA specifications apply.
Comments:		
Justification: See ETSI SR 211 011 table 17 Item 2(f).		

A.3 Access Directive (2002/19/EC)

The specifications listed in the tables that follow identify standards that implement requirements identified and justified in the analysis found in clause 8.3 and summarized in table 28.

A.3.1 Application Program Interfaces (APIs)

Article 18(1)(a) of the Framework Directive requires Member States to encourage, in accordance with the provisions of Article 17(2), providers of digital interactive television services for distribution to the public in the Community on digital interactive television platforms, regardless of the transmission mode, to use an open API.

Article 18(1)(b) of the Framework Directive requires Member States to encourage, in accordance with the provisions of Article 17(2) providers of all enhanced digital television equipment deployed for the reception of digital interactive television services on interactive digital television platforms to comply with an open API in accordance with the minimum requirements of the relevant standards or specifications.

APIs include also the possibility of a subscriber to receive services provided by third party service providers. As such, the APIs provide an access from an ECN to an ECS, or from an ECS to a content provider (see figure A.1). Open Service Access (OSA) APIs can be given as an example. The OSA APIs are a set of APIs that enable operator and 3rd party applications to make use of network functionality through a set of open, standardized interfaces. OSA provides the glue between applications and service capabilities provided by the network. In this way applications become independent of the underlying network technology. The applications constitute the top level of the OSA.

It should be noted that the following standards and specifications, although published by ETSI, are one of many alternatives to implementing generic and technology specific API solutions.

Table A.3.1: Application Program Interfaces (APIs)

Applicability	Reference	Notes
Generic	ETSI ES 201 915-1 (V1.4.1)	Open Service Access (OSA); Application Programming Interface (API); Part 1: Overview (Parlay 3)
	ETSI ES 201 915-2 (V1.4.1)	Open Service Access (OSA); Application Programming Interface (API); Part 2: Common Data Definitions (Parlay 3)
	ETSI ES 201 915-3 (V1.4.1)	Open Service Access (OSA); Application Programming Interface (API); Part 3: Framework (Parlay 3)
	ETSI ES 201 915-4 (V1.4.1)	Open Service Access (OSA); Application Programming Interface (API); Part 4: Call Control SCF (Parlay 3)
	ETSI ES 201 915-5 (V1.4.1)	Open Service Access (OSA); Application Programming Interface (API); Part 5: User Interaction SCF (Parlay 3)
	ETSI ES 201 915-6 (V1.4.1)	Open Service Access (OSA); Application Programming Interface (API); Part 6: Mobility SCF (Parlay 3)
	ETSI ES 201 915-7 (V1.4.1)	Open Service Access (OSA); Application Programming Interface (API); Part 7: Terminal Capabilities SCF (Parlay 3)
	ETSI ES 201 915-8 (V1.4.1)	Open Service Access (OSA); Application Programming Interface (API); Part 8: Data Session Control SCF (Parlay 3)
	ETSI ES 201 915-9 (V1.4.1)	Open Service Access (OSA); Application Programming Interface (API); Part 9: Generic Messaging SCF (Parlay 3)
	ETSI ES 201 915-10 (V1.4.1)	Open Service Access (OSA); Application Programming Interface (API); Part 10: Connectivity Manager SCF (Parlay 3)
	ETSI ES 201 915-11 (V1.4.1)	Open Service Access (OSA); Application Programming Interface (API); Part 11: Account Management SCF (Parlay 3)
	ETSI ES 201 915-12 (V1.4.1)	Open Service Access (OSA); Application Programming Interface (API); Part 12: Charging SCF (Parlay 3)
	ETSI ES 202 915-1 (V1.2.1)	Open Service Access (OSA); Application Programming Interface (API); Part 1: Overview (Parlay 4)
	ETSI ES 202 915-2 (V1.2.1)	Open Service Access (OSA); Application Programming Interface (API); Part 2: Common Data Definitions (Parlay 4)
	ETSI ES 202 915-3 (V1.2.1)	Open Service Access (OSA); Application Programming Interface (API); Part 3: Framework (Parlay 4)
	ETSI ES 202 915-4-1 (V1.2.1)	Open Service Access (OSA); Application Programming Interface (API); Part 4: Call Control; Sub-part 1: Call Control Common Definitions (Parlay 4)
	ETSI ES 202 915-4-2 (V1.2.1)	Open Service Access (OSA); Application Programming Interface (API); Part 4: Call Control; Sub-part 2: Generic Call Control SCF (Parlay 4)
	ETSI ES 202 915-4-3 (V1.2.2)	Open Service Access (OSA); Application Programming Interface (API); Part 4: Call Control; Sub-part 3: Multi-Party Call Control SCF (Parlay 4)
	ETSI ES 202 915-4-4 (V1.2.1)	Open Service Access (OSA); Application Programming Interface (API); Part 4: Call Control; Sub-part 4: Multi-Media Call Control SCF (Parlay 4)
	ETSI ES 202 915-4-5 (V1.2.1)	Open Service Access (OSA); Application Programming Interface (API); Part 4: Call Control; Sub-part 5: Conference Call Control SCF (Parlay 4)

Applicability	Reference	Notes
Generic (continued)	ETSI ES 202 915-5 (V1.2.1)	Open Service Access (OSA); Application Programming Interface (API); Part 5: User Interaction SCF (Parlay 4)
	ETSI ES 202 915-6 (V1.2.1)	Open Service Access (OSA); Application Programming Interface (API); Part 6: Mobility SCF (Parlay 4)
	ETSI ES 202 915-7 (V1.2.1)	Open Service Access (OSA); Application Programming Interface (API); Part 7: Terminal Capabilities SCF (Parlay 4)
	ETSI ES 202 915-8 (V1.2.1)	Open Service Access (OSA); Application Programming Interface (API); Part 8: Data Session Control SCF (Parlay 4)
	ETSI ES 202 915-9 (V1.1.1)	Open Service Access (OSA); Application Programming Interface (API); Part 9: Generic Messaging SCF (Parlay 4)
	ETSI ES 202 915-10 (V1.2.1)	Open Service Access (OSA); Application Programming Interface (API); Part 10: Connectivity Manager SCF (Parlay 4)
	ETSI ES 202 915-11 (V1.2.1)	Open Service Access (OSA); Application Programming Interface (API); Part 11: Account Management SCF (Parlay 4)
	ETSI ES 202 915-12 (V1.2.1)	Open Service Access (OSA); Application Programming Interface (API); Part 12: Charging SCF (Parlay 4)
	ETSI ES 202 915-13 (V1.1.1)	Open Service Access (OSA); Application Programming Interface (API); Part 13: Policy management SCF (Parlay 4)
	ETSI ES 202 915-14 (V1.1.1)	Open Service Access (OSA); Application Programming Interface (API); Part 14: Presence and Availability Management SCF (Parlay 4)
Cable	Not available	No standards defined
DECT	Not available	No standards defined
Digital Broadcast (TV and Radio)	ETSI ES 201 812 (V1.1.1)	Digital Video Broadcasting (DVB); Multimedia Home Platform (MHP) Specification 1.0.3
	ETSI TS 102 812 (V1.2.1)	Digital Video Broadcasting (DVB); Multimedia Home Platform (MHP) Specification 1.1.1 (Reference updated for ES) Work on the Multimedia Home Platform (MHP) technical specification continues in the Digital Video Broadcast group (DVB). DVB has grouped the MHP functionality into three classes of profiles, i.e. enhanced broadcasting, interactive broadcasting (both covered by MHP version 1.0) and internet access (covered by version MHP 1.1). ETSI has already adopted version MHP 1.0.3 and MHP 1.1.1
	ETSI TS 101 993 (V1.1.1)	Digital Audio Broadcasting (DAB); A Virtual Machine for DAB: DAB Java Specification This is the Digital Radio equivalent to MHP
GSM/UMTS	ETSI TS 129 078 (V3.11.0)	Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Customized Applications for Mobile network Enhanced Logic (CAMEL) Phase 3; CAMEL Application Part (CAP) specification (3GPP TS 29.078 version 3.11.0 Release 1999)
	ETSI TS 129 198-1 (V4.0.0)	Universal Mobile Telecommunications System (UMTS); Open Service Access (OSA); Application Programming Interface (API); Part 1: Overview (3GPP TS 29.198-1 version 4.0.0 Release 4)
	ETSI TR 129 998 (V3.2.0)	Universal Mobile Telecommunications System (UMTS); Open Services Architecture Application Programming Interface - Part 2 (3GPP TR 29.998 version 3.2.0 Release 1999)
ISDN	Not available	No standards defined

Applicability	Reference	Notes
PSTN	-	Refer to generic section
PLT	Not available	No standards defined
Satellite	Not available	No standards defined
TETRA	Not available	No standards defined
Wireless (incl. Local Loop)	Not available	
Comments:		
Justification: See ETSI SR 002 211 table 11 Items 2 and 3.		
NOTE: Digital Broadcast (TV and Radio): As the operators of pay-TV services have not wanted their subscribers transferring to the broadcast services offered by a competitor, they have typically adopted proprietary technologies that ensure a lack of interoperability with other services - thus allowing them to control "vertical markets", rather than using open standards and permitting "horizontal markets". The original argument was that the pay-TV operators were subsidizing the set-top boxes and therefore "their" boxes should not be able to receive other services. Nevertheless, free-to-air broadcasters are firmly in favour of open standards.		

A.3.2 Interconnection

Table A.3.2: Interconnection

Applicability	Reference	Notes
Cable	ETSI TS 101 909-12 (V1.1.1)	Digital Broadband Cable Access to the Public Telecommunications Network; IP Multimedia Time Critical Services; Part 12: Internet Signalling Transport Protocol (ISTP) ETSI TS 101 909-12 defines the SS7 interface to the Signalling Gateway of an IPCablecom network
	ETSI TS 101 909-17 (V1.1.1)	Digital Broadband Cable Access to the Public Telecommunications Network; IP Multimedia Time Critical Services; Part 17: Inter-domain Quality of Service ETSI TS 101 909-17 specifies the Quality of Service mechanisms to provide end-to-end QoS between IPCablecom network domains interconnected via a managed IP network
	ETSI TS 101 909-23 (V1.1.1)	Digital Broadband Cable Access to the Public Telecommunications Network; IP Multimedia Time Critical Services; Part 23: Internet Protocol Access Terminal - Line Control Signalling (IPAT - LCS) ETSI TS 101 909-23 identifies the V5.2 signalling interface to the IPAT of an IPCablecom network
DECT	ETSI EN 300 434-1 (V1.2.1)	Digital Enhanced Cordless Telecommunications (DECT); Integrated Services Digital Network (ISDN); DECT/ISDN interworking for end system configuration; Part 1: Interworking specification
	ETSI EN 300 434-2 (V1.2.1)	Digital Enhanced Cordless Telecommunications (DECT); Integrated Services Digital Network (ISDN); DECT/ISDN interworking for end system configuration; Part 2: Access profile
	ETSI EN 300 444 (V1.4.1)	Digital Enhanced Cordless Telecommunications (DECT); Generic Access Profile (GAP)
	ETSI EN 300 822 (V1.2.1)	Digital Enhanced Cordless Telecommunications (DECT); Integrated Services Digital Network (ISDN); DECT/ISDN interworking for intermediate system configuration; Interworking and profile specification
	ETSI EN 300 824 (V1.2.2)	Digital Enhanced Cordless Telecommunications (DECT); Cordless Terminal Mobility (CTM); CTM Access Profile (CAP)
	ETSI EN 301 361-1 (V1.1.1)	Digital Enhanced Cordless Telecommunications (DECT); Integrated Services Digital Network (ISDN); ISDN Mobility protocol Interworking specification Profile (IMIP); Part 1: DECT/ISDN interworking for Cordless Terminal Mobility (CTM) support

Applicability	Reference	Notes
DECT (continued)	ETSI EN 301 361-2 (V1.1.1)	Digital Enhanced Cordless Telecommunications (DECT); Integrated Services Digital Network (ISDN); ISDN Mobility protocol Interworking specification Profile (IMIP); Part 2: DECT/ISDN interworking for Global System for Mobile communications (GSM) support
	ETSI ETS 300 788 (Edition 1)	Digital Enhanced Cordless Telecommunications (DECT); Global System for Mobile communications (GSM); Integrated Services Digital Network (ISDN); DECT access to GSM via ISDN; Functional capabilities and information flows
	ETSI ETS 300 787 (Edition 1)	Digital Enhanced Cordless Telecommunications (DECT); Global System for Mobile communications (GSM); Integrated Services Digital Network (ISDN); DECT access to GSM via ISDN; General description of service requirements
	ETSI EN 300 370 (V1.3.1)	Digital Enhanced Cordless Telecommunications (DECT); Global System for Mobile communications (GSM); DECT/GSM Interworking Profile (IWP); Access and mapping (protocol/procedure description for 3,1 kHz speech service)
	ETSI EN 300 466 (V1.2.1)	Digital Enhanced Cordless Telecommunications (DECT); Global System for Mobile communications (GSM); DECT/GSM Interworking Profile (IWP); General description of service requirements; Functional capabilities and information flows
	ETSI EN 300 703 (V1.2.2)	Digital Enhanced Cordless Telecommunications (DECT); Global System for Mobile communications (GSM); DECT/GSM Interworking Profile (IWP); GSM Phase 2 supplementary services implementation
	ETSI ETS 300 756 (Edition 1)	Digital Enhanced Cordless Telecommunications (DECT); Global System for Mobile communications (GSM); DECT/GSM Interworking Profile (IWP); Implementation of bearer services
	ETSI TS 101 942 (V1.1.1)	Digital Enhanced Cordless Telecommunications (DECT); DECT Packet Radio Service (DPRS); Application Specific Access Profile (ASAP): Ethernet (Eth) Interworking
	ETSI TS 101 863-1 (V1.1.2)	Digital Enhanced Cordless Telecommunications (DECT); DECT/UMTS Interworking Profile (IWP); Part 1: General description and overview
	ETSI TS 101 863-2 (V1.1.2)	Digital Enhanced Cordless Telecommunications (DECT); DECT/UMTS Interworking Profile (IWP); Part 2: CN-FP interworking
	ETSI TS 101 863-3 (V1.1.2)	Digital Enhanced Cordless Telecommunications (DECT); DECT/UMTS Interworking Profile (IWP); Part 3: 3,1 kHz speech service
	ETSI TS 101 863-4 (V1.1.2)	Digital Enhanced Cordless Telecommunications (DECT); DECT/UMTS Interworking Profile (IWP); Part 4: Supplementary services
	ETSI TS 101 863-6 (V1.1.2)	Digital Enhanced Cordless Telecommunications (DECT); DECT/UMTS Interworking Profile (IWP); Part 6: Packet switched data
	ETSI TS 101 679 (V1.1.1)	Digital Enhanced Cordless Telecommunications (DECT); Broadband Integrated Services Digital Network (B-ISDN); DECT/B-ISDN interworking
	ETSI ETS 300 499 (Edition 1)	Digital Enhanced Cordless Telecommunications (DECT); Global System for Mobile communications (GSM); DECT/GSM Interworking Profile (IWP); Mobile services Switching Centre (MSC) - Fixed Part (FP) interconnection
	ETSI TS 102 265 (V1.1.1)	Digital Enhanced Cordless Telecommunications (DECT); DECT access to IP networks
Digital Broadcast (TV and Radio)	ETSI ETS 300 813 (Edition 1)	Digital Video Broadcasting (DVB); DVB interfaces to Plesiochronous Digital Hierarchy (PDH) networks
	ETSI ETS 300 814 (Edition 1)	Digital Video Broadcasting (DVB); DVB interfaces to Synchronous Digital Hierarchy (SDH) networks

Applicability	Reference	Notes
GSM/UMTS	ETSI TS 101 855 (V8.11.1)	Digital cellular telecommunications system (Phase 2+); Technical Specifications and Technical Reports for a GERAN-based 3GPP system (3GPP TS 01.01 version 8.11.1 Release 1999)
	ETSI TS 122 129 (V5.2.0)	Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Handover requirements between UTRAN and GERAN or other radio systems (3GPP TS 22.129 version 5.2.0 Release 5)
	ETSI TS 123 003 (V5.8.0)	Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Numbering, addressing and identification (3GPP TS 23.003 version 5.8.0 Release 5)
	ETSI TS 123 031 (V5.0.0)	Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Fraud Information Gathering System (FIGS); Service description; Stage 2 (3GPP TS 23.031 version 5.0.0 Release 5) ETSI TS 122 031 Service description; Stage 1
	ETSI TS 123 060 (V5.7.0)	General Packet Radio Service (GPRS) Service Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); General Packet Radio Service (GPRS); Service description; Stage 2 (3GPP TS 23.060 version 5.7.0 Release 5) ETSI TS 122 060 General Packet Radio Service (GPRS); Service description; Stage 1
	ETSI TS 129 002 (V5.8.0)	Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Mobile Application Part (MAP) specification (3GPP TS 29.002 version 5.8.0 Release 5)
	ETSI TS 129 007 (V5.8.0)	Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); General requirements on interworking between the Public Land Mobile Network (PLMN) and the Integrated Services Digital Network (ISDN) or Public Switched Telephone Network (PSTN) (3GPP TS 29.007 version 5.8.0 Release 5) - (Analogue and generic)
	ETSI TS 129 010 (V5.5.0)	Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Information Element Mapping between Mobile Station - Base Station System (MS - BSS) and Base Station System - Mobile-services Switching Centre (BSS - MCS) signalling procedures and the Mobile Application Part (MAP) (3GPP TS 29.010 version 5.5.0 Release 5) - (Needed for Roaming)
	ETSI TS 129 011 (V5.0.0)	Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Signalling Interworking for Supplementary Services (3GPP TS 29.011 version 5.0.0 Release 5)
	ETSI TS 129 013 (V5.0.0)	Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Signalling interworking between ISDN supplementary services Application Service Element (ASE) and Mobile Application Part (MAP) protocols (3GPP TS 29.013 version 5.0.0 Release 5)
	ETSI TS 129 060 (V5.8.0)	Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); General Packet Radio Service (GPRS); GPRS Tunnelling Protocol (GTP) across the Gn and Gp interface (3GPP TS 29.060 version 5.8.0 Release 5)
	ETSI TS 129 061 (V5.8.0)	Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Interworking between the Public Land Mobile Network (PLMN) supporting packet based services and Packet Data Networks (PDN) (3GPP TS 29.061 version 5.8.0 Release 5)

Applicability	Reference	Notes
ISDN	ISUP related specifications ISUP is the user part of Signalling System No. 7 (SS7). SS7 provides common channel signalling for use in circuit switched networks: PSTN, ISDN and GSM. ISUP has been designed first at an international boundary, but is also appropriate for the interconnections of different operators' networks in the same country. ISUP uses the layers 1 to 3 protocols (MTP) and may also use SCCP. Different ETSI versions for ISUP exist. ISUP version 2 of ETSI is specified in the ETS 300 356-series and in ETSI ETS 300 344.	
	ETSI EN 300 356-1 (V.3.2.2) and (V.4.2.1)	Part 1: Basic services
	ETSI EN 300 356-2 (V.3.2.2) and (V.4.2.1)	Part 2: ISDN supplementary service
	ETSI EN 300 356-3 (V.3.1.3) and (V.4.2.1)	Part 3: Calling Line Identification Presentation (CLIP) supplementary service
	ETSI EN 300 356-4 (V.3.1.3) and (V.4.2.1)	Part 4: Calling Line Identification Restriction (CLIR) supplementary service
	ETSI EN 300 356-5 (V.3.1.3) and (V.4.1.2)	Part 5: Connected Line Identification Presentation (COLP) supplementary service
	ETSI EN 300 356-6 (V.3.1.3) and (V.4.1.2)	Part 6: Connected Line Identification Restriction (COLR) supplementary service
	ETSI EN 300 356-7 (V.3.1.3) and (V.4.1.2)	Part 7: Terminal Portability (TP) supplementary service
	ETSI EN 300 356-8 (V.3.1.3) and (V.4.1.2)	Part 8: User-to-User Signalling (UUS) supplementary service
	ETSI EN 300 356-9 (V.3.1.3) and (V.4.1.2)	Part 9: Closed User Group (CUG) supplementary service
	ETSI EN 300 356-10 (V.3.1.3) and (V.4.1.2)	Part 10: Subaddressing (SUB) supplementary service
	ETSI EN 300 356-11 (V.3.1.3) and (V.4.1.2)	Part 11: Malicious Call Identification (MCID) supplementary service
	ETSI EN 300 356-12 (V.3.1.3) and (V.4.2.1)	Part 12: Conference call, add-on (CONF) supplementary service
	ETSI EN 300 356-14 (V.3.1.3) and (V.4.2.1)	Part 14: Explicit Call Transfer (ECT) supplementary service
	ETSI EN 300 356-15 (V.3.2.2) and (V.4.2.1)	Part 15: Diversion supplementary service
	ETSI EN 300 356-16 (V.3.1.3) and (V.4.1.2)	Part 16: Call Hold (HOLD) supplementary service
	ETSI EN 300 356-17 (V.3.1.3) and (V.4.1.2)	Part 17: Call Waiting (CW) supplementary service
	ETSI EN 300 356-18 (V.3.1.3) and (V.4.1.2)	Part 18: Completion of Calls to Busy Subscriber (CCBS) supplementary service
	ETSI EN 300 356-19 (V.3.1.3) and (V.4.2.1)	Part 19: Three-Party (3PTY) supplementary service
	ETSI EN 300 356-20 (V.3.2.8) and (V.4.3.1)	Part 20: Completion of Calls on No Reply (CCNR) supplementary service
	ETSI EN 300 356-21 (V.4.2.1)	Part 21: Anonymous Call Rejection (ACR) supplementary service
	ETSI EN 302 646-1 (V7.0.2)	Integrated Services Digital Network (ISDN); Signalling System No.7; Digital cellular telecommunications system (Phase 2+); Application of ISDN User Part (ISUP) version 3 for the ISDN-Public Land Mobile Network (PLMN) signalling interface; Part 1: Protocol specification (GSM 09.14 version 7.0.2 Release 1998)
	SCCP related specifications	
	ETSI EN 300 009-1 (V1.4.3)	Integrated Services Digital Network (ISDN); Signalling System No.7; Signalling Connection Control Part (SCCP) (connectionless and connection-oriented) to support international interconnection; Part 1: Protocol specification [ITU-T Recommendations Q.711 to Q.716 (1996), modified]
	MTP related specifications	
	ETSI EN 300 008-1 (V1.3.2)	Integrated Services Digital Network (ISDN); Signalling System No.7; Message Transfer Part (MTP) to support international interconnection; Part 1: Protocol specification [ITU-T Recommendations Q.701, Q.702, Q.703, Q.704, Q.705, Q.706, Q.707 and Q.708 modified]

Applicability	Reference	Notes
ISDN (continued)	TCAP related specifications	
	ETSI ETS 300 287-1 (Edition 2)	Integrated Services Digital Network (ISDN); Signalling System No.7; Transaction Capabilities (TC) version 2; Part 1: Protocol specification [ITU-T Recommendations Q.771 to Q.775 (1993), modified]
	MAP related specifications MAP is the user part of Signalling system No 7 (SS7) for handling roaming in mobile networks. MAP uses the SS7 protocols MTP, SCCP and TCAP	
	ETSI TS 129 002	Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Mobile Application Part (MAP) specification (Phase 2+, Release 1999 and Releases 4 and 5)
	IP (Packet) related specifications	
	ETSI TS 102 141 (V1.1.1)	Services and Protocols for Advanced Networks (SPAN); MTP/SCCP/SSCOP and SIGTRAN (Transport of SS7 over IP); Message transfer part 2 User Adaptation layer (M2UA) [Endorsement of RFC 3331 (2002), modified]
	ETSI TS 102 142 (V1.1.1)	Services and Protocols for Advanced Networks (SPAN); MTP/SCCP/SSCOP and SIGTRAN (Message of SS7 over IP); Message transfer part 3 User Adaptation layer (M3UA) [Endorsement of RFC 3332 (2002), modified]
	ETSI TS 102 143 (V1.1.1)	Services and Protocols for Advanced Networks (SPAN); MTP/SCCP/SSCOP and SIGTRAN (Transport of SS7 over IP); Signalling connection control part User Adaptation layer (SUA) [Endorsement of SIGTRAN-SUA-14 (December 2002), modified]
	ETSI TS 102 144 (V1.1.1)	Services and Protocols for Advanced Networks (SPAN); MTP/SCCP/SSCOP and SIGTRAN (Transport of SS7 over IP); Stream Control Transmission Protocol (SCTP) [Endorsement of RFC 2960 and RFC 3309, modified]
PLT	Not available	No standards defined
PSTN (Analogue and generic)	ETSI EN 300 324-1 (V2.1.1)	V interfaces at the digital Local Exchange (LE); V5.1 interface for the support of Access Network (AN); Part 1: V5.1 interface specification
	ETSI EN 300 347-1 (V2.2.2)	V interfaces at the digital Local Exchange (LE); V5.2 interface for the support of Access Network (AN); Part 1: V5.2 interface specification
	ETSI TR 101 662-1 (V1.1.2)	Internet Access; V5.2 controlled Internet access in the Access Network (AN), phase 1; Part 1: Interface Specification
	ETSI EN 301 005-1 (V1.1.4)	V interfaces at the digital Service Node (SN); Interfaces at the VB5.1 reference point for the support of broadband or combined narrowband and broadband Access Networks (ANs); Part 1: Interface specification
	ETSI EN 300 217-1 (V1.2.2)	V interfaces at the digital Service Node (SN); Interfaces at the VB5.2 reference point for the support of broadband or combined narrowband and broadband Access Networks (ANs); Part 1: Interface specification
	ETSI EN 300 299 (V1.3.2)	Broadband Integrated Services Digital Network (B-ISDN); Cell based user network access for 155 520 kbit/s and 622 080 kbit/s; Physical layer interfaces for B-ISDN applications
	ETSI EN 300 288 (V1.2.1) ETSI EN 300 289 (V1.2.1)	Network interface presentation Connection characteristics 64 kbit/s Leased lines meeting the requirements of ETS 300 288, ETS 300 288/A1 and ETS 300 289 are deemed to comply with the requirements for this type of leased line

Applicability	Reference	Notes
PSTN (Analogue and generic) (continued)	ETSI EN 300 418 (V1.2.1) ETSI EN 300 247 (V1.2.1)	Network interface presentation Connection characteristics 2 048 kbit/s - E1 (unstructured) Leased lines meeting the requirements of ETS 300 418, ETS 300 247 and ETS 300 247/A1 are deemed to comply with the requirements for this type of leased line.
	ETSI EN 300 418 (V1.2.1) ETSI EN 300 419 (V1.2.1)	Network interface presentation Connection characteristics 2 048 kbit/s - E1 (structured) Leased lines meeting the requirements of ETS 300 418 and ETS 300 419 are deemed to comply with the requirements for this type of leased line
	ETSI EN 300 766 (V1.2.1)	N x 64 kbit/s Connection characteristics and network interface presentation ETSI EN 300 766 specifies connection characteristics and network interface presentation for multiple 64 kbit/s digital unrestricted leased lines with octet integrity presented at a structured 2 048 kbit/s interface at either or both ends.
	ETSI EN 300 686 (V1.2.1) ETSI EN 300 687 (V1.2.1)	34 368 kbit/s - E3 Network interface presentation Connection characteristics E3 is the market denomination for this type of leased line.
	ETSI EN 300 686 (V1.2.1) ETSI EN 300 688 (V1.2.1)	139 264 kbit/s - E4 Network interface presentation Connection characteristics E4 is the market denomination for this type of leased line
	ETSI EN 301 164 (V1.1.1) ETSI EN 301 165 (V1.1.3)	SDH VC-based leased digital bandwidth Connection characteristics Interface presentation ETSI EN 301 164 specifies the technical requirements for leased line connections of SDH virtual containers, i.e. VC-4, VC-3, VC-2 and VC12. ETSI EN 301 165 defines the functions relevant for the interface presentations of SDH leased lines with STM-1 (155 520 kbit/s) in both electrical and optical forms and STM-4 (622 080 kbit/s) in optical form.
Satellite	GSM 09-series apply	
TETRA	ETSI ETS 300 392-4-1 (Edition 1)	Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 4: Gateways basic operation;Sub-part 1: Public Switched Telephone Network (PSTN)
	ETSI ETS 300 392-4-2 (Edition 1)	Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 4: Gateways basic operation;Sub-part 2: Integrated Services Digital Network (ISDN) gateway
	ETSI ETS 300 392-4-3 (Edition 1)	Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 4: Gateways basic operation;Sub-part 3: Data networks gateway
	ETSI TS 101 747 (V1.1.1)	Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D);IP Interworking (IPI)
	ETSI EN 300 392-3-1 (V1.2.1)	Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D);Part 3: Interworking at the Inter-System Interface (ISI);Sub-part 1: General design
	ETSI EN 300 392-3-2 (V1.2.1)	Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D);Part 3: Interworking at the Inter-System Interface (ISI);Sub-part 2: Additional Network Feature Individual Call (ANF-ISIIC)
	ETSI EN 300 392-3-3 (V1.2.1)	Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D);Part 3: Interworking at the Inter-System Interface (ISI);Sub-part 3: Additional Network Feature Group Call (ANF-ISIGC)

Applicability	Reference	Notes
TETRA (continued)	ETSI EN 300 392-3-4 (V1.2.1)	Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D);Part 3: Interworking at the Inter-System Interface (ISI);Sub-part 4: Additional Network Feature Short Data Service (ANF-ISISDS)
	ETSI EN 300 392-3-5 (V1.2.1)	Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D);Part 3: Interworking at the Inter-System Interface (ISI);Sub-part 5: Additional Network Feature for Mobility Management (ANF-ISIMM)
Wireless (incl. Local Loop)	No specific standards	
Comments:		
Justification: See ETSI SR 002 211 table 28 Items 2(c) and 5(e).		

A.3.3 Access to network facilities and services

This clause contains standards suitable for access to the network at points other than the network termination points offered to the majority of end-users.

In accordance with Article 24 and Annex VI of the Universal Service Directive, consumer equipment capable of descrambling digital television signals must allow the descrambling of such signals according to the common European scrambling algorithm, and the display of signals that have been transmitted in clear.

In accordance with Article 6(1) and Annex I of the Access and Interconnection Directive, Member States must ensure the application of the conditions referred to therein regarding access to digital television and radio broadcasting services.

Table A.3.3: Access to network facilities and services

Applicability	Reference	Notes
Generic	Service provider access requirements	
	ETSI EG 201 722 (V1.2.1)	Intelligent Network (IN); Service provider access requirements; Enhanced telephony services ETSI EG 201 722 lists the first set of access requirements that service providers have in delivering services over one or more public telecommunications networks primarily fixed public switched telecommunications networks (PSTNs) and Integrated Services Digital Networks (ISDNs).
	ETSI EG 201 897 (V1.2.1)	Services and Protocols for Advanced Networks (SPAN); Service Provider Access; Service Provider Access Requirements in a Fixed and Mobile Environment ETSI EG 201 897 lists the second set of network access requirements that service providers have in delivering services including mobile, cordless and fixed services, over one or more public telecommunication networks.
	ETSI EG 201 807 (V1.1.1)	Network Aspects (NA); Intelligent Network (IN); Network operators' requirements for the delivery of service provider access ETSI EG 201 807 lists the first set of requirements that public network operators have for the delivery of service provider access to ensure network integrity, security and other aspects such as provisions for charging and billing
	ETSI EG 201 916 (V1.1.1)	Services and Protocols for Advanced Networks (SPAN); Service Provider Access; Development of standards to support Open Inter-Network Interfaces and Service Provider Access ETSI EG 201 916 contains information to enable service providers and network operators to determine and compare standardized facilities that are available in published ETSI protocols to support the introduction of new services.

Applicability	Reference	Notes
Cable	ETSI TS 101 909-13-1 (V1.1.1)	Digital Broadband Cable Access to the Public Telecommunications Network; IP Multimedia Time Critical Services; Part 13: Trunking Gateway Control Protocol; Sub-part 1: H.248 option TS 101 909-13-1 defines the TGCP interface based upon ITU-T Recommendation H.248 to the Media Gateway of an IPCablecom network
	ETSI TS 101 909-13-2 (V1.1.2)	Digital Broadband Cable Access to the Public Telecommunications Network; IP Multimedia Time Critical Services; Part 13: Trunking Gateway Control Protocol; Sub-part 2: MGCP option TS 101 909-13-2 defines the TGCP interface based upon MGCP to the Media Gateway of an IPCablecom network
	ETSI TS 101 909-19-1 (V1.1.1)	Digital Broadband Cable Access to the Public Telecommunications Network; IP Multimedia Time Critical Services; Part 19: IPCablecom Audio Server Protocol Specification; Sub-part 1: H.248 option TS 101 909-19-1 defines the interface based upon ITU-T Recommendation H.248 to the Announcement Server within an IPCablecom network
	ETSI TS 101 909-19-2 (V1.1.1)	Digital Broadband Cable Access to the Public Telecommunications Network; IP Multimedia Time Critical Services; Part 19: IPCablecom Audio Server Protocol Specification; Sub-part 2: MGCP option TS 101 909-19-2 defines the interface based upon MGCP to the Announcement Server within an IPCablecom network
DECT	Not applicable	
Digital Broadcast (TV and Radio)	ETSI TS 101 197 (V1.2.1) ETSI TS 103 197 (V1.3.1)	Digital Video Broadcasting (DVB); DVB SimulCrypt; Head-end architecture and synchronization Digital Video Broadcasting (DVB); Head-end implementation of DVB SimulCrypt (DVB-SIM)
	ETSI ETR 289 (Edition 1)	Digital Video Broadcasting (DVB); Support for use of scrambling and Conditional Access (CA) within digital broadcasting systems (DVB-CS)
	CENELEC EN 50221 CENELEC R206-001	Common interface specification for conditional access and other digital video broadcasting decoder applications (DVB-CI) and one relevant implementation guide
	ETSI EN 300 421 (V1.1.2)	Digital Video Broadcasting (DVB); Framing structure, channel coding and modulation for 11/12 GHz satellite services (DVB-S)
	ETSI TR 101 198 (V1.1.1)	Digital Video Broadcasting (DVB); Implementation of Binary Phase Shift Keying (BPSK) modulation in DVB satellite transmission systems (DVB-S)
	ETSI EN 300 429 (V1.2.1)	Digital Video Broadcasting (DVB); Framing structure, channel coding and modulation for cable systems (DVB-C)
	ETSI EN 300 744 (V1.4.1)	Digital Video Broadcasting (DVB); Framing structure, channel coding and modulation for digital terrestrial television (DVB-T)
	ETSI TR 101 190 (V1.1.1)	Digital Video Broadcasting (DVB); Implementation guidelines for DVB terrestrial services; Transmission aspects
	ETSI EN 300 748 (V1.1.2) ETSI EN 300 749 (V1.1.2) ETSI EN 301 701 (V1.1.1)	Digital Video Broadcasting (DVB); Multipoint Video Distribution Systems (MVDS): at 10 GHz and above (DVB-MS) below 10 GHz (DVB-MC) OFDM modulation for microwave digital terrestrial television (DVB-MT)
	ETSI TS 101 191 (V1.3.1)	Digital Video Broadcasting (DVB); DVB mega-frame for Single Frequency Network (SFN) synchronization
	ETSI TR 101 154 (V1.4.1)	Digital Video Broadcasting (DVB); Implementation guidelines for the use of MPEG-2 Systems, Video and Audio in satellite, cable and terrestrial broadcasting applications

Applicability	Reference	Notes
Digital Broadcast (TV and Radio) (continued)	ETSI TR 102 154 (V1.1.1)	Digital Video Broadcasting (DVB); Implementation guidelines for the use of MPEG-2 Systems, Video and Audio in Contribution and Primary Distribution Applications
	ETSI ES 202 488-1 (V1.1.1) ETSI ES 202 488-2 (V1.1.1)	Access and Terminals (AT); Second Generation Transmission Systems for Interactive Cable Television Services - IP Cable Modems: Part 1: General Part 2: Radio frequency interface specification ITU-T Recommendation J.112, ETSI ES 200 800 (V1.3.1), ES 201 488-1 (V1.2.2) and ES 201 488-2 (V1.2.2) are earlier versions of the data-over-cable specifications and may also be used in place of ES 202 488
	ETSI EN 300 401 (V1.3.3)	Radio Broadcasting Systems; Digital Audio Broadcasting (DAB) to mobile, portable and fixed receivers
	ETSI EN 301 234 (V1.2.1) ETSI TS 101 759 (V1.1.1)	Digital Audio Broadcasting (DAB); Multimedia Object Transfer (MOT) protocol Digital Audio Broadcasting (DAB); Data Broadcasting - Transparent Data Channel Transport protocols for interoperable data services
	ETSI TS 102 818 (V1.1.1)	Digital Audio Broadcasting (DAB); XML Specification for DAB Electronic Programme Guide (EPG) (Radio equivalent to DVB-SI)
	ETSI EN 300 468 (V1.5.1)	Digital Video Broadcasting (DVB); Specification for Service Information (SI) in DVB systems (DVB-SI)
	ETSI TR 101 211 (V1.5.1)	Digital Video Broadcasting (DVB); Guidelines on implementation and usage of Service Information (SI) ETSI ETR 162 : Relevant implementation Guideline for DVB-SI
	ETSI EN 300 472 (V1.3.1)	Digital Video Broadcasting (DVB); Specification for conveying ITU-R System B Teletext in DVB bitstreams (DVB-TXT)
	ETSI TS 101 699 (V1.1.1)	Digital Video Broadcasting (DVB); Extensions to the Common Interface Specification
	ETSI TR 102 035 (V1.1.1)	Digital Video Broadcasting (DVB); Implementation Guidelines of the DVB Simulcrypt Standard
	ETSI EN 301 790 (V1.3.1)	Digital Video Broadcasting (DVB); Interaction channel for satellite distribution systems
GSM/UMTS	-	ETSI TS 122 042 Network Identity and Time Zone (NITZ) service description; Stage 1
	ETSI TS 123 032 (V3.2.1)	Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Universal Geographical Area Description (GAD) (3GPP TS 23.032 version 3.2.1 Release 1999)
	ETSI TS 124 008 (V3.17.0)	Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Mobile radio interface Layer 3 specification; Core network protocols; Stage 3 (3GPP TS 24.008 version 3.17.0 Release 1999)
	ETSI TS 129 002 (V3.18.0)	Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Mobile Application Part (MAP) specification (3GPP TS 29.002 version 3.18.0 Release 1999)
ISDN	Refer to generic	
PLT	Not available	No standards defined
PSTN	Refer to generic	
Satellite	For further study	
TETRA	Not available	No standards defined

Applicability	Reference	Notes
Wireless (incl. Local Loop)	IEEE 802.11b	Wireless LAN specification
	ETSI EN 300 652 (V1.2.1)	Broadband Radio Access Networks (BRAN); HIgh PErformance Radio Local Area Network (HIPERLAN) Type 1; Functional specification
Comments:		
Justification: See ETSI SR 002 211 table 28 Items 5(a) and 5(b). For ETSI EG 201 807: see ETSI SR 002 211 table 28 Items 5(a), 5(b) and 5(d). For ETSI EG 201 916: see ETSI SR 002 211 table 28 Items 5(b) and 5(e). For Digital Broadcast (TV and Radio): see ETSI SR 002 211 table 28 Items 6(a) and 6(c).		

A.3.4 Unbundled Access to the Local loop

The technical interfaces and/or services features given in this clause are related to unbundled access to the local loop in accordance with Recommendation 2000/417/EC [6] and Regulation EC/2887/2000 [7] on unbundled access to the local loop.

Table A.3.4: Unbundled Access to the Local loop

Applicability	Reference	Notes
Cable	Not applicable	
DECT	Not applicable	
Digital Broadcast (TV and Radio)	Not applicable	
GSM/UMTS	Not applicable	
ISDN	ETSI TS 102 080 (V1.4.1)	Transmission and Multiplexing (TM); Integrated Services Digital Network (ISDN) basic rate access; Digital transmission system on metallic local lines ETSI TS 102 080 defines the Transmission System for the ISDN Basic Access on local lines.
PLT	Not applicable	
PSTN (Analogue and generic)	ETSI TR 101 830-1 (V1.3.1)	Transmission and Multiplexing (TM); Access networks; Spectral management on metallic access networks; Part 1: Definitions and signal library ETSI TR 101 830-1 gives guidance on a common language for spectral management specifications. It provides a first set of definitions on spectral management quantities and an informative library of signal definitions
	ETSI TS 101 388 (V1.3.1)	Transmission and Multiplexing (TM); Access transmission systems on metallic access cables; Asymmetric Digital Subscriber Line (ADSL) - European specific requirements [ITU-T Recommendation G.992.1 modified] ETSI TS 101 388 endorses ITU-T Recommendation G.992.1, the contents of which apply together with the addition of the modifications being covered in the specification. In addition ITU has worked out a variant ADSL solution in its ITU-T Recommendation G.992.2, also known as G.Lite or "splitter-less" ADSL that is very easy to deploy in the customer premises.
	ETSI TS 101 524 (V1.2.1)	Transmission and Multiplexing (TM); Access transmission system on metallic access cables; Symmetric single pair high bitrate Digital Subscriber Line (SDSL)
	ETSI TS 101 135 (V1.5.3)	Transmission and Multiplexing (TM); High bit-rate Digital Subscriber Line (HDSL) transmission systems on metallic local lines; HDSL core specification and applications for combined ISDN-BA and 2 048 kbit/s transmission
	ETSI TS 101 270-1 (V1.3.1) ETSI TS 101 270-2 (V1.2.1)	Transmission and Multiplexing (TM); Access transmission systems on metallic access cables; Very high speed Digital Subscriber Line (VDSL); Part 1: Functional requirements Part 2: Transceiver specification

Applicability	Reference	Notes
PSTN (Analogue and generic) (continued)	ETSI TS 101 952-1-1 (V1.1.1) ETSI TS 101 952-1-2 (V1.1.1) ETSI TS 101 952-1-3 (V1.1.1) ETSI TS 101 952-1-4 (V1.1.1) ETSI TS 101 952-1-5 (V1.1.1) ETSI TS 101 952-2-1 (V1.1.1) ETSI TS 101 952-2-2 (V1.1.1) ETSI TS 101 952-2-3 (V1.1.1)	xDSL transmission filters ADSL splitters VDSL splitters TS 101 952 series provides the specifications for ADSL and VDSL splitters for European deployment.
Satellite	Not applicable	
TETRA	Not applicable	
Wireless (incl. Local Loop)	Not applicable	Currently outside scope of local loop unbundling
Comments:		
Justification: See ETSI SR 002 211 table 28 Item 7.		

A.3.5 Leased lines

A.3.5.1 Analogue leased lines

The following table identifies the minimum set of analogue leased lines with harmonized characteristics and associated standards as identified in the Commission Decision 2003/548/EC [15] and published in the OJ L 186 on 24 July 2003.

Table A.3.5.1: Analogue leased lines

Applicability	Reference	Notes
Cable	Not applicable	
DECT	Not applicable	
Digital Broadcast (TV and Radio)	Not applicable	
GSM/UMTS	Not applicable	
ISDN	Not applicable	
PTN (Voiceband)	2 wire: ETSI EN 300 448 (V1.2.1) or 4 wire: ETSI EN 300 451 (V1.2.1)	Connection characteristics and network interface presentation Ordinary quality voice bandwidth Leased lines meeting the requirements of ETS 300 488 (2 wire) or ETS 300 451 (4 wire) are deemed to comply with the requirements for this type of leased line.
	2 wire: ETSI EN 300 449 (V1.2.1) or 4 wire: ETSI EN 300 452 (V1.2.1)	Connection characteristics and network interface presentation Special quality voice bandwidth Leased lines meeting the requirements of ETS 300 449 and ETS 300 452 are deemed to comply with the requirements for this type of leased line
PLT	Not applicable	
Satellite	Not applicable	
TETRA	Not applicable	
Wireless (incl. Local Loop)	Not applicable	
Comments:		
Justification: See Decision 2003/548/EC [15] (OJ L 186 24.7.2003) on the minimum set of leased lines with harmonized characteristics and associated standards referred to in Article 18 of the Universal Service Directive. See ETSI SR 002 211 table 11 Item 4, table 28 Item 4, table 56 Items 6, 7 and 23(a).		

A.3.5.2 Digital Leased Lines

The following table identifies the digital leased lines with harmonized characteristics and associated standards as identified in the Commission Decision 2003/548/EC and published in the OJEC L186 on 25 July 2003.

Table A.3.5.2: Digital Leased Lines

Applicability	Reference	Notes
Cable	Not applicable	
DECT	Not applicable	
Digital Broadcast (TV and Radio)	Not applicable	
GSM/UMTS	Not applicable	
ISDN	Not applicable	
PLT	Not applicable	
PSTN (Analogue and generic)	ETSI EN 300 288 (V1.2.1) ETSI EN 300 289 (V1.2.1)	Network interface presentation Connection characteristics 64 kbit/s Leased lines meeting the requirements of ETS 300 288, ETS 300 288/A1 and ETS 300 289 are deemed to comply with the requirements for this type of leased line
	ETSI EN 300 418 (V1.2.1) ETSI EN 300 247 (V1.2.1)	Network interface presentation Connection characteristics 2 048 kbit/s - E1 (unstructured) Leased lines meeting the requirements of ETS 300 418, ETS 300 247 and ETS 300 247/A1 are deemed to comply with the requirements for this type of leased line.
	ETSI EN 300 418 (V1.2.1) ETSI EN 300 419 (V1.2.1)	Network interface presentation Connection characteristics 2 048 kbit/s - E1 (structured) Leased lines meeting the requirements of ETS 300 418 and ETS 300 419 are deemed to comply with the requirements for this type of leased line
	ETSI EN 300 766 (V1.2.1)	N x 64 kbit/s Connection characteristics and network interface presentation ETSI EN 300 766 specifies connection characteristics and network interface presentation for multiple 64 kbit/s digital unrestricted leased lines with octet integrity presented at a structured 2 048 kbit/s interface at either or both ends.
	ETSI EN 300 686 (V1.2.1) ETSI EN 300 687 (V1.2.1)	Network interface presentation Connection characteristics 34 368 kbit/s - E3 E3 is the market denomination for this type of leased line.
	ETSI EN 300 686 (V1.2.1) ETSI EN 300 688 (V1.2.1)	Network interface presentation Connection characteristics 139 264 kbit/s - E4 E4 is the market denomination for this type of leased line
	ETSI EN 301 164 (V1.1.1) ETSI EN 301 165 (V1.1.3)	SDH VC-based leased digital bandwidth Connection characteristics Interface presentation ETSI EN 301 164 specifies the technical requirements for leased line connections of SDH virtual containers, i.e. VC-4, VC-3, VC-2 and VC12. ETSI EN 301 165 defines the functions relevant for the interface presentations of SDH leased lines with STM-1 (155 520 kbit/s) in both electrical and optical forms and STM-4 (622 080 kbit/s) in optical form.

Applicability	Reference	Notes
Satellite	Not applicable	
TETRA	Not applicable	
Wireless (incl. Local Loop)	Not applicable	
Comments:		
Justification: ETSI EN 300 288, ETSI ETS 300 288, ETSI ETS 300 288/A1, ETSI EN 300 289, ETSI ETS 300 289, ETSI EN 300 418, ETSI ETS 300 418, ETSI EN 300 247, ETSI ETS 300 247, ETSI ETS 300 247/A1, ETSI EN 300 419 and ETSI ETS 300 419: See the 2003/548/EC [15] decision (OJ 24.7.2003) on the minimum set of leased lines with harmonized characteristics and associated standards referred to in Article 18 of the USD. ETSI EN 300 766, ETSI EN 300 686, ETSI EN 300 687, ETSI EN 300 688, ETSI EN 301 164 and ETSI EN 301 165: See ETSI SR 002 211 table 11 Item 4, table 28 Item 4, table 56 Items 6, 7 and 23(a).		

A.3.5.3 Bitstream access

This form of access to the network capacity is not covered within the present version of the document and will be covered in subsequent revisions to the present document.

A.4 Universal Service Directive (2002/22/EC)

The specifications listed in the tables that follow identify standards that implement requirements identified and justified in the analysis found in clause 9.3 and summarized in table 56.

A.4.1 Access to PATS at a fixed location and telephony tones

In accordance with Article 4 of the Universal Service Directive, Member States shall ensure that all reasonable requests for connection to the public telephone network at a fixed location and for access to publicly available telephone services at a fixed location are met by at least one operator.

Table A.4.1: Access to PATS at a fixed location and telephony tones

Applicability	Reference	Notes
Cable	ETSI TS 101 909-18 (V1.2.1)	IPCablecom Multimedia Terminal Adapter analogue interface presentation This is an application of ES 201 970 and the earlier EG 201 188
DECT	ETSI EN 300 765-1 (V1.3.1)	Digital Enhanced Cordless Telecommunications (DECT); Radio in the Local Loop (RLL) Access Profile (RAP); Part 1: Basic telephony services
	ETSI EN 300 765-2 (V1.3.1)	Digital Enhanced Cordless Telecommunications (DECT); Radio in the Local Loop (RLL) Access Profile (RAP); Part 2: Advanced telephony services
Digital Broadcast (TV and Radio)	Not applicable	
GSM/UMTS	For further study	
ISDN	ETSI EN 300 012-1 (V1.2.2)	ISDN Basic Rate Access
	ETSI ETS 300 402-1 (Edition 1) ETSI ETS 300 403-1 (Edition 1)	ISDN Basic Rate Access
	ETSI ETSI TR 101 973-3 (V1.1.1)	ETSI TR 101 973-3 is to be replaced by EG 201 973-3. The objective of this document is to reflect the wider European implementation of network characteristics supported by ISDN terminals. These contain recommendations intended as guidance for the definition and design of broadband IP networks and equipment (NGNs) supporting legacy terminal
PLT	Not available	No standards defined

Applicability	Reference	Notes
PSTN (Analogue and generic)	ETSI ES 201 970 (V1.1.1)	PSTN Network Termination Point (NTP) analogue interface The objective of ES 201 970 is to specify the physical and electrical characteristics at a 2-wire analogue presented NTP for short to medium length loop applications, particularly suitable for use by new network operators of public switched telephone networks (PSTN)
	ETSI TR 101 041-1 (V1.1.1)	Network generated tones : Harmonized Recommendations Guidance on the support of legacy analogue PSTN terminals. The objective of ETSI TR 101 041-1 is to review the different existing tones in use. Recommendations are made for the tones most appropriate for harmonization and for their technical characteristics.
	ETSI TR 101 973-1 (V.1.1.1) ETSI TR 101 973-2 (V1.1.1)	ETSI TR 101 973-1 and TR 101 973-2 are to be replaced by EG 201 973-1 and EG 201 973-2. The objective of these documents is to reflect the wider European implementation of network characteristics supported by Analogue PSTN terminals. These contain recommendations intended as guidance for the definition and design of broadband IP networks and equipment (NGNs) supporting legacy terminals
	ETSI TS 101 524 (V.1.2.1)	Access transmission system on metallic access cables; Symmetric single pair high bitrate Digital Subscriber Line (SDSL) This is an application of ES 201 970
Satellite	ETSI TS 101 376-4-1 (V1.1.1)	GEO-Mobile Radio Interface Specifications; Part 4: Radio interface protocol specifications; Sub-part 1: Mobile Earth Station-Gateway Station System (MES-GSS) Interface (GMR-1)
	ETSI TS 101 376-4-2 (V1.1.1)	GEO-Mobile Radio Interface Specifications; Part 4: Radio interface protocol specifications; Sub-part 2: GMR-1 Satellite Network Access Reference Configuration
	ETSI TS 101 376-4-3 (V1.1.1)	GEO-Mobile Radio Interface Specifications; Part 4: Radio interface protocol specifications; Sub-part 3: Channel Structures and Access Capabilities (GMR-1)
	ETSI TS 101 376-4-4 (V1.1.1) and (V1.2.1)	GEO-Mobile Radio Interface Specifications; Part 4: Radio interface protocol specifications; Sub-part 4: Layer 1 General Requirements (GMR-1)
	ETSI TS 101 376-4-5 (V1.1.1) and (V1.2.1)	GEO-Mobile Radio Interface Specifications; Part 4: Radio interface protocol specifications; Sub-part 5: Data Link Layer General Aspects (GMR-1)
	ETSI TS 101 376-4-6 (V1.1.1) and (V1.2.1)	GEO-Mobile Radio Interface Specifications; Part 4: Radio interface protocol specifications; Sub-part 6: Mobile earth Station-Gateway Station Interface Data Link Layer Specifications (GMR-1)
	ETSI TS 101 376-4-7 (V1.1.1)	GEO-Mobile Radio Interface Specifications; Part 4: Radio interface protocol specifications; Sub-part 7: Mobile Radio Interface Signalling Layer 3 General Aspects (GMR-1)
	ETSI TS 101 376-4-7 (V2.1.1)	GEO-Mobile Radio Interface Specifications (Release 2); General Packet Radio Service; Part 4: Radio interface protocol specifications; Sub-part 7: Mobile Radio Interface Signalling Layer 3 General Aspects (GMR-1)
	ETSI TS 101 376-4-8 (V1.2.1)	GEO-Mobile Radio Interface Specifications; Part 4: Radio interface protocol specifications; Sub-part 8: Mobile Radio Interface Layer 3 Specifications (GMR-1)
	ETSI TS 101 376-4-8 (V2.1.1)	GEO-Mobile Radio Interface Specifications (Release 2); General Packet Radio Service; Part 4: Radio interface protocol specifications; Sub-part 8: Mobile Radio Interface Layer 3 Specifications (GMR-1)
	ETSI TS 101 376-5-1 (V1.1.1)	GEO-Mobile Radio Interface Specifications; Part 5: Radio interface physical layer specifications; Sub-part 1: Physical Layer on the Radio Path: General Description (GMR-1)

Applicability	Reference	Notes
Satellite (continued)	ETSI TS 101 376-5-2 (V1.2.1)	GEO-Mobile Radio Interface Specifications; Part 5: Radio interface physical layer specifications; Sub-part 2: Multiplexing and Multiple Access; Stage 2 Service Description (GMR-1)
	ETSI TS 101 376-5-2 (V2.1.1)	GEO-Mobile Radio Interface Specifications (Release 2); General Packet Radio Service; Part 5: Radio interface physical layer specifications; Sub-part 2: Multiplexing and Multiple Access; Stage 2 Service Description (GMR-1)
	ETSI TS 101 376-5-3 (V1.2.1)	GEO-Mobile Radio Interface Specifications; Part 5: Radio interface physical layer specifications; Sub-part 3: Channel Coding (GMR-1)
	ETSI TS 101 376-5-3 (V2.1.1)	GEO-Mobile Radio Interface Specifications (Release 2); General Packet Radio Service; Part 5: Radio interface physical layer specifications; Sub-part 3: Channel Coding (GMR-1)
	ETSI TS 101 376-5-4 (V1.2.1)	GEO-Mobile Radio Interface Specifications; Part 5: Radio interface physical layer specifications; Sub-part 4: Modulation (GMR-1)
	ETSI TS 101 376-5-4 (V2.1.1)	GEO-Mobile Radio Interface Specifications (Release 2); General Packet Radio Service; Part 5: Radio interface physical layer specifications; Sub-part 4: Modulation (GMR-1)
	ETSI TS 101 376-5-5 (V1.2.1)	GEO-Mobile Radio Interface Specifications; Part 5: Radio interface physical layer specifications; Sub-part 5: Radio Transmission and Reception (GMR-1)
	ETSI TS 101 376-5-5 (V2.1.1)	GEO-Mobile Radio Interface Specifications (Release 2); General Packet Radio Service; Part 5: Radio interface physical layer specifications; Sub-part 5: Radio Transmission and Reception (GMR-1)
	ETSI TS 101 376-5-6 (V1.2.1)	GEO-Mobile Radio Interface Specifications; Part 5: Radio interface physical layer specifications; Sub-part 6: Radio Subsystem Link Control (GMR-1)
	ETSI TS 101 376-5-6 (V2.1.1)	GEO-Mobile Radio Interface Specifications (Release 2); General Packet Radio Service; Part 5: Radio interface physical layer specifications; Sub-part 6: Radio Subsystem Link Control (GMR-1)
	ETSI TS 101 376-5-7 (V1.2.1)	GEO-Mobile Radio Interface Specifications; Part 5: Radio interface physical layer specifications; Sub-part 7: Radio Subsystem Synchronization (GMR-1)
	ETSI TS 101 376-5-7 (V2.1.1)	GEO-Mobile Radio Interface Specifications (Release 2); General Packet Radio Service; Part 5: Radio interface physical layer specifications; Sub-part 7: Radio Subsystem Synchronization (GMR-1)
	ETSI TS 101 377-4-1 (V1.1.1)	GEO-Mobile Radio Interface Specifications; Part 4: Radio interface protocol specifications; Sub-part 1: GMR-2 Mobile Earth Station-Network Interface; General Aspects and Principles (GMR-2)
	ETSI TS 101 377-4-2 (V1.1.1)	GEO-Mobile Radio Interface Specifications; Part 4: Radio interface protocol specifications; Sub-part 2: GMR-2 Mobile Earth Station-Network Interface; Channel Structures and Access capabilities (GMR-2)
	ETSI TS 101 377-4-3 (V1.1.1)	GEO-Mobile Radio Interface Specifications; Part 4: Radio interface protocol specifications; Sub-part 3: Layer 1 General requirements (GMR-2)
	ETSI TS 101 377-4-4 (V1.1.1)	GEO-Mobile Radio Interface Specifications; Part 4: Radio interface protocol specifications; Sub-part 4: Data Link Layer General Aspects (GMR-2)
	ETSI TS 101 377-4-5 (V1.1.1)	GEO-Mobile Radio Interface Specifications; Part 4: Radio interface protocol specifications; Sub-part 5: GMR-2 Mobile Earth Station - Network Interface; Data Link (DL) layer Specifications (GMR-2)
	ETSI TS 101 377-4-6 (V1.1.1)	GEO-Mobile Radio Interface Specifications; Part 4: Radio interface protocol specifications; Sub-part 6: Mobile Radio Interface Signalling Layer 3 (GMR-2)

Applicability	Reference	Notes
Satellite (continued)	ETSI TS 101 377-4-7 (V1.1.1)	GEO-Mobile Radio Interface Specifications; Part 4: Radio interface protocol specifications; Sub-part 7: Mobile radio interface Layer 3 Specifications (GMR-2)
	ETSI TS 101 377-4-9 (V1.1.1)	GEO-Mobile Radio Interface Specifications; Part 4: Radio interface protocol specifications; Sub-part 9: Performance requirements on the mobile radio interface (GMR-2)
	ETSI TS 101 377-4-10 (V1.1.1)	GEO-Mobile Radio Interface Specifications; Part 4: Radio interface protocol specifications; Sub-part 10: Rate Adaptation on the Mobile Earth Station (MES) - Gateway System Interface (GMR-2)
	ETSI TS 101 377-5-1 (V1.1.1)	GEO-Mobile Radio Interface Specifications; Part 5: Radio interface physical layer specifications; Sub-part 1: Physical Layer on the Radio Path (GMR-2)
	ETSI TS 101 377-5-2 (V1.1.1)	GEO-Mobile Radio Interface Specifications; Part 5: Radio interface physical layer specifications; Sub-part 2: Multiplexing and Multiple Access on the Radio Path (GMR-2)
	ETSI TS 101 377-5-3 (V1.1.1)	GEO-Mobile Radio Interface Specifications; Part 5: Radio interface physical layer specifications; Sub-part 3: Channel Coding (GMR-2)
	ETSI TS 101 377-5-4 (V1.1.1)	GEO-Mobile Radio Interface Specifications; Part 5: Radio interface physical layer specifications; Sub-part 4: Modulation (GMR-2)
	ETSI TS 101 377-5-5 (V1.1.1)	GEO-Mobile Radio Interface Specifications; Part 5: Radio interface physical layer specifications; Sub-part 5: Radio Transmission and Reception (GMR-2)
	ETSI TS 101 377-5-6 (V1.1.1)	GEO-Mobile Radio Interface Specifications; Part 5: Radio interface physical layer specifications; Sub-part 6: Radio Subsystem Link Control (GMR-2)
	ETSI TS 101 377-5-7 (V1.1.1)	GEO-Mobile Radio Interface Specifications; Part 5: Radio interface physical layer specifications; Sub-part 7: Radio Subsystem Synchronization (GMR-2)
	ETSI TS 101 376-3-13 (V1.1.1)	GEO-Mobile Radio Interface Specifications; Part 3: Network specifications; Sub-part 13: Technical realization of group 3 facsimile using transparent mode of transmission (GMR-2)
	ETSI TS 101 377-3-12 (V1.1.1)	GEO-Mobile Radio Interface Specifications; Part 3: Network specifications; Sub-part 12: Technical realization of Facsimile Group 3 Transparent (GMR-2)
TETRA	ETSI EN 300 392-2 (V2.3.2)	Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 2: Air Interface (AI)
Wireless (incl. Local Loop)	For further study	
Comments:		
Justification: See ETSI SR 002 211 table 56 Item 1(a).		

A.4.2 Special measures for disabled users

Article 7 identifies a requirement to ensure access to PATS for disabled users. Annex B of the present document summarizes all provisions conforming to this Article under the generic title "Human Factors".

A.4.3 Control of expenditure

In accordance with Article 10 and Annex I part A of the Universal Service Directive operators with universal service obligations must offer a number of services so consumers can monitor and control expenditure.

A.4.3.1 Outgoing Call Barring

Table A.4.3.1: Outgoing Call Barring

Applicability	Reference	Notes
Cable	No specification available	
DECT	ETSI EN 300 175-5 (V1.7.1)	Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 5: Network (NWK) layer
Digital Broadcast (TV and Radio)	Not applicable	
GSM/UMTS	ETSI TS 124 088 (V3.0.0)	Call Barring (CB) Supplementary Service; Stage 3 ETSI TS 123 088 Stage 2 ETSI TS 122 088 Stage 1
	ETSI TS 129 002 (V3.18.0)	Mobile Application Part (MAP) specification
ISDN	ETSI EN 301 082 (V2.1.1)	Outgoing Call Barring-Fixed (OCB-F) supplementary service ETSI EN 301 082 provides the service description for Integrated Services Digital Network (ISDN) Outgoing Call Barring-Fixed (OCB-F) supplementary service
	ETSI EN 301 084 (V2.1.1)	Outgoing Call Barring-User Controlled (OCB-UC) ETSI EN 301 084 provides the service description for Integrated Services Digital Network (ISDN) Outgoing Call Barring-User Controlled (OCB-UC) supplementary service supplementary service
	ETSI EN 301 001-1 (V1.2.2)	Outgoing Call Barring (OCB) supplementary services; DSS1 protocol specification ETSI EN 301 001-1 defines the DSS1 protocol for the OCB supplementary services.
PLT	No specification available	
PSTN (Analogue and generic)	No specification available	
Satellite	TS 101 376-3-16 (V1.1.1)	GEO-Mobile Radio Interface Specifications; Part 3: Network specifications; Sub-part 16: Call Barring (CB) supplementary services - Stage 2
	TS 101 377-2-7 (V1.1.1)	GEO-Mobile Radio Interface Specifications: Operator Determined Barring (ODB)
	TS 101 377-2-8 (V1.1.1)	GEO-Mobile Radio Interface Specifications: Call Barring Supplementary Services
	TS 101 377-3-16 (V1.1.1)	GEO-Mobile Radio Interface Specifications: Technical realization of Operator Determined Barring (ODB)
	TS 101 377-3-17 (V1.1.1)	GEO-Mobile Radio Interface Specifications; Part 3: Network specifications; Sub-part 17: Call Barring (CB) Supplementary Services - Stage 2
	TS 101 377-4-14 (V1.1.1)	GEO-Mobile Radio Interface Specifications; Part 4: Radio interface protocol specifications; Sub-part 14: Call Barring Supplementary Services
TETRA	ETSI EN 300 392-12-18 (V1.1.1)	Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 12: Supplementary services stage 3; Sub-part 18: Barring of Outgoing Calls (BOC) Only stage 3 specifications are provided for TETRA. ETSI EN 300 392-11-18 TETRA;Voice plus Data (V+D);Part 11: Supplementary services stage 2;Sub-part 18: Barring of Outgoing Calls (BOC) ETSI EN 300 392-10-18 TETRA;Voice plus Data (V+D);Part 10: Supplementary services stage 1;Sub-part 18: Barring of Outgoing Calls (BOC)
Wireless (incl. Local Loop)	No specification available	
Comments: The CEPT SF Handbook (see note) Section II Chapters 3.1.2 and 3.1.3 contain recommendations for Outgoing Call Barring.		
NOTE: The CEPT SF Handbook can be obtained from European Telecommunications Network Operators' association (ETNO), Avenue Louise 54, 1050 Brussels, Belgium.		
Justification: See ETSI SR 002 211 table 56 Items 3 and 19(a).		

A.4.3.2 Incoming Call Barring

Table A.4.3.2: Incoming Call Barring

Applicability	Reference	Notes
Cable	No specification available	
DECT	ETSI EN 300 175-5 (V1.7.1)	Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 5: Network (NWK) layer
Digital Broadcast (TV and Radio)	Not applicable	
GSM/UMTS	ETSI TS 124 088 (V3.0.0)	Call Barring (CB) Supplementary Service; Stage 3 ETSI TS 123 088 Stage 2 ETSI TS 122 088 Stage 1
	ETSI TS 129 002 (V3.18.0)	Mobile Application Part (MAP) specification
ISDN	No specification available	
PLT	No specification available	
PSTN (Analogue and generic)	No specification available	
Satellite	TS 101 376-3-16 (V1.1.1)	GEO-Mobile Radio Interface Specifications; Part 3: Network specifications; Sub-part 16: Call Barring (CB) supplementary services - Stage 2
	TS 101 377-2-7 (V1.1.1)	GEO-Mobile Radio Interface Specifications: Operator Determined Barring (ODB)
	TS 101 377-2-8 (V1.1.1)	GEO-Mobile Radio Interface Specifications: Call Barring Supplementary Services
	TS 101 377-3-16 (V1.1.1)	GEO-Mobile Radio Interface Specifications: Technical realization of Operator Determined Barring (ODB)
	TS 101 377-3-17 (V1.1.1)	GEO-Mobile Radio Interface Specifications; Part 3: Network specifications; Sub-part 17: Call Barring (CB) Supplementary Services - Stage 2
	TS 101 377-4-14 (V1.1.1)	GEO-Mobile Radio Interface Specifications; Part 4: Radio interface protocol specifications; Sub-part 14: Call Barring Supplementary Services
TETRA	EN 300 392-12-19 (V1.1.1)	Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 12: Supplementary services stage 3; Sub-part 19: Barring of Incoming Calls (BIC) EN 300 392-11-19 Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 11: Supplementary services stage 2; Sub-part 19: Barring of Incoming Calls (BIC) EN 300 392-10-19 Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 10: Supplementary services stage 1; Sub-part 19: Barring of Incoming Calls (BIC)
Wireless (incl. Local Loop)	No specification available	
Comments:		
Justification: See ETSI SR 002 211 table 56 Items 3 and 19(a).		

A.4.3.3 Advice of Charge (AoC)

Table A.4.3.3: Advice of Charge (AoC)

Applicability	Reference	Notes
Cable	No specification available	
DECT	ETSI EN 300 175-5 (V1.7.1)	Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 5: Network (NWK) layer
Digital Broadcast (TV and Radio)	No specification available	See note

Applicability	Reference	Notes
GSM/UMTS	ETSI TS 122 024 (V3.0.1)	Digital cellular telecommunications system (Phase 2+) (GSM); Universal Mobile Telecommunications System (UMTS); Description of Charge Advice Information (CAI) (3G TS 22.024 version 3.0.1 Release 1999)
	ETSI TS 122 115 (V3.4.0)	Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Service aspects; Charging and billing (3GPP TS 22.115 version 3.4.0 Release 1999)
	ETSI TS 124 086 (V3.0.0)	Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Advice of Charge (AOC) supplementary services - Stage3 (3G TS 24.086 version 3.0.0 Release 1999) ETSI TS 123 086 Stage 2 ETSI TS 122 086 Stage 1
	ETSI TS 129 002 (V3.18.0)	Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Mobile Application Part (MAP) specification (3GPP TS 29.002 version 3.18.0 Release 1999)
ISDN	ETSI EN 300 182-1 (V1.3.6)	Integrated Services Digital Network (ISDN); Advice of Charge (AOC) supplementary service; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification
PLT	No specification available	
PSTN (Analogue and generic)	ETSI EN 300 659-3 (V1.3.1)	Access and Terminals (AT); Analogue access to the Public Switched Telephone Network (PSTN); Subscriber line protocol over the local loop for display (and related) services; Part 3: Data link message and parameter codings Subscriber line protocol for display (and related) Services (includes support of AoC message). ETSI TR 102 088: Public Switched Telephone Network (PSTN); Subscriber line protocol for Advice of Charge (AoC) display services
Satellite	No specification available	
TETRA	-	Advice of charge is not expclitly supported in TETRA. However users may restrict the area in which a call is established and may control charging as a secondary effect using the TETRA Area Selection supplementary service (ETSI TS 100 392-12-8)
Wireless (incl. Local Loop)	No specification available	
NOTE: Pay-TV operators clearly display the charges (e.g. for pay-per-view movie), but the mechanisms for transactions have not been standardized.		
Justification: See ETSI SR 002 211 table 56 Items 3, 9 and 19(a).		

A.4.4 Quality of Service (QoS)

The term "Quality of Service" is most often used in ETSI specifications to address the dynamic aspects of a service and may include for example the mouth-to-ear performance of a telephone call.

The term "Grade of service" is applied to cover those aspects of reliability, service availability, service recovery and similar that are contained within a service contract.

NOTE: Articles 11 and 22 of the Universal Service Directive refer to the same set of standards with a different emphasis. Article 11 refers to data to be provided to the regulator, whilst Article 22 refers to data to be provided to the user.

A.4.4.1 Quality of Service (parameters)

Table A.4.4.1: Quality of Service (parameters)

Applicability	Reference	Notes
Generic	ETSI EG 201 769 (V1.1.2)	ETSI EG 201 769 provides QoS parameter definitions and measurements; parameters for voice telephony service required under the ONP Voice Telephony Directive 98/10/EC [22]. ETSI TR 102 126 provides guidance on the correct implementation of ETSI EG 201 769 and describing practical solutions.
	ETSI EG 202 057-1 (V1.1.1) ETSI EG 202 057-2 (V1.1.1)	Speech Processing, Transmission and Quality Aspects (STQ); User related QoS parameter definitions and measurements; Part 1 : General Part 2: Voice telephony; Group3 fax and modem data services ETSI EG 202 057 contains harmonized definitions and measurement methods for a range of user perceivable Quality of Service (QoS) parameters.
	ETSI EG 202 009-1 (V1.1.1) ETSI EG 202 009-2 (V1.1.1) ETSI EG 202 009-3 (V1.1.1)	User Group; Quality of telecom services; Part 1: Methodology for identification of parameters relevant to users Part 2: User related parameters on a service specific basis Part 3: Template for Service Level Agreements (SLAs) ETSI is currently working on revision of ETSI EG 202 009 V1.1.1.
Cable	Refer to generic	
DECT	ETSI EN 301 649 (V1.3.1)	Digital Enhanced Cordless Telecommunications (DECT); DECT Packet Radio Service (DPRS)
	ETSI EN 300 175-8 (V1.7.1)	Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 8: Speech Coding and Transmission
Digital Broadcast (TV and Radio)	Refer to generic	
GSM/UMTS	ETSI TS 123 107 (V3.9.0)	Universal Mobile Telecommunications System (UMTS); Quality of Service (QoS) concept and architecture (3GPP TS 23.107 version 3.9.0 Release 1999)
	ETSI EG 201 769 (V1.1.2)	ETSI EG 201 769 provides QoS parameter definitions and measurements; parameters for voice telephony service required under the ONP Voice Telephony Directive 98/10/EC. ETSI TS 102 126 provides guidance on the correct implementation of EG 201 769 and describing practical solutions.
ISDN	Refer to generic	
PLT	ETSI TR 102 049 (V1.1.1)	PowerLine Telecommunications (PLT); Quality of Service (QoS) requirements for in-house systems
PSTN	Refer to generic	
Satellite	Refer to generic	
TETRA	Refer to generic	
Wireless (incl. Local Loop)	Refer to generic	
Comments:		
Justification: ETSI EG 201 769: see ETSI SR 002 211 table 56 Items 4 and 21. ETSI EG 202 057 and ETSI EG 202 009: see ETSI SR 002 211 table 56 Item 10.		

A.4.4.2 Grade of Service

Table A.4.4.2: Quality of Service (Grade of service)

Applicability	Reference	Notes
Cable	ETSI TR 101 971 (V1.1.1)	Access and Terminals (AT); IP Cable Services for Multimedia Broadband Cable Networks; Availability and Reliability
DECT	No specification available	
Digital Broadcast (TV and Radio)	No specification available	
GSM/UMTS	ETSI TS 124 008 (V3.17.0)	Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Mobile radio interface Layer 3 specification; Core network protocols; Stage 3 (3GPP TS 24.008 version 3.17.0 Release 1999)
	ETSI TS 129 002 (V3.18.0)	Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Mobile Application Part (MAP) specification (3GPP TS 29.002 version 3.18.0 Release 1999)
ISDN	ETSI EN 300 416 (V1.2.1)	The availability objectives for designing, planning and operating digital transmission networks. Reference document: ITU-T Recommendation G.827
PLT	No specification available	
PSTN (Analogue and generic)	ETSI ES 201 801 (V1.1.1) ETSI TS 102 024-12 (V4.1.1)	Transfer of performance parameters of connections on a per call basis; End-to-end speech transmission performance Additional Network Feature (ANF); Service description Telecommunications and Internet Protocol Harmonization Over Networks (TIPHON) Release 4; End-to-end Quality of Service in TIPHON Systems; Part 12: IP Telephony Service Availability
Satellite	No specification available	
TETRA	ETSI TS 100 392-16 (V1.1.1)	Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D);Part 16: Network Performance Metrics
Wireless (incl. Local Loop)	No specification available	
Comments:		
Justification: See ETSI SR 002 211 table 56 Item 10.		

A.4.5 Carrier selection and carrier pre-selection

Table A.4.5: Carrier selection and carrier pre-selection

Applicability	Reference	Notes
Generic	ETSI TR 101 092 (V1.1.1)	Report on carrier selection, identifies the essential requirements and related network capabilities for introducing carrier selection and carrier pre-selection; a variety of possible methods are considered and the likely impact of each is assessed.
	ITU-T E.164 supplement 1	ITU-T Recommendation E.164 (Supplement 1) presents a summary of the potential methods for carrier selection and network identification on the public network
Cable	Refer to generic	
DECT	Refer to generic	
Digital Broadcast (TV and Radio)	Not applicable	
GSM/UMTS	ETSI TS 100 930 (V8.7.0)	Digital cellular telecommunications system (Phase 2+); Functions related to Mobile Station (MS) in idle mode and group receive mode (3GPP TS 03.22 version 8.7.0 Release 1999)
	Refer to generic	
ISDN	Refer to generic	
PLT	Refer to generic	

Applicability	Reference	Notes
PSTN	Refer to generic	
Satellite	ETSI TS 101 376-3-10 (V1.2.1)	GEO-Mobile Radio Interface Specifications; Part 3: Network specifications; Sub-part 10: Functions related to Mobile Earth Station (MES) in idle mode (GMR-1)
	ETSI TS 101 376-3-10 (V2.1.1)	GEO-Mobile Radio Interface Specifications (Release 2); General Packet Radio Service; Part 3: Network specifications; Sub-part 10: Functions related to Mobile Earth Station (MES) in idle mode (GMR-1)
	ETSI TS 101 376-2-1 (V1.1.1)	GEO-Mobile Radio Interface Specifications; Part 2: Service specifications; Sub-part 1: Service Accessibility (GMR-1)
	ETSI TS 101 377-2-6 (V1.1.1)	GEO-Mobile Radio Interface Specifications; Part 2: Service specifications; Sub-part 6: Service Accessibility (GMR-2)
	ETSI TS 101 377-3-11 (V1.1.1)	GEO-Mobile Radio Interface Specifications; Part 3: Network specifications; Sub-part 11: Functions Related to Mobile Earth Station (MES) in Idle Mode (GMR-2)
TETRA	Refer to generic	
Wireless (incl. Local Loop)	Refer to generic	
Comments:	There are currently no standards addressing carrier pre-selection from the perspective of user access to non-mobile service providers.	
Justification:	See ETSI SR 002 211 table 56 Item 8.	

A.4.6 Transparency of prices and tariffs

As declared in the caveat to Article 21 (see paragraph 9.5.3) the provision of pricing data to consumers in sufficient detail to allow consumers to evaluate service offerings from different providers does not of itself require a technical standard. However a standard means of presenting data to the consumer needs to be considered and the table below summarizes a requirement for future work across all technologies.

Table A.4.6: Transparency of prices and tariffs

Applicability	Reference	Notes
Cable	-	For future work
DECT	-	For future work
Digital Broadcast (TV and Radio)	-	For future work
GSM/UMTS	-	For future work
ISDN	-	For future work
PLT	-	For future work
PSTN (Analogue and generic)	-	For future work
Satellite	-	For future work
TETRA	-	For future work
Wireless (incl. Local Loop)	-	For future work
Comments:	No technical specification is identified, however, it has been identified that a generic proforma for the presentation of service specific tarrif information is required independent of the sector (technology).	
Justification:	See ETSI SR 002 211 table 56 Item 9.	

A.4.7 Integrity of the network

The integrity of the network as defined in Article 23 refers to providers of publicly available telephone services at fixed locations, requiring them to take all reasonable steps to ensure uninterrupted access to emergency services. No ESO standards exist in this area, but general provisions for Grade of Service as identified in Annex III of the Universal Service Directive also apply.

A.4.8 Interoperability of consumer television equipment

In accordance with Article 24 and Annex VI of the Universal Service Directive, television sets should be fitted with at least one open interface socket (as standardized by a recognized European standardization body and in the case of digital television sets the interface conforms to either a European standard or an industry-wide specification).

Table A.4.8: Interoperability of consumer television equipment

Applicability	Reference	Notes
GSM/UMTS	Not applicable	
Cable	Not applicable	
DECT	Not applicable	
Digital Broadcast (TV and Radio)	CENELEC EN 50049-1	Open interface for Analogue Television sets with an integral diagonal visible screen greater than 42 cm, e.g. peritelevision connector
	CENELEC EN 50049-1/A1	Open interface for Digital Television sets with an integral diagonal visible screen greater than 30 cm, e.g. common interface
	ETSI TS 102 201 (V1.2.1)	Digital Video Broadcasting (DVB); Interfaces for DVB Integrated Receiver Decoder (DVB-IRD)
ISDN	Not applicable	
PSTN (Analogue and generic)	Not applicable	
PLT	Not applicable	
Satellite	Not applicable	
TETRA	Not applicable	
Wireless (incl. Local Loop)	Not applicable	
Comments:	As stated in recital 33 of the Universal Service Directive, user requirements and functionality of digital interface sockets are still evolving in line with technological developments.	
Justification:	See ETSI SR 002 311 table 56 Items 12, 22(b) and 22(c).	

A.4.9 Directory enquiry services

Article 25 requires that PATS subscribers have access to both Operator assistance and Directory Enquiry Services. In each case access numbers form part of the national dialling plan and require no specific standardization.

In accordance with Article 5 of the Universal Service Directive, Member States shall ensure that at least one telephone directory enquiry service covering all listed subscribers' numbers is available to all users.

Table A.4.9: Directory enquiry services

Applicability	Reference	Notes
Generic	ITU-T Recommendation F.510	Interconnection of computerized directory assistance services. ITU-T Recommendation F.510 was developed for international public directory services, but is also suitable for interconnecting national directory databases. ITU-T Recommendation E.115 (Computerized directory assistance) is currently used to implement international public directory services.
	ETSI TS 102 051 (V1.1.1)	ENUM administration in Europe
	ETSI TS 102 172 (V1.1.1)	Services and Protocols for Advanced Networks (SPAN); Minimun requirements for interoperability of European ENUM trials
Cable	Refer to generic	
DECT	Refer to generic	
Digital Broadcast (TV and Radio)	Not applicable	
GSM/UMTS	Refer to generic	
ISDN	Refer to generic	
PLT	Refer to generic	
PSTN	Refer to generic	

Applicability	Reference	Notes
Satellite	Refer to generic	
TETRA	Refer to generic	
Wireless (incl. Local Loop)	Refer to generic	
Comments:		
Justification: See ETSI SR 002 211 table 56 Items 13(b) and 13(c).		

A.4.10 Single European Emergency Call Number

A.4.10.1 Access to Emergency Services

Table A.4.10.1: Access to Emergency Services

Applicability	Reference	Notes
Cable	ETSI TS 101 909-4 (V1.3.1)	Digital Broadband Cable Access to the Public Telecommunications Network; IP Multimedia Time Critical Services; Part 4: Network Call Signalling Protocol The NCS Protocol defines support for emergency calls within the IPCablecom network and to be supported by E-MTA (ETSI TS 101 909-18)
DECT	EN 300 175-5 (V1.7.1)	Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 5: Network (NWK) layer
Digital Broadcast (TV and Radio)	Not applicable	
GSM/UMTS	ETSI TS 100 930 (V8.7.0)	Functions related to Mobile Station (MS) in idle mode and group receive mode
	ETSI TS 101 503 (V8.20.0)	Mobile radio interface layer 3 specification; Radio Resource Control (RRC) protocol
	ETSI TS 123 122 (V3.10.0)	Non-Access-Stratum functions related to Mobile Station (MS) in idle mode
	ETSI TS 124 008 (V3.17.0)	Mobile radio interface Layer 3 specification; Core network protocols; Stage 3
	ETSI TS 125 331 (V3.17.0)	Radio Ressource Control (RRC) protocol specification
ISDN	EN 300 356-22 (V1.1.1)	ISDN User Part (ISUP) version 4 for the international interface; Part 22: International Emergency Preference Scheme (IEPS) service [ITU-T Amendments (2002) to Q.761 - Q.764 (1999) modified]
PLT	No specification available	
PSTN (Analogue and generic)	No specification available	
Satellite	ETSI TS 101 377-2-6 (V1.1.1)	GEO-Mobile Radio Interface Specifications; Part 2: Service specifications; Sub-part 6: Service Accessibility
	ETSI TS 101 377-4-7 (V1.1.1)	GEO-Mobile Radio Interface Specifications; Part 4: Radio interface protocol specifications; Sub-part 7: Mobile radio interface Layer 3 Specifications.
TETRA	ETSI EN 300 392-12-10 (V1.2.0)	TETRA;Voice plus Data (V+D);Part 12: Supplementary services stage 3;Sub-part 10: Priority Call (PC) ETSI EN 300 392-11-10 TETRA;Voice plus Data (V+D);Part 11: Supplementary services stage 2;Sub-part 10: Priority Call (PC) ETSI EN 300 392-10-10 TETRA;Voice plus Data (V+D);Part 10: Supplementary services stage 1;Sub-part 10: Priority Call (PC)
Wireless (incl. Local Loop)	No specification available	
Comments: ETSI SR 002 180-1 describes the requirements for the telecommunication's service emergency call service: Citizen to Authority. The general provisions of the emergency call service, the basic function of emergency call setup, recognition, forwarding and termination are described.		
Justification: See ETSI SR 002 211 table 56 Items 2(c) and 14.		

A.4.10.2 Caller location

In accordance with Article 26(3) of the Universal Service Directive Member States shall ensure that providers of public telephone networks make caller location information available to emergency services authorities, to the extent technically feasible, for all "112" calls. In fixed networks caller location will be provided by means of CLIP service.

Table A.4.10.2: Caller location

Applicability	Reference	Notes
Generic	TS 102 164 (V1.1.1)	Emergency location protocols Derived from LIF forum, simplified and endorsed by ETSI TC SPAN for PSAP interface to Mobile network location register.
Cable	Refer to generic	
DECT	Access Network specification applies	It is the specifications to which the DECT system is connected that applies
Digital Broadcast (TV and Radio)	Not applicable	
GSM/UMTS	ETSI TS 123 171 (V3.10.0)	Location Services (LCS); Functional description; Stage 2 (UMTS)
ISDN	Refer to generic	
PLT	Not available	Use generic
PSTN	Not available	Use generic
Satellite	TS 101 376-3-6 (V1.1.1)	GEO-Mobile Radio Interface Specifications; Part 3: Network specifications; Sub-part 6: Location Registration and Position Identification Procedures
	TS 101 376-3-21 (V1.2.1)	GEO-Mobile Radio Interface Specifications; Part 3: Network specifications; Sub-part 21: Position Reporting services; Stage 2 Service description
	TS 101 377-3-8 (V1.1.1)	GEO-Mobile Radio Interface Specifications; Part 3: Network specifications; Sub-part 8: Location Registration Procedures
TETRA	Not available	Use generic
Wireless (incl. Local Loop)	Access Network specification applies	It is the specifications to which the Wireless system is connected that applies
Comments:		
Justification: See ETSI SR 002 211 table 56 Item 14 and table 69 Item 6(a).		

A.4.11 European telephone access code ("3883")

In accordance with Article 27 of the Universal Service Directive Member States shall ensure that all providers of public telephone networks handle all calls to the European Telephony Numbering Space (ETNS).

Table A.4.11: European telephone access code ("3883")

Applicability	Reference	Notes
Generic	ETSI EN 301 160 (V1.2.1)	Routeing of calls to European Telephony Numbering Space (ETNS) services ETSI EN 301 160 standardizes the short and medium term routeing alternatives for handling a calls using pan-European numbering scheme.
	ETSI EN 301 161 (V1.2.1)	Management of the European Telephony Numbering space ETSI EN 301 161 Ver.1.2.1 is the revision of EN 301 161 to take into account of the assignment of '3883' by ITU-T SG2
	ETSI EN 301 104 (V1.1.1)	Human factors requirements for a European Telephony Numbering Space (ETNS) ETSI EN 301 104 identifies the Human Factors issues in the creation of a European Numbering Space and the creation of recommendations for addressing those issues.

Applicability	Reference	Notes
Generic (continued)	ETSI TR 101 617 (V1.1.1)	Considerations on network mechanisms for charging and revenue accounting for European Telephony Numbering Space (ETNS) services. ETSI TR 101 617 provides the description of a basic frame for charging and revenue accounting for ETNS services.
Cable	Refer to generic	
DECT	Refer to generic	
Digital Broadcast (TV and Radio)	Not applicable	
GSM/UMTS	Refer to generic	
ISDN	Refer to generic	
PLT	Refer to generic	
PSTN	Refer to generic	
Satellite	Refer to generic	
TETRA	Refer to generic	
Wireless (incl. Local Loop)	Refer to generic	
Comments:		
Justification: See ETSI SR 002 211 table 56 Item 15.		

A.4.12 Non-geographic numbers

Article 28 requires that PATS subscribers can access non-geographic numbers. The provision of such numbers forms part of the national numbering plan and is not subject to ESO standardization.

A.4.13 Provision of additional facilities

A.4.13.1 DTMF

In accordance with Article 29 of the Universal Service Directive operators operating public telephone networks must support the use of DTMF tones as listed in Annex I Part B (2002/22/EC [4]).

Table A.4.13.1: DTMF

Applicability	Reference	Notes
Generic	ETSI ES 201 235-1 (V1.1.1)	Part 1: General
	ETSI ES 201 235-3 (V1.2.1)	Part 3: Receivers
	ETSI ES 201 235-4 (V1.2.1)	Part 4: End-to-end signalling
Cable	Refer to generic	
DECT	Refer to generic	
Digital Broadcast (TV and Radio)	Not applicable	
GSM/UMTS	Refer to generic	
ISDN	Refer to generic	
PLT	Refer to generic	
PSTN	Refer to generic	
Satellite	ETSI TS 101 376-3-8 (V1.1.1)	GEO-Mobile Radio Interface Specifications; Part 3: Network specifications; Sub-part 8: Support of Dual-Tone Multifrequency Signalling (DTMF) (GMR-1)
TETRA	Refer to generic	
Wireless (incl. Local Loop)	Refer to generic	
Comments: Dual-Tone Multi-Frequency Transmitters are specified in ETSI ES 201 235-2.		
Justification: See ETSI SR 002 211 table 56 Items 17, 19(b)(i) and 19(b)(ii).		

A.4.13.2 Calling-Line Identification Presentation (CLIP)

In accordance with Article 29 of the Universal Service Directive operators operating public telephone networks must make available calling-line identification as listed in Annex I, Part B (2002/22/EC [4]).

Table A.4.13.2: Calling-Line Identification Presentation (CLIP)

Applicability	Reference	Notes
Cable	No specification available	
DECT	EN 300 175-5 (V1.7.1)	Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 5: Network (NWK) layer
Digital Broadcast (TV and Radio)	Not applicable	
GSM/UMTS	ETSI TS 124 081 (V3.1.0)	Line Identification Supplementary Service; Stage 3 ETSI TS 123 081 Stage 2 ETSI TS 122 081 Stage 1
		ETSI TS 123 011: Technical realization of Supplementary Services
		ETSI TS 122 004:General on supplementary services
	ETSI TS 129 002 (V3.18.0)	Mobile Application Part (MAP) specification
ISDN	ETSI ETS 300 648 (Edition 1)	Stage 1
	ETSI EN 300 659-1 (V1.3.1)	On-hook
	ETSI EN 300 659-2 (V1.3.1)	Off-hook
	ETSI EN 300 659-3 (V1.3.1)	Data link message and parameter coding Subscriber line protocol for display (and related) Services
PLT	No specification available	
PSTN (Analogue and generic)	ETSI EN 300 092-1 (V2.1.1)	Stage 3 ETSI EN 300 089 Stage 1 ETSI ETS 300 091 Stage 2
Satellite	TS 101 376-3-15 (V1.1.1)	GEO-Mobile Radio Interface Specifications: Line Identification supplementary service - Stage 2
TETRA	ETSI ETS 300 392-12-1 (V1.2.1)	Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D);Part 12: Supplementary services stage 3; Sub-part 1: Call Identification (CI) ETSI ETS 300 392-11-1: Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 11: Supplementary services stage 2; Sub-part 1: Call Identification (CI) ETSI ETS 300 392-10-1: Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 10: Supplementary services stage 1; Sub-part 1: Call identification
Wireless (incl. Local Loop)	No specification available	
Comments:	European Telecommunications Platform (ETP) has developed guidelines (version 4, September 2003) for CLI to telephone companies and organizations transmitting and receiving CLI information, as well as for terminal and network equipment manufacturers. The implementation of these Guidelines should ensure the ability of public networks to use CLI information for network and/or account management purposes and customer care or, in co-operation with the relevant authorities, handling of emergency calls and the tracing of malicious calls and similar services and activities.	
Justification:	See ETSI SR 002 211 table 56 Items 17 and 19(b)(iii).	

A.4.13.3 Calling-Line Identification Restriction (CLIR)

In accordance with Article 29 of the Universal Service Directive operators operating public telephone networks must make available calling-line identification as listed in Annex I part B (2002/22/EC [4]).

Table A.4.13.3: Calling-Line Identification Restriction (CLIR)

Applicability	Reference	Notes
Cable	No specification available	
DECT	EN 300 175-5 (V1.7.1)	Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 5: Network (NWK) layer
Digital Broadcast (TV and Radio)	Not applicable	
GSM/UMTS	ETSI TS 124 081 (V3.1.0)	Line Identification Supplementary Service; Stage 3 ETSI TS 123 081 Stage 2 ETSI TS 122 081 Stage 1
		ETSI TS 123 011: Technical realization of Supplementary Services
		ETSI TS 122 004: General on supplementary services
	ETSI TS 129 002 (V3.18.0)	Mobile Application Part (MAP) specification
ISDN	ETSI EN 300 093-1 (V1.2.4)	Stage 3 ETSI EN 300 090 Stage 1 ETSI ETS 300 091 Stage 2
	ETSI EN 300 356-4 (V4.2.1)	ETSI EN 300 356-4 specifies ISDN User Part (ISUP) version 4 for the international interface for Calling Line Identification Restriction (CLIR) supplementary service.
PLT	No specification available	
PSTN (Analogue and generic)	ETSI ETS 300 649 (Edition 1)	Stage 1
Satellite	TS 101 376-3-15 (V1.1.1)	GEO-Mobile Radio Interface Specifications: Line Identification supplementary service - Stage 2
TETRA	ETSI ETS 300 392-12-1 (V1.2.1)	Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D);Part 12: Supplementary services stage 3; Sub-part 1: Call Identification (CI) ETSI ETS 300 392-11-1: Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 11: Supplementary services stage 2; Sub-part 1: Call Identification (CI) ETSI ETS 300 392-10-1: Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 10: Supplementary services stage 1; Sub-part 1: Call identification
Wireless (incl. Local Loop)	No specification available	
Comments:	European Telecommunications Platform (ETP) has developed guidelines (version 4, September 2003) for CLI to telephone companies and organizations transmitting and receiving CLI information, as well as for terminal and network equipment manufacturers. The implementation of these Guidelines should ensure the ability of public networks to use CLI information for network and/or account management purposes and customer care or, in co-operation with the relevant authorities, handling of emergency calls and the tracing of malicious calls and similar services and activities.	
Justification:	See ETSI SR 002 211 table 56 Items 17 and 19(b)(iii).	

A.4.14 Number portability

The technical interfaces and/or services features given in this clause are based upon Article 30 and Article 19 of the Universal Service Directive with regard to operator number portability, carrier selection and carrier pre-selection.

Table A.4.14: Number portability

Applicability	Reference	Notes
Generic	ETSI TR 101 119 (V1.2.2)	High level description of number portability
	ETSI TR 101 118 (V1.1.1)	High level network architecture and solutions to support number portability
	ETSI TR 101 697 (V1.1.1)	Administrative support for number portability
	ETSI TR 101 698 (V1.1.1)	Guidance on choice of network solutions
	ETSI TR 101 122 (V1.1.1)	Numbering and addressing for number portability
	ETSI TR 102 081 (V1.1.1)	Signalling requirements to support number portability
	ETSI TR 101 073 (V1.1.1)	Number portability for pan-European services
	ETSI EN 301 937 (V1.1.1)	Number portability for ETNS services. ETSI EN 301 937 focuses on the number portability between Service Providers (SP) i.e. a customer can move from one ETNS Service Provider (SP) to another and retain a European Number for that service. It describes the main technical requirements and features of number portability in the context of an ETNS service and discusses the technologies available today and in the near future for realizing number portability in an efficient way whilst trying as much as possible to minimize the impacts on the network.
Cable	Refer to generic	
DECT	Access Network specification applies	It is the specifications to which the DECT system is connected that apply
Digital Broadcast (TV and Radio)	Refer to generic	
GSM/UMTS	ETSI TS 123 066 (V3.3.0)	Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Support of Mobile Number Portability (MNP); Technical Realization; Stage 2 (3G TS 23.066 version 3.3.0 Release 1999) ETSI TS 122 066: Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Support of Mobile Number Portability (MNP); Stage 1
	ETSI TS 129 002 (V3.18.0)	Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Mobile Application Part (MAP) specification (3GPP TS 29.002 version 3.18.0 Release 1999)
ISDN	ETSI EN 302 097 (V1.1.1)	Integrated Services Digital Network (ISDN); Signalling System No.7 (SS7); ISDN User Part (ISUP); Enhancement for support of Number Portability (NP) [ITU-T Recommendation Q.769.1 (2000), modified]
	ETSI EG 201 367 (V1.1.1)	Intelligent Network (IN); Number Portability Task Force (NPTF); IN and Intelligence Support for Service Provider Number Portability
PLT	Refer to generic	
PSTN	Refer to generic	
Satellite	Refer to generic	

Applicability	Reference	Notes
TETRA	Refer to generic	
Wireless (incl. Local Loop)	Refer to generic	
Comment 1: The ETSI deliverables on Generic (PSTN) and ISDN cover geographic as well as non-geographic numbers. Different solutions for number portability exist. An IN solution can provide high functionality with fairly high throughput or traffic handling capability. Depending on the number portability requirements, also other solutions with lower functionality are possible.		
Comment 2: ETSI has produced TR 101 621 "Consequences of mobile number portability on the PSTN/ISDN and synergy between geographic and mobile number portability".		
Justification: See ETSI SR 002 211 table 56 Item 18.		

A.5 Directive on privacy and electronic communications (2002/58/EC)

The specifications listed in the tables that follow identify standards that implement requirements identified and justified in the analysis found in clause 10.3 and summarized in table 69.

A.5.1 Security

Article 4 identifies requirements to both identify the risk to a system, covered by standards in clause A.5.1.1, and the countermeasures to mitigate the risk, covered by standards in clause A.5.1.2.

A.5.1.1 Security Analysis

Table A.5.1.1: Security Analysis

Applicability	Reference	Notes
Generic	ETSI ETR 336 (Edition 1)	Telecommunications Management Network (TMN); Introduction to standardizing security for TMN
	ISO 15408-1,-2,-3	Common Criteria
	ISO 17799	Security and Risk Analysis
Cable	No specification available	Use generic
DECT	ETSI EN 300 175-7 (V1.7.1)	Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 7: Security Features
Digital Broadcast (TV and radio)	No specification available	Use generic
GSM/UMTS	ETSI TS 100 920 (V8.0.1)	Digital cellular telecommunications system (Phase 2+); Security aspects (GSM 02.09 version 8.0.1 Release 1999)
	ETSI TS 100 929 (V8.1.0)	Global System for Mobile communication (GSM) (Phase 2+); Security related network functions (GSM 03.20 version 8.1.0 Release 1999)
	ETSI TS 121 133 (V4.1.0)	Universal Mobile Telecommunications System (UMTS); 3G security; Security threats and requirements (3GPP TS 21.133 version 4.1.0 Release 4)
	ETSI TS 133 102 (3.13.0)	Universal Mobile Telecommunications System (UMTS); 3G security; Security architecture (3GPP TS 33.102 version 3.13.0 Release 1999)
	ETSI TS 133 120 (V4.0.0)	Universal Mobile Telecommunications System (UMTS); 3G Security; Security Principles and Objectives (3GPP TS 33.120 version 4.0.0 Release 4)
ISDN	ETSI TR 101 365 (V1.1.1)	Intelligent Network (IN); IN interconnect threat analysis
	ETSI TR 101 771 (V1.1.1)	Telecommunications and Internet protocol Harmonization Over Networks (TIPHON) Release 4; Service Independent requirements definition; Threat Analysis
	ETSI TS 102 165-1 (V4.1.1)	Telecommunications and Internet Protocol Harmonization Over Networks (TIPHON) Release 4; Protocol Framework Definition;Methods and Protocols for Security; Part 1: Threat Analysis

Applicability	Reference	Notes
PLT	No specification available	Use generic
PSTN	No specification available	Use generic
Satellite	ETSI TS 101 376-3-9 (V1.1.1)	GEO-Mobile Radio Interface Specifications; Part 3: Network specifications; Sub-part 9: Security related Network Functions (GMR-1)
	ETSI TS 101 377-3-10 (V1.1.1)	GEO-Mobile Radio Interface Specifications; Part 3: Network specifications; Sub-part 10: Security related Network Functions (GMR-2)
TETRA	ETSI ETR 086-3 (Edition 1)	Trans European Trunked Radio (TETRA) systems; Technical requirements specification; Part 3: Security aspects
Wireless (incl. Local Loop)	No specification available	Use generic
Comments:		
Justification: See ETSI SR 002 211 table 69 Item 1.		

A.5.1.2 Network Information Security (NIS)

Table A.5.1.2: Network Information Security (NIS)

Applicability	Reference	Notes
Generic	ETSI SR 002 298 (V1.1.1)	Response from CEN and ETSI to the "Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions: Network and Information Security: Proposal for aEuropean Policy Approach"
	ETSI TS 102 165-2 (V4.1.1)	Telecommunications and Internet Protocol Harmonization Over Networks (TIPHON) Release 4; Protocol Framework Definition; Methods and Protocols for Security; Part 2: Counter Measures
Cable	ETSI TS 101 909-11 (V1.2.1)	Digital Broadband Cable Access to the Public Telecommunications Network; IP Multimedia Time Critical Services; Part 11: Security
DECT	For further study	
Digital Broadcast (TV and Radio)	ETSI ES 202 488-3 (V1.1.1)	Second Generation Transmission Systems for Interactive Cable Television Services - IP Cable Modems - Baseline Privacy Plus Interface Specification ITU-T Recommendation J.112 and ES 201 488-3 (V1.2.2) are earlier versions of the data-over-cable specifications and may also be used in place of ES 202 488
GSM/UMTS	For further study	
ISDN	Not available	
PLT	Not available	
PSTN	Not available	
Satellite	ETSI TS 101 376-3-9 (V1.1.1)	GEO-Mobile Radio Interface Specifications; Part 3: Network specifications; Sub-part 9: Security related Network Functions (GMR-1)
	ETSI TS 101 377-2-3 (V1.1.1)	GEO-Mobile Radio Interface Specifications; Part 2: Service specifications; Sub-part 3: Security Aspects (GMR-2)
	ETSI TS 101 377-3-10 (V1.1.1)	GEO-Mobile Radio Interface Specifications; Part 3: Network specifications; Sub-part 10: Security related Network Functions (GMR-2)
TETRA	ETSI EN 300 392-7 (V2.1.1)	Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 7: Security
	ETSI TS 100 392-7 (V2.1.1)	Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 7: Security
Wireless (incl. Local Loop)	ETSI TS 102 178 (V.1.1.1)	Broadband Radio Access Networks (BRAN); HIgh PErformance Radio Metropolitan Area Network (HIPERMAN) Data Link Control (DLC) Layer
Comments:		
Justification: See ETSI SR 002 211 table 69 Item 1.		

A.5.2 Presentation and Restriction of Calling and Connected line Identification

A.5.2.1 Calling-Line Identification Presentation (CLIP)

In accordance with Article 8 of the Directive on privacy and electronic communications, operators operating public telephone networks must make available calling-line identification.

Table A.5.2.1: Calling-Line Identification Presentation (CLIP)

Applicability	Reference	Notes
Cable	No specification available	
DECT	ETSI EN 300 175-5 (V1.7.1)	Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 5: Network (NWK) layer
Digital Broadcast (TV and Radio)	Not applicable	
GSM/UMTS	ETSI TS 124 081 (V3.1.0)	Line Identification Supplementary Service; Stage 3 ETSI TS 123 081 Stage 2 ETSI TS 122 081 Stage 1
		ETSI TS 123 011: Technical realization of Supplementary Services
		ETSI TS 122 004:General on supplementary services
	ETSI TS 129 002 (V3.18.0)	Mobile Application Part (MAP) specification
ISDN	ETSI ETS 300 648 (Edition 1)	Stage 1
	ETSI EN 300 659-1 (V1.3.1)	On-hook
	ETSI EN 300 659-2 (V1.3.1)	Off-hook
	ETSI EN 300 659-3 (V1.3.1)	Data link message and parameter coding Subscriber line protocol for display (and related) Services
PLT	No specification available	
PSTN (Analogue and generic)	ETSI EN 300 092-1 (V2.1.1)	Stage 3 ETSI EN 300 089 Stage 1 ETSI ETS 300 091 Stage 2
Satellite	TS 101 376-3-15 (V1.1.1)	GEO-Mobile Radio Interface Specifications: Line Identification supplementary service - Stage 2
TETRA	ETSI ETS 300 392-12-1 (V1.2.1)	Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D);Part 12: Supplementary services stage 3; Sub-part 1: Call Identification (CI) ETSI ETS 300 392-11-1: Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 11: Supplementary services stage 2; Sub-part 1: Call Identification (CI) ETSI ETS 300 392-10-1: Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 10: Supplementary services stage 1; Sub-part 1: Call identification
Wireless (incl. Local Loop)	No specification available	
Comments:	European Telecommunications Platform (ETP) has developed guidelines (version 4, September 2003) for CLI to telephone companies and organizations transmitting and receiving CLI information, as well as for terminal and network equipment manufacturers. The implementation of these Guidelines should ensure the ability of public networks to use CLI information for network and/or account management purposes and customer care or, in co-operation with the relevant authorities, handling of emergency calls and the tracing of malicious calls and similar services and activities.	
Justification:	See ETSI SR 002 211 table 68 Items 5(a) and 7(a).	

A.5.2.2 Calling-Line Identification Restriction (CLIR)

In accordance with Article 8 of the Directive on privacy and electronic communications, operators operating public telephone networks must make available calling-line identification.

Table A.5.2.2: Calling-Line Identification Restriction (CLIR)

Applicability	Reference	Notes
Cable	No specification available	
DECT	ETSI EN 300 175-5 (V1.7.1)	Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 5: Network (NWK) layer
Digital Broadcast (TV and Radio)	Not applicable	
GSM/UMTS	ETSI TS 124 081 (V3.1.0)	Line Identification Supplementary Service; Stage 3 ETSI TS 123 081 Stage 2 ETSI TS 122 081 Stage 1
		ETSI TS 123 011: Technical realization of Supplementary Services
		ETSI TS 122 004: General on supplementary services
	ETSI TS 129 002 (V3.18.0)	Mobile Application Part (MAP) specification
ISDN	ETSI EN 300 093-1 (V1.2.4)	Stage 3 ETSI EN 300 090 Stage 1 ETSI ETS 300 091 Stage 2
	ETSI EN 300 356-4 (V4.2.1)	ETSI EN 300 356-4 specifies ISDN User Part (ISUP) version 4 for the international interface for Calling Line Identification Restriction (CLIR) supplementary service.
PLT	No specification available	
PSTN (Analogue and generic)	ETSI ETS 300 649 (Edition 1)	Stage 1
Satellite	TS 101 376-3-15 (V1.1.1)	GEO-Mobile Radio Interface Specifications: Line Identification supplementary service - Stage 2
TETRA	ETSI ETS 300 392-12-1 (V1.2.1)	Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D);Part 12: Supplementary services stage 3; Sub-part 1: Call Identification (CI) ETSI ETS 300 392-11-1: Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 11: Supplementary services stage 2; Sub-part 1: Call Identification (CI) ETSI ETS 300 392-10-1: Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 10: Supplementary services stage 1; Sub-part 1: Call identification
Wireless (incl. Local Loop)	No specification available	
Comments:	European Telecommunications Platform (ETP) has developed guidelines (version 4, September 2003) for CLI to telephone companies and organizations transmitting and receiving CLI information, as well as for terminal and network equipment manufacturers. The implementation of these Guidelines should ensure the ability of public networks to use CLI information for network and/or account management purposes and customer care or, in co-operation with the relevant authorities, handling of emergency calls and the tracing of malicious calls and similar services and activities.	
Justification:	See ETSI SR 002 211 table 68 Items 5(a) and 7(a).	

A.5.3 Location data for public telephone services

The provison of location data over and above normal signalling (i.e. the signalling data required for support of roaming and migration in cellular networks (GSM/UMTS, TETRA) is covered by Article 9 with an exception for emergency services access in Article 10. The list of specifications in table A.5.3 cover additional location data.

Table A.5.3: Location data for public telephone services

Applicability	Reference	Notes
Generic	ETSI TS 102 164 (V1.1.1)	Services and Protocols for Advanced Networks (SPAN); Emergency location protocols Derived from LIF forum, simplified and endorsed by ETSI TC SPAN for PSAP interface to Mobile network location register.
Cable	Refer to generic	
DECT	Access Network specification applies	It is the specifications to which the DECT system is connected that applies
Digital Broadcast (TV and Radio)	Not applicable	
GSM/UMTS	ETSI TS 123 171 (V3.10.0)	Universal Mobile Telecommunications System (UMTS); Location Services (LCS); Functional description; Stage 2 (UMTS) (3GPP TS 23.171 version 3.10.0 Release 1999)
ISDN	Refer to generic	
PLT	Not available	Use generic
PSTN	Not available	Use generic
Satellite	Not available	
TETRA	Not available	Use generic
Wireless (incl. Local Loop)	Access Network specification applies	It is the specifications to which the Wireless system is connected that applies
Comments: The Commission prepared Recommendation (2003/558/EC) [21] on 25 July 2003 published in the OJ L 189 on 29 July 2003 on the processing of caller location information in electronic communication networks for the purpose of location-enhanced emergency call services.		
NOTE: The "112" provisions in Article 26 of the Universal Service Directive apply to all public network operators [ECPs], either implicitly or explicitly.		
Justification: See ETSI SR 002 211 table 69 Item 6(a).		

A.5.4 Automatic Call Forwarding

In accordance with Article 11 of the Directive on privacy and electronic communications Member States shall ensure that any subscriber is provided, free of charge and via a simple means, with the possibility to stop automatic call forwarding by a third party to the subscriber's terminal.

Table A.5.4: Automatic Call Forwarding

Applicability	Reference	Notes
Cable	No specification available	
DECT	ETSI EN 300 175-5 (V1.7.1)	Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 5: Network (NWK) layer
Digital Broadcast (TV and Radio)	Not applicable	
GSM/UMTS	ETSI TS 129 002 (V3.18.0)	Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Mobile Application Part (MAP) specification (3GPP TS 29.002 version 3.18.0 Release 1999)
ISDN	No specification available	
PSTN (Analogue and generic)	No specification available	
PLT	No specification available	
Satellite	No specification available	
TETRA	No specification available	
Wireless (incl. Local Loop)	No specification available	
Comments:		
Justification: See ETSI SR 002 211table 69 Item 8.		

A.5.5 Unsolicited communications

A.5.5.1 Anonymous Call Rejection

The technical interfaces and/or services features given in this clause are related to the calling and connected line identification services required under Article 8 of the Directive on privacy and electronic communications.

The Calling-Line Identification Presentation and Restriction specifications are listed in clauses A.4.7 and A.4.8.

Table A.5.5.1: Anonymous Call Rejection

Applicability	Reference	Notes
Cable	No specification available	
DECT	ETSI EN 300 175-5 (V1.7.1)	Digital Enhanced Cordless Telecommunications (DECT); Common Interface (CI); Part 5: Network (NWK) layer
Digital Broadcast (TV and Radio)	Not applicable	
GSM/UMTS	ETSI TS 100 977 (V8.11.0)	Specification of the Subscriber Identity Module - Mobile Equipment (SIM-ME) Interface (see note)
	ETSI TS 124 081 (V3.1.0)	Line Identification Supplementary Service; Stage 3 ETSI TS 123 081 Stage 2 ETSI TS 122 081 Stage 1
		ETSI TS 123 011 Technical realization of Supplementary Services
		ETSI TS 122 004 General on supplementary services
	ETSI TS 129 002 (V3.18.0)	Mobile Application Part (MAP) specification
ISDN	No specification available	
PLT	No specification available	
PSTN (Analogue and generic)	ETSI EN 301 798 (V1.1.1)	Anonymous call rejection (Service that rejects incoming call without CLI) ETSI EN 301 798 contains the service description for the Anonymous Call Rejection (ACR) supplementary service.
Satellite	No specification available	
TETRA	No specification available	
Wireless (incl. Local Loop)	No specification available	
Comments:		
NOTE: The SIM card is needed within the mobile Equipment, except for emergency calls (depending upon National Regulations).		
Justification: See ETSI SR 002 211 table 69 Item 5a.		

A.5.5.2 Consumer equipment - SIM card

Table 5.5.2: Consumer equipment - SIM card

Applicability	Reference	Notes
Cable	Not applicable	
DECT	ETSI ETS 300 331 (Edition 1)	Digital Enhanced Cordless Telecommunications (DECT); DECT Authentication Module (DAM)
	ETSI ETS 300 825 (Edition 1)	Digital Enhanced Cordless Telecommunications (DECT); 3 Volt DECT Authentication Module (DAM)
	EN 300 370 (V1.3.1)	DECT/GSM Interworking Profile (IWP); Access and mapping (protocol/procedure description for 3,1 kHz speech service)
	ETSI TS 101 863-3 (V1.1.2)	DECT/UMTS Interworking Profile (IWP); Part 3: 3,1 kHz speech service
Digital Broadcast (TV and Radio)	No specification available	
GSM/UMTS	ETSI TS 101 413 (V8.0.0)	Digital cellular telecommunications system (Phase 2+); Subscriber Identity Module Application Programming Interface (SIM API); Stage 1 (3GPP TS 02.19 version 8.0.0 Release 1999)
	ETSI TS 101 476 (V8.5.0)	Digital cellular telecommunications system (Phase 2+); GSM API for SIM toolkit stage 2 (3GPP TS 03.19 version 8.5.0 Release 1999)
	ETSI TS 100 977 (V8.11.0)	Digital cellular telecommunications system (Phase 2+); Specification of the Subscriber Identity Module - Mobile Equipment (SIM-ME) Interface (3GPP TS 11.11 version 8.11.0 Release 1999)
	ETSI TS 121 111 (V3.4.0)	Universal Mobile Telecommunications System (UMTS); USIM and IC card requirements (3GPP TS 21.111 version 3.4.0 Release 1999)
ISDN	Not applicable	
PLT	Not applicable	
PSTN (Analogue and generic)	Not applicable	
Satellite	See GSM/UMTS section	
TETRA	ES 200 812-1 (V2.2.5)	Terrestrial Trunked Radio (TETRA); Subscriber Identity Module to Mobile Equipment (TSIM-ME) interface; Part 1: Universal Integrated Circuit Card (UICC); Physical and logical characteristics
	ES 200 812-2 (V2.3.2)	Terrestrial Trunked Radio (TETRA); Subscriber Identity Module to Mobile Equipment (TSIM-ME) interface; Part 2: Universal Integrated Circuit Card (UICC); Characteristics of the TSIM application
Wireless (incl. Local Loop)	Not applicable	
Comments:		
Justification: See ETSI SR 002 211 table 69 Item 2.		

Annex B: Human Factors

In accordance with Article 7 of the Universal Service Directive Member States shall, where appropriate take specific measures to ensure equal access to and affordability of publicly available telephone services for disabled users.

B.1 General

There are some user groups who are likely to need special requirements in respect of the new regulatory framework. These are very diverse and have very different requirements. They may be divided into three main categories, though these will often overlap:

- People with disabilities.
- Senior citizens.
- Young people (children).

Each of these categories may again be divided into sub-groups, all of which have very different requirements. For the purposes of the present document the age classifications shall be ignored as in practice age does not of itself require special treatment but rather there is a distribution of impairments over time, which may make it more or less likely to observe an impairment in a particular age group.

Disabilities fall into three basic categories, which can be further sub-divided as shown by example in the parentheses:

- ***Sensory*** impairments (sight, hearing, touch, taste/smell, balance).
- ***Physical*** impairments (speech, dexterity, manipulation, mobility, strength/endurance).
- ***Cognitive*** impairments (intellect, memory, language/literacy).

Characteristics of these disabilities and their relationship with ICT products and services are described in ETSI EG 202 116.

B.2 Standards and guidelines for disabled access to ICT

NOTE: Within ETSI the technical standards, in general, do not deal with terminal issues. Technical Committee Human Factors (TC HF) however provides standards and guidance on the user interaction with ICT services including terminal aspects. The table that follows does not distinguish specific technologies.

Table B.2.1 is drawn from the list of published ETSI specifications with identification specifically of those that have a direct bearing on the provisions of the Framework directive. The main justification for Human Factors standards being listed are to be found in the Universal Service Directive where it is stated that services should be open to disabled users with citations made for deaf, speech-impaired and blind (including partially sighted) people. The justifications are therefore made for a small subset of Human Factors standards; however there may also be justification for the general design guidelines for Human Factors. This second class of ETSI deliverables is not listed in the current edition of the present document.

Table B.2.1: Standards for services and other measures for disabled users: Access and Usability by disabled users and users with special needs

Reference	Notes
ETSI EN 301 462 (V1.1.1)	Human Factors (HF); Symbols to identify telecommunications facilities for the deaf and hard of hearing people
ETSI ES 201 381 (V1.1.1)	Human Factors (HF); Telecommunications keypads and keyboards; Tactile identifiers Identifies the form, dimensions and location of tactile identifiers on digit "5" of keypads and on the "F" and "J" keys of keyboards.
ETSI ES 202 076 (V1.1.2)	Human Factors (HF); User Interfaces; Generic spoken command vocabulary for ICT devices and services
ETSI ES 202 130 (V1.1.1) (*see comment*)	Human Factors (HF); User Interfaces; Character repertoires, ordering rules and assignments to the 12-key telephone keypad
ETSI ETS 300 375 (Edition 1)	Human Factors (HF); Pictograms for point-to-point videotelephony
ETSI ETS 300 640 (Edition 1) (*see comment*)	Human Factors (HF); Assignment of alphabetic letters to digits on standard telephone keypad arrays
ETSI ETS 300 738 (Edition 1)	Human Factors (HF); Minimum Man-Machine Interface (MMI) to public network based supplementary services
ETSI ETS 300 767 (Edition 1)	Human Factors (HF); Telephone Prepayment Cards; Tactile Identifier
ETSI EN 300 743 (V1.2.1)	Digital Video Broadcasting (DVB); Subtitling systems
ETSI ETS 300 488 (Edition 1)	Terminal Equipment (TE); Telephony for hearing impaired people; Characteristics of telephone sets that provide additional receiving amplification for the benefit of the hearing impaired
Comments: ETSI ES 202 130 complements and extends ETSI ETS 300 640.	
Justification: See ETSI SR 002 211 table 56 Items 2(a), 2(b), 2(c) and 2(d).	

Annex C:
Areas for future standardization

C.1 Introduction

The standards presented in Annex A are not sufficient to implement all of the mandates of the framework directive. Many of the requirements of the framework directive cannot in fact be satisfied by technical standardization but need to be addressed in business practice, and in contract development, in particular where contracts exist for provision of a service.

C.2 Modelling of the new regulatory regime for the NGN

The development methods used in modern standards and product development appear to be somewhat ahead of those used to model the New Regulatory Regime (NRR). The language of standards is generally indented to be unambiguous and to focus on observable behaviour at specified points of inspection (the reference points of a network or service). Furthermore most standards have a clearly observable path from requirement to implementation that allows validation of a requirement being met. One of the purposes that are understood for Article 17 is to have a map of implementation to requirement where the requirement is stated in the NRR. For the standards listed in Article 17 this is an incomplete exercise as there is no formal method of obtaining proof (in the form of validation) that a standard when listed satisfies the requirement placed on it.

It is proposed that in the course of future work in the standards bodies that the major entities proposed in the NRR are modelled in like manner to the way in which services and capabilities for the NGN are modelled. In particular the NGN (as being developed in ETSI TISPAN and in the 3GPP) is intended to be service independent and technology neutral.

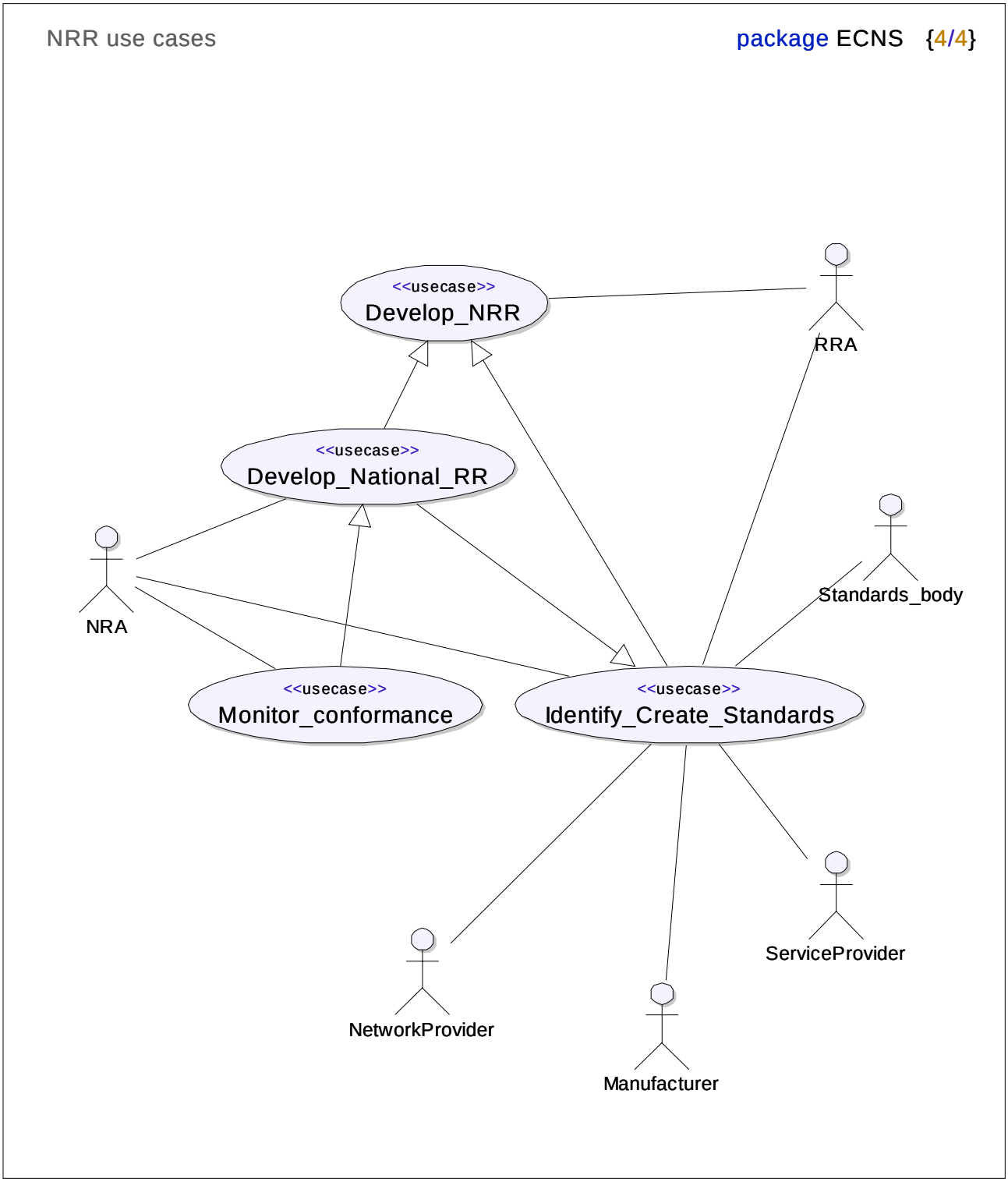
The remainder of this annex is a first treatment of the NRR in UML. It is proposed that this model is extended (updated and corrected) by the standards bodies to better reflect the technical requirements raised by the NRR. This activity may in turn raise new work items in support of the NRR for specific technologies and better identify from the existing suite of standards, some of which may listed in Annex A, those that are essential in supporting the claims of the model and of the NRR.

C.2.1 Actors and actions in the NRR

In order to review the NRR in a technical model the Unified Modelling Language (UML) is recommended. One of the strengths of this modelling language is that it can contain and develop both deep technical detail such as is required for standardization and implementation, as well as providing a home for requirements and presentation of conceptual and real relationships.

The following actors exist in the NRR (this list may be incomplete):

- Regional regulatory authority.
- National regulatory authorities.
- Service providers.
- Network providers.
- Content providers.
- End-users.
- Standards bodies.
- Manufacturers.



NRA	National Regulatory Authority
NRR	New Regulatory Regime
RR	Regulatory Regime
RRA	Regional Regulatory Authority

Figure C.1: Example of use-cases involved in NRR

A further modelling example is given in figure C.2 that is derived from Article 4 of the Privacy Directive (2002/58/EC [5]).

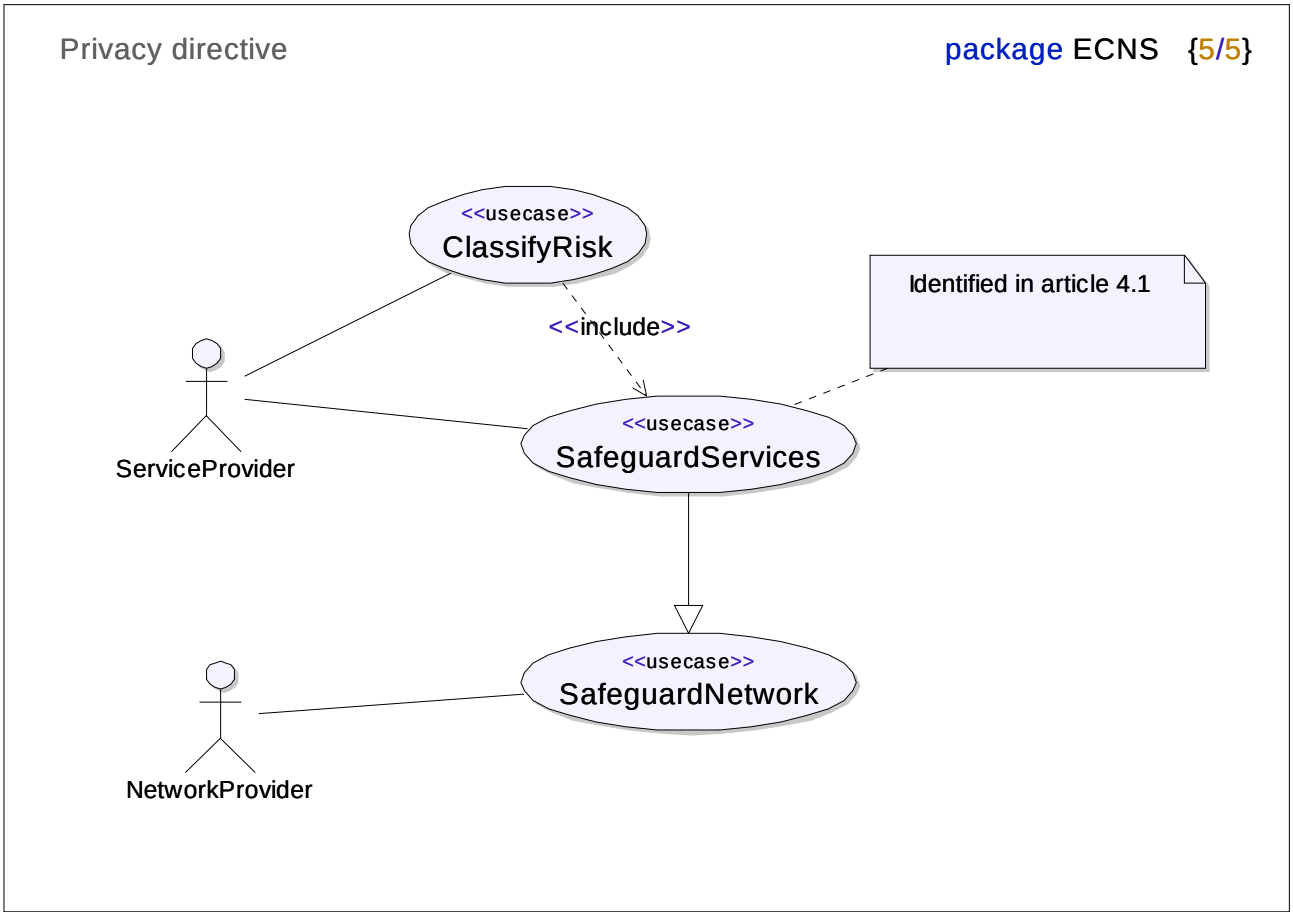


Figure C.2: Use case diagram illustrating Article 4.1 of the Privacy Directive

C.2.2 Base NRR model

The base NRR model consists of two classes of object:

- Electronic Communication Network (ECN);
- Electronic Communication Service (ECS).

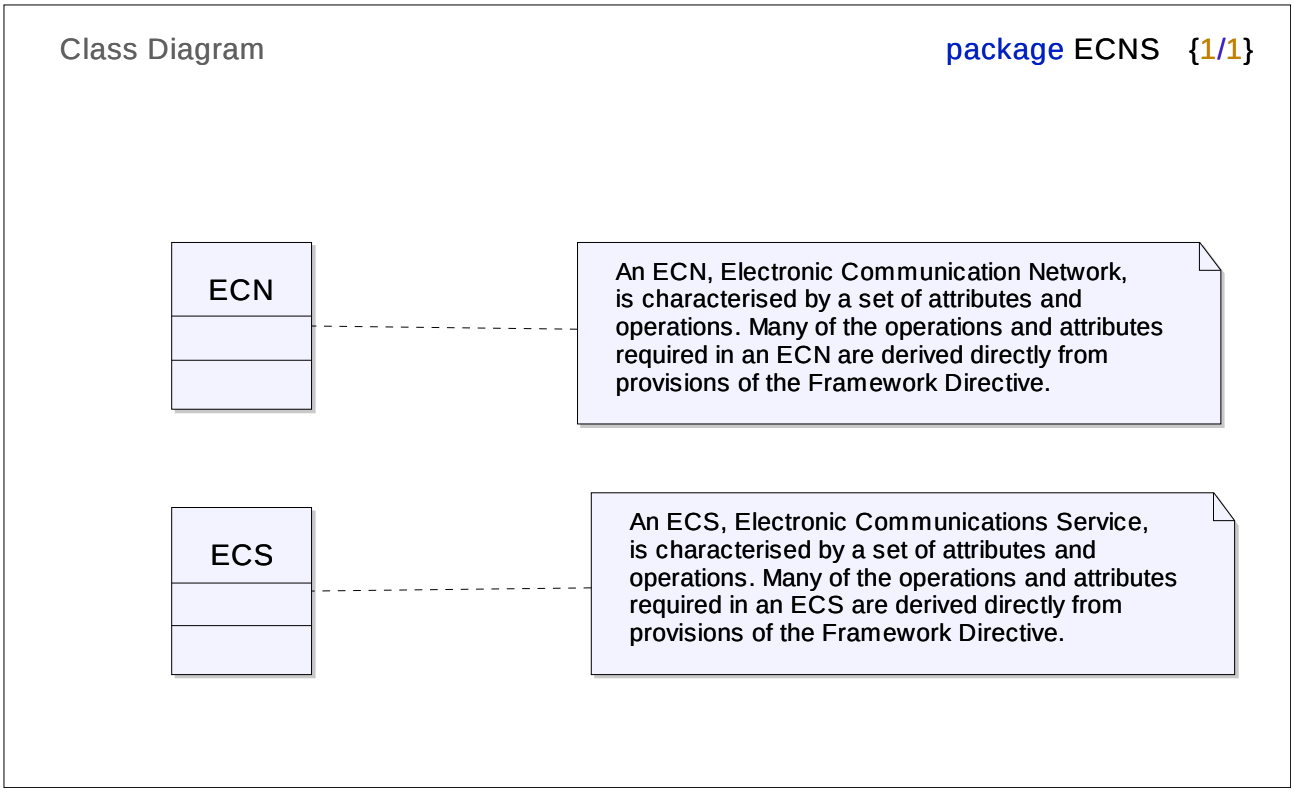


Figure C.3: Base class diagram for NRR

There are well-defined relationships between ECNs and ECSs which can be captured in the class diagram and which are also derived from the NRR with respect to access and interconnection. In order to assist in the definition of this class of Content Provider (CP) is added to the class model.

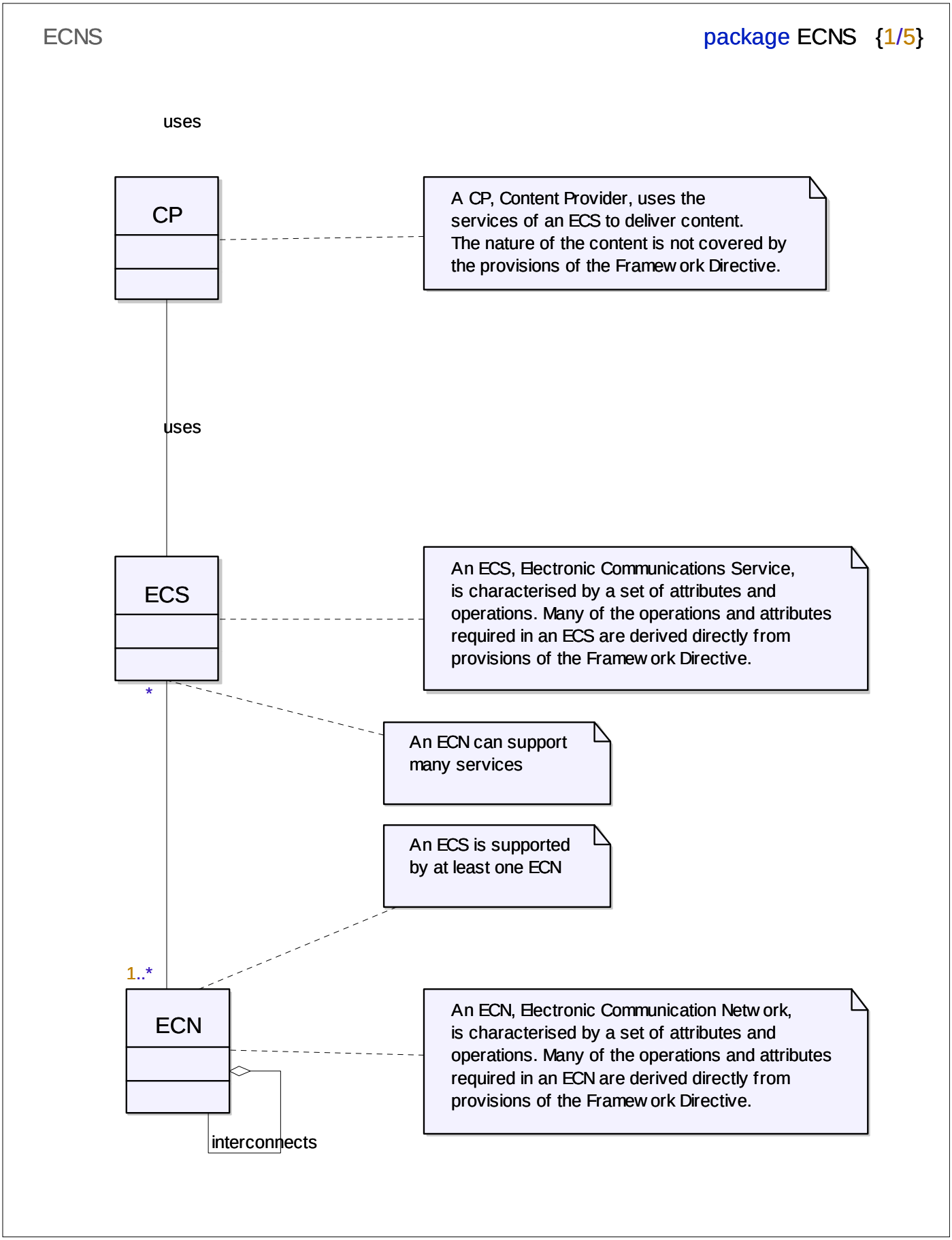


Figure C.4: NRR relationships and ordinality

C.2.3 Attributes and operations derived from NRR

From the analysis given in the main body of this ETSI Special Report attributes and operations can be assigned to each of ECN and ECS. In addition specializations of each of ECN and ECS can be modelled where those specializations are supported by the NRR.

C.2.3.1 Extension of base ECS model

The simple ECS model shown in figure C.4 can be extended as shown in figure C.5. This extended model shows the ECS having a core operation "openAccessToCP()" that is intended to show that all ECS have to have an open access to Content Providers. The figure also shows that there is at least one specialization of ECS in the form of the Publicly Available Telephone Service (PATS).

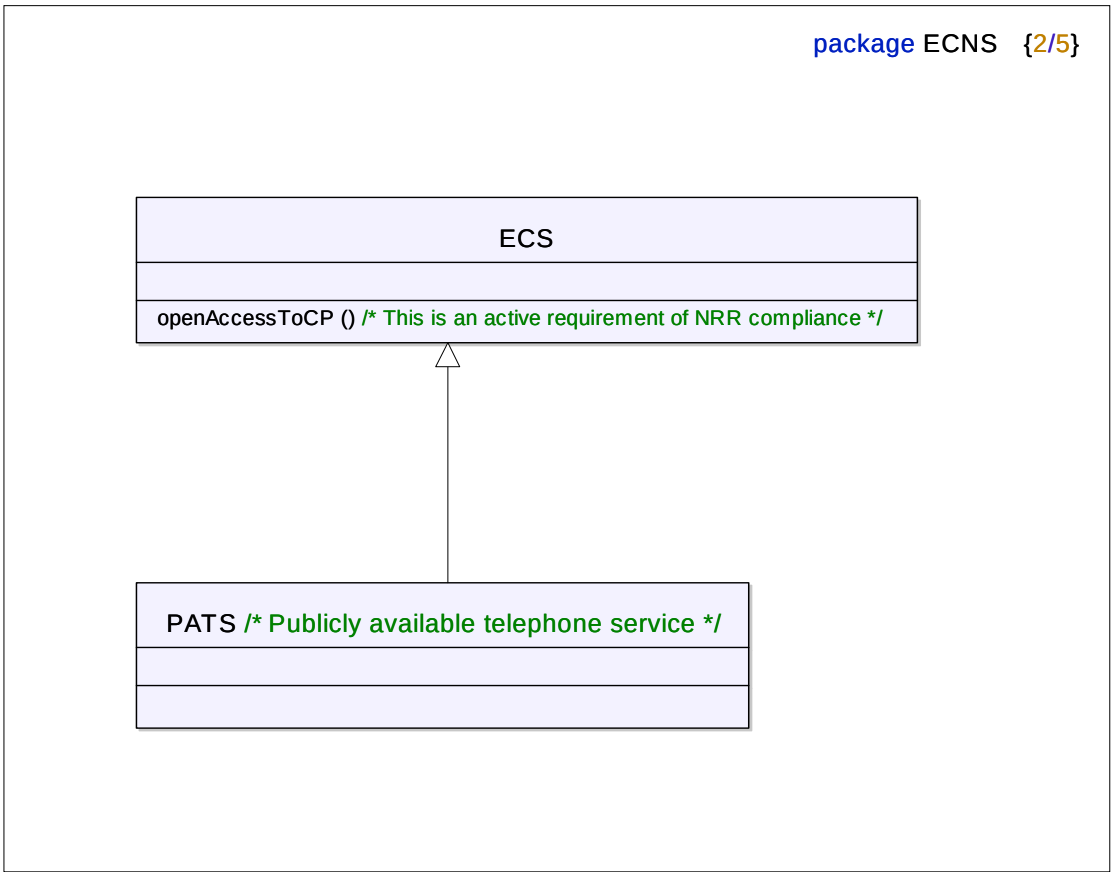


Figure C.5: Extension of ECS model

The standards bodies should extend the ECS class to identify all of the essential attributes and operations required to comply with the NRR.

C.2.3.2 Extension of base ECN model

As with the ECS model we can extend it as shown in figure C.6. In this case we show all ECNs having one mode, which is, either "Access" or "Interconnect" and that there are a number of specializations of ECN (packet mode versus circuit mode, store-and-forward versus streaming). As with the ECS model a feature of ECN in the NRR is to be "open" and therefore a single capability is shown "openAccessToECS()".

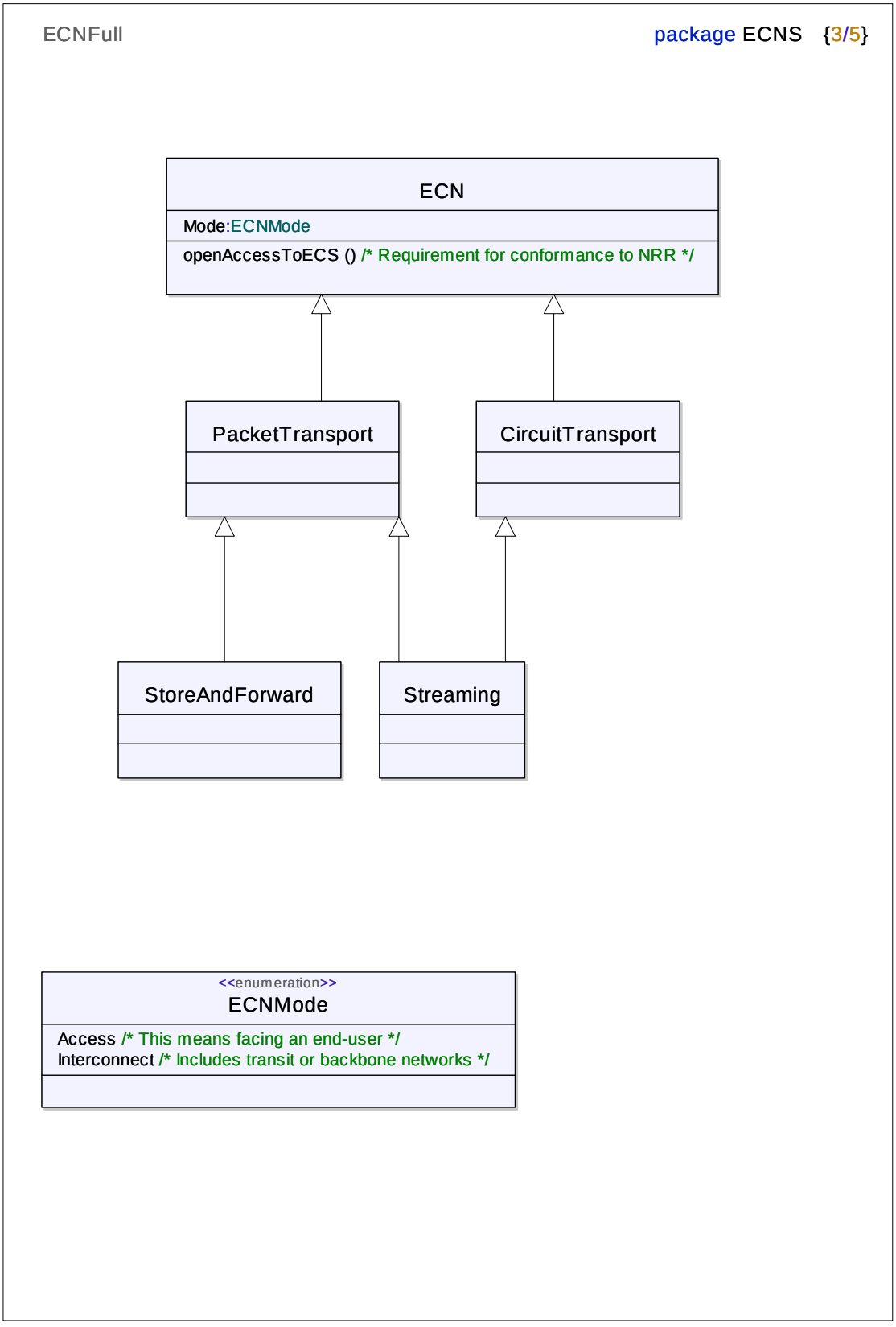


Figure C.6: Extension of ECN model

The standards bodies should extend the ECN class to identify all of the essential attributes and operations required to comply with the NRR.

C.2.4 Role of standards in respect of the NRR model

It is a role of the standards community to ensure that methods exist to support the attributes and operations identified in the ECS and ECN classes and in the interactions between the classes. It may be sufficient for a business when claiming to be an ECS or ECN to show that the attributes and operations are supported by implementation of one or another standard.

Annex D:
Full list of Articles by Directive

Those Articles identified with the letter "Y" in the "Relevant" column of table D.1 identifies those Articles regarded as having relevance to the rationale and justification for areas to be covered by the Article 17 list of standards.

Table D.1: Articles providing justification in the context of Article 17 of the Framework Directive

Directive	Article	Chapter	Title	Relevant	Comments
Access Directive	1	Scope, aim and definition	Scope and aim	Y	This is an introduction, which is further explained in Recitals
Access Directive	2	Scope, aim and definition	Definitions	Y	Definitions are included within the present document
Access Directive	3	General provisions	General framework for access and interconnection	N	To be included in the introduction
Access Directive	4	General provisions	Rights and obligations for undertakings	Y	Article 4.2 applies
Access Directive	5	General provisions	Powers and responsibilities of the national regulatory authorities with regard to access and interconnection	Y	Identifies how and when Article17 list (Framework Directive) will be used
Access Directive	6	Obligations on operators and market review procedures	Conditional access systems and other facilities	N	
Access Directive	7	Obligations on operators and market review procedures	Review of former obligations for access and interconnection	Y	Clause 7.1 To maintain previous obligations (Lease Line requirements, etc.)
Access Directive	8	Obligations on operators and market review procedures	Imposition, amendment or withdrawal of obligations	N	
Access Directive	9	Obligations on operators and market review procedures	Obligation of transparency	Y	Declaration against Article 17 list.
Access Directive	10	Obligations on operators and market review procedures	Obligation of non-discrimination	N	
Access Directive	11	Obligations on operators and market review procedures	Obligation of accounting separation	N	

Directive	Article	Chapter	Title	Relevant	Comments
Access Directive	12	Obligations on operators and market review procedures	Obligations of access to, and use of, specific network facilities	Y	As a basis for Article17 list 1: (a), (e), (g), (h), (i) 2: (f)
Access Directive	13	Obligations on operators and market review procedures	Price control and cost accounting obligations	N	
Access Directive	14	Procedural provisions	Committee	N	
Access Directive	15	Procedural provisions	Publication of, and access to, information	N	
Access Directive	16	Procedural provisions	Notification	N	
Access Directive	17	Procedural provisions	Review procedures	N	
Access Directive	18	Procedural provisions	Transposition	N	
Access Directive	19	Procedural provisions	Entry into force	N	
Access Directive	20	Procedural provisions	Addresses	N	
Access Directive	A1	Annex I	Conditions for access to digital TV and radio services broadcast to viewers and listeners in the community	Y	
Access Directive	A2	Annex II	Minimum list of items to be included in a reference offer for unbundled access to the twisted metallic pair local loop to be published by notified operators	Y	As a basis for Article 17 list (Framework Directive) A, C and D.1
Authorisation Directive	1		Objective and scope	Y	This is an introduction, which is further explained in Recitals
Authorisation Directive	2		Definitions	Y	Definitions are included within the present document
Authorisation Directive	3		General authorization of electronic communications networks and services	N	
Authorisation Directive	4		Minimum list of rights derived from the general authorization	Y	General rights to provide electronic communications. Clauses 1(a) and 2
Authorisation Directive	5		Rights of use for radio frequencies and numbers	N	
Authorisation Directive	6		Conditions attached to the general authorization and to the rights of use for radio frequencies and for numbers and specific obligations	Y	Clause 6(1)
Authorisation Directive	7		Procedure for limiting the number of rights of use to be granted for radio frequencies	N	
Authorisation Directive	8		Harmonized assignment of radio frequencies	N	

Directive	Article	Chapter	Title	Relevant	Comments
Authorisation Directive	9		Declarations to facilitate the exercise of rights to install facilities and rights of interconnection	N	
Authorisation Directive	10		Compliance with the conditions of the general authorization or of the rights of use and with specific obligations	N	
Authorisation Directive	11		Information required under the general authorization, for rights of use and for the specific obligations	N	
Authorisation Directive	12		Administrative charges	N	
Authorisation Directive	13		Fees for rights of use and rights to install facilities	N	
Authorisation Directive	14		Amendment of tights and obligations	N	
Authorisation Directive	15		Publication of information	N	
Authorisation Directive	16		Review procedures	N	
Authorisation Directive	17		Existing authorizations	N	
Authorisation Directive	18		Transposition	N	
Authorisation Directive	19		Entry into force	N	
Authorisation Directive	20		Addresses	N	
Authorisation Directive	A	Annex		Y	Part A 3;6;7;8;11;12;14;15;16 and 18 Part C 3;4
Directive on privacy and electronic communications	1		Scope and aim	Y	This is an introduction, which is further explained in Recitals
Directive on privacy and electronic communications	2		Definitions	Y	Definitions are included within the present document
Directive on privacy and electronic communications	3		Services concerned	Y	To be included in the introduction. CLIP, CLIP and automatic call forwarding: mandatory on digital networks and conditional on analogue networks
Directive on privacy and electronic communications	4		Security	Y	
Directive on privacy and electronic communications	5		Confidentiality of the communications	Y	Article 5.3: Freedom of choice relating to storage of data, or user information related to privacy and data protection
Directive on privacy and electronic communications	6		Traffic data	Y	Article 6.3: how is the user to withdraw his consent for the processing of traffic data at any time.
Directive on privacy and electronic communications	7		Itemized billing	Y	Freedom of choice. On itemized billing (OSS). eg roaming calls with CLIP of the caller. Make sure N° not published on the itemized bill
Directive on privacy and electronic communications	8		Presentation and restriction of calling and connected line identification	Y	Related to privacy
Directive on privacy and electronic communications	9		Location data other than traffic data	Y	Related to privacy
Directive on privacy and electronic communications	10		Exceptions	Y	Emergency calls must carry CLIP and Location
Directive on privacy and electronic communications	11		Automatic call forwarding	Y	Privacy

Directive	Article	Chapter	Title	Relevant	Comments
Directive on privacy and electronic communications	12		Directories of subscribers	N	
Directive on privacy and electronic communications	13		Unsolicited communications	Y	Article 13.4: Function to be provided by the network facility to block unsolicited mails.
Directive on privacy and electronic communications	14		Technical features and standardization	Y	
Directive on privacy and electronic communications	15		Application of certain provisions of Directive 95/46/EC	Y	Provides the exceptions to Articles 5, 6, 8 and 9
Directive on privacy and electronic communications	16		Transitional arrangements	N	
Directive on privacy and electronic communications	17		Transposition	N	
Directive on privacy and electronic communications	18		Review	N	
Directive on privacy and electronic communications	19		Repeal	N	
Directive on privacy and electronic communications	20		Entry into force	N	
Directive on privacy and electronic communications	21		Addresses	N	
Framework Directive	1	Scope, aim and definition	Scope and aim	Y	This is an introduction, which is further explained in Recitals
Framework Directive	2	Scope, aim and definition	Definitions	Y	Definitions are included within the present document
Framework Directive	3	NRAs	National Regulatory Authorities	N	Not relevant to Article 17. It concerns NRAs
Framework Directive	4	NRAs	Right of appeal	N	Not relevant to Article 17. It concerns NRAs
Framework Directive	5	NRAs	Provision of information	N	Not relevant to Article 17. It concerns NRAs
Framework Directive	6	NRAs	Consultation and transparency mechanism	N	Not relevant to Article 17. It concerns NRAs
Framework Directive	7	NRAs	Consolidating the internal market for electronic communications	N	Not relevant to Article 17. It concerns NRAs
Framework Directive	8	Tasks of NRA	Policy objectives and regulatory Principles	Y	Underlying requirement for Article 17
Framework Directive	9	Tasks of NRA	Management of radio frequencies for electronic communications services	N	Management of scarce resource allocation
Framework Directive	10	Tasks of NRA	Numbering, naming and addressing	N	Management of scarce resource allocation
Framework Directive	11	Tasks of NRA	Rights of way	N	
Framework Directive	12	Tasks of NRA	Co-location and facility sharing	N	
Framework Directive	13	Tasks of NRA	Accounting separation and financial reports	N	
Framework Directive	14	General provisions	Undertakings with significant market power	N	
Framework Directive	15	General provisions	Market definition procedure	N	
Framework Directive	16	General provisions	Market analysis procedure	N	
Framework Directive	17	General provisions	Standardization	Y	Legal basis for the list of standards and/or specifications
Framework Directive	18	General provisions	Interoperability of digital interactive television services	Y	Taking into account the interoperability aspect of digital consumer equipment

Directive	Article	Chapter	Title	Relevant	Comments
Framework Directive	19	General provisions	Harmonization procedures	Y	Legal basis for introducing harmonization
Framework Directive	20	General provisions	Dispute resolution between undertakings	N	
Framework Directive	21	General provisions	Resolution of cross-border disputes	N	
Framework Directive	22	General provisions	Committee	N	
Framework Directive	23	General provisions	Exchange of information	N	
Framework Directive	24	General provisions	Publication of information	N	
Framework Directive	25	General provisions	Review procedures	N	
Framework Directive	26	Final provisions	Repeal	Y	Confirmation of those Directives and legislative measures that no longer apply in their entirely under new Regulatory Framework
Framework Directive	27	Final provisions	Transitional measures	Y	
Framework Directive	28	Final provisions	Transposition	N	
Framework Directive	29	Final provisions	Entry into force	N	
Framework Directive	30	Final provisions	Addresses	N	
Framework Directive	Rec 4	Commission Decision 2003/548/EC	Relevant recommendations under R-LAN access to public ECNs and ECSs	Y	Pursuant to Article 19 of Framework Directive on harmonization
Universal Service Directive	1	Scope, aim and definition	Scope and aim	Y	This is an introduction, which is further explained in Recitals
Universal Service Directive	2	Scope, aim and definition	Definitions	Y	Definitions are included within the present document
Universal Service Directive	3	Universal service obligations including social obligations	Availability of universal service	N	
Universal Service Directive	4	Universal service obligations including social obligations	Provision of access at a fixed location	Y	Covers access to Universal Service and provides the description of Universal service
Universal Service Directive	5	Universal service obligations including social obligations	Directory enquiry services and directories	N	Not relevant for third parties
Universal Service Directive	6	Universal service obligations including social obligations	Public pay telephones	N	
Universal Service Directive	7	Universal service obligations including social obligations	Special measures for disabled users	Y	
Universal Service Directive	8	Universal service obligations including social obligations	Designation of undertakings	N	
Universal Service Directive	9	Universal service obligations including social obligations	Affordability of tariffs	N	
Universal Service Directive	10	Universal service obligations including social obligations	Control of expenditure	Y	Annex II, Improves freedom of choice for users.

Directive	Article	Chapter	Title	Relevant	Comments
Universal Service Directive	11	Universal service obligations including social obligations	Quality of service of designated undertakings	Y	Annex III: QoS parameters
Universal Service Directive	12	Universal service obligations including social obligations	Costing of universal service obligations	N	
Universal Service Directive	13	Universal service obligations including social obligations	Financing of universal service obligations	N	
Universal Service Directive	14	Universal service obligations including social obligations	Transparency	N	
Universal Service Directive	15	Universal service obligations including social obligations	Review of the scope of universal service	Y	Section 1(a) and 1(b)
Universal Service Directive	16	Chapter III	Review of obligations	Y	Requirements under Article 16 1(c) relating to maintenance of obligations imposed for leased lines
Universal Service Directive	17	Regulatory controls on undertakings with significant market power in specific markets	Regulatory controls on retail services	N	
Universal Service Directive	18	Regulatory controls on undertakings with significant market power in specific markets	Regulatory controls on the minimum set of leased lines	Y	Specific reference to Article 17
Universal Service Directive	19	Regulatory controls on undertakings with significant market power in specific markets	Carrier selection and carrier pre-selection	Y	Freedom of choice
Universal Service Directive	20	End-User Interest and rights	Contacts	N	
Universal Service Directive	21	End-User Interest and rights	Transparency and publication of information	Y	Annex II, Improves freedom of choice for users.
Universal Service Directive	22	End-User Interest and rights	Quality of Service of designated undertakings	Y	Up to date information for end-users on the quality of services; Annex III my be used where appropriate
Universal Service Directive	23	End-User Interest and rights	Integrity of the network	Y	Ask for a clarification regarding the definition of integrity
Universal Service Directive	24	End-User Interest and rights	Interoperability of consumer digital television equipment	Y	Interoperability
Universal Service Directive	25	End-User Interest and rights	Operator assistance and directory enquiry services	Y	Provision of access to information, privacy and electronic communications

Directive	Article	Chapter	Title	Relevant	Comments
Universal Service Directive	26	End-User Interest and rights	Single European emergency call number	Y	Universal service: 112, has an impact on priority status
Universal Service Directive	27	End-User Interest and rights	European telephone access codes	Y	All prividers of public telephone networks to handle all calls to the European Telephony Numbering Space (ETNS)
Universal Service Directive	28	End-User Interest and rights	Non-geographic numbers	Y	Improves freedom of choice for users.
Universal Service Directive	29	End-User Interest and rights	Provision of additional facilities	Y	Annex I
Universal Service Directive	30	End-User Interest and rights	Number portability	Y	Improves freedom of choice for users.
Universal Service Directive	31	End-User Interest and rights	"Must carry" obligations	N	
Universal Service Directive	32	General and Final Provisions	Additional mandatory services	N	
Universal Service Directive	33	General and Final Provisions	Consultation with interested parties	N	
Universal Service Directive	34	General and Final Provisions	Out-of-court dispute resolution	N	
Universal Service Directive	35	General and Final Provisions	Technical adjustment	Y	Annexes I,II,III, VI, and VII
Universal Service Directive	36	General and Final Provisions	Notification, monitoring and review procedures	N	
Universal Service Directive	37	General and Final Provisions	Committee	N	
Universal Service Directive	38	General and Final Provisions	Transposition	N	
Universal Service Directive	39	General and Final Provisions	Entry into force	N	
Universal Service Directive	40	General and Final Provisions	Addresses	N	
Universal Service Directive	A1	Annex I	Description of facilities and services referred to in Article 10 (Control of expenditure) and Article 29 (Additional Facilities)	Y	Part A: (b); Part B: (a); (b)
Universal Service Directive	A2	Annex II	Information to be published in accordance with Article 21 (Transparency and publication of information)	Y	Freedom of choice.
Universal Service Directive	A3	Annex III	Quality of service parameters	Y	Articles 11 and 22 if appropriate
Universal Service Directive	A4	Annex IV	Calculating the net cost, if any, of universal service obligations and establishing any recovery of sharing mechanism in accordance with Articles 12 and 13	N	
Universal Service Directive	A5	Annex V	Process for reviewing the scope of universal service in accordance with Article 15	N	

Directive	Article	Chapter	Title	Relevant	Comments
Universal Service Directive	A6	Annex VI	Interoperability of digital consumer equipment referred to in Article 24	Y	Access Directive
Universal Service Directive	A7	Annex VII	Conditions for the minimum set of leased lines refereed to in Article 18	Y	Leased Lines
Universal Service Related	A	Commission Decision 2003/548/EC [15]	List of standards and/or specifications for electronic communications networks, services and associated facilities and services	Y	List of leased line standards to be included

Annex E:
Main changes from the previous EU regulatory regime

E.1 General authorization regime

A key change of the new framework is that the telecommunications licensing regime disappears - communications providers are no longer required to obtain a licence in advance of operating a telecommunication system or providing telecommunications services. The licensing regime has been replaced by a general authorization to provide electronic communications networks or services under which communications providers may be subject to a number of general conditions specified in the Authorisation Directive. In addition to the general conditions, communications providers may also be subject to specific conditions. Such conditions can only be imposed on individual communication providers as a result of:

- a Significant Market Power (SMP) designation;
- a Universal Service designation;
- the provision of conditional access services; or
- the provider's control of access to end-users.

E.2 Procedures to determine effective competition

The approach underlying the new regulatory framework is to regulate where there is not effective competition. In that case, specific obligations will fall on those operators, which have:

- SMP; and
- are operating on particular markets where competition is not effective.

Thus the first step for regulators is to identify those markets where competition is not effective, and secondly to designate which operator(s) have significant market power on those markets.

E.3 Markets defined according to competition law principles

Under the new framework, the market to be regulated is identified in a Commission Recommendation on Relevant Product and Service Markets [12]. It identifies those product and service markets within the sector having characteristics which justify the imposition of regulatory obligations. Based on the analysis of the relevant markets in their country, NRAs can decide whether these markets are effectively competitive or not - and impose, or amend, or withdraw regulatory obligations accordingly.

The Commission has produced Guidelines [13] to assist NRAs with market analysis and the assessment of SMP, which must be in accordance with the principles of Competition law.

Figure E.1 shows in graphical form the process that NRAs will follow to establish if competition is effective within a market sector. Figure E.2 highlights the various elements of the NRA toolbox and identifies that access is not an obligation, but one element, just as account separation, transparency and publication of an offer are elements of the same toolbox. The Article 17 list of standards is part of the added value of the toolbox when the NRA considers the options open to it to encourage competition in the market, when competition is ineffective.

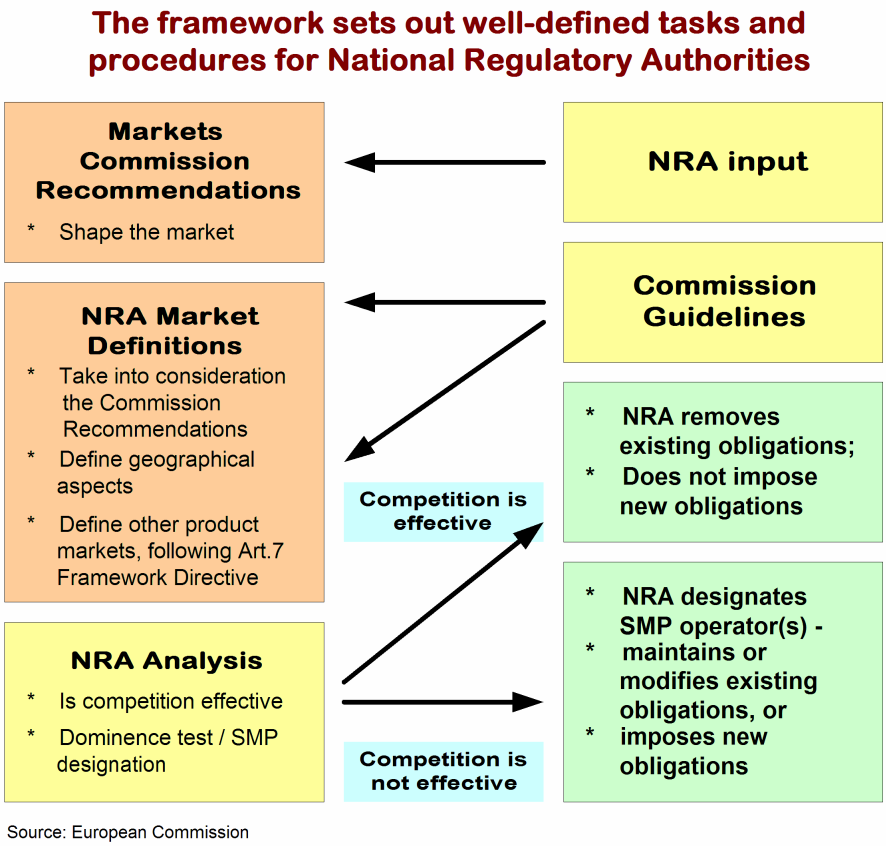


Figure E.1: NRAs to perform Market Analysis to establish if competition is effective

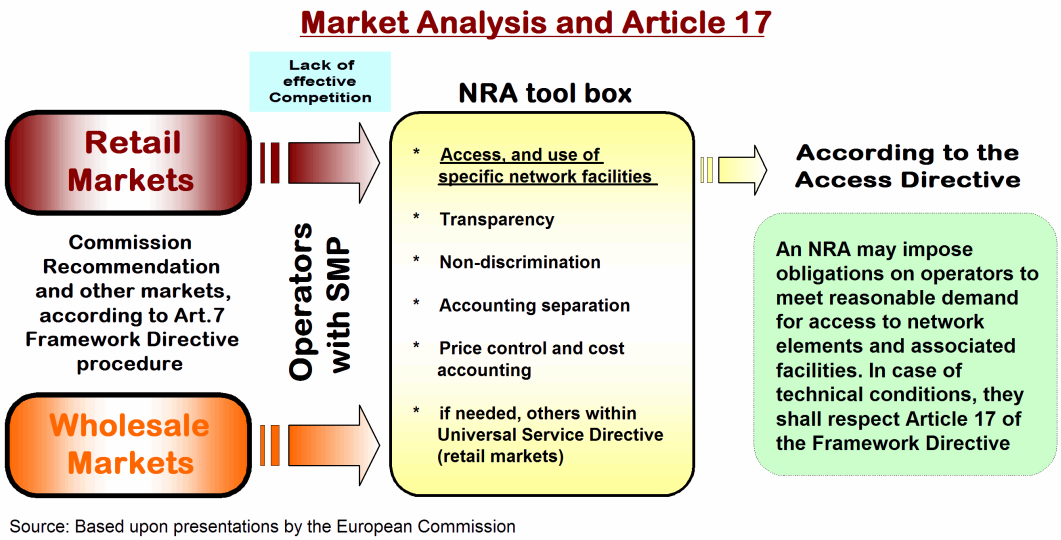


Figure E.2: Standards add value to the NRA toolbox after Market Analysis

E.4 Ex-ante regulation

In the respective of market analysis performed by an NRA, they will need to determine whether a given market in their territory is already characterized by effective competition and shall designate SMP Electronic Communication Providers (ECPs) in those markets. If the NRA concludes that there is no effective competition in the market (and Competition law remedies do not suffice to address any identified problems), the NRA must impose proportionate ex-ante obligations (see note) on ECPs designated as having SMP, or maintain such obligations already existing. This is to ensure that Electronic Communication Providers cannot use their market power either to restrict or distort competition on the relevant market, or to leverage such market power onto adjacent markets.

NOTE: Additional and specific obligations applied to force competition and that are applied until such time that an NRA determines that competition is effective.

E.5 Definition of SMP

The definition of SMP is explicitly linked to the competition law concept of dominance. The threshold for imposing ex-ante obligations - new SMP is now aligned to the competition law concept of dominance (i.e. the power of an undertaking, either alone or jointly with others, to behave to an appreciable extent independently of competitors, consumers and ultimately consumers).

E.6 Harmonization goals

There is an explicit goal of harmonization in the new framework (NRAs - Commission).

The primary responsibility for implementing the new framework relies, as in the previous ONP framework, on the national regulatory authorities (NRAs) in the EU Member States. The new framework establishes a more flexible set of rules at Community level, and gives NRAs a large degree of flexibility to choose the tools most appropriate to deal with regulatory concerns as they arise. As a counterweight to this increased flexibility, the new framework seeks to improve co-operation between NRAs, and between the European Commission and the NRAs, in a transparent manner, to ensure the consistent application throughout the EU of the provisions of the legislation.

E.7 Recognition of only two fundamental types of providers

The new framework takes account of a convergence of provision, in parallel with technological convergence. It no longer makes sense to create further distinction between categories of providers, such as operators, internet service providers, system-less service providers, etc. The new framework aims at simplicity by recognizing only two fundamental types of providers: providers of Electronic Communications Networks (ECNs) and providers of Electronic Communications Services (ECSs). Additionally, the new framework also recognizes providers of associated facilities, such as servers, databases, etc.

Some providers will provide both networks and services; others will either provide a network or a service but not both. However, for the purposes of the new regulatory framework they will all be known as (Electronic) Communication Providers (ECPs).

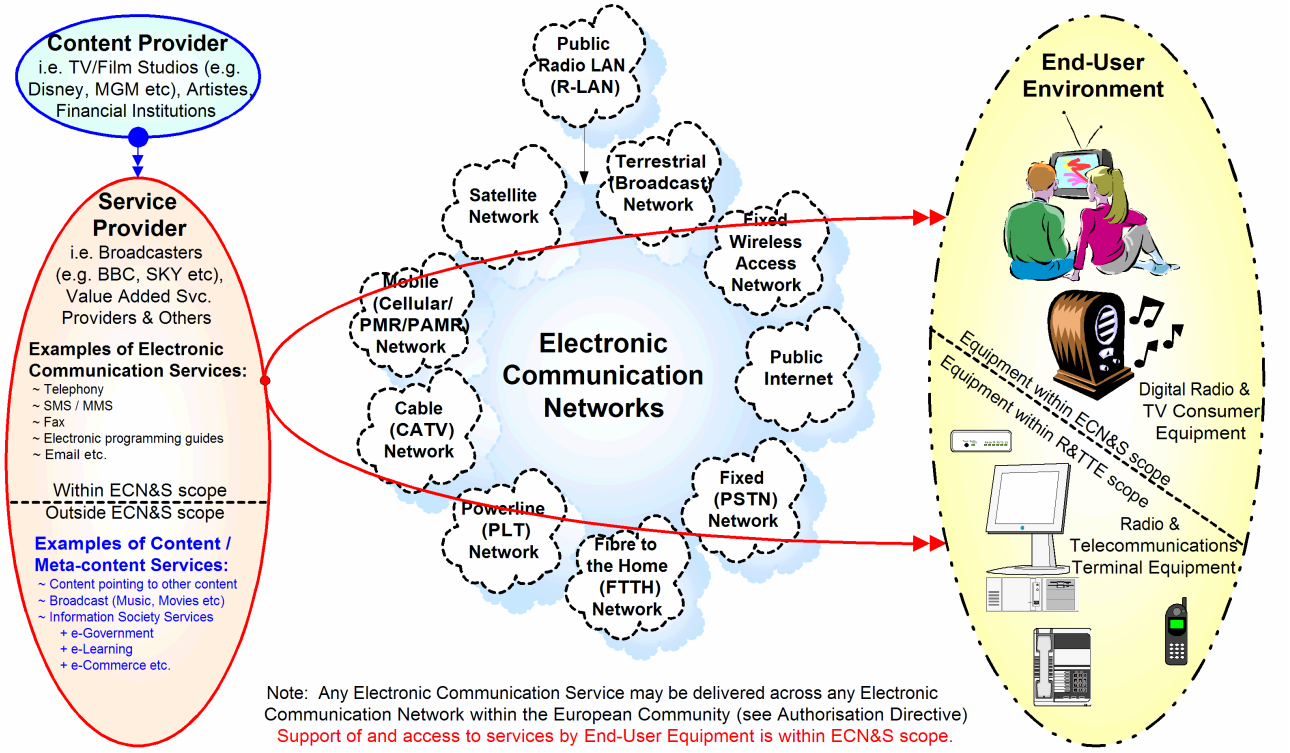
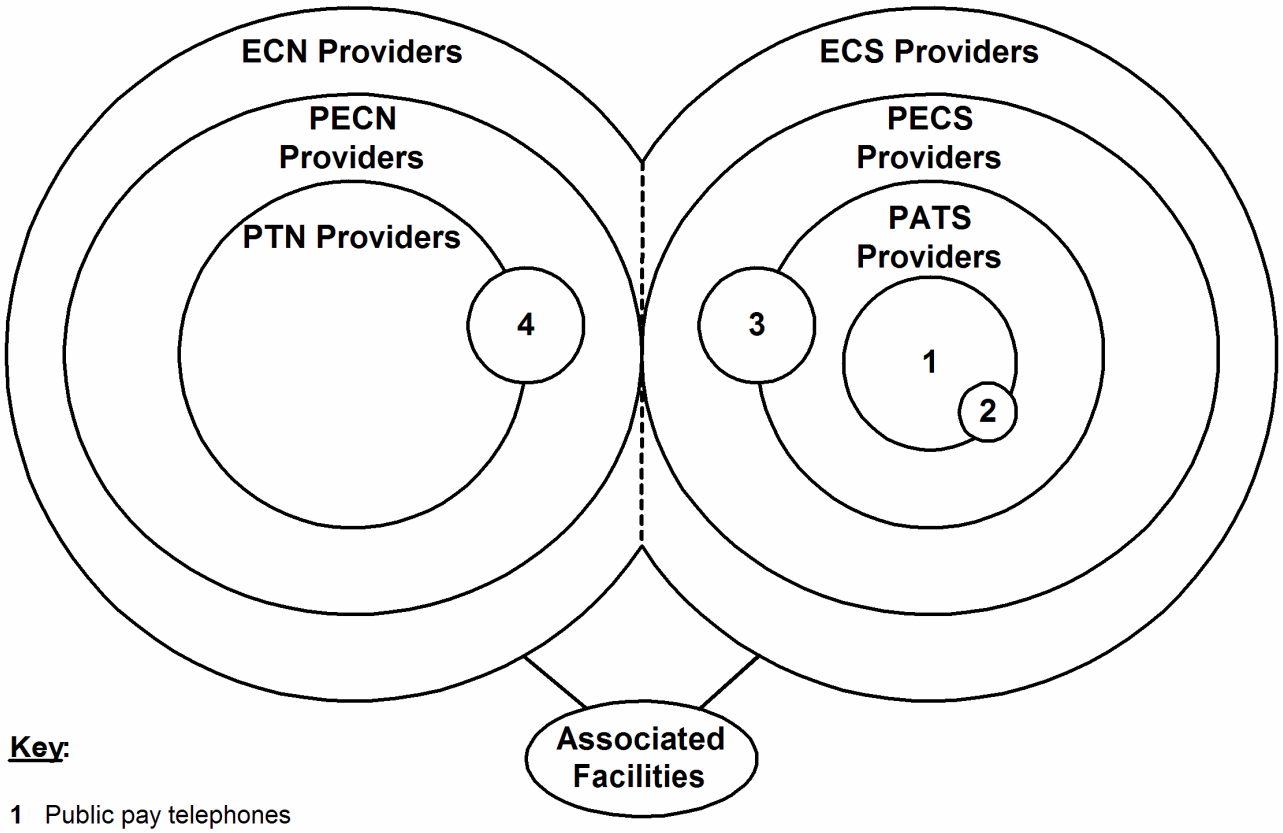


Figure E.3: Principles of Electronic Communication Service provision across any Electronic Communication Network

E.7.1 Electronic communications networks (ECNs) and providers of Electronic Communications Services (ECSs)

- ECN is a transmission system for the conveyance of signals.
- ECS is a service consisting in the conveyance of signals.

The definitions of ECN and ECS are interlocking: the signals conveyed by an ECS are conveyed by means of an ECN; an ECN is the platform by which an ECS is provided. The provision of an ECS does not extend to the provision of content services or most Information Society services, although providing the underlying transmission over which such a service is conveyed may well involve the provision of an ECS. Information Society services are defined in EU legislation as "any services normally provided for remuneration, at a distance, by electronic means and at the individual request of a recipient of services" (see also clause 4.1.5). In other words these are the services the key characteristics of which lies more in the provision of information than in the conveyance of signals, and which are provided over ECNs at individual request, e.g. Internet banking, on-line internet services, etc.



Key:

1 Public pay telephones
2 PATS (Publicly Available Telephone Service) at a fixed location
3 PECS (Public ECS) to domestic and small business users'
4 PECNs (Public ECNs) used by a significant number of users to receive TV and Radio broadcasts

Source: Figure reproduced from diagram appearing within Annex A - Oftel (UK) Crown Copyright "A guide to the new regulatory framework for service providers"

Figure E.4: A graphical explanation of the different Electronic Communication Providers

Annex F:
Standards and Specifications

The standards and/or specifications shown in table F.1 are provided for guidance to illustrate those deliverables given in Annex A of the present document under the Article 17 (2002/21/EC [3]) list. Most of the standards and specifications mentioned in this list are ETSI deliverables under both the previous and current ETSI nomenclature, according to the "ETSI Directives" (see note).

NOTE: Available at http://portal.etsi.org/directives/.

The present document currently includes those deliverables at ESO level and some at International level. Later versions of the present document may make reference to other PAS.

Table F.1: Publicly available standards and/or specifications

Technical standards and/or specifications	Short ref.	Description	Voting process for approval of standard or specification
Harmonized Standard	EN	An EN the drafting of which has been entrusted to an ESO by a mandate from the European Commission under European Directive 98/34/EC (plus amendment 98/48/EC) and has been drafted to take into account the applicable essential requirements of the "New Approach" Directive and whose reference has subsequently been announced in the Official Journal of the European Communities.	Approved for publication in a process involving the National Standards Organizations with implications concerning standstill and national transposition.
European Standard (telecommunications series)	EN	An ETSI deliverable containing normative provisions. The EN (European Standard (telecommunications series)) is the formal output for standardization at the European level and shall be chosen when the document is intended to meet needs specific to Europe and requires transposition into national standards or when the drafting of the document is required under an EC/EFTA mandate.	Approved for publication in a process involving the National Standards Organizations and/or ETSI National Delegations with implications concerning standstill and national transposition.
European Telecommunication Standard	ETS	An ETSI deliverable, containing normative, provisions approved for publication in a process involving the National Standards Organizations and/or ETSI National Delegations with implications concerning standstill and national transposition.	An ETSI deliverable, containing normative, provisions approved for publication in a process involving the National Standards Organizations and/or ETSI National Delegations with implications concerning standstill and national transposition.
ETSI Standard	ES	An ETSI deliverable, containing normative provisions The ES (ETSI Standard) shall be chosen when the document contains normative provisions and it is considered preferable or necessary that the document be submitted to the whole ETSI membership for its approval.	Approved for publication by application of the Membership Approval Procedure.

Technical standards and/or specifications	Short ref.	Description	Voting process for approval of standard or specification
ETSI Guide	EG	An ETSI deliverable, containing mainly informative elements The EG (ETSI Guide) shall be chosen when the document contains guidance on handling of technical standardization activities in the whole or major parts of the Technical Organization.	Approved for publication by application of the Membership Approval Procedure
ETSI Technical Specification	TS	An ETSI deliverable, containing normative provisions. The TS (ETSI Technical Specification) is the preferred deliverable when the document contains normative provisions and short time to "market", validation and maintenance are essential.	Approved for publication by a Technical Body.
ETSI Technical Report	TR	An ETSI deliverable, containing mainly informative elements The TR (ETSI Technical Report) is the default deliverable when the document contains mainly informative elements.	Approved for publication by a Technical Body.
ETSI Technical Report	ETR	An ETSI deliverable, containing informative elements, approved for publication by a Technical Committee.	Approved for publication by a Technical Committee.
International Standard	ISO IEC ITU-T ITU-R	A deliverable issued either as a standard or recommendation and may contain both common harmonized requirements/ recommendations and additional regional and/or national deviations	Approved for publication in a process involving the National Delegations represented at the International Standards body.
National Standards	-	Deliverables produced by National Standardization Organizations either transposing or endorsing European or International standards, where no prior standard exists an NSO may produce and publish a National Standard.	Approved for publication by the Membership of the National Standards Organization.
Fora standards and/or specifications	-	Deliverables produced by Industry representative bodies and associations for the development and agreement of specific technologies to promote common implementation and adoption within a given sector of the industry, enabling a short time to "market".	Approved for publication by the Membership of the Industry representative body or association

Annex G: Bibliography

The list refers to the following legislative documents which may be found at http://europa.eu.int/information_society/index_en.htm

- Council Directive 90/387/EEC of 28 June 1990 on the establishment of the internal market for the telecommunication services through the implementation of open network provision (OJ L 192, 24.7.1990, p. 1), as amended by Directive 97/51/EC of the European Parliament and the of the Council of 6 October 1997 amending Council Directives 90/387/EEC and 92/44/EEC for the purpose of adaptation to a competitive environment in telecommunications (OJ L 295, 29.10.1997, p.23).
- Directive 97/33/EC of the European Parliament and of the Council of 30 June 1997 on interconnection in telecommunications with regard do ensuring universal service and interoperability through application of the principles of Open Network Provision (ONP) (OJ L 199, 26.7.1997, p. 32).

History

Document history		
V1.1.1	February 2004	Publication