

**Human Factors (HF);
European accessibility requirements for public procurement
of products and services in the ICT domain
(European Commission Mandate M 376, Phase 1)**



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Foreword

This Technical Report (TR) has been produced by ETSI Technical Committee Human Factors (HF). The work was co-funded by the EC/EFTA in response to Phase I of EC Mandate M 376 [i.141], and was developed in close coordination with CEN BT WG 185 and CENELEC CLC-BT WG 101-5, during September 2007 - September 2008.

NOTE: The ETSI Drafting Rules specify that ETSI Technical Reports shall be entirely informative.

In cases where national or international standards, requirements or legislation, currently applied to the public procurement of ICT products and services in the EU and EFTA are reported or referred to in the present document, the intention of the original verbal forms has been preserved for information purposes and with respect to the original sources. The use of quotation marks would have introduced inconsistencies due to language translation and other related issues.

Therefore, the "shall" and "must" verbal forms used in the present document are NOT to be taken as normative requirements for the purposes of this entire document.

0 Executive summary

The present document was prepared in response to the ETSI part of Phase I of Mandate M 376 [i.141] from the European Commission to CEN, CENELEC and ETSI, which requires the provision of an inventory of European and international accessibility requirements in order to harmonize and facilitate the public procurement of accessible ICT products and services.

The Mandate required the generation of an inventory of ICT products and services together with a listing of the functional accessibility requirements of those products.

An initial study of the Common Procurement Vocabulary (CPV) code list revealed that over 100 ICT product categories or products could be identified as products that might be bought by public procurers. The range of ICT products and services actually purchased through government procurement services were determined in a study conducted using the codes listed in Tenders Electronic Daily (TED) (see <http://ted.eur-op.eu.int/>) and through questioning of national representatives throughout Europe and in other countries.

The main products identified in this study were computer hardware, photocopying and printing equipment, telecommunications equipment, software, installation, configuration and set-up services, maintenance services, upgrade services, customization and telecommunication services (e.g. fixed and mobile telephony). The study is described in clause 5 and those few ICT products and services publicly referred to in national information are set out in more detail in annex C, which also contains references to national procurement legislation.

It was noted that TED can provide an open and transparent record of products and services purchased by Government agencies but the level of information varied significantly between countries, the difference to some extent reflecting the relative maturity of national procurement legislation.

Furthermore it was found that this procurement information could be distorted by certain National practices. In many countries the national regulator uses the obligations of the Universal Service Directive [i.23] to mandate the provision of accessible products and services by an operator with significant market power. This generates a hidden procurement-

like situation without any payment appearing between a Government and the affected telecom operator. Thus there is no public information on the products procured. It was also found that there are differences in the level of obligation demanded in different countries.

A review that was made of the existing functional accessibility requirements used for public procurement within Europe and in other countries showed that only a few steps have been taken to advance *e*Accessibility through public procurement. This review is reported in clause 6 with more detail given in annex D.

At an International level, the UN Convention on the Rights of Persons with Disabilities [i.156] advances measures that promote *e*Accessibility to information, communications and other services.

At an intra-European level, the Nordic Forum for Telecommunication and Disability provides guidelines and recommendations related to *e*Accessibility. International and European standardization bodies have been preparing standards and recommendations related to *e*Accessibility and these standards have been identified ([i.142], [i.143], [i.144], [i.145], [i.146], [i.147], [i.148], [i.149] and [i.150]).

Related information for each member state and EFTA country is detailed in annex D. In general, the main existing accessibility requirements in EU member States and EFTA countries refer to the Web accessibility of either existing or new public Web sites. There are some countries that mandate the accessibility of the Web sites of their public organizations. Others advance Web accessibility but not within any legal framework and a few have no particular evidence of Web accessibility.

There are two European countries (Italy and Spain) where the national law mandates accessible ICT procurement based on international, European and national standards. There are also two countries (Denmark and Ireland) that have developed public procurement toolkits that enable procurers to address accessibility requirements in their procurement procedures on a voluntary basis.

Outside Europe, in the USA, the requirements for accessibility are set out in the Code of Federal Regulations (in CFR 36, Part 1194). These are currently being reviewed and updated under the "Section 508 Refresh" and have been considered thoroughly in several clauses in the present document. Australian Commonwealth departments and agencies are required by the Disability Discrimination Act 1992 to ensure that online information and services are accessible by people with disabilities. Japan, products and services supplied to the government are required to have considered ICT accessibility based on a series of existing standards.

Exhaustive research was conducted into the large number of documents related to accessibility that have been or are being produced by international and regional Standards Development Organizations. This work is reported in clause 7. Some of these documents provided a valuable source of information on user needs related to particular disabilities. Unfortunately the functional requirements set out in many of the standards were exceedingly vague and commonly referred out to other documents which in their turn contained no testable requirements.

Over 100 documents dealing with accessibility related functions were identified in this study. This huge list of requirements and standards may be overwhelming for those working with specifications for procurement who also have many other aspects than accessibility to consider. It seems inevitable that some practical guidance is needed to pick those applicable standards best suited for reference in procurement documents. Some countries have introduced a toolkit for retrieval of requirements and standards for the application at stake. This approach seems to provide a practicable resolution for this task.

New ways to operate ICT are created continuously, and new ways will appear to fulfil user needs. New standards will therefore be needed to harmonize such new features, and they will have to be incorporated into tools for selecting requirements and standards. Thus any list of standards will have to be a living list with proper maintenance.

In order to determine what gaps existed in current accessibility requirements for ICT equipment, a study was first made of ISO/IEC PDTR 29138-1 [i.118] and of other documents such as the UN convention on the rights of persons with disabilities [i.156] to determine those needs of users with disabilities that required to be satisfied by such accessibility requirements. These user needs are set out in clause 8 and each need is mapped with an existing functional technical requirement for features and facilities of ICT products where it was found. This mapping was very valuable in identifying a significant number of apparent "gaps" between the needs of disabled users expressed in those documents and the technical requirements available to satisfy these needs.

This approach, by relating user needs to a product feature (for example, a display), was found to be the most effective way of dealing with the requirements as the user needs are similar for any product with that feature. This was more efficient than attempting to generate a listing of all possible CPV codes for products that might contain a display and associating the functional requirements for a display with each.

Relating the technical accessibility requirements to the users needs and features, as was done in the ETSI Design for All guide EG 202 116 [i.32], limits the effect of this combinatorial complexity issue and was therefore the approach taken in the present document.

It should be noted that at the time of writing the present document, ISO/IEC PDTR 29138-1 [i.118] is still a draft and that some of the expressed "needs" may not survive into the finally published version, either because they are not specific to disabled users or because they are not considered to be real or subject to practicable solution.

Clause 9 provides a detailed listing of those existing functional requirements together with a reference to those clauses found in existing standards or drafts which refer to that requirement.

The user needs set out in clause 8 which do not have an associated functional requirement in clause 9 are listed in clause 10 and identified as potential "gaps". Some process will be required to study these theoretical "gaps" between the currently available functional requirements and the needs of disabled users to determine whether they can or should be "filled" or whether further research is needed. This study needs to be carried out in a suitable forum where global consensus can be achieved. Such a forum should at least include the European Commission and the US Access Board (on policy, as well as at operational levels).

This global work implies a timescale longer than that projected for Phase II of the Mandate and suggests that gap filling measures should be performed outside the mandated Phase II work, preferably in international collaboration including research and standardization.

Clause 11 draws conclusions from the studies set out in the report, presents input to a Standardization work programme and makes proposals for the work of Phase II of the Mandate.

The mapping performed in clauses 8 and 9 demonstrated that there was sufficient information available to provide a firm base for the creation of a single European norm which could address the majority of identified user needs and which could contain functional requirements which are demonstrable and testable.

It is proposed that for each functional requirement, a review is made of those references that have been identified and a new functional requirement is written that forms a consensus of those existing technical statements. Such an approach could provide a comprehensive document that could provide a "one stop shop" where all the necessary functional requirements of an ICT product or service could be found. It would also avoid potential copyright problems caused by a listing of extracts from other standards.

1 Scope

The present document is a report concerning ICT products and services purchased by public procurers in the EU and EFTA, together with a listing of existing functional accessibility requirements.

The present document provides:

- 1) an inventory of ICT products and services that are usually bought by public procurers (see clause 5);
- 2) a listing of existing functional accessibility requirements in EU and EFTA Member States and internationally (see clause 6);
- 3) the identification of gaps where no accessibility requirements exist and suggestions for developing missing or additional requirements (see clause 10);
- 4) a list of existing national, European and international standards and technical specifications which might comply with functional accessibility requirements (see clause 7); and
- 5) a proposal for standardization work for the development of requirements and award criteria that still do not exist or that are not yet standardized (see clause 11).

The present document assesses relevant existing activities, including those in other regions (e.g. the US Section 508 system) and those carried out at international level. In particular, due account has been taken of the work in the ISO/IEC JTC1/ SWG-A on *eAccessibility*, providing an overview of *eAccessibility* user needs and standards.

2 References

References are either specific (identified by date of publication and/or edition number or version number) or non-specific.

- For a specific reference, subsequent revisions do not apply.
- Non-specific reference may be made only to a complete document or a part thereof and only in the following cases:
 - if it is accepted that it will be possible to use all future changes of the referenced document for the purposes of the referring document;
 - for informative references.

Referenced documents which are not found to be publicly available in the expected location might be found at <http://docbox.etsi.org/Reference>.

NOTE: While any hyperlinks included in this clause were valid at the time of publication ETSI cannot guarantee their long term validity.

2.1 Normative references

The following referenced documents are indispensable for the application of the present document. For dated references, only the edition cited applies. For non-specific references, the latest edition of the referenced document (including any amendments) applies.

Not applicable.

2.2 Informative references

The following referenced documents are not essential to the use of the present document but they assist the user with regard to a particular subject area. For non-specific references, the latest version of the referenced document (including any amendments) applies.

- [i.1] ANSI C63.19-2007: "American National Standard Method of measurement of compatibility between wireless communication devices and hearing aids".
- [i.2] CEN/CENELEC Guide 6 (2002): "Guidelines for standards developers to address the needs of older persons and persons with disabilities".
- [i.3] CEN CWA 14661 (2003): "Guidelines to Standardisers of ICT products and services in the CEN ICT domain".
- [i.4] CEN CWA 14835: 2003: " Guidelines for making information accessible through sign language on the web".
- [i.5] CEN CWA 15778: 2008: "Document Processing for Accessibility".
- [i.6] Commission Regulation (EC) No 2195/2002 of the European Parliament and of the Council of 5 November 2002 on the Common Procurement Vocabulary (CPV) (OJ L340/1 - 16.12.2002).
- [i.7] Commission Regulation (EC) No 2151/2003 of 16 December 2003 amending Regulation (EC) No 2195/2002 of the European Parliament and of the Council on the Common Procurement Vocabulary (CPV) (OJ L 329/1 - 17.12.2003).
- [i.8] Commission Regulation (EC) No 1564/2005 of 7 September 2005 establishing standard forms for the publication of notices in the framework of public procurement procedures pursuant to Directives 2004/17/EC and 2004/18/EC of the European Parliament and of the Council (OJ L 257/1 - 1.10.2005).
- [i.9] Commission Regulation (EC) No 1422/2007 of 4 December 2007 amending Directives 2004/17/EC and 2004/18/EC of the European Parliament and of the Council in respect of their application thresholds for the procedures for the award of contracts (OJ L 317/34 - 5.12.2007).
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- [i.13] Council Directive 90/531/EEC of 17 September 1990 on the procurement procedures of entities operating in the water, energy, transport and telecommunications sectors (L 297/01 - 29.10.90).
- [i.14] Council Directive 92/13/EEC of 25 February 1992 coordinating the laws, regulations and administrative provisions relating to the application of Community rules on the procurement procedures of entities operating in the water, energy, transport and telecommunications sectors (L 076/14 - 23.3.92).
- [i.15] Council Directive 92/50/EEC of 18 June 1992 relating to the coordination of procedures for the award of public service contracts (L 209/1 - 24.7.92).
- [i.16] Council Directive 93/36/EEC of 14 June 1993 coordinating procedures for the award of public supply contracts (L 199/01 - 9.8.93).
- [i.17] Council Directive 93/37/EEC of 14 June 1993 concerning the coordination of procedures for the award of public works contracts (L 199/54 - 9.8.93).

- [i.18] Council Directive 93/38/EEC of 14 June 1993 coordinating the procurement procedures of entities operating in the water, energy, transport and telecommunications sectors (L 199/84 - 9.8.93).
- [i.19] Council Directive 97/52/EC of 13 October 1997 amending Directives 92/50/EEC, 93/36/EEC and 93/37/EEC concerning the coordination of procedures for the award of public service contracts, public supply contracts and public works contracts respectively (L 328/1 - 28.11.97).
- [i.20] Directive 98/4/EC of the European Parliament and of the Council of 16 February 1998 amending Directive 93/38/EEC coordinating the procurement procedures of entities operating in the water, energy, transport and telecommunications sectors (L 101/01 - 1.4.98).
- [i.21] Directive 98/34/EC of the European Parliament and of the Council of 22 June 1998 laying down a procedure for the provision of information in the field of technical standards (L 204/37 - 21.7.98).
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- [i.24] Directive 2004/17/EC of the Parliament and of the Council of 31 March 2004 coordinating the procurement procedures of entities operating in the water, energy, transport and postal services sectors (L 134/1 - 30.4.2004).
- [i.25] Directive 2004/18/EC of the Parliament and of the Council of 31 March 2004 on the coordination of procedures for the award of public works contracts, public supply contracts and public service contracts (L 134/114 - 30.4.2004).
- [i.26] Commission Directive 2005/51/EC of 7 September 2005 amending Annex XX to Directive 2004/17/EC and Annex VIII to Directive 2004/18/EC of the European Parliament and the Council on public procurement (L 257/127 - 1.10.2005).
- [i.27] "Assessment of the status of eAccessibility in Europe" (The MeAC study) - European Commission October 2007.
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- [i.29] ETSI EG 201 103: "Human Factors (HF); Human factors issues in Multimedia Information Retrieval Services (MIRS) ".
- [i.30] ETSI EG 202 048: "Human Factors (HF); Guidelines on the multimodality of icons, symbols and pictograms".
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- [i.32] ETSI EG 202 116: "Human Factors (HF); Guidelines for ICT products and services; "Design for All"".
- [i.33] ETSI EG 202 132: "Human Factors (HF); User Interfaces; Guidelines for generic user interface elements for mobile terminals and services".
- [i.34] ETSI EG 202 191: "Human Factors (HF); Multimodal interaction, communication and navigation guidelines".
- [i.35] ETSI EG 202 249: "Universal Communications Identifier (UCI); Guidelines on the usability of UCI based systems".
- [i.36] ETSI EG 202 320: "Human Factors (HF); Duplex Universal Speech and Text (DUST) communications".
- [i.37] ETSI EG 202 325: "Human Factors (HF); User Profile Management".

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- [i.39] ETSI EG 202 417: "Human Factors (HF); User education guidelines for mobile terminals and services".
- [i.40] ETSI EG 202 421: "Human Factors (HF); Multicultural and language aspects of multimedia communications".
- [i.41] ETSI EG 202 423: "Human Factors (HF); Guidelines for the design and deployment of ICT products and services used by children".
- [i.42] ETSI EG 202 487: "Human Factors (HF); User experience guidelines; Telecare services (eHealth)".
- [i.43] ETSI EG 202 518: "Speech Processing, Transmission and Quality Aspects (STQ); Acoustic output of terminal equipment; Maximum levels and test methodology for various applications".
- [i.44] ETSI EG 202 534: "Human Factors (HF); Guidelines for real-time person-to-person communication services".
- [i.45] ETSI EG 202 745: "Human Factors (HF); Guidelines on the provision of ICT services to young children".
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- [i.47] ETSI ES 201 125: "Human Factors (HF); Universal Personal Telecommunications (UPT); Specification of the minimum Man-Machine Interface (MMI) for Phase 1 UPT".
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- [i.49] ETSI ES 202 975: "Human Factors (HF); Harmonized relay services".
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- [i.51] ETSI ETS 300 767: "Human Factors (HF); Telephone prepayment cards; Tactile identifier".
- [i.52] ETSI ETR 160: "Human Factors (HF); Human Factors aspects of multimedia telecommunications".
- [i.53] ETSI ETR 297: "Human Factors (HF); Human Factors in Videotelephony".
- [i.54] ETSI ETR 334: "Human Factors (HF); The implications of human ageing for the design of telephone terminals".
- [i.55] ETSI ETR 345: "Human Factors (HF); Characteristics of telephone keypads and keyboards; Requirements of elderly and disabled people".
- [i.56] ETSI ETS 300 375: "Human Factors (HF); Pictograms for point-to-point videotelephony".
- [i.57] ETSI TR 101 767: "Human Factors (HF); Symbols to identify telecommunications facilities for deaf and hard of hearing people; Development and evaluation".
- [i.58] ETSI TR 101 806: "Human Factors (HF); Guidelines for Telecommunication Relay Services for Text Telephones".
- [i.59] ETSI TR 102 068: "Human Factors (HF); Requirements for assistive technology devices in ICT".
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- [i.72] Georgia Tech Research Institute Accessibility Monograph Series (October 2006): "#3 Laptop Computers, A study of accessibility issues and potential design solutions for designers, procurement officials and consumers".
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- [i.73] IEC 60118-1 (Ed. 3.1 b:1999): "Hearing aids - Part 1: Hearing aids with induction pick-up coil input".
 - [i.74] IEC/CD 60118-2: "Electroacoustics - Hearing aids - Part 2: Hearing aids with automatic gain control circuits".
 - [i.75] IEC/CD 60118-4: "Electroacoustics - Hearing aids - Part 4: Induction loop systems".
 - [i.76] IEC/CD 60118-6: "Electroacoustics - Hearing aids - Part 6: Characteristics of electrical input circuits for hearing aids".
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- [i.81] ISO 9241-9:2000: "Ergonomic requirements for office work with visual display terminals (VDTs) - Part 9: Requirements for non-keyboard input devices".
- [i.82] ISO 9241-10:1996: "Ergonomic requirements for office work with visual display terminals (VDTs) - Part 10: Dialogue principles".
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3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in EG 201 013 [i.28] and the following apply:

accessibility: extent to which a product can be used by people with the widest range of abilities to achieve specified goals in a specified context of use

assistive technology: any product, instrument, equipment or technical system used to prevent, compensate, relieve or neutralize an impairment, disability or handicap

NOTE: Assistive technology includes specialized assistive software.

assistive technology device: device used to prevent, compensate, relieve or neutralize an impairment, disability or handicap and which has the ability to interface to an ICT device

NOTE: In an appropriate context, often abbreviated to assistive device.

closed functionality: functionality of a product where assistive technology cannot be used to augment some or all of the functionality of the electronic user interface components for any reason including hardware, software, platform, license, or policy limitation

design for all: design of products to be accessible and usable to the greatest extent possible, without the need for specialized adaptation

disability: any restriction or lack of ability to perform an activity in the manner required by an ICT product due to a health condition or physical/mental/cognitive/psychological impairment of a permanent or temporary nature

emergency service: service, recognized as such by the EU Member State that provides immediate and rapid assistance in situations where there is a direct risk to an individual's life or limb, public health or safety, private or public property, or the environment, but not necessarily limited to these situations

impairment: any reduction or loss of psychological or physiological function or structure of a user

keyboard: set of systematically arranged keys by which a machine or device is operated and alphanumeric input is provided such as a computer keyboard, a cell-phone keypad, or a television remote control that can generate alphanumeric input

NOTE: Tactilely discernable keys that are used in conjunction with the main cluster of keys are included in the definition of keyboard as long as their function also maps to keys on any keyboard interfaces.

platform software: software that interacts with hardware or other underlying platform software and which provides services for client software

NOTE: A browser can act both as a client and as platform software.

tender: offer to supply goods or services at a fixed price

touch operated control: control which, when operated, gives no perception of movement

usability: extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use

User Interface (UI): physical and logical interface through which a user communicates with an ICT device or service

user requirements: requirements made by users, based on their needs and capabilities, on a product or service and any of its supporting components, terminals and interfaces, in order to make use of this service in the easiest, safest, most efficient and most secure way

visual acuity: sharpness of vision, the ability to identify black symbols on a white background

3.2 Abbreviations

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

3GPP	Third Generation Partnership Project
ACT	Australian Capital Territory (Australia)
ADIO	Assistive Devices Industry Office (Canada)
AENOR	Asociación Española de Normalización y Certificación (Spain)
ANSI	American National Standards Institute
APT	Accessible Procurement Toolkit (Canada)
AT	Assistive Technology
ATAG	Authoring Tool Accessibility Guidelines
ATM	Automatic Teller Machine
BITV	Barrierefreie Informations Technik-Verordnung (Barrier-free Information Technology Regulation) (Germany)
BSI	British Standards Institution
CIMU	Central Information Management Unit (Malta)
CITA	Centre for IT Accommodation (USA)
CN	Combined Nomenclature
CPC	Central Product Classification (of the United Nations)
CPV	Common Procurement Vocabulary
CWA	CEN Workshop Agreement
DDA	Disability Discrimination Act (UK)
DED	Disability Equality Duty
DUST	Duplex Universal Speech and Text

E&IT	Electronic and Information Technology
EC	Commission Regulation
e-GIF	e-Government Interoperability Framework (UK)
FAR	Federal Acquisition Regulation
FITA	Foundation for IT Accessibility (Malta)
FPC	Federal Procurement Code (USA)
FSC	Federal Supply Code (USA)
GPA	Agreement on Government Procurement
GSA	General Services Administration (USA)
GSIN	Goods and Services Identification Number (Canada)
GSM	Global System for Mobile telecommunication
ICF	International Classification of Functioning, disability and health
ICT	Information and Communication Technologies
IEC	International Electrotechnical Commission
IETF	Internet Engineering Task Force
ISO	International Organization for Standardization
IT	Information Technology
ITI	Information Technology Industry
ITU	International Telecommunication Union
IVR	Interactive Voice Response
JHS	Public Administration Recommendations (Julkisen Hallinnon tietohallintoa koskevia JHS-Standardeja) (Finland)
JUHTA	Julkisen Hallinnon tietohallinnon neuvoTelukuntA (Advisory Committee on Information Management in Public Administration) (Finland)
KNPD	Kummissjoni Nazzjonali Persuni b'Dizabilita (National Commission for Persons with Disability (Malta)
LTA	Long-Term Agreement
MITTS	Malta Information Technology and Technical Services
NDA	National Disability Authority (Ireland)
NDPB	Non-Departmental Public Bodies (UK)
NFTH	Nordiskt Forum för Telekomunikasjon och Handikapp (Nordic forum for telecommunication and disability) (Denmark)
NHS	National Health Service (UK)
NSH	Nordic Cooperation on Disability
NUH	Nordic development centre for rehabilitation technology (Nordiska utvecklingscentret för handikapphjälpmedel) (Denmark)
OGC	Office of Government Commerce
PA	Public Address
PAS	Publicly Available Specification (of BSI)
PDA	Personal Digital Assistant
PIAP	Public Internet Access Point
PPA	Public Procurement Act
PPR	Public Procurement Register
PSC	Product Services Code (USA)
RCM	Resolution of the Council of Ministers (Portugal)
SIMAP	Système d'Information pour les MArchés Publics (EC) Information about European public procurement
SMS	Short Message Service
SWG-A	Special Working Group - Accessibility (of ISO/IEC Joint Technical Committee 1)
TCHF	Technical Committee Human Factors
TED	Tenders Electronic Daily
TEITAC	Telecommunications and Electronic and Information Technology Advisory Committee
TISPAN	Telecommunications and Internet converged Services and Protocols for Advanced Networking
TSC	Technical Standards Catalogue (UK)
UAAG	User Agent Accessibility Guidelines (of W3C)
UI	User Interface
UMIC	Unit of Mission, Innovation and Knowledge (Portugal)
UNDP	United Nations Development Programme
UNSPSC®	United Nations Standard Products and Services Code®
USO	Universal Service Obligation
VoIP	Voice over IP
VPAT™	Voluntary Product Accessibility Template™

W3C	World Wide Web Consortium
WAI	Web Accessibility Initiative (of W3C)
WCAG	Web Content Accessibility Guidelines (of W3C)
WTO	World Trade Organization
EIT	Electronic and Information Technolog
PPC	Public Procurement Code
EPG	Electronic Program Guidance
WAG	Web Accessibility Guidelines
TSP	Telecommunication Service Providers

4 Approach, methodology and contexts of use

4.1 Approach and methodology

To generate an inventory of ICT products and services together with a listing of the functional accessibility requirements of those products, two approaches were investigated:

- The first was by listing products, identifying them by Common Procurement Vocabulary (CPV) code and associating the necessary requirements with each product.
- The second approach was to take a user centred approach by identifying the user's requirements for each feature of a product and subsequently applying these requirements as necessary to any product having the relevant feature.

There are over 100 ICT product categories or products identified in the CPV code list as the first approach would require together with 150 known user requirements to be to be dealt with. To map the products and requirements to each of these needs would require the listing and checking of at least 15 000 requirements. Furthermore the CPV codes are under review at present.

It was considered that the user needs for a product feature (for example, a display), would be similar for any products with that feature and so it was considered most efficient to address the functional requirements of features of products rather than attempt to generate a listing of all possible CPV codes for products that might contain a display, so as to limit the effect of this combinatorial complexity issue. A further complexity was caused by the trend towards digital convergence which makes it impossible to distinguish whether a feature apparent to a user is provided by software within a product or by some service to which that product might be connected.

Therefore this second approach, basing the requirements on the users needs and features rather than on technology, as was done in the ETSI Design for All guide EG 202 116, [i.32] is the approach taken in the present document.

The present document lists a set of user needs determined from the UN convention on the rights of persons with disabilities [i.156] and from a number of International standards. These user needs are then mapped to the functional requirements for features and facilities of ICT products.

This mapping demonstrates that there is sufficient information available to create a single European norm which addresses the majority of identified user needs and which contains requirements which are demonstrable and testable. No existing set of standards currently exists which could fill that role.

For the few remaining user needs, some new work may be necessary. This work is discussed in clauses 10 and 11.

4.2 User abilities and impairments

For the purposes of the present document, human ability is broadly grouped into two broad classes:

- physiological variation; and
- psychological variation.

Within each class, there are multiple kinds of variation. Each individual will have different levels of ability along all of these axes, furthermore these levels will vary throughout their lifetime. Sometimes a level may drop temporarily, for example due to accident or fatigue, sometimes a level may be affected by external environment, such as a noisy street.

Many facilities will be affected as an individual ages, and sometimes a capability will be permanently absent or reduced.

In the context of physiological variation, ICT products and services can further be distinguished between sensory input mechanisms, particularly vision, hearing and touch (other sensory modalities are not typically used in ICT products at this time), and control systems, which are currently primarily physical motor interaction, and verbal communication.

Psychological variation is much more difficult to generalize with respect to the use of ICT products, because there are such a wide variety of issues. Some of them are quite poorly understood today (although current, focused research activities addressing e.g. cognitive disabilities are underway), and a very wide range of disabilities need to be addressed, from dyslexia to learning difficulties. There are also a class of issues which are not directly related to an impairment as such, but more environmental (e.g. older people, especially after they leave the workforce, may not be exposed to the continual rapid change in technology advancement, therefore even though they may be highly intelligent and capable in general, they may not learn the mental concepts necessary in order to understand the principles behind a newer class of ICT product and thus be placed at a disadvantage or entirely blocked from access). Similarly, a sensory impairment such as being deaf from birth, may have affected the nature of language acquisition in early childhood, so that as an adult reading for example may be more difficult, even though the individual has no intellectual impairment.

When two or more impairments occur at the same time, e.g. mental retardation and blindness or a learning disability and an orthopaedic impairment, multiple disabilities need to be addressed. Complex disabilities (referring to the presence of sensory, physical or neurological problems in people with intellectual disabilities) includes people who have complex medical needs, some of whom are dependent on (ICT) technology. These conditions may have the same or similar causes as intellectual disabilities, or may be completely unrelated. Additional impairments typically have profound impacts, not only on people's functioning, but on the responses of appropriate services.

Last but not least, there may be other factors negatively influencing the use of ICT, such as low literacy and limited language proficiency, that may also apply to and limit ICT use in both children and adults.

These more complex interactions are taken into account in the World Health Organisation's International Classification of Functioning, Disability and Health (the ICF) which is based on the biopsychosocial model, taking into account both the health condition and the contextual factors.

4.3 Contexts of use and user roles

According to ISO 9241-11 [i.83], context(s) of use involves users, tasks, equipment and the physical and social environments in which a product is used. The document provides guidance on the identification of the context of use.

ISO/FDIS 9241-20 [i.85] stresses that attention should be paid to identifying the range of user characteristics found in the user population. Furthermore, in order to ensure accessibility, it recommends to:

- understand and specify the context of use, taking into consideration the variation of user characteristics and the impact of tasks, equipment and environmental characteristics that affect accessibility;
- identify, study and specify the users' needs for accessibility;
- develop design solutions taking accessibility considerations into account; and
- evaluate design solutions with users whose characteristics reflect the targeted user groups.

Public procurement is performed for ICT products and services used during:

- corporate use (typically addressing "white collar employees");
- professional use including maintenance (typically addressing "blue collar employees"); and
- consumer use (typically addressing non-employee (or consumer) use during leisure time);
- as well as combinations of the above.

In order to take a forward-looking view on the accessibility and related requirements applicable to publicly procured ICT products and services, it is important to consider how and with whom in focus public authorities procure ICT in order to improve the quality of life of people (e.g. bus tickets bought through SMS or vending machines, Kindergarten and school choices made through the Web from Public Internet Access Points (PIAPs), smart cards used in eHealth, eGovernment, personal identification or transportation). Professional, consumer and combined use is considered below.

4.3.1 Professional use

Access is required for employees of any contracting authority (as defined in Directive 2004/18/EC [i.25]) who have disabilities, as well as for members of the public seeking information or services from that authority, which is comparable to the access and use by authority employees or members of the public who are not individuals with disabilities.

In this area, efficiency as well as basic access is important. If a person with a disability can access the technology necessary to perform work but their use is considerably slower than their colleagues (and the use of the technology occupies a significant portion of their workload and mental capacity), then they may be unable to keep pace with their colleagues.

Furthermore, dedicated set-up and configuration procedures may be necessary to ensure fair and equal access.

In the USA, in the current Section 508 [i.152], there are certain exceptions to universal access in public procurement, for example, in Intelligence and Security systems. Some exceptions are covered by specific legislation elsewhere and this conflicts with a desire within Europe to ensure that there are no exceptions to the provision of accessible ICT. Such anomalies need to be investigated and resolved in the Phase II work.

4.3.2 Consumer use

Consumer's role differs as they use ICT for non-professional, private purposes, typically also covering all involved costs. However, many of the public services offered by the authorities directly address users in their pure consumer (or sometimes, combined) role.

ICT plays an increasingly important role in the daily activities of many people and promises a world where ICT resources improve further the quality of life.

The capabilities offered by ICT evolve continuously and are becoming mass-market while at the same time offering an increasing number of complex tasks and services. Connectivity and interoperability between communication networks, personal computing, the Internet, and ever-smarter mobile devices and services offer enormous potential for improving life. However, there is concern about whether these new products, services and their content will be fully usable and accessible to all people. An effective *e*-Society relies on the fact that *all* citizens are granted access. Users who cannot get over the hurdle of the first installation of their devices and services will perpetually be excluded from the *e*-Society.

Accessible ICT can also reduce the load on secondary users such as parents or caregivers, reducing dependencies and the costs of living and increasing the time that a person with a severe disability can live independently.

4.3.3 Combined use

Increasingly, ICT products and services are used by people both in professional and consumer roles, for a variety of reasons including familiarity, trust, availability and simplicity, extending the benefits of good accessibility from one area to another. Examples given may be mobile telephones, public ticket vending machines, information services or health and care services. It is therefore increasingly important to ensure that ICT products are developed and designed in an accessible manner, so that people with disabilities and elderly persons can use and profit from them in the same way as everyone else.

5 ICT products and services bought by public procurers

5.1 General

This clause provides a summary of national legislation on public procurement and an inventory of the ICT products and services that are typically procured in European Member States and EFTA countries. It is based on the detailed information provided in annex C.

In addition, it explains the structure of the CPV codes called up in the European Legislation in Public Procurement and set out in Regulation 2151/2003 [i.7] and describes how these were used in the analysis identifying the ICT products and services that are typically purchased by public procurers in Europe.

Furthermore, some useful information is provided on the public procurement at International level under the United Nations Development Programme and World Trade Organization that has some European relevance.

It concludes with details of ICT products and services bought by public procurers.

5.2 International

5.2.1 United Nations Development Programme (UNDP)

The United Nations Development Programme (UNDP) supplier code of conduct requires that suppliers do not discriminate in their hiring and employment practices on the grounds of physical ability or health conditions.

UNDP Procurement is based on competitive bidding. Depending on the type, complexity, size and value of the project and its procurement elements, commonly used methods of solicitation include a request for quotation, an invitation to bid and a request for proposal. In some cases, exceptions to competition are being made and direct contracting is used. This usually happens when a Long-Term Agreement (LTA) is in place, either globally or locally (at country office level). For values less than US\$2,500, country offices may engage in local shopping.

Depending on the procurement method, different factors take on the key role in the evaluation process. The price seems to be the most important element. In addition, UNDP evaluates its products and services based on a number of criteria (e.g. meet technical specifications, delivery, environmentally sound, quality assurance, accuracy of documentation, speed of response and customer service but not including accessibility).

More than 50 % of UNDP's procurement expenditure is spent on goods and services, 60 € million being for ICT related products and services. However, there does not appear to be any clear requirement to procure accessible ICT products and services.

5.2.2 World Trade Organization (WTO)

The World Trade Organization (WTO) Agreement on Government Procurement (GPA) offers any supplier from EU and EFTA countries full access to the public procurement markets of the other GPA Parties (e.g. USA, Japan, Canada, etc.). This implies that accessibility requirements that exist in certain countries (e.g. the US and Canada) need to be met for exports to those countries.

5.3 European

5.3.1 European legislation

The main European Legislation framework on public procurement comprises two directives:

- Directive 2004/17/EC [i.24] coordinating the procurement procedures of entities operating in the water, energy, transport and postal service sectors; and
- Directive 2004/18/EC [i.25] on the coordination of procedures for the award of public works contracts, public supply contracts and public service contracts sets out the rules for awarding contract within Europe.

Annexes of these Directives have minor amendments in Directive 2005/51/EC [i.26].

Both of these Directives require transparent purchasing procedures which are required to identify the product areas involved by reference to the Common Procurement Vocabulary (CPV) nomenclature. These procedures are required to use standard forms established in Commission Regulation (EC) No 1564/2005 [i.8]. In practice, the Directives lay down financial limits below which regulation does not apply.

Both of these Directives have now been amended by Commission Regulation (EC) No 213/2008 [i.10]. This Regulation aims to increase the user friendliness of the CPV by making it less material-driven and more product-driven. To ease the reading and understanding of the scope of legislation in Directives 2004/17/EC [i.24] and 2004/18/EC [i.25], their annexes have been amended to reflect the changes in the CPV codes without any material effect on the scope of the Directives themselves.

The Supplementary vocabulary contained in the annexes has been entirely revised to provide a logical structure divided into groups that can be used to simplify contract drafting.

Commission Regulation (EC) No 213/2008 [i.10] also amends Commission Regulation (EC) No 2195/2002 [i.6], by annexes which show the correspondence between the CPV codes and the CPC Prov (the Provisional Central Product Classification of the United Nations) with NACE Rev1, (the General Industrial Classification of the European Communities) and with the Combined Nomenclature (CN).

5.3.2 CPV structure

Products and Services that are procured in Europe are classified in accordance with the Common Procurement Vocabulary (CPV) that is set out in Commission Regulation (EC) No 2151/2003 [i.7] which amends Commission Regulation (EC) No 2195/2002 [i.6]. These codes are published on the EU's public procurement portal SIMAP [<http://simap.europa.eu/>]. The Regulation standardizes public procurement throughout the European Community by using a single classification system which uses the same description for goods and the same corresponding alphanumeric code.

This aims to make it possible to overcome language barriers in the harmonization of procurement procedures throughout the European Community and to make the whole process more transparent.

All public contracts are required to indicate the CPV codes they refer to. Within Europe, according to the Directive 2004/18/EC [i.25] all purchases of ICT products and services of total net value above 162 000 € are subject to public contracts and are required to reference the appropriate CPV codes. This financial limit is subject to a regular review based upon the value of the Euro, and currently stands at 133 000 € [i.9].

The CPV consists of a main vocabulary for defining the subject of a contract, and a supplementary vocabulary for adding further qualitative information. The main vocabulary is based on a tree structure comprising codes of up to 9 digits (an 8 digit code plus a check digit) associated with a wording that describes the type of supplies, works or services forming the subject of the contract. Unfortunately there appears to be no formal description of the detailed structure, but it can be deduced from the examples given.

The first two digits identify the divisions (**xx**000000-**y**), e.g.:

- 30000000-9 is Office and computing machinery, equipment and supplies.

The first three digits identify the groups (**xxx**00000-**y**), e.g.:

- 30100000-0 is Office machinery, equipment and supplies except computers; and
- 30200000-1 is Computer equipment and supplies.

The first four digits identify the classes (**xxxx**0000-**y**), e.g.:

- 30210000-4 is Data-processing machines (hardware); and
- 30230000-0 is Computer related equipment.

The first five digits identify the categories (**xxxxx**000-**y**), e.g.:

- 30231000-7 is Computer screens and consoles; and
- 30232000-5 is Peripheral equipment.

Finally, each of the last three digits gives a greater degree of precision within each category and the ninth digit is a verification digit. The above codings permitted the identification of the ICT products and services that could be considered in the analysis of products procured within Europe.

5.3.3 CPV codes considered

All of the public contracts awarded in all the Member States and EFTA countries and listed in Tenders Electronic Daily (TED) since 2004 were reviewed and those that deal with the following broad categories were identified:

- Office and computing machinery, equipment and supplies (CPV code: 30000000-9).
- Electrical machinery, apparatus, equipment and consumables (CPV code: 31000000-6).
- Radio, television, communication, telecommunication and related equipment and apparatus (CPV code: 32000000-6).

Based on the identified CPV codes and related public contracts awarded in Europe, the ICT product categories that are purchased through public contracts in Europe were determined. The identified list is presented in annex B.

The information derived from TED may involve some double counting when a product can be counted both in a group and in a sub-group. Also there are differences between national arrangements for the delegation of purchasing powers which may affect the level of reporting due to the resultant difference in size of the contracts.

The main CPV categories that are related to ICT services and support were noted as being:

- 50960000-2: Installation Services of computers and Office Equipment.
- 50961000-9: Installation service of computers and information processing equipment.
- 50961110-3: Hardware installation services.
- 72253000-3: Helpdesk and Support services.
- 72253200-5: System Support Services.
- 72254000-0: Software testing and maintenance services.
- 72254100-1: System Testing services.

It was not felt worthwhile to analyse the service codes in any more detail as in general they are associated with product purchases.

5.4 National studies

5.4.1 General

The major Directives on public procurement were not published until the year 2004. The transposition of these Directives into National legislation has taken some time and so in many countries, information on National procurement does not yet exist. This has made it difficult to obtain information on the products and services procured in many countries. This difficulty has been compounded by differences in National procurement organization and responsibilities.

This information was obtained by contacting over 270 individuals listed in the European Public Procurement Network who were invited to provide national information addressing:

- Existing ICT procurement requirements that address accessibility.
- An inventory of publicly procured ICT products and services.

The feedback received from procurement contacts and stakeholders regarding the types of ICT products and Services that are typically procured in each European country was unexpectedly minimal. The lists of individuals was understood to be up-to-date and despite a small number of returned e-mails ("recipient unknown"), the overall response rate was low. A log was maintained of all emails sent and the responses received. Where possible the information received was checked against government Web sites before being incorporated into the draft.

The same respondents were again contacted via e-mail when the second public draft was available and each was provided with the information pertaining only to their own country. They were asked to review and confirm (or correct) the information. The responses returned came from the same respondents who replied to the first email approach.

Other sources of information used to gather the information included here, were:

- Government Web sites.
- Known individuals and contacts involved in ICT accessibility.
- Various consultants' reports, including the Measuring Progress of *e*Accessibility in Europe (MeAC) study [i.27], for which permission was provided to re-use.

Overall the information obtained was rather limited since it depended on the level of feedback received from the key stakeholders but it is representative for the country concerned. The information that was received from Cyprus, Spain, Sweden and UK was in an unstructured format and from Estonia and Lithuania in a CPV format.

The detailed results of the National studies may be found in annex C.

5.4.2 Types of ICT services and products procured

It is found that all traditional ICT devices and services for both fixed and wireless and mobile network access are among the 20 most popular items procured according to the EC procurement directives. The dominating kinds of mainstream devices and services procured are:

- Computers.
- Telecommunications equipment.
- Telecommunications services.
- Computer accessories.
- Network components.
- Software.
- IT services.
- Web information.
- Web based applications.
- Web design services.

An increase in the accessibility requirements on these products and services would be expected to result in a good general increase in accessibility to ICT.

5.4.3 Procured mainstream products and services with accessibility requirements

In the scan for procurement of mainstream products and services with accessibility requirements included in procurement there were much fewer hits. The following were found:

- ATMs with accessibility features.
- Emergency services with textphone access.
- Information services in local travel services.
- PA systems with inductive loops for hearing aid coupling.
- PA systems with IR and radio transmission.

- Sign language interpretation in TV transmission.
- Telecom services with accessibility features.
- Text telephony access to the authority included in general telecom procurement.
- Texting services for TV transmission.
- Web information accessibility review.
- Web information accessibility revision.
- Web information provision.

5.4.4 Specific accessibility procurements

From the studies reported in annex C it was found that there are many products and services procured specifically as accessible or assistive technology devices and services. They dominate the tangible results of accessibility procurements in Europe today. In this area, the following types of services and products are procured:

- Accessible Web sites.
- Alarm phone systems for older people and people with disabilities.
- Alerting equipment for accessible telecommunications.
- Assistive technology for computer and communication use for people with low vision.
- Braille printout of authority information on request.
- Communication services for deaf-blind people.
- Communication assistive technology for deaf-blind users.
- Communication assistive technology for people with low vision.
- Computer assistive technology for people with low vision.
- Doorphones for deaf-blind users.
- Fax reading services for users with low vision.
- Free phone directory services.
- Gateway services between PSTN text telephony and IP text communication.
- Gateway services between video telephony in 3G and the Internet.
- Hearing support systems for local hearing.
- IP text communication systems.
- Listening support devices.
- Memory support equipment for people with cognitive disabilities.
- Mobile text telephony services.
- Navigation support for people with low vision.
- Sign language information in the web.
- SMS access to emergency services.
- Speech-to-speech relay services for people with speech impairments or cognitive disabilities.

- Text relay services.
- Text telephones.
- Total conversation devices.
- Total Conversation relay services (for sign language and text).
- Video relay services.
- Videophones for sign language.
- Videophones for users with cognitive disabilities.

5.5 Summary and conclusions

The main products and services purchased through government procurement services have been determined:

- 1) through the study of the codes listed in Tenders Electronic Daily (TED); and
- 2) through questioning of national representatives throughout Europe and in other countries.

An informal listing derived as the outcome of both methods 1 and 2 gives:

- Computer hardware:
 - personal computers and workstations, laptops and portable computers, displays, monitors, keyboards.
- Photocopying and printing equipment:
 - printers, color photocopiers, copying equipment, scanners.
- Telecommunications equipment:
 - facsimile equipment, networking equipment, telephone equipment, switchboards, wireless telecommunication systems, mobile phones, multimedia, television and audio-visual equipment, video conferencing equipment.
- Software:
 - upgrades, mainframe software, operating systems, application software (e.g. anti-virus, database, email systems, etc.).
- Installation/configuration/Set-up Services.
- Maintenance Services/ Upgrade services/Customization.
- Telecommunication services (e.g. fixed and mobile telephony).

TED can provide an open and transparent record of products and services purchased by Government agencies. The level of information varied significantly between countries, the difference to some extent reflecting the relative maturity of national procurement legislation.

Furthermore it was found that there is an interesting condition distorting this procurement information. In many countries the national regulator uses the obligations of the Universal Service Directive [i.23] to mandate the provision of accessible products and services by an operator with significant market power. This generates a hidden procurement-like situation without any payment appearing between a Government and the affected telecom operator. It was also found that there are differences in the level of obligation demanded in different countries.

It has been noted in Sweden that there is growing tendency to procure package solutions combining services and products. Such a move would affect procurement by making awarding of contracts dependant on the evaluation of suppliers' capacities and abilities to address overall accessibility solutions, rather than specific attributes of the solutions' individual elements. Leaving the responsibility for accessibility details to the supplier without specifying the individual elements leaves a significant risk of missed requirements and inaccessible deliveries outside the control of the procurers.

6 Existing functional accessibility requirements for public ICT procurement

6.1 General

This clause describes studies into existing functional accessibility requirements in EU Member States and internationally for those ICT products and services within each technical area, particularly those currently in use in public procurement. The requirements cover the concepts of "Design for All" and "Assistive Technology".

This section contains information on existing functional accessibility requirements for public ICT procurement that apply at International and European level as well as at a national level in Europe and also in Australia, Japan and the USA. There are also instances where regional guidelines have been developed and have been transformed into national requirements (e.g. see clause 6.3 for further details about Nordic guidelines).

6.2 International requirements

The United Nations' (UN) "Convention on the Rights of Persons with Disabilities" [i.156] and its "Optional Protocol" was adopted on 13 December 2006 and was opened for signature on 30 March 2007. It aims to "ensure the full and equal enjoyment of all human right and fundamental freedoms by all persons with disabilities". Article 4.1(a), places obligations on member states to adopt all appropriate legislative and other measures for the implementation of the rights recognized in the convention.

This is enlarged upon in Article 9.1 requiring states to "take appropriate measures to ensure to persons with disabilities access on an equal basis with others to --- information and communications technologies and systems --- provided to the public".

These measures are required to include in (b), "information, communication and other services, including electronic services and emergency services".

In article 9.2, States Parties are required to take appropriate measures to "develop, promulgate and monitor the implementation of minimum standards and guidelines for the accessibility of facilities and services open or provided to the public".

In article 19, States are called upon to ensure that "Community services and facilities for the general population are available on an equal basis to persons with disabilities" and Article 21 requires information for the general public to be provided to persons with disabilities in accessible formats, mentioning in particular Braille and sign language.

These obligations are dealt with in detail in clause 8.2 of the present document

This Convention builds on the Standard Rules on the Equalization of Opportunities for Persons with Disabilities adopted by the UN General Assembly in 1993 which represented a strong moral and political commitment from governments to take action to attain equalization of opportunities for persons with disabilities.

Further to the above, international and regional standardization institutes (with a global outlook), such as the International Organization for Standardization (ISO), the International Telecommunication Union (ITU), the European Telecommunication Standards Institute (ETSI), CEN/CENELEC, ISO and industrial fora and consortia such as the GSM Association, the Third Generation Partnership Project (3GPP) and TISPAN (Telecommunications and Internet converged Services and Protocols for Advanced Networking), the IETF (Internet Engineering Task Force) and the World Wide Web Consortium (W3C) have developed generic and/or specific requirements, guidelines and specifications, applicable to some extent to this work. Many of these documents are referenced in other clauses of the present document.

6.3 Intra- and pan-European requirements

The Nordic Forum for Telecommunication and Disability (NFTH) offers an example of regional collaboration. It is an agency established in 1987 by the Nordic Cooperation on Disability (NSH), under the Nordic Council of Ministers. The NFTH now works for NUH, the Nordic Development centre for rehabilitation technology. The NFTH has produced a number of guidelines, many of which were developed into national requirement after an adoption process.

Amongst these guidelines are:

- The Nordic guide to text telephony [i.147].
- The Nordic guidelines for telecommunications relay services for text telephones [i.149].
- The Nordic guide to video telephony and video relay services [i.148].

Within Europe, ETSI has led much of the work on standardization in the area of disability and design for all in the area of ICT and many of the resulting standards are identified in clause 7.3. CEN and CENELEC have also contributed accessibility requirements in some fields such as smart cards and digital television.

Further to this, the European Commission has, through its ambitious action plans and initiatives (such as the eEurope 2002 and 2005 Action Plans and the i2010 Initiative) consistently focused on contributing to the creation of standards, guidelines and technical reports necessary for the implementation of an all-accessible, e-Inclusive Information Society. ETSI has played an important role in this process, through its Technical Committee Human Factors (TCHF) and others.

6.4 EU and EFTA Member state requirements

6.4.1 Approach

Identification and collection of existing functional accessibility requirements in EU Member States and EFTA countries for those ICT products and services within each technical area that are normally procured by the public organizations follows the following approaches:

- Identification of key players in the public procurement area and individual communication with each one of them for investigating current functional accessibility requirements of ICT products that are normally procured by public authorities.
- Utilization of existing knowledge within the STF team regarding existing functional eAccessibility requirements of ICT products procured in various member states.
- Identification and utilization of external information sources that had some relevant information like European and National studies and reports, Internet sites and publications.

As a result, individual information per European Member State and EFTA country has been collected, analysed and presented in annex D. Conclusions with the main outcomes follow in the next clause.

6.4.2 Conclusions

Related information for each member state and EFTA country is detailed in annex D. In general, the main existing accessibility requirement in EU member States and EFTA countries concerns the Web accessibility of either existing or new public Web sites. More specifically, 11 countries (Austria, Denmark, France, Germany, Ireland, Italy, Lithuania, Netherlands, Portugal, Spain, UK) have already established a legal framework that regulates public governmental Web sites to be accessible within specific time frames.

There are other countries that although they have not established a legal framework for requiring the accessibility of their public Web sites, do encourage the adoption of Web accessibility standards for their sites such as the W3C/WCAG through various actions such as including those requirements in public contracts, providing recommendations, guidelines and support, giving good examples to follow, issuing policies etc. These countries are Belgium, Cyprus, Estonia, Finland, Greece, Hungary, Iceland, Luxemburg, Malta, Norway, Poland, Slovenia, Sweden, and Switzerland.

There are also some countries that have either followed rather limited or no steps towards Web accessibility of their public Web sites. These countries are Latvia, Liechtenstein, Slovakia, Romania, and Bulgaria.

As regards any other functional accessibility requirements for ICT products and services, there is rather limited progress. There is no legal obligation to procure accessible ICT product and services other than to some degree in Italy and Spain. In Italy, the functional accessibility requirements for ICT products and services that are procured are based on W3C/WAI guidelines and on the American Section 508 requirements.

In Spain the following national standards are included in the procurement legislation by Royal Decree 1494/2007:

- UNE 139803:2004 (Web content) [i.159] is referred to as mandatory for public Web sites according to article 5 of the basic accessibility conditions.
- UNE 139801:2003 (Hardware) [i.157] and UNE 139802:2003 (Software) [i.158] are referred to as examples of standards for hardware and software accessibility, but preference is given to international or European standards (although none is cited because none existed at the date of writing the Royal Decree).

Some countries such as Denmark and Ireland have developed through their governmental agencies procurement toolkits that can support public procurers to include accessibility considerations when they procure ICT products and services.

More specifically, the Danish Toolkit includes functional requirements for ICT procurement based mainly on the following standards and recommendations.

For Hardware:

- "Section 508 [i.152] of the Rehabilitation Act of 1973, § 1194.26 Desktop and portable computers".
- "Section 508 [i.152] of the Rehabilitation Act of 1973, § 1194.25 Self contained, closed products".
- "Guidelines for Procurement of Accessible Personal Computer Systems" EU project ACCENT.
- ITU-T Recommendation E.161 [i.122] (02/2001): "Arrangement of digits, letters and symbols on telephones and other devices that can be used for gaining access to a telephone network".

For software applications and operating systems:

- "Section 508 [i.152] of the Rehabilitation Act of 1973, § 1194.21 Software Applications and Operating Systems".
- "Section 508 [i.152] of the Rehabilitation Act of 1973, § 1194.22 Web-based intranet and internet information and applications".
- "IBM Software Accessibility Checklist v. 3.1".
- "Irish National Disability Authority IT Accessibility Guidelines v. 1.1, Application Software".
- "Guidelines for Keyboard User Interface Design" from Microsoft.
- "Authoring Tool Accessibility Guidelines 1.0" from W3C/WAI".

For Web based Internet information and applications:

- "Section 508 [i.152] of the Rehabilitation Act of 1973, § 1194.22 Web-based intranet and internet information and applications".
- "Section 508 [i.152] of the Rehabilitation Act of 1973, § 1194.21 Software Applications and Operating Systems".
- "Web Content Accessibility Guidelines 1.0" from W3C/WAI.
- "The Danish Governments guideline for Public Homepages".
- "Accessibility Design Guidelines for the Web" from Microsoft.
- "Creating Accessible PDF's with Special Consideration for Publication Release Notices".

In addition, the Irish toolkit provides guidelines for ICT Accessibility that have been analysed and considered in clause 9. The toolkit provides support for procurers, developers and Web accessibility auditors. These recommendations are outlined below:

- Web accessibility guidelines, which use the W3C/WCAG 1.0 and cover all information and services delivered via the World Wide Web or using HTML, including Web sites and online applications. They describe three priority levels.
- Public access terminal guidelines, which cover all information and services delivered by means of Public Access Terminals such as ATMs (Automated Teller Machines), Information kiosks, Ticket vending machines and so on.
- Smart card accessibility guidelines, which cover all information and services delivered using Smart Cards and related media. They define two priority levels.
- Application software accessibility guidelines: These guidelines cover application software running under any operating system or runtime environment such as Windows, Macintosh, Unix, Linux, Java. They define two priority levels.
- Telecoms accessibility guidelines: These guidelines cover fixed or mobile telecommunications devices and services delivered via Interactive Voice Response (IVR) systems. This includes the hardware and software aspects of public or private telephones and videophones and menu-based services such as voicemail. They define two priority levels.

However, it is useful to note that there is no legal obligation in Denmark nor in Ireland for the use of these toolkits in public procurement. They are purely voluntarily and supportive.

6.5 Other national requirements

Requirements for Australia, Japan and the United States are given in annex D.

6.6 Summary and conclusions

It is evident that there have already been some steps forward to advance *e*Accessibility in public procurement. At an International level, the UN convention advances measures that promote *e*Accessibility to information, communications and other services, including electronic services and emergency services.

At an Intra-European level, the Nordic Forum for Telecommunication and Disability provides guidelines and recommendations related to *e*Accessibility. International and European standardization bodies have produced or are working on standards and recommendations related to *e*Accessibility that can be applied in public procurement. These standards have been identified and considered in other clauses, such as in clauses 7 and 9.

Related information for each member state and EFTA country is detailed in annex D. In general, the main existing accessibility requirements in EU member States and EFTA countries refer to the Web accessibility of either existing or new public Web sites. There are some countries that mandate the accessibility of the Web sites of their public organizations. Others that advance Web accessibility but not within any legal framework and a few with no particular evidence of Web accessibility.

Furthermore, two European countries (Italy and Spain) mandate accessible ICT procurement based on international, European and national standards. There are also two countries (Denmark and Ireland) that have developed public procurement toolkits that enable procurers to address accessibility requirements in their procurement procedures on a voluntary basis.

Outside Europe, Australian Commonwealth departments and agencies are required by the Disability Discrimination Act 1992 to ensure that online information and services are accessible by people with disabilities. In Japan, products and services supplied to the government "must" (see Foreword) have considered ICT accessibility based in a series of existing standards. In the USA, the requirements for accessibility are set out on the Code of Federal Regulations (in CFR 36, Part 1194). These are currently being reviewed and updated under the "Section 508 Refresh" and have been considered thoroughly by several clauses in the present document.

7 Relevant European and international standards

7.1 General

This clause provides a list of existing national, European and international standards and technical specifications (in the sense of Directive 98/34/EC [i.21]) that might provide those functional accessibility requirements.

Within the definitions of Directive 98/34/EC [i.21], a national standard is "a standard adopted by a national standardization body and made available to the public". A European standard is "a standard adopted by a European standardization body and made available to the public" and an international standard is similarly "a standard adopted by an international standardization organization and made available to the public".

A technical specification is "a specification contained in a document which lays down the characteristics required of a product such as levels of quality, performance, safety or dimensions, including the requirements applicable to the product as regards the name under which the product is sold, terminology, symbols, testing and test methods, packaging, marking or labeling and conformity assessment procedures".

CEN, CENELEC and ETSI are recognized as European standardization bodies in annex I of the Directive which also gives a list of National standardization bodies in annex II.

7.2 Standards identified

Over 50 international and de facto standards published by the IEC, the ISO, the ITU-T and W3C were identified that might provide information on accessibility compliance. They are all detailed in clause E.1 together with a brief outline of their scope.

Over 20 European relevant standards were found, published by ETSI, CEN and CENELEC. They are also detailed in clause E.2.

Some 30 other national standards were noted that were relevant to the work. They are listed in clauses E.3 and E.4.

Due to their cost, it was not found possible to obtain copies of all of these standards. As many as possible were consulted to generate the functional requirements list set out in clause 9. All of the standards actually consulted during this process are listed in clause 9.11.

7.3 Summary and conclusions

The international and regional Standards Development Organizations have produced a large number of documents related to accessibility. These standard documents provide a valuable source of information to use when specifying functional requirements on products and services to be procured.

Nearly 80 accessibility related basic functional requirements are identified in the clause 9 dealing with requirements, and since each requirement are required to be fulfilled in a large number of goods and services, it is evident that an even larger number of resulting standards could be needed to describe the requirements to a satisfying degree. Over 100 documents dealing with accessibility related functions were identified in this study and these did not cover all of the functional requirements.

This huge list of requirements and standards may be overwhelming for those working with specifications for procurement who also have many other aspects than accessibility to consider. It seems inevitable that some practical guidance is needed to pick the best suited applicable standards for reference in procurement documents. Some countries have introduced a toolkit for retrieval of requirements and standards for the application at stake. That approach seems to provide one possible resolution for this task.

It should though be remembered that new ways to operate ICT are being created continuously, and that there will appear new ways to fulfil the user needs. New standards will be needed to harmonize such new features, and they need to be incorporated into tools for selecting requirements and standards. Thus the list of standards needs to be a living list with proper maintenance.

8 ICT user requirements and mapping

Clause 8 identifies existing documentation of user needs of people with disabilities, and is drawn from the following documents (avoiding duplication):

- work being carried out in ISO/IEC JTC1 SWG-A as ISO/IEC PDTR 29138-1 [i.118];
- the UN Convention on the Rights of Persons with Disabilities [i.156]; and
- EG 202 320 [i.36] DUST.

It maps the user needs identified in these documents to a list of relevant functional requirements that are listed in clause 9.

It identifies gaps where user needs are not currently addressed by existing functional requirements. In specific areas such as web content, W3C standards (WCAG 2.0, UAAG 1.0, ATAG 1.0 - see [i.169], [i.170], [i.171], [i.172], [i.173] and [i.174]) address some of these gaps but obviously do not apply in a general manner. This partial cover occurs for the following user need identified as 2-8, 2-9, 6-14, 6-19, 12-1, 12-3, 12-11, 13-2, 13-3, 13-4, 13-5, 13-11, 13-12, 14-1, 16-7, 16-10.

Gaps are further expanded upon in clause 10 where the need for additional technical standards is discussed.

8.1 ISO/IEC PDTR 29138-1: User requirements mapping

8.1.1 Perception of visual information

Source: ISO/IEC PDTR 29138-1 [i.118], section 5.1.

User need ID	User need summary	Relevant functional requirement
1-1	Visual information also available in auditory form	9.2.5 Alternatives to Visual Information 9.4.3 Perceptual characteristics 9.4.6 Text Alternatives
1-2	Visual information also available in tactile form	9.2.5 Alternatives to Visual Information
1-3	Sufficient brightness for visually presented information (luminance for displays - illumination for printed)	9.3.1 Reflectance contrast
1-4	Sufficient contrast between all visual information and its background	9.4.2 Contrast
1-5	Any information (other than the colour itself) that is presented through colour to be also presented in another way that does not rely on colour	9.4.1 Colour
1-6	To change the colours of information	9.4.4 User preferences 9.4.5 Colour adjustment
1-7	Text readable with reduced visual acuity	9.2.7 Text Size 9.9.1 Accessible documentation
1-8	Information within viewable range of those of short stature or seated in wheelchairs	9.3.6 Installed or Free Standing Products 9.2.7 Text Size
1-9	To avoid reflective glare	9.3.1 Reflectance contrast
1-10	To avoid glare from excessive brightness (of material or surrounding)	9.3.1 Reflectance contrast
1-11	To pause, and re-play information presented using audio, video or animation	9.4.9 Pausing 9.4.31.5 User preferences
1-12	To perceive foreground visual information in the presence of background	9.4.2 Contrast 9.4.1 Colour

8.1.2 Perception of audio information

Source: ISO/IEC PDTR 29138-1 [i.118], section 5.2.

User need ID	User need summary	Relevant functional requirement
2-1	Auditory information also available in visual form	9.2.4 Alternatives to Audio Information 9.4.3 Perceptual characteristics 9.4.6 Text Alternatives 9.4.31.5 User preferences 9.10.4 Accessible content
2-2	Auditory information also available in tactile form	9.2.4 Alternatives to Audio Information in combination with 5.2.5 Alternatives to Visual Information 9.4.6 Text Alternatives 9.10.4 Accessible content
2-3	To adjust the volume to a suitable level	9.3.7.5 Volume (gain) - covers speech Non speech audio gain - potential gap
2-4	Auditory events, alerts etc, be multi-frequency	Potential gap - see clause 10
2-5	When vibration is used as a substitute for different auditory events, then some need vibration to have different vibration patterns (rather than vibration frequency or strength)	Potential gap - see clause 10
2-6	Multi-channel auditory information available in monaural form	Potential gap - see clause 10
2-7	To pause, and re-play audio information	9.4.9 Pausing
2-8	To perceive foreground audio information in the presence of background (including ambient noise)	Potential gap - see clause 10
2-9	To adjust the audio characteristics (e.g. pitch, balance)	Potential gap - see clause 10

8.1.3 Perception of available actions

Source: ISO/IEC PDTR 29138-1 [i.118] section 5.3.

User need ID	User need summary	Relevant functional requirement
3-1	To locate and identify all keys and controls via non-visual means without activating them	9.3.3 Mechanical controls 9.4.3 Perceptual characteristics 9.3.4 Touch operation
3-2	To have non-actionable elements (logos, decorative details) not look or feel like buttons or controls	9.3.3 Mechanical controls
3-3	Sufficient landmarks to be able to quickly re-find controls tactilely during use	9.3.3 Mechanical controls
3-4	Controls that visually contrast with their surroundings	9.3.1 Reflectance contrast 9.3.3 Mechanical controls 9.4.2 Contrast
3-5	Controls to be in places where they can be easily found with low vision and with no sight	9.3.3 Mechanical controls
3-6	Controls within viewable range of people of short stature or seated in wheelchairs	9.3.3 Mechanical controls 9.3.6 Installed or Free Standing Products
3-7	Focus and pointing indicators that are visible with low vision	9.4.21 Focus indicator
3-8	Information describing the layout of the operational parts	Potential gap - see clause 10

8.1.4 Perception of signals

Source: ISO/IEC PDTR 29138-1 [i.118], section 5.4.

User need ID	User need summary	Relevant functional requirement
4-1	A non-visual equivalent to any visual indicators or operational cues, designed (power light) or intrinsic (e.g. visual movements)	9.2.5 Alternatives to Visual Information 6.4.3 Perceptual characteristics
4-2	A non-audio indicator for any auditory indicators or operational cues, designed (e.g. beeps, lights) or intrinsic (e.g. machine sounds, visual movements)	9.2.4 Alternatives to Audio Information 6.4.3 Perceptual characteristics
4-3	A non-tactile alternative to any subtle tactile feedback	9.3.3 Mechanical controls
4-4	Alternatives that are different, when different signals are used (e.g. different ring tones, or tactile or visual indicators)	9.2.4 Alternatives to Audio Information
4-5	Visual indicators (e.g. LEDs, on screen indicators, mouse cursors) that are visible with low vision	9.2.6 Colour 9.2.7 Text Size 9.4.20 Focus Indicator
4-6	Controls and indicators that are perceivable without relying on colour	9.4.1 Colour
4-7	Sufficient quality (e.g. volume, direction, clarity, frequency) for audio cues	Potential gap - see clause 10
4-8	Tactile indicators (i.e. for those who need indicator to be both non-visual and non-auditory)	9.2.4 Alternatives to Audio Information in combination with 9.2.5 Alternatives to Visual Information 9.4.6 Text Alternatives
4-9	Information within viewable range of those of short stature or seated in wheelchairs	9.3.6 Installed or Free Standing Products

8.1.5 Perception of feedback

Source: ISO/IEC PDTR 29138-1 [i.118], section 5.5.

User need ID	User need summary	Relevant functional requirement
5-1	Feedback to be audio or tactile (i.e. non-visual)	9.2.5 Alternatives to Visual Information 9.4.6 Text Alternatives
5-2	Feedback to be tactile (i.e. both non-visual and non-auditory)	9.2.5 Alternatives to Audio Information 9.4.6 Text Alternatives
5-3	A visual or auditory alternative to any subtle tactile feedback	9.3.3 Mechanical controls
5-4	Alternatives that are different, when different signals are used (e.g. different ring tones, or tactile or visual indicators)	9.2.4 Alternatives to Audio Information
5-5	Visual feedback that is obvious with low vision	9.2.7 Text Size 9.4.20 Focus Indicator 9.4.16 User Interface Components
5-6	Feedback that is perceivable without relying on colour	9.2.6 Colour
5-7	To adjust the colours to make things easier to read	9.4.4 User preferences 9.4.5 Colour adjustment
5-8	Sufficient quality (e.g. volume, direction, clarity, frequency) for audio feedback	Potential gap - see clause 10
5-9	Audio feedback that does not require tone differentiation	Potential gap - see clause 10 (see clause 5.2.2.1)
5-10	Visual or tactile feedback to occur at the same location as the control	Potential gap - see clause 10
5-11	Clear feedback of connector engagement (e.g. power cord, PC card, USB connector, etc.)	Potential gap - see clause 10

8.1.6 Performing actions

Source: ISO/IEC PDTR 29138-1 [i.118], section 5.6.

User need ID	User need summary	Relevant functional requirement
6-1	To operate all functionality using only tactilely discernable controls coupled with non-visual feedback	9.4.19 Keyboard operation - potential gap for products without keyboards 9.2.5 Alternatives to Visual Information 9.3.3 Mechanical controls 9.4.6 Text Alternatives
6-2	To access all functionality without having to use touch or very light touch activated controls	9.3.3 Mechanical controls 9.3.4 Touch operation 9.4.16 User Interface Components 9.4.21 AT Interoperability
6-3	To fully operate the product that does not require a pointing device	9.4.19 Keyboard operation 9.4.16 User Interface Components 9.4.21 AT Interoperability
6-4	To access all computer software functionality from the keyboard (or keyboard emulator) with only visual feedback	9.4.19 Keyboard operations
6-5	An alternative method to operate any speech controlled functions	9.2.8 Speech operation alternatives
6-6	A method to fully operate the product that does not require simultaneous actions	9.3.3 Mechanical controls
6-7	A method to fully operate the product that does not require much force	9.3.3 Mechanical controls
6-8	A method to fully operate the product that does not require much continuous force	9.3.3 Mechanical controls
6-9	A method to fully operate the product that does not require much stamina (includes sustained or repeated activity without sufficient rest)	9.3.3 Mechanical controls
6-10	A method to fully operate the product that does not require much reach (weakness, stature or wheelchair)	9.3.3 Mechanical controls
6-11	A method to fully operate the product that does not require tight grasping	9.3.3 Mechanical controls
6-12	A method to fully operate the product that does not require pinching	9.3.3 Mechanical controls
6-13	A method to fully operate the product that does not require twisting of the wrist	9.3.3 Mechanical controls
6-14	A method to fully operate the product that does not require direct body contact	Potential gap - see clause 10
6-15	A method to fully operate the product that does not require much accuracy of movement	9.3.3 Mechanical controls 9.4.31.5 User preferences
6-16	To adjust the speed and acceleration of input devices	9.3.3 Mechanical controls
6-17	To operate the product with only a left or only a right hand	9.3.3 Mechanical controls
6-18	To operate the product without use of hands	9.3.3 Mechanical controls
6-19	To operate the product using only speech	Potential gap - see clause 10
6-20	Alternatives to biometric means of identification	9.2.2 Biometric ID
6-21	Alternative modalities to text input	9.4.19 (non standard keyboard)

8.1.7 Time to complete actions

Source: ISO/IEC PDTR 29138-1 [i.118], section 5.7.

User need ID	User need summary	Relevant functional requirement
7-1	Much more time to read displayed information	9.4.18 Timing
7-2	Much more time to complete actions - and no feeling of time pressure	9.4.18 Timing
7-3	Information necessary to plan their actions in advance	9.4.26 Labels or Instructions
7-4	Ability to avoid visual or auditory distractions that prevent focusing on a task	9.4.12 Audio turn-off

8.1.8 Intentional activation

Source: ISO/IEC PDTR 29138-1 [i.118], section 5.8.

User need ID	User need summary	Relevant functional requirement
8-1	Products designed so they can be tactilely explored without activation	9.3.3 Mechanical controls 9.3.4 Touch operation
8-2	To operate controls with tremor or spasmodic movements without inadvertent entries	9.3.3 Mechanical controls 9.3.4 Touch operation
8-3	Controls that are not so easy to activate that they are activated by a slight brush of hand	9.3.3 Mechanical controls 9.3.4 Touch operation

8.1.9 Recovery from errors

Source: ISO/IEC PDTR 29138-1 [i.118], section 5.9.

User need ID	User need summary	Relevant functional requirement
9-1	Notification when the product detects errors made by the user	9.4.29 Error Identification
9-2	Unambiguous guidance on what to do in the event of a reported error	9.4.29 Error Identification
9-3	A means (e.g. a mechanism) to go back and undo the last thing(s) they did	9.4.31.3
9-4	To reset (to initial condition)	6.3.7.6 Volume reset 9.4.31.3

8.1.10 Security and privacy

Source: ISO/IEC PDTR 29138-1 [i.118], section 5.10.

User need ID	User need summary	Relevant functional requirement
10-1	Private listening capability, when using audio alternatives to visual information in public places	9.3.7.3 Audio connection
10-2	Protection of the privacy of their information, even if they are not able to do the "expected" things to protect it themselves	Potential gap - see clause 10
10-3	Security of their information, even if they are not able to do the "expected" things to protect it themselves	Potential gap - see clause 10

8.1.11 Safety

Source: ISO/IEC PDTR 29138-1 [i.118], section 5.11.

User need ID	User need summary	Relevant functional requirement
11-1	Products where hazards are obvious, easy to avoid, and difficult to trigger	Potential gap - see clause 10
11-2	Products that do not rely on specific senses or fine movement to avoid injury	Potential gap - see clause 10
11-3	To use products safely without seeing hazards or warnings	9.2.5 Visual information alternatives 6.3.7.6 Volume reset
11-4	To use products safely without hearing hazard warnings	9.2.4 Audio information alternatives
11-5	To avoid visual patterns that causes them to have seizures	9.3.2 Flashing 9.4.10 Flashing
11-6	To avoid auditory patterns that causes them to have seizures	Potential gap - see clause 10
11-7	Products that do not give off electromagnetic radiation that they are allergic to	ETSI does not consider this to be a safety issue
11-8	Products that do not give off chemicals that they are allergic to	Potential gap - see clause 10

8.1.12 Efficient operation

Source: ISO/IEC PDTR 29138-1 [i.118], section 5.12.

User need ID	User need summary	Relevant functional requirement
12-1	Alternate modes of operation that are effective given the time constraints of the task	Potential gap - see clause 10
12-2	Cursor movement that is controlled by keyboard to follow data entry or control order	9.4.19 Keyboard operation
12-3	To increase the rate of audio alternatives (unless there are minimal audio alternatives)	Potential gap - see clause 10
12-4	System level accessibility preference settings that apply across applications	9.4.4 User preferences
12-5	To have applications not override or defeat built-in accessibility features	9.4.17 Disruption of access features
12-6	Accessibility preference settings preserved unless explicitly changed	9.4.17 Disruption of access features
12-7	Preference settings to change immediately preferably without requiring system reboot	Potential gap - see clause 10
12-8	To save and restore individual preference settings	9.4.4 User preferences 9.4.31.5 User preferences (non visual)
12-9	Accessibility functions that can be returned to an initial state individually or together after each user	Potential gap - see clause 10
12-10	Hardcopy documents to be usable with one hand or mouth-stick	9.9.1 Accessible documentation
12-11	Structure when navigating long audio material	Potential gap - see clause 10

8.1.13 Understanding how to use

Source: ISO/IEC PDTR 29138-1 [i.118], section 5.13.

User need ID	User need summary	Relevant functional requirement
13-1	To get overview and orient themselves to product and functions/parts without relying on visual presentation or markings on product	9.2.5 Visual information alternatives 9.3.3 Mechanical controls
13-2	Wording, symbols, and indicators used on products that are as easy to understand as possible given the device and task	Potential gap - see clause 10
13-3	Products or services to use standard conventions, words and symbols for their culture (cross-cultural if possible)	Potential gap - see clause 10
13-4	Clear and easy activation mechanisms for any access features	Potential gap - see clause 10 (but see clause 9.5.3)
13-5	Navigation that supports different thinking styles	Potential gap - see clause 10
13-6	To understand product if they have trouble thinking hierarchically	Potential gap - see clause 10
13-7	Any text read aloud to them	9.2.5 Visual information alternatives 6.4.7 Human (natural) language 6.4.8 Language of parts 9.4.13 Reading sequence
13-8	Steps for operations that are minimized and clearly described	Potential gap - see clause 10
13-9	Interfaces that limit the memorization required of the user to operate them successfully	Potential gap - see clause 10
13-10	Cues to assist them in multi-step operations	9.4.25 Labels and instructions 9.4.26 Multiple ways
13-11	Simple interfaces that only require them to deal with the controls they need (advanced or optional controls removed in some fashion)	Potential gap - see clause 10
13-12	Each function on its own key rather than having keys change their functions but look/feel the same	Potential gap - see clause 10 (but see clause 9.4.11)
13-13	To know that a product is usable by them and how to set it up to work for them	Potential gap - see clause 10
13-14	Information presented in an alternative to text based representation	Potential gap - see clause 10 (but see clause 9.4.22)

8.1.14 Understanding output

Source: ISO/IEC PDTR 29138-1 [i.118], section 5.14.

User need ID	User need summary	Relevant functional requirement
14-1	Textual material to be worded as clearly and simply as possible	Potential gap - see clause 10
14-2	Text, illustrations and diagrams in spoken form	9.4.6 Non-text objects 6.4.7 Human (natural) language 6.4.8 Language of parts
14-3	To not have device noise or regular audio output interfere with ability to understand accessibility audio	9.4.12 Audio turn-off
14-4	Visual information generated by access features (such as captions) not to occur simultaneously with other visual information that they "must" (see Foreword) view	Potential gap - see clause 10
14-5	Image resolution and speed be sufficient to understand any sign language presented	9.7.5 Video support
14-6	To slow audio, video, or animated information down slightly	9.4.9 Pausing
14-7	To replay, pause, change speed in order to understand information	9.4.9 Pausing
14-8	To replay auditory information	9.4.9 Pausing
14-9	Enlargeable text word-wrap that stays on screen and is understandable	9.2.7 Text size 9.4.4 User preferences
14-10	Feedback using pictures or symbols	Potential gap - see clause 10
14-11	To silence audio output	9.4.12 Audio turn-off
14-12	Information presented in an alternative to text	Potential gap - see clause 10 (but see clause 9.4.22)
14-13	Textual information presented using figures of speech (such as abbreviations, idioms, metaphors, etc.) is also presented in a way that does not require understanding of those figures of speech	Potential gap - see clause 10
14-14	Information to be available regarding the meaning associated with colours and symbols	Potential gap - see clause 10 (but see clause 9.4.1)

8.1.15 Using assistive technology

Source: ISO/IEC PDTR 29138-1 [i.118], section 5.15.

User need ID	User need summary	Relevant functional requirement
15-1	That the product not interfere with AT	9.3.2.7 Interference with hearing device 9.4.17 Disruption of access features
15-2	To use their AT with the device (e.g. Alternate display, amplifiers, or alternate controls)	6.3.7.1 Magnetic coupling 9.4.22 AT interoperability
15-3	Full and efficient functional control of a product using their AT, including pass-through of user feedback and notifications such as error messages	6.3.7.1 Magnetic coupling 9.4.22 AT interoperability
15-4	An AT available that will work with new technologies, at the time of release of the new technology	9.4.22 AT interoperability

8.1.16 Cross-cutting issues

Source: ISO/IEC PDTR 29138-1 [i.118], section 5.16.

User need ID	User need summary	Relevant functional requirement
16-1	New technologies that are accessible when they are released	6.3.7.1 Magnetic coupling 6.3.5 Standard connection 9.4.22 AT interoperability
16-2	To access the controls that allow them to turn on and adjust the built in accessibility features	9.10.3 Accessibility configuration
16-3	An accessible path and a means to position oneself within reach of installed products	9.3.6 Installed or free standing products
16-4	Timely access to trained customer service personnel (e.g. Help Desk)	9.9.3 Support services
16-5	Accessible training and support materials	9.9.1 Accessible documentation
16-6	Electronic access to copyrighted and otherwise protected material	9.2.1 Closed functionality
16-7	The product to be usable by those with multiple disabilities	Potential gap - see clause 10
16-8	A means to provide feedback about improvements to accessibility to meet their particular needs	9.9.3 Support services
16-9	Product accessibility information to be disseminated to distributors, retailers, installers, system integrators, customer organizations, and people with disabilities	9.9.1 Accessible documentation
16-10	To have their accessibility functions available at all times, without disruption	9.4.17 Disruption of Access Features

8.2 UN Convention on the Rights of Persons with Disabilities: User requirements mapping

8.2.1 General

The convention [i.156] applies to signatory states, and so many clauses do not address user needs directly, but rather address how signatory states should respect the rights of persons with disabilities, and as such do not map directly to functional requirements. Those articles that do map more directly to technical implications for ICT products and services are indicated in this clause and are mapped to the functional requirements of clause 9.

8.2.2 Article 9: Accessibility

Convention clause	User need summary	Relevant functional requirement
9.1	Persons with disabilities to live independently and participate fully in all aspects of life on an equal basis with others in information, communications and other services, including electronic services and emergency services	All
9.2 (a)	Minimum standards and guidelines for the accessibility of facilities and services open or provided to the public	All
9.2 (b)	Private entities services open or provided to the public take into account accessibility	All
9.2 (c)	Training for stakeholders on accessibility	6.9.3
9.2 (d)	Public signage in Braille and in easy to read and understand forms	6.2.5
9.2 (e)	Live assistance and intermediaries (guides, readers and professional sign language interpreters) for buildings and other facilities open to the public	6.9.3
9.2 (f)	Forms of assistance and support to ensure access to information	6.9.3
9.2 (g)	Access to new information and communications technologies and systems, including the Internet	All
9.2 (h)	Design, development, production and distribution of accessible information and communications technologies and systems at an early stage, so they become accessible at minimum cost	All

8.2.3 Article 21: Freedom of expression and opinion, and access to information

Convention clause	User need summary	Relevant functional requirement
21.1 (a)	Information intended for the general public to persons with disabilities in accessible formats, in a timely manner and without additional cost	9.2.4, 9.2.5, 9.4.4, 9.4.6
21.1 (b)	Use of sign languages, Braille, augmentative and alternative communication, and all other accessible means, modes and formats of communication in official interactions	9.2.4, 9.2.5, 9.4.4, 9.4.6, 9.7.5, 9.10.1, 9.10.2
21.1 (c)	Private entities' services to the general public, including through the Internet in accessible and usable formats for persons with disabilities	9.2.4, 9.2.5, 9.4.4, 9.4.6
21.1 (d)	Mass media, including the Internet, accessible to persons with disabilities	9.2.4, 9.2.5, 9.4.4, 9.4.6
21.1 (e)	The use of sign languages	9.2.4, 9.7.5, 9.10.1, 9.10.2

8.3 EG 202 320: User requirements mapping

8.3.1 General

EG 202 320 [i.36], the communications aspect is not included in the work of ISO/JTC1 SWG-A included in clause 5.2. Therefore the user requirements structure is complemented here with the communications-related information.

8.3.2 Real-time communication

User need reference	User need summary	Relevant functional requirement
6.1.1 Universality	Text communication available on on a universal basis	9.7.1, 9.7.2, 9.7.3, 9.2.3
6.1.2 Call Set-up	Text communication as easily set up as speech call	Potential gap - see clause 10, same as 13-4
6.1.3 Text Communications	Live two way conversational text communication available for normal interactive conversational flow	9.7.1
6.1.4 Conversational Quality	Error free live conversational text communication available	9.7.1
6.1.5 Speech Conversation	Speech communication of good quality available simultaneously with text communication	9.3.7.1, 9.3.7.2, 9.3.7.3, 9.3.7.4, 9.3.7.5, 9.7.1, 9.7.2
6.1.6 Display	Display the text of both parties in the character set in which they are typed	9.2.3
6.1.7 Loss in transmission	Missing text detected and indication given in the display	9.2.3
6.1.8 Editing	Editing functions should be provided	Potential gap - see clause 10
6.1.9 Service Accessibility	All services (including emergency) operate with text in addition to other media	9.10.1, 9.7.3, Gap for emergency service access
6.1.10 Call Progress	Alternative modes of communication available for call progress information	9.2.4, 9.7.4
6.1.11 Conferencing	Possible to use text conversation in multi party sessions	Potential gap - see clause 10
6.1.12 Multimedia	Service offered in all modes within the capabilities of the terminals and networks	9.7.5, 9.7.1, 9.7.2, 9.10.2, 9.2.3
6.1.13 Terminal configurability	Service configurable by the user to suit the communication preferences and abilities	9.4.4
6.1.14 Signing and lipreading	Service offering a video mode provides video quality that is sufficient for signing and lip-reading	9.7.5, 9.10.2
6.1.15 Relay service	Enables communication between users of terminals that do not share common modes of communication	9.2.3, 9.10.1, 9.10.2

9 Functional requirements

9.1 Introduction

In this clause, the user needs identified in clause 8 are translated into functional requirements of features that are likely to be found in any of the ICT products and services described in the Common Procurement Vocabulary. In this clause, specific functional requirements are described, which when followed by those features of ICT products, either make them intrinsically more widely useable, or enable Assistive Technology (AT) to be used with them to allow a broader range of access.

In identifying the general functional requirements that might satisfy the user needs identified in clause 8, a large number of documents were studied. Many of these documents were published documents, but where these were not available, either due to their expense or due to the fact that work on them was not complete, use was made of drafts not in the public domain. All of these documents consulted are listed in clause 9.11. The quality and testability of the requirements given in these documents was somewhat variable and further editing will be required in Phase II of the Mandate [i.141].

In this clause gaps were identified where a user need exists which were not met by a previously expressed functional requirement. In these cases, new functional requirements are proposed. It is noted that in the interest of global harmonization, these gaps may need to be drawn to the attention of the US Access Board.

Other gaps were identified where functional requirements exist which are not treated in European or International standards. These gaps are noted.

To compile this data the provisions described below were compared with normative requirements and informative recommendations available in the published and draft versions of the standards listed in clauses 9.11.1 and 9.11.2.

The matches are rarely exact. Often the provision is only partly addressed by the requirement or recommendation in the listed standards clause. In other cases the requirement or recommendation in the standards clause encompasses a far broader area than described by the provision. In some instances, the matching of the provision to the standards requirement or recommendation is very tenuous and this is consequently identified by the use of "?".

This is not intended as an exhaustive review: many standards identified were not obtainable, were unavailable in English, or time constraints prevented a full review. The standards listed and reviewed were considered to be those most relevant for this task.

9.2 Functional requirements

9.2.1 Closed functionality

Some provision is required to address the case where assistive technology cannot be used to achieve some functionality for any reason such as licence or policy constraints. Consequently that closed functionality is required to be made available to and operable by people with disabilities within the product itself and provisions that relate to the connection of assistive technology would not apply.

ISO EN 9241-171	8.6.1 Read content on closed systems 8.6.2 Announce changes on closed systems 8.6.3 Operable through tactilely discernable controls 8.6.4 Pass through of system functions
508	1194.25(a)
TEITAC	Subpart C 1-A

9.2.1.1 Analysis

Addresses user needs: 16-6.

Sufficient extant standards coverage exists to draft procurement legislation.

9.2.2 Biometric ID

Some provision is required to cover the case where a product uses a biometric form of user identification and some alternative needs to be provided which does not rely on a unique biological characteristic which may not be usable by some people.

EG 202 116	8.9 Biometric input 8.9.2 Iris recognition 8.9.3 Fingerprint recognition
EG 202 132	9.8.4 Access control
EG 202 249	11.3.1 Registration 11.3.2 Verification
ISO/IEC Guide 71	8.2.5 Biological identification and operation
ISO/FDIS 9241-20	9.1.9 Biometric data
ISO/TR 22411	8.2.5 Biological identification and operation
ISO/IEC 10779	5.9 Requirements for information security
ISO/IEC WD 29136	5.5.1 Alternative means of user identification
NDA "accessIT"	Public access terminals 1.12 (Priority 1)
Nordic Guidelines for Computer Accessibility	16 Security
JIS X 8341-2	5.6.2 Alternative means for user's identification means
UNE 139801:2003	4.1.6 If biometric forms of control are used, alternative forms of activation "must" (see Foreword) also be provided (P1)
508	1194.25(d), 1194.26(c)
TEITAC	Subpart C 1-B

9.2.2.1 Analysis

Addresses user needs: 6-20.

Sufficient extant standards coverage exists to draft procurement legislation.

9.2.3 Pass through

Some provision is required to ensure that any information related to accessibility that is transmitted or passed through any product should not be affected in any way that damages the accessibility features supported by that information.

EG 202 320	6.2.1 Universality
ISO/FDIS 9241-20	9.3.2 Supporting combinations of assistive technologies
ISO EN 9241-171	8.6.4 Pass through of system functions
ITU-T Recommendation F.790	10.1.3 Compatible
ITU-T FSTP-TACL	5.3 Media transport
ITU-T Recommendation Y.2201	5.4 Codecs
255	1193.37
508	1194.23(j)
TEITAC	Subpart C 1-C
ATAG 1.0	Checkpoint 1.2 and 7.1
UAAG 1.0	Guideline 6
WCAG 2.0	Success Criteria 4.1

9.2.3.1 Analysis

Addresses user needs: 8.2.3 Real-time communication, 6.1.1 Universality, 6.1.6 Display, 6.1.7 Loss in transmission, 6.1.12 Multimedia, 6.1.15 Relay service.

Sufficient extant standards coverage exists to draft procurement legislation.

9.2.4 Audio information alternatives

Some provision is required to ensure that information is not to be conveyed solely in the audio mode.

EG 202 116	7.4.2 Multimodality
TS 102 577	Recommendations 9.3.5.a, 11.8.2b
ISO/IEC Guide 71	8.2.3 Alternatives to auditory information
ISO/FDIS 9241-20	7.3.2 Providing verbal information visually 7.3.3 Users that cannot hear 7.3.4 Providing visual versions of alarms 7.3.5 Providing tactile versions of alarms 7.3.6 Supporting sign language
ISO EN 9241-171	10.1.3 Provide accessible alternatives to task relevant audio and video 10.6.7 Allow users to choose visual alternative for audio output 10.7.1 Display any captions provided (+++10.8.4 Update equivalent alternatives for media when the media changes)
ISO/TR 22411	8.2.3 Alternatives to auditory information 8.2.3.1 Visual Information 8.2.3.2 Tactile information 8.2.4 Alternatives to voice input?
ISO/IEC 10779	4.2.2 Operable with limited hearing or without hearing
JIS X 8341-2	5.1.5 Guide function for operation 6.2.3 Display of acoustic status
JIS X 8341-3	4.2 Basic requirements. b) 5.4 Non-text information. c)
NDA "accessIT"	Software 1.7 (Priority 1) Public access terminals 1.11 (Priority 1)
UNE 139801:2003	4.4.1 All important audio signals "must" (see Foreword) be provided in a visual form or be made available to the software. (P1)
ITU-T Recommendation F.790	9.1.5 Alert tones and voice guidance system
ITU-T FSTP-TACL	5.1 (1, 3, 6) Control of devices through a user interface
255	1194.43(d)
TEITAC	Subpart C 1-D
KICS.KO-09.0040	4.6 Replacement of and Complement to audible message
US Part 79.1	47 C.F.R. § 79.2 Accessibility of programming providing emergency information(relating to: Telecommunications Act, Section 713)
IMS Guidelines for Developing Accessible Learning Applications	5. Guidelines for Accessible Delivery of Text, Audio, Images, and Multimedia 6. Guidelines for Developing Accessible Asynchronous Communication and Collaboration Tools 7. Guidelines for Developing Accessible Synchronous Communication and Collaboration Tools
ATAG 1.0	Guideline 7
UAAG 1.0	Checkpoint 1.3
WCAG 2.0	1.2.2, 1.2.3, 1.2.4, 1.2.6, 1.2.8, 1.2.9, 1.1.1
ACCENT D3.1	Appendix 2, Software Requirements, Requirement 1, Requirement 4
ACCENT D3.2	Appendix 1, O/P from the system
GTRIAMS #1	Pages 29 and 30
GTRIAMS #2	Page 39

9.2.4.1 Analysis

Addresses user needs: 2-1, 2-2, 4-2, 4-4, 4-8, 5-4, 11-4, 21.1(a).

Sufficient extant standards coverage exists to draft procurement legislation.

9.2.5 Visual information alternatives

Some provision may be required to ensure that information presented in the visual mode is also presented in an audio or simple tactile mode.

NOTE: See clause 9.4.6 for text alternative to non-text objects.

EG 202 116	7.4.2 Multimodality
EG 202 048	5.1.3.1 Haptic symbols, icons and pictograms: introduction
ES 202 130	4.1 User requirements
EG 202 417	8.4 Accessibility of screen-based content
EG 202 423	4.1.3.3 Other input devices 4.1.4 Output devices
EG 202 487	12.2.1 Telecare system's output should be made available through multiple modalities (auditory, tactile and visual) 12.2.10 Telecare system's input should be available through multiple modalities (such as vocal or tactile) 13.2.1 User education materials should be offered and made accessible to people with disabilities
ETR 345	4.4 Separation of key groups 4.6 Key tops 4.11 Tactile feedback and ease of keying
TS 102 577	Recommendations 9.3.2.c, 9.3.5.a, 10.9a, 10.9b, 11.8.2a
ISO/FDIS 9241-20	7.2.2 Providing information using sound 7.2.4 Providing location and function information by auditory and/or tactile means
ISO/IEC 10779	4.2.1 Operable with limited vision or without vision
ITU-T Recommendation F.790	9.1.3 Displays
ITU-T FSTP-TACL	5.1 (1, 3, 6) Control of devices through a user interface
JIS X 8341-2	5.1.5 Guide function for operation
JIS X 8341-3	4.2 Basic requirements. a) 5.4 Non-text information. a)
NDA "access-it"	Software 1.6 (Priority 1) Public access terminals 1.7 (Priority 1) Web 1.4 (Priority 1)
Nordic Guidelines for Computer Accessibility	8 The perception of alarms, warnings, status signals, error messages 9 The use of a keyboard 9.2 The localization of keys
TEITAC	Subpart C 1-E
KICS.KO-09.0040	4.5 Complement to Color Contrast 4.4 Complement to and Replacement of Eyesight
US Part 79.1	47 C.F.R. § 79.2 Accessibility of programming providing emergency information(relating to: Telecommunications Act, Section 713)
IMS Guidelines for Developing Accessible Learning Applications	5 Guidelines for Accessible Delivery of Text, Audio, Images, and Multimedia 6 Guidelines for Developing Accessible Asynchronous Communication and Collaboration Tools 7 Guidelines for Developing Accessible Synchronous Communication and Collaboration Tools
ATAG 2.0	Guideline A.2.2 (for the authoring tool user interface) Display synchronized alternatives for synchronized media.
WCAG 2.0	Non-text Content 1.2.1 Audio-only and Video-only (Pre-recorded) 1.2.3 Audio Description or Full Text Alternative 1.2.8 Full Text Alternative 1.2.9 Live Audio-only
ACCENT D3.1	Appendix 1, Signals, Requirement 3.1
ACCENT D3.2	Appendix 1, O/P from the system
GTRIAMS #1	Pages 29, 30, 33, 34, 60, 61 and 62
GTRIAMS #2	Pages 37 to 39 and 62
GTRIAMS #3	Pages 29 to 33

9.2.5.1 Analysis

Addresses user needs: 1-1, 1-2, 4-1, 4-8, 5-1, 5-2, 6-1, 11-3, 13-1, 13-7, 9.2(d), 21.1(b), 21.1(c), 21.1(d).

Sufficient extant standards coverage exists to draft procurement legislation.

9.2.6 Colour

Some provision is required to ensure that information presented by means of colour is also presented in alternative ways that allow for atypical perception of colour.

EG 202 048	5.1.1.2 Visual symbols, icons and pictograms: guidelines
EG 202 116	7.1.4 Colour
EG 202 191	8.4 Low vision
EG 202 249	8.2.2 Additional content of address book records
ETR 334	5.2 Sensory change in vision 5.2.2 Colour perception 5.2.4 Requirements for optimizing vision 6.1.3 Dialling
ETR 345	4.8 Contrast between characters and keys 4.9 Contrast between keys and telephone set
TS 102 511	7.2.1 Colour 7.2.4 Menu A.3 Specific requirements for new AT commands-Colour
TS 102 577	Recommendation 10.10e
TR 102 133	A.3.3 Key messages
CWA 14661:2003	12.2.6 Colour and contrast 12.3.4 Colour and contrast
ISO/IEC Guide 71	8.2 Alternative format 8.5.3 Colour coding of information 9.2.1.4 Risks and hazards final bullet
ISO 9241-12:1988	7.5 Color coding 7.5.1 Defective color vision
ISO/FDIS 9241-20	7.2.11 Users with limited colour vision
ISO EN 9241-171	10.4.1 Do not convey information by colour output alone (+++10.4.2 Provide colour schemes designed for people with disabilities) (+++10.4.3 Provide individualization of colour schemes)
ISO EN 9241-151	9.3.9 Using colour 9.4.8 Highlighting previously visited links
ISO/DIS 9241-303	5.6 Legibility of information coding 5.6.4 Colour coding. penultimate sentence
ISO 10075-2	4.2.2.6 Signal discriminability
ISO 13406-2	7.5 Chromaticity uniformity difference 7.21 Image formation time 7.25 Default colour set 7.26 Multicolour object size 7.27 Colour differences 7.28 Spectrally extreme colours 7.29.1 Simultaneous colour presentation 8.7.5 Chromaticity uniformity difference 8.7.5.2 Calculations (See table 47) - table 47 - Chromaticity uniformity difference calculations 8.7.25 Default colour set 8.7.27 Colour differences 8.7.29.3 Colour interpretation from memory A.2 Guidance on flat panel display colorimetry
ITU-T Recommendation F.790	9.1.3 (b) Displays
ISO/IEC 10779	5.4.1 Display requirements c) Colour coding "shall" (see Foreword) not be used as the only method of providing information
ISO/IEC TR 19766	7.2.5 Colour coding in icon graphics
Nordic Guidelines for Computer Accessibility	9.1 Basic ergonomic qualities 9.2 The localization of keys 9.3 The identification of keys 11 The perception of the contents of the display

JIS S 0012	5.1 Legibility of markings...b)
JIS X 8341-2	6.1.2 Colour and contrast...b)
UNE 139801:2003	4.1.5 Colour "must" (see Foreword) not be the only means of distinguishing controls and switches (P1) 4.2.4 Colour "must" (see Foreword) not be the only means to distinguish keys (P1)
255	1194.41(c)
508	1194.25(g) and 1194.21(i)
TEITAC	Subpart C 1-F
KICS.KO-09.0040	4.5 Complement to Colour Contrast
IMS Guidelines for Developing Accessible Learning Applications	5.1 Common Types of Media Delivery and Associated Presentation Formats 5.1.1 Text 7. Guidelines for Developing Accessible Synchronous Communication and Collaboration Tools
ATAG 1.0	Guideline 7
UAAG 1.0	Guideline 8
WCAG 2.0	1.2.2, 1.2.3, 1.2.4, 1.2.6, 1.2.8, 1.2.9, 1.1.1
ACCENT D3.1	Appendix 2 software requirements, icons, Requirement 5 and Displays requirement 1
GTRIAMS #1	Pages 31 and 32
GTRIAMS #2	Pages 35, 36 and 76

9.2.6.1 Analysis

Addresses user needs: 1-7, 1-8, 4-5, 5-5, 14-9.

Sufficient extant standards coverage exists to draft procurement legislation.

9.2.7 Text size

Some provision may be required to ensure that information presented as text is readable by those with reduced visual acuity.

EG 201 103	7.2.1 Text specific requirements
EG 202 048	5.1.1.1 Visual symbols, icons and pictograms: introduction 5.2.1 Allocating information to a sensory modality
EG 202 417	6.1.2 Format and layout 8.3 Guidelines for screen-based content (table)
EG 202 423	4.2.1.1 Style and format of language 4.3.3.1 Text and data messaging
ETR 160	5.1.1 Text
TS 102 511	7.2.3 Font size
TS 102 577	Recommendations 10.3e, 11.8.1a
ISO/FDIS 9241-20	7.2.8 Adjusting size of displayed objects
ISO EN 9241-171	10.3.2 Enable users to set minimum font size (+++10.3.3 Adjust the scale and layout of user interface elements as font-size changes)
ISO EN 9241-151	9.6.1 Readability of text 9.6.6 Making text resizable by the user
ISO/DIS 9241-303	5.5 Legibility and readability 5.5.3 Character height
ISO/TR 22411	8.6 Size and style of font and symbols in information, warnings and labelling of controls 8.6.1 Font size 8.6.2 Font style? C.3 Estimation of a minimum legible font size
ISO/IEC 10779	5.4.1 Display requirements a) Text printed on operable controls "shall" (see Foreword) be of an appropriate size and contrast b) A screen display device should support advanced functions such as character enlargement and contrast adjustment
ISO/IEC FCD 24786	5.2.1 Contents and interface of the accessibility setting mode
ISO/IEC 18035	5.2.6 Text/typeface
ISO/IEC 11581-1	6.1.6 Colour "shall" (see Foreword) not serve as the only informative element to distinguish between icons unless the functional element represented is the colour itself
ISO/IEC 11581-2	6.2.4 Typeface
ISO/IEC IS 11581-5	6.2.2 Typeface
ISO/IEC IS 11581-6	6.2.6 Typeface
JIS S 0012	5.1 Legibility of markings...a)
JIS X 8341-2	6.7 Display...a), b) and c)
JIS X 8341-3	5.6 Character... a), b)
UNE 139801	4.1.9 The labels of controls and switches which are essential for operating the product "must" (see Foreword) be easily readable: they "must" (see Foreword) have a high contrast, a sans-serif font and a minimum height of 4 mm (P2)
255	1193.43 (b)
TEITAC	Subpart C 1-G
IMS Guidelines for Developing Accessible Learning Applications	5.1 Common Types of Media Delivery and Associated Presentation Formats 5.1.1 Text
ATAG 1.0	Guideline 7. Ensure that the authoring tool is accessible to authors with disabilities
UAAG 1.0	Checkpoint 4.1
ATAG 2.0	A.2.3.7 Access to Presentation Being Edited
WCAG 2.0	1.4.4, 1.4.6, 1.4.8
GTRIAMS #1	Pages 29, 30, 56, 58, 77 and 78
GTRIAMS #3	Pages 72 and 73

9.2.7.1 Analysis

Addresses user needs: 1-7, 1-8, 4-5, 5-5, 14-9.

Sufficient extant standards coverage exists to draft procurement legislation.

9.2.8 Speech operation alternatives

Some provision is required to ensure that products do not rely on user speech to operate.

EG 202 048	5.1.4.1 Olfactory symbols, icons and pictograms: introduction
EG 202 191	8.6 About hearing disabilities
ISO/IEC Guide 71	9.3.5.2
255	1193.23 (e)
TEITAC	Subpart C 1-H
ATAG 1.0	Guideline 7
UAAG 1.0	Guideline 1

9.2.8.1 Analysis

Addresses user needs: 6-5, 21.1(a).

Sufficient extant standards coverage exists to draft procurement legislation.

9.3 Hardware

9.3.1 Reflectance contrast for legends and displays

Some provision is required to ensure primary legends, instructions and displays provide adequate contrast and brightness for essential visually presented information.

EG 202 116	7.1.3 Adjustability 7.1.4 Colour 7.5 Labels and abbreviations 8.2.4.1 Keys General 9.2.2 Visual display types/characteristics 9.3.2 Text content 9.4.1 Optical signals 10.3 Casework colour 10.5 Connectors
EG 202 191	9.2 Design principles for multimodal systems
EG 202 249	6.3.1 Terminals
ETR 160	5.1.1 Text 5.1.5 Still image
ETR 297	5 HF Recommendations of aspects of videotelephone functions 5.2.5.6 Ambient lighting and background 7.2.1 Naming of functions and labelling 7.2.3 Visual indication and messages 7.4.2 Image quality
ETR 334	5.2.1.2 Glare 5.2.3.3 Visual search 5.2.4 Requirements for optimizing vision 6.1.1 Finding the telephone 6.1.2 Finding the number or seeking other information 6.1.3 Dialling
ETR 345	4.8 Contrast between characters and keys 4.9 Contrast between keys and telephone set
TR 102 415	6.2.3.2 Sensory impairments 7.1 Usability, accessibility and UI issues
TS 102 511	5.4 Usable menus 7.2.1 Colour 7.2.4 Menu A.3 Specific requirements for new AT commands-Colour
TS 102 577	Recommendations 10.3e, 10.10g
CWA 14661:2003	12.2.5 Display 12.2.6 Colour and contrast 12.3.4 Colour and contrast 12.4.6 Display 12.5.6 Display
ISO/IEC Guide 71	8.4.4 Avoidance of glare 8.5.1 Choice of colour? 8.5.2 Colour combinations? 8.6 Size and style of font in information, warnings and labelling of controls
ISO 9241-7	6 Requirements
ISO 10075-2	4.2.2.6 Signal discriminability 4.4 Guidelines concerning reduced vigilance

ISO 13406-2	3.4 Display technology 3.5 Alphanumeric symbols 3.5.11 Readability 5 Guiding principles 7.1 Design viewing distance 7.2 Design viewing direction 7.3 Design screen illuminance 7.5 Chromaticity uniformity difference 7.9 Fill factor 7.15 Contrast 7.17 Reflections 7.17.1 Contrast in the presence of reflections 7.17.2 Contrast of unwanted reflections 7.21 Image formation time 7.22 Absolute luminance coding 7.25 Default colour set 7.26 Multicolour object size 7.27 Colour differences 7.28 Spectrally extreme colours 7.29.1 Simultaneous colour presentation 7.29.3 Colour interpretation from memory 8.3.3.2 Reflectance standards 8.3.3.4 Luminance sources 8.3.4.4 Diffuse reflectance standard 8.3.4.5 Specular reflectance standard 8.3.4.6 Alignment system 8.6 Combined measurement for luminance, contrast and diffuse illumination 8.7.5 Chromaticity uniformity difference Chromaticity uniformity difference calculations 8.7.5.3 Review of compliance 8.7.9.1 Panels that require microphotometric evaluation 8.7.14 Display luminance 8.7.15 Contrast 8.7.17.2.2 Diffuse reflectance standard 8.7.25 Default colour set 8.7.27 Colour differences 8.7.29.1 Simultaneous colour presentation
ISO/IEC WD 29136	6.1.1 Brightness and contrast
Nordic Guidelines for Computer Accessibility	12.3 Alarms from the printer should appear on the display of the workstation
ITU-T Recommendation F.790	9.1.3 Displays
NDA "accessIT"	Public access terminals 1.13 (Priority 1)
508	1194.21(j) and 25(h)
TEITAC	Subpart C 2.1-A
ACCENT D3.1	Appendix 1, Display Recommendation 6.1
GTRIAMS #1	Pages 72 and 73
GTRIAMS #2	Pages 57, 58 and 59
GTRIAMS #3	Page 74

9.3.1.1 Analysis

Addresses user needs: 1-3, 1-9, 1-10, 3-4.

Sufficient extant standards coverage exists to draft procurement legislation for office and interior environments only, additional work required to cover exterior environments.

9.3.2 Flashing

Some provision is required to ensure products do not flash in a manner likely to induce photosensitive seizures.

EG 202 116	9.3.2 Text content 9.3.6 Screen formatting 9.4.1 Optical signals
TS 102 577	Recommendations 10.3.4, 11.8.1c
ISO/IEC Guide 71	8.2.6 Prevention of seizures
ISO 9241-12:1997	7.6 Coding with other visual techniques 7.6.5 Blink coding
ISO/FDIS 9241-20	7.2.12 Users who react to flicker
ISO EN 9241-171	10.1.1 Avoid seizure-inducing flash rates
ISO FDIS 9241-303	5.4 Visual Artefacts 5.4.6 Temporal instability (flicker) 5.6 Legibility of information coding 5.6.3 Blink coding
ISO/IEC 10779	5.4.1 Display requirements g) When a blinking feature is used in the display, a blinking frequency not inducing photosensitive seizures "shall" (see Foreword) be used
ISO 13406-2	3.4.4 image formation time 7.23 Blink coding 8.7.23 Blink coding
ISO/TR 22411	8.2.6 Prevention of seizures
JIS X 8341-2	5.5.2 Prevention of photosensible epilepsy, etc.
JIS X 8341-3	5.8 Speed.b)
NDA "accessIT"	Software 1.8 (Priority 1)
UNE 139801:2003	4.3.5 Screens "must" (see Foreword) be designed to avoid flickerings with a frequency between 2 Hertz and 50 Hertz (P3)
TEITAC	Subpart C 2.1-B
ATAG 2.0	Guideline A.3.3 (for the authoring tool user interface) Help authors avoid flashing that could cause seizures
UAAG 2.0	Guideline 4.4 Help users avoid flashing that could cause seizures
WCAG 2.0	2.3.1, 2.3.2
ACCENT D3.1	Appendix 1, Displays Requirement 6.1

9.3.2.1 Analysis

Addresses user needs: 11-5.

Sufficient extant standards coverage exists to draft procurement legislation for office and interior environments but additional investigation required for exterior environments, LED's and specific parameters.

9.3.3 Mechanically operated controls

Some provision is required to ensure mechanically operated controls can easily be located, identified and have their status determined via non-visual means without activating them; and which are both visually and tactilely distinct from non-active features. The controls need to be operable with limited force and dexterity and allow the key repeat rate to be adjusted.

EG 202 116	8.2.2.2 Alphanumeric keyboards 8.2.4.1 Keys general 8.2.4.3 Function keys
EG 202 048	5.1.3.1 Haptic symbols, icons and pictograms: introduction
EG 202 423	4.1.2 Physical characteristics of devices 4.1.3.1 Keyboards and buttons 4.1.3.3 Other input devices 4.2.1.3 Labels and abbreviations 4.2.3 Operation
ETR 297	5.1.2 Control of service mode 5.1.2.2 Principles for procedures 5.2.1 Incoming video indication 5.2.3 One-way videotelephony (single-point videotelephony) 5.2.4 Self view function 5.2.5.4 Camera iris control 5.2.5.5 Camera focus control 5.3.2 Audio functions 6 User Procedures 7 Controls and indications 7.1 Feedback 7.2.1 Naming of functions and labelling 7.2.2.1 Application of pictograms for videotelephony 7.2.3 Visual indication and messages 7.3 Control issues
ETR 334	5.2.3.2 Perception of movement 5.3.3 Requirements for optimizing hearing 5.4.2.1 Speech production 5.4.2.4 Sensitivity to small movements 5.4.3 Requirements for optimizing motor skills 5.5.5 Requirements for optimizing cognitive performance 6 Design issues 6.3.1 Getting to and handling the telephone 6.3.4 Dialling
TS 102 577	Recommendations 10.3a, 10.4e, 10.4f, 10.4e, 10.4g, 10.4h, 10.4j, 10.4n, 10.4o, 10.5a, 10.10a, 10.10b, 10.10d
ISO/IEC Guide 71	8.3 Location and layout of information and controls and positioning of handles 8.3.1 Location 8.3.3 Layout 8.4.2 Consideration of ambient lighting? 8.6 Size and style of font in information, warnings and labelling of controls? 8.11 Distinctive form of product, control or packaging 8.11.1 Identification by form 8.11.2 Orientation of product or control 8.12.3 Controls: handling 8.12.4 Controls: spacing 8.12.5 Controls: status 8.18.1 Slip-resistance and texture 9.2 Sensory abilities 9.2.3.3 Design considerations 9.3 Physical abilities 9.3.1.2 Design considerations 9.3.1.3 Risks and hazards?
ISO 9241-9	6.1.4 Button design 6.1.5 Consideration of handedness 6.1.6 Grasp stability 6.1.8 Access

ISO/FDIS 9241-20	7.5.1 Limited physical movement 7.5.2 Providing adjustable location of controls 7.5.3 Supporting either or only one hand 7.5.4 Limiting physical force requirements 7.5.5 Limiting motor control requirements 7.5.6 Compensating for limitations in fine motor control capabilities 7.5.7 Providing user control of response timing
ISO EN 9241-171	9.3.6 Provide adjustment of key repeat rate 9.3.7 Provide adjustment of key-repeat onset 9.3.9 Provide notification about toggle-key status
ISO 9241-410	7.2.4.4 Reliability of device access 7.2.4.5 Adequacy of device access 7.2.4.6 Control access 7.2.5.3 Effort B.2.2.1.1 d) Force B.2.2.1.1 h) Key repeat function
ISO 9355-3	5.3.2 Task requirement e) - Need for tactile checking of setting (tactile check) 5.3.3 Task requirement f) - Need to avoid inadvertent operation
ISO 10075-2	4.2.2.19 Controllability 4.2.2.21 Control dynamics 7 Controls - finding, reaching, identifying and using 7.6 The adjustment settings should be easily perceived 10 The use of a pointing device
ISO/TR 22411	8.3 Location and layout of information and controls and positioning of handles 8.3.1 Location 8.3.1.2 Location of controls 8.3.3 Layout 8.6 Size and style of font in information, warnings and labelling of controls? 8.11 Distinctive form of product, control or packaging 8.11.1 Identification by form 8.11.2 Orientation of product or control 8.12.3 Controls 8.12.3.1 Handling 8.12.3.2 Spacing 8.12.3.3 Status 8.17.4 Other design considerations concerning cognitive abilities.14 th bullet 8.18.1 Slip-resistance and texture 9.2.3 Touch 9.3 Physical abilities 9.3.1.Dexterity
ISO/IEC 10779	4.2.5 Operable with physical low strength or fine motor control 4.2.8 Operable with either hand 4.2.9 Operable with limited mobility in the arms, legs, fingers, or with artificial limbs 5.4.3 Shape requirements a) 5.4.4 Operation Requirements a) 5.4.5 Feedback requirements a), b) 5.5.2 Shape requirements a) b) c) 5.5.3 Operation Requirements a) b) c) d) e)
ISO/IEC WD 29136	5.2.1 Power on/Off, b) and c) 6.3 Keys and buttons (input) 6.3.1 Operability (suitable force, etc.).a), b), c), d), e) and f) 6.3.5 Status indication a)
JIS S 0012	5.3 Location of operating parts 5.4 Arrangement of controlling elements 5.5 Usability of controlling elements 5.9 Tactile usability 5.10 Countermeasure against and prevention of wrong operation...a)

JIS X 8341-2	6.4.1 Ergonomics requirements for key? 6.4.2 Operability (suitable force, etc) 6.4.4 Setting up function of definite conditions of key, button and switch input 6.4.5 Prevention of double push 6.4.6 Setting up function of key repeat conditions 6.4.7 Sequential input function 6.4.8 Status display 6.4.9 Tactile dots
JIS X 8341-3	4.2 Basic requirements c)
NDA "accessIT"	Public access terminals 1.3, 1.4 and 1.5 (Priority 1)
Nordic Guidelines for Computer Accessibility	7 Controls - finding, reaching, identifying and using 7.5 Controls should be marked so that the control setting can be easily identified by touch 7.8 No operation of a control should require more power than 2 Newton 9.1 Basic ergonomic qualities
UNE 139801	4.1.1 Controls and switches "must" (see Foreword) be placed in a position where it is easy to locate them and activate them (P1) 4.1.2 Controls and switches "must" (see Foreword) be able to be handled with one hand and their activation "must" (see Foreword) not require movements that need tight grasping (maximum force 22,2 Newtons), twisting the wrist or precision gripping (P1) 4.1.4 Controls and switches "must" (see Foreword) be tactilely discernable without being activated when touched (P1) 4.1.8 The actual status of all controls and switches "must" (see Foreword) be visually discernable and, in addition, through either touch or sound (P2) 4.2.1 The force required to activate keys "must" (see Foreword) not exceed 22,2 Newtons (P1) 4.2.3 The keys "must" (see Foreword) be tactilely discernable without being activated when touched (P1) 4.2.5 The time between the initial key press acceptance and key repeat onset "must" (see Foreword) be able to be adjusted to at least 2 seconds (P1) 4.2.6 The rate of key repeat "must" (see Foreword) be able to be adjusted to at least 1 per 2 seconds (P1) 4.2.9 The actual status of all latch and lock keys "must" (see Foreword) be distinguished visually and, in addition, through touch or sound. (P2) 4.5.1 Insertion and removal of storage media drives "must" (see Foreword) be able to be handled with one hand and without movements that need tight grasping (maximum force 22,2 Newtons), twisting the wrist precision gripping (P2) 4.5.3 Removable media drives "must" (see Foreword) be able to unload/eject through software control (P2)
ITU-T Recommendation F.790	9.1.1 Layout of operational panel 9.1.2 Operational keys, buttons and switches
508	1194.26(a); 1194.23(k)
TEITAC	Subpart C 2.1-C
ACCENT D3.1	Appendix 1, Controls, Requirements 2.3, 2.4, 2.5, 2.6
GTRIAMS #1	P. 35, Pages 36-38, 40, 41, 44-50, 66-69, 74-76, 77, 78, 81
GTRIAMS #2	Pages 40, 41, 48 to 53, 63 to 65 and 72 to 75
GTRIAMS #3	Pages 31, 32, 47 to 54, 57 to 61, 64, 67 and 68

9.3.3.1 Analysis

Addresses user needs: 3-1, 3-2, 3-3, 3-4, 3-5, 3-6, 4-3, 5-3, 6-1, 6-2, 6-7, 6-8, 6-10, 6-11, 6-12, 6-13, 6-15, 6-16, 6-17, 6-18, 8-1, 8-2, 8-3, 13-1.

Sufficient extant standards coverage exists to draft procurement legislation for significant portions of user needs, but additional investigation is required for newer kinds of mechanical controls.

9.3.4 Touch operated controls

Some provision is required to ensure products that are operated by touch operation also provide a means of operation which meets the requirements for Mechanical Operation and does not rely on fine motor control, user speech or vision.

EG 202 116	7.1.2 Adaptability 7.4.2 Multimodality 5.2.6.3 Touch 5.2.7.2 Dexterity 7.8.2.2 Help Mechanisms - Auditory 9.5.4 Speech Output
ISO/IEC Guide 71	8.2 Alternative format 8.2.1 General considerations
ISO 9241-9	This standard provides guidance for the design of touch sensitive controls and test methods
ISO/FDIS 9241-20	7.2.4 Providing location and function information by auditory and/or tactile means?
ISO EN 9241-151	10.9 Designing for input device independence
ISO/IEC 10779	4.2.5 Operable with physical low strength or fine motor control
Nordic Guidelines for Computer Accessibility	8 The perception of alarms, warnings, status signals, error messages
ITU-T Recommendation F.790	9.1.2 (k) Operation keys, buttons and switches
NDA "accessIT"	Public access terminals 1.3 and 1.6 (Priority 1)
508	1194.25(c), 1194.26(b)
TEITAC	Subpart C 2.1-D
ACCENT D3.2	Appendix 1, I/P to the system
GTRIAMS #3	Page 66

9.3.4.1 Analysis

Addresses user needs: 3-1, 6-2, 8-1, 8-2, 8-3.

Sufficient extant standards coverage exists to draft procurement legislation for significant portions of user needs, but additional investigation required for newer kinds of touch controls.

9.3.5 Standard connection

Some provision is required to ensure that where users can access and control the user interface of a product through a non-standard user connection, they will also be able to control that functionality through a standard user connection using a standard protocol (if a standard protocol exists that will work with that type of input or output) or an available adapter.

TR 102 068	11 Recommended interfaces and protocols
TS 102 577	Recommendation 10.2c
ISO/IEC WD 29136	5.4.1 Connectivity for external devices a)
JIS X 8341	5.4 Connectivity 5.4.1 Interface specification and protocol
UNE 139801	4.6.1 Expansion slots, ports and connectors "must" (see Foreword) comply with common accepted industrial standards (P1) 4.6.2 The force required to connect and disconnect external cables and elements "must" (see Foreword) not exceed 22,2 Newtons (P2)? 4.6.3 The cables and their corresponding connections "must" (see Foreword) be tactilely and visually discernable (P2)? 4.6.4 The information and control needed to handle a peripheral device in real time "must" (see Foreword) be supplied to external devices in a format commonly accepted by industry, which is easily and completely translatable to text and uses a standard port (P3)?
508	1194.26(d)
TEITAC	Subpart C 2.1-F
ACCENT D3.1	Appendix 1, Basic Hardware Requirement 1.1
GTRIAMS #2	Pages 31 and 32

9.3.5.1 Analysis

Addresses user needs: 16-1.

Sufficient extant standards coverage exists to draft procurement legislation.

9.3.6 Installed or free-standing products

Some provision is required to ensure that that all controls necessary to operate installed products are within reach for the widest range of people (considering for example, weakness, stature, absence of limbs, wheelchair use).

EG 202 116	7.1.3 Adjustability
EG 202 423	4.1.5 Child ergonomics
ETR 334	5.4.2.4 Sensitivity to small movements 5.4.3 Requirements for optimizing motor skills 5.5.5 Requirements for optimizing cognitive performance 6 Design issues 6.3.1 Getting to and handling the telephone
ES 202 130	5.6 Control functions
TS 102 511	5.4 Usable menus 6.13 Requirements for satisfying the needs of the users 7.2.4 Menu
TS 102 577	Recommendations 10.4e, 10.4m, 10.5b, 10.6a, 10.10f, 12.5.1c, 12.5.1d
TR 102 415	4.3.3 Precautions, reliability and fail-safe operation 4.3.4 Equipment integration, interoperability and user confidence
TR 103 073	6.5 Control of communications set-up 6.5.2 Delegation of control 6.6 Control of making a communication
ISO/IEC Guide 71	8.3 Location and layout of information and controls and positioning of handles 8.3.1 Location 8.12 Ease of handling 8.12.1 Size, shape and mass?
ISO/FDIS 9241-20	7.5.2 Providing adjustable location of controls
ISO/TR 22411	8.3.1.2 Location of controls 8.12 Ease of handling 8.12.1 Size, shape and mass? 8.12.3 Controls 8.12.3.1 Handling 8.12.7 Elements in buildings and the built environment 8.12.7.1 General considerations 8.12.7.8 Reach ranges 9.3 Physical abilities 9.3.2 Manipulation 9.3.2.2 Reach envelopes
ISO 10075-2	4.2.2.19 Controllability 4.2.2.21 Control dynamics 4.2.3.6 Changes in task activities with different task demands or kinds of mental workload
ISO/IEC 10779	4.2.4 Operable irrespective of physique 4.2.7 Operable with Wheelchair user 4.2.9 Operable with limited mobility in the arms, legs, fingers, or with artificial limbs?
Nordic Guidelines for Computer Accessibility	7 Controls - finding, reaching, identifying and using 7.5 Controls should be marked so that the control setting can be easily identified by touch 7.8 No operation of a control should require more power than 2 Newton 9.1 Basic ergonomic qualities
ITU-T Recommendation F.790	8.2 Installation, connection and configuration
JIS S 0012	5.3 location of operating parts
NDA "accessIT"	Public access terminals 1.1 (Priority 1) Public access terminals 1.2 (Priority 1) Public access terminals 1.14 (Priority 1)
255	1193.41(f)
508	1194.25(j)
TEITAC	Subpart C 2.2-F

ACCENT D3.1	Appendix 1, Controls Requirements 2.2, 4.1
ACCENT D3.2	Appendix 2, Physical Design
GTRIAMS #1	Pages 59, 79, 80, 82 and 83
GTRIAMS #2	Page 66 and 72 to 75
GTRIAMS #3	Pages 34 to 45

9.3.6.1 Analysis

Addresses user needs: 1-8, 3-6, 4-9, 16-6.

Sufficient extant standards coverage exists to draft procurement legislation for significant portion of user needs.

9.3.7 Hardware products with speech output or throughput

9.3.7.1 Magnetic coupling

Some provision is required to ensure effective coupling to personal hearing technologies.

ETS 300 488	5.1 Magnetic field strength (from earphone) 6.3.2 Weighted Terminal Coupling Loss (TCLw)
EG 202 116	5.2.6.2 Hearing
ETR 334	6.2.3 Communication
TR 101 767	5.4 Hearing impaired, telecommunications and hearing aids 5.5 Discussion and conclusions 6.2.2.3 Provision for an additional earphone 6.2.2.4 Provision for an external headset 6.3.1 Inductive coupling 6.3.2 Electrical coupling 6.3.3 Infra red coupling 6.3.4 Radio coupling 6.4.4 Infra red port for text unit 7.1 Initial research 7.2 Classification of the Symbols
TS 102 577	Recommendations 9.3.5g, 10.2.b, 10.6e
ISO/IEC Guide 71	8.20.3 Induction loops?
IEC 60118-1	Whole Document
ITU-T Recommendation P.370	4.2.2 Magnetic field strength (from earphone)
ITU-T Recommendation F.790	9.1.6 (g) Voice input/output system
255	1193.43(i)
508	1194.23(h)
ANSI C63.19-2007	Whole document
TIA-1083	3 Handset magnetic performance
TEITAC	Subpart C 2.1-A

9.3.7.1.1 Analysis

Addresses user needs: 15-2, 15-4, 16-1, 6.1.5.

Sufficient extant standards coverage exists to draft procurement legislation for current personal hearing technologies.

9.3.7.2 Interference with hearing device

Some provision is required to ensure products should not cause interference to personal hearing technologies.

TS 102 577	Recommendations 9.3.5g, 10.2b, 10.11b
ISO/IEC Guide 71	Nothing relevant
ISO/FDIS 9241-20	9.1.5 Providing interoperability?
ISO/TR 22411	8.20.3 Communication systems?
UNE 139801:2003	4.4.6 If a product generates audio output through earphones or other similar devices placed near the ear, it "must" (see Foreword) not interfere with hearing aids (P2) 4.9.1 The product "must" (see Foreword) not generate electromagnetic or radio frequency fields that can interfere with hearing aids (P3)
ITU-T Recommendation F.790	9.1.6 (i) Voice input/output system
508	1194.23(h)
255	1193.43(i)
ANSI C63.19-2007	Whole document
TIA-1083	Annex D
TEITAC	Subpart C 2.2-B

9.3.7.2.1 Analysis

Addresses user needs: 15-1, 6.1.5.

Sufficient extant standards coverage exists to draft procurement legislation for current personal hearing technologies.

9.3.7.3 Audio connection

Some provision is required to ensure that audio information can be available through means that are compatible with relevant standards and compatible with hearing aids.

ISO/IEC WD 29136	6.2.1 Audio volume 6.2.2 Audio input/output port a)
ITU-T Recommendation F.790	9.1.6 Voice input/output system 9.3 External connection ports
JIS X 8341-2	6.2.4 Readiness of external output terminal
ANSI C63.19-2007	Whole document
TIA-1083	3 Handset magnetic performance
255	1193.51(b), 1193.43(g)
508	1194.25(e)
TEITAC	Subpart C 2.2-C

9.3.7.3.1 Analysis

Addresses user needs: 10-1, 6.1.5.

Sufficient extant standards coverage exists to draft procurement legislation for current personal hearing technologies.

9.3.7.4 Volume

Some provision is required to ensure that for speech output delivered via speakers, the volume is adequate when measured at a typical listener position.

EG 202 518	Upper limit on output
EG 202 116	5.2.7.1 Speech 9.5.2.1 Acoustic Signals 9.5.4 Speech Output 9.5.5 Auditory Menus 10.7 Handset 10.13 Videophones 11.8 Voice transmission 7.3 Assistive technology 10.7 Handset
EG 201 103	6.6.2 Output devices 6.6.2.2 Loudspeakers (sound output)
EG 202 048	5.1.2.1 Auditive symbols, icons and pictograms: introduction 5.1.2.2 Auditive symbols, icons and pictograms: guidelines 5.1.2.1 Auditive symbols, icons and pictograms: introduction 5.1.2.2 Auditive symbols, icons and pictograms: guidelines
EG 202 534	4.3 Audio communication
ETR 160	5.1.2 Audio
ETR 297	5.3.6 Other audio considerations
ETR 334	5.3.2 Localizing sound 5.4.2.1 Speech production
ETS 300 488	5.2 Sensitivity frequency response 5.3 Receiving Loudness Rating
TS 102 511	7.2.12 Volume 7.3.7 Voice channel input and output
TS 102 577	Recommendations 9.3.5g
TR 101 767	5.4 Hearing impaired, telecommunications and hearing aids 6.3 Coupling to hearing aids 6.3.2 Electrical coupling 6.3.3 Infra red coupling 6.3.4 Radio coupling 6.11.4 Service over mobile telephony 6.12.3.5 Study of the interaction of Hearing Aid and Cellular Telephones 6.2.3.2 Loud ringer
ISO/FDIS 9241-20	9.1.5 Providing interoperability?
ISO/TR 22411	8.20.3 Communication systems?
ISO WD 24501	7 Setting method of sound pressure level of auditory signal 7.1 When not taking a masking sound into consideration 7.2 When taking a masking sound into consideration
Nordic Guidelines for Computer Accessibility	13 Requirements of persons with hearing impairments
ITU-T Recommendation F.790	9.1.5 Alert tones and voice guidance system 9.1.6 Voice input/output system
508	1194.23(h)
255	1193.43(i)
TEITAC	Subpart C 2.2-B
GTRIAMS #3	Page 69

9.3.7.4.1 Analysis

Addresses user needs: 2-3, 6.1.5.

Sufficient extant standards coverage exists to draft procurement legislation.

9.3.7.5 Volume (gain)

Some provision is required to ensure that products with speech output have an adjustable gain up to a sufficient output level.

ETS 300 488	5.3 Loudness rating
EG 202 518	Upper limit on output
EG 201 103	6.6 Terminal equipment 6.6.1 Input devices 6.6 Terminal equipment
EG 202 048	5.1.2.2 Auditive symbols, icons and pictograms: guidelines
EG 202 116	5.2.7.1 Speech 7.1.3 Adjustability 9.5.1 Auditory displays 9.5.2.1 Acoustic Signals
TS 102 577	Recommendations 10.11a
TS 102 511	7.2.12 Volume
CWA 14661:2003	12.3.5 Audio
ISO/IEC Guide 71	8.9 Loudness and pitch of non-spoken communication 8.20 Acoustics 8.20.2 Amplification and adjustment
ISO/FDIS 9241-20	7.3.8 Providing volume control 7.3.10 Providing independent controls for different channels
ISO EN 9241-171	10.6.2 Enable control of audio volume? 10.6.5 Control of background and other sound tracks?
ISO/TR 22411	8.7 Clear language in written or spoken information 8.7.4 Spoken information 8.7.4.2 Cognitive aspects of voice instruction. 1 st bullet 8.9 Loudness and pitch of non-spoken communication 8.20 Acoustics 8.20.2 Amplification and adjustment?
ISO WD 24500	4 Requirements for auditory signals
ISO/IEC WD 29136	6.2.1 Audio volume
ITU-T Recommendation P.370	5.2.1 Sensitivity
JIS S 0012	5.8 Understandability of sounds for the announcement purpose...a)
JIS X 8341-2	6.2 Sense and auditory information 6.2. Loudness and frequency...a), b)
UNE 139801:2003	4.4.2 The volume "must" (see Foreword) be able to be controlled by means of a physical control or by software (P1) 4.4.3 The user "must" (see Foreword) be able to select a volume that exceeds the background noise level in 20dB? (P2) 4.4.7 There "must" (see Foreword) be a direct way of readjusting the volume to the user's preferences (P3)
255	1193.43(e)
508	1194.23(f)
FCC	§68.317
ANSI/EIA-470-A-1987	Analogue phones
ANSI/EIA/TIA-571-1991	Digital phones
TEITAC	Subpart C 2.2-E
ACCENT D3.1	Appendix 1, Signals, Requirement 3.2

9.3.7.5.1 Analysis

Addresses user needs: 2-3, 6.1.5.

Sufficient extant standards coverage exists to draft procurement legislation for user needs related to gain, additional investigation required for other audio parameters.

9.3.7.6 Volume reset

Some provision is required to ensure that products which can adjust the receive volume to a level greater than 18 dB above normal unamplified level should have a function provided to automatically reset the volume to a level not greater than 18 dB above normal unamplified level after every use.

ETS 300 488	5.4 Restoring normal receive amplification
ISO/FDIS 9241-20	7.1.6 Returning to default configuration
ITU-T Recommendation P.370	5.3.3 Restoring normal receive amplification
508	1194.23(g)
FCC Memorandum Opinion and Order	DA 01-578
TEITAC	Subpart C 2.2-F

9.3.7.6.1 Analysis

Addresses user needs: 9-4, 11-3.

Sufficient extant standards coverage exists to draft procurement legislation.

9.4 Software and electronic content

These provisions apply to software and Web user interfaces and electronic content including Web pages.

9.4.1 Colour

Some provision is required to ensure information presented through colour is also presented in another way that is usable with atypical colour perception.

EG 202 116	5.2.6.1 Sight 7.1.4 Colour
EG 202 048	5.1.1.2 Visual symbols, icons and pictograms: guidelines
EG 202 191	9.2 Design principles for multimodal systems
TS 102 511	7.2.1 Colour
TS 102 577	Recommendation 10.10e
CWA 14661:2003	12.2.6 Colour and contrast 12.3.4 Colour and contrast
ISO/IEC Guide 71	8.5.3 Colour coding of information 9.2.1.4 Risks and hazards. final bullet
ISO 9241-12	7.5.1
ISO/FDIS 9241-20	7.2.11 Users with limited colour vision
ISO EN 9241-151	9.3.9 Using colour 9.4.8 Highlighting previously visited links
ISO EN 9241-171	10.4.1 Do not convey information by colour output alone (+++10.4.2 Provide colour schemes designed for people with disabilities) (+++10.4.3 Provide individualization of colour schemes)
ISO FDIS 9241-303	5.6 Legibility of information coding 5.6.4 Colour coding. penultimate sentence
ISO/TR 22411	8.2.1 General considerations (example 2) 8.5 Colour and contrast 8.5.1 Choice of colour. 1 st bullet 8.5.3 Colour coding of information
ISO/IEC 10779	5.4.1 Display requirements c) Colour coding "shall" (see Foreword) not be used as the only method of providing information
ISO/IEC TR 19766	7.2.5 Colour coding in icon graphics
ISO/IEC 11581-3	6.1.1 Display shalls

ISO 13406-2	7.25 Default colour set 7.26 Multicolour object size 7.27 Colour differences 7.28 Spectrally extreme colours 7.29.1 Simultaneous colour presentation 8.7.15 Contrast 8.7.25 Default colour set 8.7.27 Colour differences
Nordic Guidelines for Computer Accessibility	11 The perception of the contents of the display
ITU-T Recommendation F.790	9.1.3 (b) Displays
JIS X 8341-2	6.1.2 Colour and contrast...b)
JIS X 8341-3	5.5 Colour and shape....a)
NDA "access-it"	Web 1.2 (Priority 1) Web 2.1 (Priority 2)
255	1193.41(c)
508	1194.21 (i), 1194.22(c), 194.25(h)
ATAG 1.0	Guideline 7
UAAG 1.0	Guideline 8
WCAG 2.0	1.4.1, 1.1.1, 1.3.3, 1.4.8
TEITAC	Subpart C 3-A
KICS.KO-09.0040	4.5 Complement to Colour Contrast
IMS Guidelines for Developing Accessible Learning Applications	5.1 Common Types of Media Delivery and Associated Presentation Formats 5.1.1 Text
ACCENT D3.1	Appendix 2 software requirements, icons, Requirement 5 and Displays requirement 1
GTRIAMS #1	Pages 31 and 32
GTRIAMS #2	Pages 35, 36 and 76

9.4.1.1 Analysis

Addresses user needs: 1-5, 1-12, 4-6.

Sufficient extant standards coverage exists to draft procurement legislation.

9.4.2 Contrast

Some provision is required to ensure sufficient contrast is specified for textual information to be presented visually against its background.

EG 202 116	9.3.2 Text content
EG 201 103	7.2.2 Still images and graphics 6.1 Generic interface design issues
EG 202 048	5.1.1.1 Visual symbols, icons and pictograms: introduction 5.1.1.2 Visual symbols, icons and pictograms: guidelines 5.1.4.1 Olfactory symbols, icons and pictograms: introduction 5.1.4.2 Olfactory symbols, icons and pictograms: guidelines 5.2.1 Allocating information to a sensory modality
EG 202 191	8.4 Low vision 9.2 Design principles for multimodal systems
EG 202 423	4.1.3.1 Keyboards and buttons 4.1.5 Child ergonomics 4.2.1.1 Style and format of language 4.4.1.1 Comprehensibility to children
ETR 334	5.2.1.2 Glare 5.2.3.3 Visual search 5.2.4 Requirements for optimizing vision 6.1.1 Finding the telephone 6.1.2 Finding the number or seeking other information
ETR 345	4 Recommendations for the characteristics of telephone keypads and keyboards 4.8 Contrast between characters and keys 4.9 Contrast between keys and telephone set
CWA 14661:2003	12.2.6 Colour and contrast 12.3.4 Colour and contrast 12.4.6 Display 12.5.6 Display
TS 102 511	7.2.1 Colour 7.2.4 Menu E.2.2 Background colour H.6 Colour
TS 102 577	Recommendations 9.3.5a
ISO/IEC Guide 71	8.6 Size and style of font in information, warnings and labelling of controls 9.2 Sensory abilities 9.2.1 Seeing 9.2.1.3 Design considerations
ISO/FDIS 9241-20	7.2.7 Adjusting contrast of displayed objects
ISO EN 9241-171	10.4.5 Provide contrast between foreground and background
ISO DIS 9241-303	5.2 Luminance 5.2.1 Illuminance 5.2.2 Display luminance 5.2.3 Luminance balance and glare 5.2.4 Luminance adjustment 5.4 Visual Artefacts 5.4.3 Contrast uniformity? 5.5 Legibility and readability 5.5.1 Luminance contrast? 5.7 Legibility of graphics 5.7.2 Contrast for object legibility?
ISO/TR 22411	8.5.4 Luminance contrast 4) 8.6 Size and style of font and symbols in information, warnings and labelling of controls 8.6.3 Special consideration for fonts used in display screens. 9.2 Sensory abilities 9.2.1 Seeing 9.2.1.3 Span of fundamental colour and colour combination (category of colours) 9.2.1.7 Contrast sensitivity including the low vision sensitivity

ISO 13406-2	Part 2: Ergonomic requirements for flat panel displays 3.1 Photometry 3.1.2 background luminance 3.4.4 image formation time 3.4.16 viewing area 3.5.11 readability 7.14 Display luminance 7.15 Contrast 7.17 Reflections 7.17.2 Contrast of unwanted reflections 8.7.14 Display luminance 8.7.15 Contrast
ISO 10075-2	4.2.2.6 Signal discriminability
ISO/IEC 11581-1	6.1.6 Colour "shall" (see Foreword) not serve as the only informative element to distinguish between icons unless the functional element represented is the colour itself
JIS X 8341-2	6.1.2 Colour and contrast...a)
JIS X 8341-3	5.5 Colour and shape...a)
NDA "access-it"	Web 3.1 (Priority 3)
Nordic Guidelines for Computer Accessibility	9.3 The identification of keys 11 The perception of the contents of the display
508	1194.21(j)
TEITAC	Subpart C 3-B
ATAG 1.0	Guideline 7
UAAG 1.0	Guideline 8
ATAG 2.0	Guideline A.2.4 (for the authoring tool user interface) Make it easier to see and hear the interface A.2.4.4 Visual Display
UAAG 2.0	3.7.4 Maintain contrast
WCAG 1.0	Guideline 2. Don't rely on colour alone Ensure that text and graphics are understandable when viewed without colour
WCAG 2.0	1.4.3 Contrast (Minimum) 1.4.6 Contrast (Enhanced) 1.4.8
IMS Guidelines for Developing Accessible Learning Applications	5.1 Common Types of Media Delivery and Associated Presentation Formats 5.1.1 Text 5.1.2 Audio 5.1.4 Multimedia
ACCENT D3.1	Appendix 1, Keyboard 4.4
ACCENT D3.2	Appendix 2, Display Requirement 3
GTRIAMS #1	Page 39
GTRIAMS #2	Pages 42, 43 and 57 to 59

9.4.2.1 Analysis

Addresses user needs: 1-4, 1-12, 3-4.

Sufficient extant standards coverage exists to draft procurement legislation for text.

9.4.3 Perceptual characteristics

Some provision is required to ensure instructions and descriptions do not rely on perception of visual aspects of components for their comprehension.

EG 202 423	4.2.1 Comprehending instructions 4.2.4.5 Error handling
ETR 160	6.1 Using different media for the same task 7.1.7 User guidance
ETR 334	6.4.4 Information and instructions
ETR 300 488	A.2 User instructions
TR 102 133	5.6.1 Comprehension
TR 103 073	6.5.1 Initial set-up
Nordic Guidelines for Computer Accessibility	8 The perception of alarms, warnings, status signals, error messages
ISO/IEC Guide 71	8.6 Size and style of font in information, warnings and labelling of controls
ISO/FDIS 9241-20	7.6.3 Aiding understanding
ISO/TR 22411	8.3.1 Location 8.12.1 Size, Shape and mass
JIS X 8341-3	5.5 Colour and shape....c)
TEITAC	Subpart C 3-C
ATAG 1.0	Guideline 7
UAAG 1.0	Guideline 8
ATAG 2.0	B.2.2.4 Help Authors Decide B.3.2.2 Sequenced Instructions B.3.4.1 Instructions
WCAG 2.0	1.3.3 Sensory Characteristics 3.3.2 Labels or Instructions
IMS Guidelines for Developing Accessible Learning Applications	5.1 Common Types of Media Delivery and Associated Presentation Formats 5.1.1 Text

9.4.3.1 Analysis

Addresses user needs: 1-1, 2-1, 3-1, 4-1, 4-2.

Sufficient extant standards coverage exists to draft procurement legislation.

9.4.4 User preferences

Some provision is required to ensure that products make use of the platform user settings of display characteristics such as colour, contrast, font size and focus cursor(s) where they exist, or in the absence of such platform settings for colour and contrast, provide adequate defaults.

EG 202 116	9.2 Visual output
EG 202 249	10.8.2 Implicit methods - adaptive personalization
EG 202 325	4.2.2 Device and service profiles 13.2 Access to profile data
EG 202 416	6.12 Design for differing user abilities and functional limitations
EG 202 421	4.7 Design for flexible handling of users' needs 4.7.2 User profiles 4.9.11 User profiles 6 User profiles to support language and cultural Preferences 6.2 Ideal situation 6.3 User profile support for user requirements 6.4 User profile support for system requirements 7.2 User profiles 7.5.3.2 User language capabilities portfolio 7.6.9.1 Human Simultaneous translation/Interpretation 9.1 User profiles 9.2 Preference and capability negotiation
ETR 334	7.1 User description
EG 202 487	14 Localization, customization and personalization Guidelines
TR 102 415	7.4 Ubiquity of access, interoperability, customization and Personalization
TR 103 073	4.1.2 The Personal User Agent (PUA)
TS 102 577	Recommendations 10.2a, 11.8.1e, 13.2.2b, 15.4.1, 15.4.2
ISO/IEC Guide 71	Nothing relevant
ISO/FDIS 9241-20	7.1.5 Changing configurations? 7.2.7 Adjusting contrast of displayed objects?
ISO 9241-110	4.9 Suitability for individualization
ISO EN 9241-151	7.2.9.5 Allowing users to see and change profiles
ISO EN 9241-171	8.2.1 Enable individualization of user preference settings 8.2.2 Enable adjustment of attributes of common user interface elements 8.2.3 Enable individualization of the user interface look and feel 8.2.4 Enable individualization of the cursor and pointer 8.2.5 Provide user-preference profiles 8.2.6 Provide capability to use preference settings across locations 8.2.7 Enable user control of timed responses 10.4.5 Provide contrast between foreground and background
ISO DIS 9241-303	5.7 Legibility of graphics 5.7.3 Colour considerations for graphics. 4 th paragraph: Default colour set?
ISO/TR 22411	8.12.3.1 Handling. Final sentence 8.17.4 Other design considerations concerning cognitive abilities. 3 rd bullet
ISO/IEC 10779	5.3 Requirements for operation to be considered b) Operation procedures f) Adjustment of display/voice output
ISO/IEC TR 19766	8.8 User control of labels
ISO/IEC FCD 24786	5.1.1 StickyKeys a) 5.1.2 SlowKeys a) 5.1.3 BounceKeys a) 5.1.4 MouseKeys a) 5.1.5 RepeatKeys a) 5.1.6 On-screen keyboard a) b) 5.1.7 Voice operation a) 5.1.8 Visual emphasis a) b) m) 5.1.9 Screen reader a) 5.1.10 Auditory feedback a) 5.1.11 Visual feedback a)

ITU-T Recommendation Y.IPTV-Reqt	6.7.1 Accessibility
JIS X 8341-2	6.1.2 Colour and contrast...a) 6.1.3 Enlargement and reduction of display
UNE 139801:2003	4.1.7 Preferences that can be modified using controls and switches "must" (see Foreword) also be able to be adjusted by using software (P2) 4.4.4 If a product generates output through voice synthesis, a method for adjusting the basic parameters - speed and tone - "must" (see Foreword) be provided (P2)
508	1194.21(g)
TEITAC	Subpart C 3-D
KICS.KO-09.0040	4.7 Complement to Cognitive ability
WCAG 1.0	Guideline 7
UAAG 1.0	Checkpoint 11.6, Guideline 7
WCAG 2.0	1.4.1, 1.1.1, 1.3.3, 1.4.8
ACCENT D3.1	Appendix 2 software requirements, Display Requirements 2 and 5
ACCENT D3.2	Appendix 1, General, Requirement 5
GTRIAMS #2	Page 60, 61 and 78
GTRIAMS #3	Page 77

9.4.4.1 Analysis

Addresses user needs: 1-6, 5-7, 12-4, 12-8, 14-9.

Sufficient extant standards coverage exists to draft procurement legislation.

9.4.5 Colour adjustment

Some provision is required to produce adequate luminosity contrast ratio when colour and contrast settings are adjustable.

EG 202 116	9.2.2 Visual display types/characteristics
ETR 345	4.8 Contrast between characters and keys 4.9 Contrast between keys and telephone set
ISO/IEC Guide 71	8.5.2 Colour combinations?
ISO 9241-8	5 Visual performance objectives? 6.1 Default colour set
ISO/FDIS 9241-20	7.2.7 Adjusting contrast of displayed objects
ISO 13406-2	3.1.7 luminance contrast 7.15 Contrast 7.17.2 Contrast of unwanted reflections 8.7.15 Contrast C.4.4.3 Two-dimensional BRDF Data
ISO EN 9241-171	10.4.5 Provide contrast between foreground and background 10.4.2 Provide colour schemes designed for people with disabilities
ISO FDIS 9241-303	5.2 Luminance 5.2.1 Illuminance 5.2.2 Display luminance 5.2.3 Luminance balance and glare 5.2.4 Luminance adjustment 5.7 Legibility of graphics 5.7.3 Colour considerations for graphics. 4 th paragraph: Default colour set?
ISO/TR 22411	8.2.3.1 Visual Information. 2 nd bullet? 8.5.1 Choice of colour. See end of 1st new paragraph and final bullet. 8.5.2 Colour combinations? 8.5.4 Luminance contrast?
ISO/IEC 10779	5.4.1 Display requirements h) Still images and moving images on a personal computer display "shall" (see Foreword) be labelled with text describing the meaning of the images, when the office equipment is operated from a personal computer
ISO/IEC 10779	5.4.1 Display requirements e) When office equipment permits a user to adjust colour and contrast settings, a range of colour selections capable of producing a variety of contrast levels and colour schemes "shall" (see Foreword) be provided
ISO/IEC FCD 24786	5.1.8 Visual emphasis d), e), f), g), k) and n)
UNE 139801:2003	4.3.2 Colour, brightness and contrast "must" (see Foreword) be able to be adjustable so as to adapt to background conditions (P2)
508	1194.21(j)
ATAG 1.0	Guideline 7
UAAG 1.0	Guideline 8, checkpoint 4.3
WCAG 2.0	1.4.1 Use of Colour (Level AA)
TEITAC	Subpart C 3-E
IMS Guidelines for Developing Accessible Learning Applications	5.1 Common Types of Media Delivery and Associated Presentation Formats 5.1.1 Text

9.4.5.1 Analysis

Addresses user needs: 1-6, 5-7.

Sufficient extant standards coverage exists to draft procurement legislation.

9.4.6 Non-text objects

Some provision is required to ensure that non-text objects have a text alternative that presents equivalent information.

NOTE: Equivalent information for a software control that accepts user input would be a name that describes its purpose. Equivalent information for a media content, a test or exercise that "must" (see Foreword) be presented in non-text format, a non-text object is to confirm that content is being accessed by a person rather than a computer, would be a descriptive text label. Equivalent information for a non-text object that is pure decoration, or used only for visual formatting, or not presented should be ignorable by assistive technology.

EG 202 417	8.4 Accessibility of screen-based content
ISO/FDIS 9241-20	7.3.2 Providing verbal information visually
ISO EN 9241-151	7.2.3.2 Providing text equivalents for non-text media objects
ISO EN 9241-171	8.1.1 Provide a name for each user interface element 8.1.2 Provide meaningful names 8.1.3 Provide unique names within context 8.1.4 Make names available to assistive technology 8.1.5 Display names 8.1.6 Provide names and labels that are short 8.1.7 Provide text label display option for icons 8.1.8 Properly position the labels of user interface elements on screen
ISO/TR 22411	8.2.3.1 Visual Information. 2 nd bullet? 8.5.1 Choice of colour. See end of 1st new paragraph and final bullet 8.5.2 Colour combinations? 8.5.4 Luminance contrast?
JIS X 8341-2	6.1.4 Graphic and picture image
JIS X 8341-3	5.4 Non-text information
NDA "access-it"	Web 1.1 (Priority 1)
Nordic Guidelines for Computer Accessibility	14.4 Making accessible Web pages
508	1194.22(a)
TEITAC	Subpart C 3-F
IMS Guidelines for Developing Accessible Learning Applications	5.1 Common Types of Media Delivery and Associated Presentation Formats 5.1.2 Audio 5.1.3 Images 5.1.4 Multimedia
ATAG 1.0	Guideline 7
ATAG 2.0	A.2.2.3 Visual Information - c) Full Text Alternatives A.2.2.7 Full Text Alternative
UAAG 1.0	Guideline 8, checkpoint 2.2
UAAG 2.0	3.5.1 Repair Missing Alternatives
WCAG 1.0	Guideline 10. Use interim solutions - Checkpoint 10.3
WCAG 2.0	1.1.1 Non-text Content 1.2.1 Audio-only and Video-only (Prerecorded) 1.2.3 Audio Description or Full Text Alternative 1.2.8 Full Text Alternative 1.2.9 Live Audio-only

9.4.6.1 Analysis

Addresses user needs: 1-1, 2-1, 2-2, 4-8, 5-1, 5-2, 6-1, 14-2, 21.1(a).

Sufficient extant standards coverage exists to draft procurement legislation.

9.4.7 Human (natural) language

Some provision is required to ensure that the default human language of electronic documents can be programmatically determined.

EG 202 132	9.6 Language selection mechanisms
EG 202 325	5.3.3 Profile portability
EG 202 416	5.1 Employing use cases 6.8 Provide all configuration information in the user's native or other preferred language
EG 202 421	4.3 Current ways of providing cultural and language variants 4.6 Language identification 4.9.2 Natural language representation 4.9.4 Description of language and cultural capabilities 6.3 User profile support for user requirements 6.4 User profile support for system requirements 6.7.2 Implicit methods - adaptive personalization 7.5.3.2 User language capabilities portfolio 7.6.4.1 Enhanced language identification
ES 202 130	4.2 Principles and structure of the language coverage
ISO/IEC Guide 71	8.7.5 Multiple languages
ISO EN 9241-151	9.6.5 Identifying the language used?
ISO/TR 22411	8.7.1 Information available as text?
JIS X 8341-3	5.9 Language a)
NDA "access-it"	Web 1.7 (Priority 1)
WCAG 2.0	3.1.1 Language of Page (Level A)
TEITAC	Subpart C 3-G

9.4.7.1 Analysis

Addresses user needs: 13-7, 14-2.

Sufficient extant standards coverage exists to draft procurement legislation.

9.4.8 Language of parts

Some provision is required to ensure that the default human language of each part of electronic documents can be programmatically determined.

EG 202 421	4.6 Language identification 4.9.1.3 Localization markup language 4.9.2 Natural language representation 4.9.4 Description of language and cultural capabilities 6.7.2 Implicit methods - adaptive personalization 7.5.3.2 User language capabilities portfolio 7.6.4.1 Enhanced language identification
EG 202 132	9.6 Language selection mechanisms
EG 202 423	4.2.1.1 Style and format of language
TS 102 577	Recommendation 14.1d
ISO EN 9241-151	9.6.5 Identifying the language used?
ISO DIS 9241-303	Nothing relevant
ISO/TR 22411	8.7.1 Information available as text?
JIS X 98341-2	6.7.3 Title
TEITAC	Subpart C 3-H
WCAG 1.0	Guideline 4. Clarify natural language usage
WCAG 2.0	3.1.1 Language of Page 3.1.2 Language of Parts

9.4.8.1 Analysis

Addresses user needs: 13-7, 14-2.

Sufficient extant standards coverage exists to draft procurement legislation.

9.4.9 Pausing

Some provision is required to ensure that a mechanism is provided to where possible to control moving, blinking, scrolling or auto updating information that lasts for a significant time.

EG 202 116	
EG 201 103	6.4 System response time
TR 101 767	6.2.3.4 Optical indication of ringing
ISO/IEC Guide 71	8.10 Slow pace of information presentation
ISO/FDIS 9241-20	7.6.8 Enabling pausing or stopping
ISO EN 9241-151	7.2.3.3 Enabling users to control time-dependent media objects
ISO EN 9241-171	10.1.2 Enable user control of time-sensitive presentation of information 10.8.1 Enable users to stop, start and pause 10.8.2 Enable users to replay, rewind, pause and fast or jump forward
ISO 13406-2	7.23 Blink coding 8.7.23 Blink coding
ISO DIS 9241-303	Nothing relevant
ISO/TR 22411	8.10 Slow pace of information presentation 8.12.6 Timed responses
TEITAC	Subpart C 3-I
KICS.KO-09.0040	4.5 Complement to the response time
ATAG 1.0	Guideline 7
ATAG 2.0	Guideline A.3.3 (for the authoring tool user interface) Help authors avoid flashing that could cause seizures A.3.3.2 Blinking Request
WCAG 1.0	Guideline 7. Ensure user control of time-sensitive content changes
WCAG 2.0	2.2.2 Pause, Stop, Hide
UAAG 1.0	Guideline 8, checkpoint 3.3
UAAG 2.0	Guideline 4.4 Help users avoid flashing that could cause seizures

9.4.9.1 Analysis

Addresses user needs: 1-11, 2-7, 14-6, 14-7, 14-8.

Sufficient extant standards coverage exists to draft procurement legislation.

9.4.10 Flashing

Some provision is required to ensure any flashing display cannot induce seizure.

EG 202 116	9.4.1 Optical signals
TS 102 577	Recommendations 10.3h, 11.8.1c
CWA 14661:2003	12.4.8 Timing 12.5.8 Timing
ISO/IEC Guide 71	Nothing relevant
ISO 9241-12:1997	7.6 Coding with other visual techniques 7.6.5 Blink coding
ISO/FDIS 9241-20	7.2.12 Users who react to flicker
ISO EN 9241-151	Nothing relevant
ISO EN 9241-171	10.1.1 Avoid seizure-inducing flash rates
ISO 13406-2	7.23 Blink coding 8.7.23 Blink coding
ISO DIS 9241-303	5.4 Visual Artefacts 5.4.6 Temporal instability (flicker) 5.6 Legibility of information coding 5.6.3 Blink coding
ISO/TR 22411	8.2.6 Prevention of seizures 8.10.2.2 Control of visual information presentation?
ISO/IEC 10779	5.4.1 Display requirements g) When a blinking feature is used in the display, a blinking frequency not inducing photosensitive seizures "shall" (see Foreword) be used
JIS X 8341-2	5.5.2 Prevention of photosensible epilepsy, etc.
JIS X 8341-3	5.8 Speed b)
NDA "access-it"	Software 1.8 (Priority 1) Web 1.3 (Priority 1) Web 1.2 (Priority 2)
255	1193.43(f)
508	1194.21(k) 1194.22(j) 1194.25(i)
TEITAC	Subpart C 3-J
TKICS.KO-09.0040	4.5 Complement to the response time
ATAG 1.0	Guideline 7
ATAG 2.0	Guideline A.3.3 (for the authoring tool user interface) Help authors avoid flashing that could cause seizures A.3.3.2 Blinking Request
WCAG 1.0	Guideline 7. Ensure user control of time-sensitive content changes
WCAG 2.0	2.3.1, 2.3.2
UAAG 1.0	Guideline 7, checkpoint 3.3
UAAG 2.0	Guideline 4.4 Help users avoid flashing that could cause seizures

9.4.10.1 Analysis

Addresses user needs: 11-5.

Sufficient extant standards coverage exists to draft procurement legislation.

9.4.11 Consistent identification

Some provision is required to ensure that components with the same functionality and from the same source are consistently identified.

EG 202 116	7.2.7 Direct manipulation
EG 201 103	6.1 Generic interface design issues 5.1.3 Navigation and browsing
EG 202 417	5.3.3 Structure
EG 202 421	4.9.1.4 Structured information 5.2.4 Consistency
ISO/IEC Guide 71	8.3.3 Layout
ISO/FDIS 9241-20	9.1.2 Maintaining consistency
ISO EN 9241-151	8.4.15 Explicit activation 8.5.4.4 Handling large result sets 9.3.2 Consistent page layout 9.3.3 Placing title information consistently 9.4.14 Redundant links
ISO EN 9241-171	8.1.8 Properly position the labels of user interface elements on screen 8.4.10 Present user notification using consistent techniques
ISO DIS 9241-303	Nothing relevant
ISO/TR 22411	8.3.3 Layout 2 nd bullet++ 8.17.4 Other design considerations concerning cognitive abilities 14 th and 18 th bullets
ISO/IEC 10779	5.3 Requirements for operation to be considered e) Consistency of operation
ISO/IEC TR 19766	6.5 Consistency of state information 6.8 Consistency of comprehensibility and discriminability 7.1.1 Consistent description attributes 7.2.2 Consistent use of icon graphics 7.2.3 Consistent appearance of icon graphics 9.3 Consistent positioning. See all of clause 9 consistency recommendations
ISO/IEC 18035	5.1.4 Visual feedback...final sentence 5.2.2 Metaphor 5.2.5 Appearance
ISO/IEC 11581-1	6.1.7 When icon graphics are used as components of other icons, the meaning conveyed by the component "shall" (see Foreword) be consistent across all uses of the component 6.2.1 The visual appearance of icons should be consistent within the set of icons for which conformance is claimed. This means that within one set, icons should be displayed using similar graphical style, for example, a similar degree of realism 6.2.5 The location of any user-modifiable label relative to the icon should be consistent within any environment or any collection of environments designed for use together
ISO/IEC 11581-2	6.1.5 State change 6.2.2 Consistent behaviour
ISO/IEC 11581-6	6.1.4 Visual feedback. Last sentence 6.2.5 Appearance
JIS X 8341-2	5.1.2 Consistency of operation - Location and layout... b)
JIS X 8341-3	5.3 Operation and input f)
NDA "accessIT"	Software 2.2 (Priority 2) Public access terminals 2.3 and 2.4 (Priority 2)
Nordic Guidelines for Computer Accessibility	14.4 Making accessible Web pages
UNE 139801:2003	4.1.10 Symbols which appear on the labels of controls and switches "must" (see Foreword) be standardized or at least, commonly accepted (P3)
508	1194.21(e)
TEITAC	Subpart C 3-K
ATAG 1.0	Guideline 7

ATAG 2.0	Guideline A.4.2 (for the authoring tool user interface) Make functionality predictable A.4.2.3 Consistent Identification A.4.2.4 Consistent Navigation
WCAG 1.0	Guideline 13. Provide clear navigation mechanisms Guideline 14. Ensure that documents are clear and simple
WCAG 2.0	3.2.3 Consistent Navigation 3.2.4 Consistent Identification 2.4.9
ACCENT D3.1	Appendix 1, Keyboard Requirement 4.2 Appendix 2, Icons Requirement 2
ACCENT D3.2	Appendix 1, Generic Requirements, Interaction with the system, Output from the system
GTRIAMS #1	Pages 41, 42 and 58
GTRIAMS #2	Pages 46, 47 and 82

9.4.11.1 Analysis

Addresses user needs: 13-2, 13-3, 13-5.

Sufficient extant standards coverage exists to draft procurement legislation.

9.4.12 Audio turn-off

Some provision is required to ensure that a mechanism separate from the platform is provided to pause, stop or attenuate automatic audio signals that last for a significant time.

EG 202 116	9.5.2 Non-speech audio
EG 201 103	6.6.2.2 Loudspeakers (sound output) 7.2.4 Audio
TR 101 767	6.2.3.2 Loud ringer
TS 102 577	Recommendation 11.8.2e
ISO/IEC Guide 71	Nothing relevant
ISO/FDIS 9241-20	7.3.1 Avoiding harmful audio 7.3.8 Providing volume control
ISO EN 9241-151	Nothing
ISO EN 9241-171	10.6.2 Enable control of audio volume
ISO/TR 22411	8.7.4.2 Cognitive aspects of voice instruction 1 st bullet 8.9 Loudness and pitch of non-spoken communication?
ISO/IEC 10779	5.4.2 Auditory information requirements c) When office equipment utilizes a voice output feature, the ability to switch the device ON/OFF and adjust the volume "shall" (see Foreword) be possible d) When office equipment utilizes a voice output feature, it "shall" (see Foreword) be possible to interrupt, pause, and restart the voice output
JIS X 0841-2	6.2 Sense and auditory information (output) 6.2.2 Speed
JIS X 8341-3	5.7 Sound...b)
508	1194.25(e)
TEITAC	Subpart C 3-M
UAAG 1.0	Checkpoints 4.5 and 3.2
ATAG 2.0	A.2.4.3 Audio Control
WCAG 2.0	1.4.2, 1.4.7, 2.2.1
ACCENT D3.1	Appendix 1, Keyboard Requirement 4.1 Appendix 2, Sounds Requirement 3

9.4.12.1 Analysis

Addresses user needs: 9-4.

Sufficient extant standards coverage exists to draft procurement legislation.

9.4.13 Reading sequence

Some provision is required to ensure that information is navigable in a sequence consistent with its meaning, and that a sequence that conveys the intended meaning is available to assistive technology.

EG 202 116	7.1.8 Flexibility
ISO/IEC Guide 71	8.17 Logical process 8.17.1 Operations?
ISO 9241-12	5.6 Groups 5.6.2 Sequencing
ISO/FDIS 9241-20	7.6.3 Aiding understanding
ISO EN 9241-151	8.3.5 Offering task-based navigation?
ISO EN 9241-171	9.3.18 Arrange controls in task-appropriate navigation order?
ISO/TR 22411	8.7.4 Spoken information?
JIS X 8341-2	6.1.1 Location and layout a)
NDA "access-it"	Software 1.10 (Priority 1) Web 2.15 (Priority 2)
508	1194.25(e)
TEITAC	Subpart C 3-M
UAAG 1.0	Checkpoint 9.9
ATAG 2.0	A.2.3.5 Meaningful Sequence
WCAG 2.0	1.3.2 Meaningful Sequence 2.4.3 Focus Order, 2.4.11 Focus Order (Visual)
ACCENT D3.1	Appendix 2, Keyboard Access Requirement 3
ACCENT D3.2	Appendix 1, General Requirements
GTRIAMS #1	Page 58

9.4.13.1 Analysis

Addresses user needs: 13-5, 13-8, 13-10.

Sufficient extant standards coverage exists to draft procurement legislation.

9.4.14 Link purpose

Some provision is required to ensure that where the purpose of a link is clear it is possible to determine the purpose of a link from its text or from its programmatically determinable context.

EG 202 423	B.2.4 Comprehension of content
TR 102 133	5.6.1 Comprehension
ISO EN 9241-151	9.4.5 Self-explanatory link cues 9.4.7 Using descriptive link labels 9.4.9 Marking links to special targets 9.4.11 Distinguishing navigation links from controls? 9.4.12 Distinguishable within-page links?
JIS X 8341-3	5.3 Operation and input g)
NDA "access-it"	Web 2.12 (Priority 2)
TEITAC	Subpart C 3-N
WCAG 2.0	2.4.4 Link Purpose (In Context) 2.4.9 Link Purpose (Link Only)

9.4.14.1 Analysis

Addresses user needs: 13-2.

Sufficient extant standards coverage exists to draft procurement legislation.

9.4.15 Information and relationships

Some provision is required to ensure that information and relationships conveyed through presentation are available to assistive technology.

TS 102 511	4.2 Assistive technology interfacing
NDA "access-it"	Web 2.7, 2.9 & 2.10 (Priority 2)
508	1194.22(g), (h), (i), & (n), 21(l)
WCAG 2.0	1.3.1 Info and Relationships (Level A) 4.1.1, 4.1.2
TEITAC	Subpart C 3-O

9.4.15.1 Analysis

Addresses user needs: 15-3.

Sufficient extant standards coverage exists to draft procurement legislation.

9.4.16 User interface components

Some provision may be required to ensure that the name and role of all user interface elements is available to assistive technology.

TR 102 068	5.0 User aspects
ISO EN 9241-151	8.4?
ISO/TR 22411	8.7 Clear language in written or spoken information 8.7.1 Information available as text 1st bullet "graphic elements"?
ISO/IEC 10779	4.1 Basic policies d)? (reverse disruption?)
508	1194.21 (l), 1194.22 (n)
WCAG 2.0	4.1.2 Name, role, value (Level A)
TEITAC	Subpart C 3-P
ATAG 2.0	Guideline A.1.2 (for the authoring tool user interface) Support interoperability with assistive technologies.
UAAG 2.0	2 The user agent is not required to export the bindings outside of the user agent process (though doing so may be useful to assistive technology developers)

9.4.16.1 Analysis

Addresses user needs: 15-3.

Sufficient extant standards coverage exists to draft procurement legislation.

9.4.17 Disruption of access features

Some provision is required to ensure that access features of platforms (as defined in the relevant documentation) cannot be disrupted except on user request.

TS 102 577	Recommendations 10.2f
ISO/FDIS 9241-20	9.1.8 Safeguarding features
ISO EN 9241-171	8.3.3 Avoid interference with accessibility features 8.3.2 Safeguard against inadvertent activation or deactivation of accessibility features?
508	1194.21(b)
TEITAC	Subpart C 3-Q
ATAG 1.0	Checkpoints 7.1 and 5.2
UAAG 1.0	Guideline 3, Guideline 8
WCAG 2.0	Conformance Requirements, Non Interference
ACCENT D3.1	Appendix 2, Keyboard Access Requirement 5 and Sounds Requirement 2

9.4.17.1 Analysis

Addresses user needs: 12-5, 15-3.

Sufficient extant standards coverage exists to draft procurement legislation.

9.4.18 Timing

Some provision is required to ensure that users are able to change or switch off time limits when required, and when this does not invalidate the activity.

EG 202 116	5.2.8.1 Intellect, 716 Error management, 7.9 Response times
TS 102 577	Recommendations 11.6.1a, 11.6.1b
ISO/IEC Guide 71	8.10 Slow pace of information presentation 8.12.5 Duration of actions? 8.12.6 Timed responses 9.3.2 Manipulation 9.3.2.2 Effects of ageing
ISO/FDIS 9241-20	7.5.7 Providing user control of response timing
ISO EN 9241-151	9.3.5 Visualizing temporal status 7.2.3.3 Enabling users to control time-dependent media objects?
ISO EN 9241-171	8.2.7 Enable user control of timed responses
ISO 10075-2	4.2.2.19 Controllability
ISO/IEC 10779	5.3 Requirements for operation to be considered g) Timed response 5.4.4 Operation Requirements c) Timed response should not be required. d) When a timed operation is required, the time "shall" (see Foreword) be adjustable
ISO/IEC FCD 24786	5.1.2 SlowKeys d) "shall" (see Foreword) 5.1.3 BounceKeys d) "shall" (see Foreword) 5.1.4 MouseKeys d) "shall" (see Foreword) 5.1.5 RepeatKeys b) "shall" (see Foreword), c) "shall" (see Foreword) 5.1.9 Screen reader c) "shall" (see Foreword)
ISO/TR 22411	8.10.2 User control of time-sensitive content changes 8.10.3 Time-constrained task design
JIS S 0012	5.6.2 Consideration given in operational procedure...d)
JIS X 8341-2	6.8 Time limit (input and output)
JIS X 8341-3	5.3 Operation and input c), d)
NDA "access-it"	Software 2.1 (Priority 2) Public access terminals 2.1 (Priority 2)
UNE 139801:2003	4.7.1 When a response is required from the user within a set time, a warning "must" (see Foreword) be provided before that time expires. This warning "must" (see Foreword) be perceived in both visual and audible forms (P2)? 4.7.2 When a response is required from the user within a set time, there "must" (see Foreword) be a mechanism that allows the user to indicate that he needs more time to respond (P2)?
255	1193.41(g)
508	1194.22(p), 1194.23(d), 1194.25(b)
TEITAC	Subpart C 3-R
UAAG 1.0	Checkpoint 2.4
ATAG 2.0	A.3.2.2 Timing Adjustable 4.3.1 Timing Adjustable
WCAG 2.0	2.2.1 Timing Adjustable
ACCENT D3.1	Appendix 2, Keyboard Access Requirement 6
ACCENT D3.2	Appendix 1, Interaction with the system

9.4.18.1 Analysis

Addresses user needs: 7-1, 7-2.

Sufficient extant standards coverage exists to draft procurement legislation.

9.4.19 Keyboard operation

Some provision is required to ensure that functionality operated through the user interface "must" (see Foreword) be operable with the keyboard or its interface, unless the functionality relies on real time path data.

TS 102 577	Recommendations 11.7.1a, 11.7.1b, c, d, e, f, g, h
CWA 14661:2003	12.5.3 Keyboard access
ISO/FDIS 9241-20	7.2.5 Providing control using non-visual mechanisms 7.4.1 Supporting text entry of inputs
ISO EN 9241-151	10.9 Designing for input device independence
ISO EN 9241-171	9.3.2 Enable full use via keyboard 8.5.11 Accept the installation of keyboard and/or pointing device emulators 9.1.1 Provide keyboard input from all standard input mechanisms 9.1.2 Provide parallel keyboard control of pointer functions
ISO 13406-2	8.3.1 Test facility
ISO/IEC 10779	5.7 Alternate methods c) "shall" (see Foreword)
ISO/IEC TR 19766	5.4 Accessibility of icon operations
ISO/IEC FCD 24786	5.1.6 On-screen keyboard a) "shall" (see Foreword) and b) should 5.2.2.2 Keyboard operation (3 "shalls" (see Foreword) and 1 should)
JIS X 8341-2	6.4.12 Operation by keyboard 6.4.14 Preparation of alternative means
NDA "accessIT"	Software 1.4 (Priority 1) Software 1.5 (Priority 1)
UNE 139801:2003	4.2.12 Key labels "must" (see Foreword) be easily readable: they "must" (see Foreword) have a high contrast and a sans-serif font (P2) <i>this also addresses text/fonts, contrast and legibility issues</i>
508	1194.21(a)
TEITAC	Subpart C 3-S
IMS Guidelines for Developing Accessible Learning Applications	6. Guidelines for Developing Accessible Asynchronous Communication and Collaboration Tools 6.1 Threaded Message Boards 6.2 e-mail Messaging 6.3 Document Repositories 6.4 Organisers, Schedulers and Calendars
ATAG 1.0	Guideline 7
ATAG 2.0	Guideline A.3.1 (for the authoring tool user interface) Ensure that all functionality is available from a keyboard
UAAG 1.0	Guideline 1. Support input and output device-independence checkpoint 1.2
UAAG 2.0	Guideline 4.1 Ensure full keyboard access
WCAG 1.0	Guideline 9. Design for device-independence
WCAG 2.0	Guideline 2.1 Keyboard Accessible: Make all functionality available from a keyboard, 2.1.1, 2.1.3
ACCENT D3.1	Appendix 1, Keyboard Access Requirement 1 and Icons Requirement 4
GTRIAMS #2	Pages 44 and 45
GTRIAMS #3	Pages 57 and 58

9.4.19.1 Analysis

Addresses user needs: 6-4.

Sufficient extant standards coverage exists to draft procurement legislation.

9.4.20 Keyboard shortcuts

Some provision may be required to ensure that keyboard commands operated through the user interface are visible within the visual interface.

CWA 14661:2003	12.4.3 Keyboard access
ISO EN 9241-171	9.3.11
TEITAC	Subpart C 3-SS
Nordic Guidelines for Computer Accessibility	9 The use of a keyboard
ATAG 2.0	A.4.4.2 Document Accessibility Features
UAAG 1.0	1.1 Full keyboard access (P1)
UAAG 2.0	Guideline 4.1. Ensure full keyboard access 4.1.5 Available Keystrokes
WCAG 1.0	Checkpoint 9.5

9.4.20.1 Analysis

Addresses user needs: 13-8.

Sufficient extant standards coverage exists to draft procurement legislation.

9.4.21 Focus indicator

Some provision is required to ensure that keyboard focus can be set to have a high visibility.

ISO 9241-12	6.2 Cursors and pointers 6.2.1 Designation of cursor and pointer position 6.2.8 Active cursor/pointer
ISO EN 9241-171	9.2.1 Provide keyboard focus and text cursor 9.2.2 Provide high visibility keyboard focus and text cursors
JIS X 8341-2	6.4.11 Input focus
508	1194.21(c)
UAAG 1.0	Guideline 9, checkpoint 9.1
WCAG 2.0	2.4.7 Focus Visible (Level AA)
TEITAC	Subpart C 3-T

9.4.21.1 Analysis

Addresses user needs: 3-7.

Sufficient extant standards coverage exists to draft procurement legislation.

9.4.22 AT interoperability

Some provision may be required to ensure that where equipment supports interaction with external assistive devices, the software provides sufficient information to such assistive devices to operate.

EG 202 191	9.4 Accessibility and assistive terminal interfaces
EG 202 249	C.4.17 Accessibility
TR 102 068	11 Recommended interfaces and protocols
TR 103 073	6.2 Accessibility
TS 102 577	Recommendations 10.2.e
ISO/FDIS 9241-20	7.1.8 Supporting assistive technologies
ISO EN 9241-171	8.1.4 Make names available to assistive technology 8.5.2 Enable communication between software and assistive technology 8.5.4 Make user interface element information available to assistive technologies 8.5.5 Allow assistive technology to change keyboard focus and selection 8.5.6 Provide user interface element descriptions 8.5.7 Make event notification available to assistive technologies 8.5.8 Allow assistive technology to access resources 8.5.9 Use system-standard input/output 8.5.10 Enable appropriate presentation of tables 8.5.11 Accept the installation of keyboard and/or pointing device emulators 8.5.12 Allow assistive technology to monitor output operations 8.5.13 Support combinations of assistive technologies
ISO/TR 22411	6.4 Content of the standard 2 nd bullet 8.10.2.2 Control of visual information presentation 1 st paragraph, final sentence
ISO/IEC 10779	5.7 Alternate methods a) = "shall" (see Foreword) ? b) = "shall" (see Foreword) /should?
ISO/IEC TR 19766	5.3 Accessibility of description attributes
NDA "accessIT"	Software 1.2 (Priority 1)
508	1194.21(d), (c) and (f)
TEITAC	Subpart C 3-U
Nordic Guidelines for Computer Accessibility	4.2 Connection of assistive devices
CWA 14661:2003	6.2 Adaptive and Assistive Technologies
ATAG 1.0	Guideline 7
ATAG 2.0	Guideline A.1.2 (for the authoring tool user interface) Support interoperability with assistive technologies
UAAG 2.0	2 The user agent is not required to export the bindings outside of the user agent process (though doing so may be useful to assistive technology developers)
WCAG 2.0	4.1.1, 4.1.2
GTRIAMS #2	Pages 79, 80 and 81
GTRIAMS #3	Page 75

9.4.22.1 Analysis

Addresses user needs: 15-2, 15-3.

Sufficient extant standards coverage exists to draft procurement legislation.

9.4.23 Accessibility services

Some provision is required to ensure that platform software provides access to services enabling adequate interaction with assistive technology.

TR 102 068	11 Recommended interfaces and protocols
ISO/IEC Guide 71	Nothing relevant
ISO/FDIS 9241-20	Nothing relevant
ISO EN 9241-151	Nothing relevant
ISO EN 9241-171	8.5.3 Use standard accessibility services
ISO DIS 9241-303	Nothing relevant
ISO/TR 22411	Nothing relevant
ISO/IEC WD 29136	5.4.3 Connectivity of alternative devices a), b), c), d) and e)
Nordic Guidelines for Computer Accessibility	4.2 Connection of assistive devices
WCAG 2.0	4.1.2 Name, Role, Value (Level A)
TEITAC	Subpart C 3-V
ACCENT D3.2	Appendix 1, Physical Design

9.4.23.1 Analysis

Addresses user needs: 15-2.

Sufficient extant standards coverage exists to draft procurement legislation.

9.4.24 Assistive technology

Some provision may be required to ensure that external assistive devices utilize the accessibility services provided by the platform software.

TR 102 068	11 Recommended interfaces and protocols
EG 202 191	9.4 Accessibility and assistive terminal interfaces
WCAG 2.0	4.1.2 Name, Role, Value (Level A), 4.1.1
TEITAC	Subpart C 3-VV

9.4.24.1 Analysis

Addresses user needs: 15-3, 15-4.

Sufficient extant standards coverage exists to draft procurement legislation.

9.4.25 Multiple ways

Some provision is required to ensure that there is more than one way to locate content within a set of Web pages.

ISO EN 9241-171	8.5.3 Use standard accessibility services
WCAG 2.0	2.4.5 Multiple Ways (Level AA)
TEITAC	Subpart C 3-W

9.4.25.1 Analysis

Addresses user needs: 13-5 partial match.

Sufficient extant standards coverage exists to draft procurement legislation.

9.4.26 Labels or instructions

Some provision is required to ensure that when user input is required, suitable labels or instructions are provided.

EG 202 116	7.8.2.6 Help Mechanisms Text 9.3.5 Screen messages
EG 201 103	6.5.2.1 Labels and icons
ETR 160	7.1.7 User guidance
ETR 334	6.4.4 Information and instructions
ETS 300 488	A.1 Packaging and labelling A.2 User instructions
ETR 297	7.2 Indication issues 7.2.1 Naming of functions and labelling 7.2.3 Visual indication and messages
ETR 345	4.13 Labelling of function keys 4.15 Labelling of memory keys
ISO/IEC Guide 71	8.7 Clear language in written or spoken information (most, but in particular) 8.7.1 Information available as text 8.7.2 Complexity of information? 8.7.3 Printed instructions? 8.7.4 Spoken information?
ISO 9241-12	5.5 Input/output area 5.5.1 Required information 5.9 Labels: all clauses 5.9.1 to 5.9.9
ISO/FDIS 9241-20	7.6.3 Aiding understanding?
ISO EN 9241-151	8.3.6 Offering clear navigation within multi-step tasks 8.3.3 Breadth versus depth of the navigation structure? 9.4.7 Using descriptive link labels?
ISO EN 9241-171	<i>(8.1 addresses labels, but does not have anything similar to the requirements)</i>
ISO/TR 22411	6.4 Content of the standard 1 st bullet 8.7 Clear language in written or spoken information (most, but in particular) 8.7.1 Information available as text 8.7.2 Complexity of information? 8.7.3 Printed instructions? 8.7.4 Spoken information?
NDA "access-it"	Web 2.16 (Priority 2)
WCAG 2.0	3.3.2 Labels or Instructions (Level A) 3.3.1, 3.3.2, 3.3.3
TEITAC	Subpart C 3-X
ATAG 2.0	A.4.3.4 Labels or Instructions
GTRIAMS #2	Pages 69 and 70

9.4.26.1 Analysis

Addresses user needs: 3-1, 3-2, 3-3, 3-4, 3-5, 3-6, 3-7, 3-8.

Sufficient extant standards coverage exists to draft procurement legislation.

9.4.27 On focus

Some provision is required to ensure that when focus changes in content or electronic documents occur through navigation by keyboard or other keypads, a change of context is not initiated.

WCAG 2.0	3.2.1 On Focus (Level A) 2.4.3
TEITAC	Subpart C 3-Y
ATAG 1.0	Guideline 7
UAAG 1.0	Guideline 9, checkpoints 9.1 and 9.3
ATAG 2.0	A.4.2.1 On Focus
UAAG 2.0	3.12.11 On Focus

9.4.27.1 Analysis

Addresses user needs: No exact match.

Sufficient extant standards coverage exists to draft procurement legislation.

9.4.28 On input

Some provision is required to ensure that when a setting of any user interface component in content or electronic documents is changed there is no unexpected change of context.

WCAG 2.0	3.2.2 On Input (Level A)
TEITAC	Subpart C 3-Z
ATAG 2.0	A.4.2.2 On Input

9.4.28.1 Analysis

Addresses user needs: No direct match.

Sufficient extant standards coverage exists to draft procurement legislation.

9.4.29 Error identification

Some provision is required to ensure that when an input error is automatically detected in content or electronic documents, the item that is in error is identified and described to the user in text.

EG 202 116	7.1.6 Error management
EG 201 103	6.5.2.2 Feedback
ES 201 125	5.3.1 Error announcements
EG 202 132	8.4 Error handling guidance
EG 202 249	5.2.1 Presentation of feedback, notification and state information 5.6 Error prevention and handling
EG 202 417	7.2.1 Help texts
EG 202 423	4.2.4.5 Error handling
TS 102 511	E.5.1 Notification of menu changes
TS 102 577	Recommendations 11.8.3a and 11.8.3b
ETR 297	7.2 Indication issues
CWA 14661:2003	12.4.7 User notification 12.5.7 User notification
ISO 9241-110	4.8 Error tolerance...4.8.3
ISO EN 9241-151	8.5.2.10 Error-tolerant search? 8.5.4.5 Showing the query with the results? 10.3.2 Providing clear error messages
ISO EN 9241-171	8.4.9 Allow warning or error information to persist 8.4.10 Present user notification using consistent techniques 8.4.11 Provide understandable user notifications 8.4.12 Facilitate navigation to the location of errors
ISO 10075-2	4.2.2.23 Error tolerance 4.2.2.24 Error consequences
ISO/IEC 26514	11.10 Content of error messages and problem resolution
ISO/IEC 10779	5.3 Requirements for operation to be considered j) Operation during error
WCAG 2.0	3.3.1 Error Identification (Level A)
TEITAC	Subpart C 3-AA
ATAG 2.0	A.4.3.3 Error Identification
ACCENT D3.2	Appendix 1, Interaction with the system
GTRIAMS #2	Page 33

9.4.29.1 Analysis

Addresses user needs: 9-1, 9-2.

Sufficient extant standards coverage exists to draft procurement legislation.

9.4.30 Headings and labels

Some provision is required to ensure that headings and labels describe the topic or purpose.

EG 202 116	7.5 Labels and abbreviations
EG 201 103	6.5.2.1 Labels and icons
ETR 297	7.2.1 Naming of functions and labelling
TS 102 577	Recommendations 11.8.1d and 11.8.1e
ISO/IEC TR 19766	7.1.10 Meaningful icon labels
UNE 139801	4.1.9 The labels of controls and switches which are essential for operating the product "must" (see Foreword) be easily readable: they "must" (see Foreword) have a high contrast, a sans-serif font and a minimum height of 4mm? (P2)
TEITAC	Subpart C 3-BB
WCAG 2.0	2.4.6 Headings and Labels
ATAG 2.0	A.4.3.4 Labels or Instructions
ACCENT D3.1	Appendix 2, Icons Requirement 1 and Field Labelling Requirement 1
GTRIAMS #2	Page 77
GTRIAMS #3	Pages 70 and 71

9.4.30.1 Analysis

Addresses user needs: 13-2.

Sufficient extant standards coverage exists to draft procurement legislation.

9.4.31 Advisory recommendations

The following are recommended best practices. As they are not testable criteria, they cannot be included in any normative requirements.

9.4.31.1 Suppression of unneeded function

Software should provide a mechanism enabling users to simplify the interface including the modification or hiding of command buttons. If such a function is provided, a mechanism should be provided to reset to the default user interface.

EG 202 116	7.1.8 Flexibility
TEITAC	Advisory note 1

9.4.31.1.1 Analysis

Addresses user needs: 13-11.

Insufficient extant standards coverage exists to draft procurement legislation.

9.4.31.2 Writing guidelines

Authors should follow best practices for creating content that is accessible for people with disabilities.

EG 202 116	7.2 Dialogue style
EG 201 103	6.5.1 Help and prompting
EG 202 132	7.4 User guides and reference documentation
EG 202 325	4.1.2 Descriptive information 10.9.2 Guided configuration
EG 202 417	4.3 Choice of media 6.4 Multiple user guidance 7.2.1 Help texts 7.2.3 Interactive tutorials and avatars
EG 202 423	4.2.1 Comprehending instructions 4.2.4.4 Help facilities
ETR 160	7.1.7 User guidance
ETR 297	7.2.3 Visual indication and messages
ETR 334	6.4.4 Information and instructions
ETR 300 488	A.2 User instructions
TS 102 577	Recommendations 9.2.2a, 9.2.2b, 9.2.2c and 9.2.2d
ISO/IEC Guide 71	8.7 Clear language in written or spoken information 8.7.2 Complexity of information 8.7.3 Printed instructions 8.7.4 Spoken information 8.7.5 Multiple languages 8.12.2 Instruction manuals and location of markings 9.4.4 Language/literacy 9.4.4.2 Effects of ageing 9.4.4.3 Risks and hazards
ISO EN 9241-151	(Clause 9 is Content presentation) 9.1 General 9.2 Observing principles of human perception 9.3 Page design issues (all clauses) 9.4 Link design (all clauses) 9.5 Interaction objects (all clauses) 9.6 Text design (all clauses)
ISO EN 9241-171	11.1.1 Provide understandable documentation and Help 11.1.4 Write instructions and Help without unnecessary device references
ISO/IEC 26514	12.5.1 Provide understandable documentation 12.5.4 Write instructions without unnecessary device references
ISO/IEC 26514	Provides guidance on developing and producing user documentation and instructions, and Includes accessibility recommendations for documentation
ISO/TR 22411	8.7 Clear language in written or spoken information 8.7.2 Complexity of information 8.7.3 Printed instructions 8.7.4 Spoken information (all clauses) 8.7.5 Multiple languages 8.7.6 Other factors 8.7.6.1 Document navigation mechanisms 8.7.6.2 Language support 8.12.2 Instruction manuals and location of markings 8.17.4 Other design considerations concerning cognitive abilities 7 th and 9 th bullets 8.18.4 Non-glare surface finish 9.2.2.4 Design of voice instructions 9.4.4 Language/literacy 9.4.4.2 Effects of ageing 9.4.4.3 Risks and hazards
JIS S 0012	5.6 Understandability of procedure
JIS X 8341-2	5.2 Vocabulary and notation
JIS X 8341-3	5.9 Language...c), d) and f)
NDA "access-it"	Software 1.9 (Priority 1) Web 1.6 (Priority 1) Web 3.6 (Priority 3)
Nordic Guidelines for Computer Accessibility	15 Documentation

UNE 139801	4.8.1 Product documentation "must" (see Foreword) be written in the clearest and simplest form possible, with a vocabulary which clearly explains the task to be undertaken by the product (P3) 4.8.2 Product documentation "must" (see Foreword) be available on request in alternative formats, adjusted to the specific needs of the user and at no additional cost (P3) 4.8.3 The information on accessibility features of the product "must" (see Foreword) be available in alternative formats on request, adjusted to the specific needs of the user and at no additional cost (P3) 4.8.4 The technical and client support services "must" (see Foreword) accommodate the communication requirements of users with disabilities (P3)
ATAG 1.0	Checkpoints 6.1, 6.2 and 6.3
TEITAC	Advisory note 2

9.4.31.2.1 Analysis

Addresses user needs: No match found - a process rather than need.

Insufficient extant standards coverage exists to draft procurement legislation.

9.4.31.3 Interaction guidelines

Applications should design user interactions that are accessible for people with disabilities including the provision of means to undo actions, and means to move backwards one step in a process to fix mistakes or check answers or cancel actions before final submission.

EG 202 116	7.1.6 Error management
EG 202 249	5.4 User control and freedom 5.6 Error prevention and handling
ETR 160	7.1.6 Navigation
TR 102 133	5.4 Operating characteristics
TS 102 577	Recommendations 10.2g, 13.2.332a, b, c, d, e, f, g, h
ISO/IEC Guide 71	See clause 9 - Detail about human abilities and the consequences of impairment
ISO/FDIS 9241-20	9.1.7 Providing undo or confirm
ISO EN 9241-151	8.4.11 Linking back to the home page or landmark pages 8.4.12 Going back to higher levels? 8.4.13 Providing a "step back" function
ISO EN 9241-171	8.4.3 Provide "Undo" and/or "Confirm" functionality
ISO/TR 22411	8.17.4 Other design considerations concerning cognitive abilities 1 st bullet See clause 9 - Ergonomic data on human abilities and the consequences of impairment
ITU-T Recommendation T.140	Section 8.2 Erase last character
ITU-T FSTP-TACL	5.1 and 5.2
ITU-T Recommendation F.790	9.1.1, 9.1.2
JIS S 0012	5.6.2 Consideration given in operational procedure...b) 5.10 Countermeasure against and prevention of wrong operation...c)
JIS X 8341-2	5.1.4 Cancellation of operational error 6.9.2 UNDO function
JIS X 8341-3	5.3 Operation and input.
NDA "access-it"	Public access terminals 2.2 (Priority 2)
TEITAC	Advisory note 3
UAAG 1.0	Checkpoints 2.1, 2.2, 2.7, 2.8, 2.9 and 2.10
ATAG 2.0	A.4.3.6 Error Prevention
WCAG 2.0	3.3.4 Error Prevention (Legal, Financial, Data) 3.3.6 Error Prevention (All) 3.3.1, 3.3.2, 3.3.4, 3.3.5, 3.3.6
ACCENT D3.2	Appendix 1, Interaction with the system
GTRIAMS #3	Page 76

9.4.31.3.1 Analysis

Addresses user needs: 3-1, 6-1, 9-3, 13-4, 6.1.8, 8.3.1 Real-time communication.

Insufficient extant standards coverage exists to draft procurement legislation.

9.4.31.4 Parsing

It should be ensured that content implemented using mark-up languages has elements with complete start and end tags, except as allowed by their specifications, and are nested according to their specifications.

EG 202 421	4.4.3 Spoken Text Mark-up Language (STML)
WCAG 2.0	2.0-4.1.1 Parsing (Level A)
TEITAC	Advisory note 4

9.4.31.4.1 Analysis

Addresses user needs: No match found - a secondary function.

Insufficient extant standards coverage exists to draft procurement legislation.

9.4.31.5 User preferences (non-visual)

User interfaces which provide a mode of interaction other than visual (such as vocal, aural, gustatory, olfactory, tactile) that can affect human sensory functions, should provide settings that allow the user to stop and control those functions.

EG 202 116	7.1.2 Adaptability
TS 102 577	Recommendation 15.4.1
ISO/FDIS 9241-20	7.2.5 Providing control using non-visual mechanisms
ISO EN 9241-151	10.9 Designing for input device independence?
ISO EN 9241-171	8.2.1 Enable individualization of user preference settings 8.2.5 Provide user-preference profiles 8.2.6 Provide capability to use preference settings across locations 10.6.2 Enable control of audio volume 10.6.4 Enable adjustment of audio output 10.6.5 Control of background and other sound tracks 10.9.3 Enable tactile output to be adjusted
ISO/TR 22411	8.2 Alternative format 8.17.4 Other design considerations concerning cognitive abilities: penultimate bullet
ISO/IEC FCD 24786	5.2 Accessibility setting mode 5.3 Shortcuts to access the accessibility functions
ITU-T Recommendation Y.IPTV-Req1	6.7.1 Accessibility
WCAG 2.0	3.3.3 Error suggestion (Level AA)
TEITAC	Advisory note 5
KICS.KO-09.0040	4.4 Complement to and Replacement of Eyesight

9.4.31.5.1 Analysis

Addresses user needs: 2-1, 2-2.

Insufficient extant standards coverage exists to draft procurement legislation.

9.5 Audio visual equipment

9.5.1 Captioning/subtitling playback

Some provision is required to ensure that audio/video playback products, including but not limited to, televisions, set top boxes, personal video display devices and software players, provide adequate support for Subtitling.

ES 202 432	5.1 Subtitling
ISO/FDIS 9241-20	7.3.3 Users that cannot hear
ISO EN 9241-171	10.7.1 Display any captions provided 10.7.2 Enable system-wide control of captioning 10.7.3 Support system settings for captioning 10.7.4 Position captions to not obscure content
ISO DIS 9241-303	Nothing relevant
PDTR 22411	Nothing relevant
ISO/IEC WD 29136	5.4.3 Connectivity of alternative devices e) PC should display closed captions
ITU-T Recommendation Y.IPTV	6.7.1
JIS X 8341-2	6.3.1 Presentation of alternative information on animation and sound b) 6.3.2 Reproduction of animation and sound
UNE 139801:2003	4.3.4 If the screen is equipped with a television receiver (analogue or digital), it "must" (see Foreword) be able to display the subtitles broadcast by different television channels (P2)
508	1194.24(a)
TEITAC	Subpart C 4A
WCAG 2.0	1.2.1, 1.2.2, 1.2.3, 1.2.4, 1.2.8, 1.2.9
US Part 79.1	47 C.F.R. § 79.2 Accessibility of programming providing emergency information (relating to: Telecommunications Act, Section 713)

9.5.1.1 Analysis

Addresses user needs: 2-1.

Sufficient extant standards coverage exists to draft procurement legislation.

9.5.2 Supplemental audio playback

Some provision is required to ensure that audio/video playback products, including but not limited to televisions, set top Boxes, personal video display devices and software players, provide adequate support for audio description playback.

ES 202 432	5.2 Audio description
ITU-T Recommendation Y.IPTV	6.7.1
JIS X 8341-2	6.3.1 Presentation of alternative information on animation and sound a) 6.3.2 Reproduction of animation and sound
508	1194.24(b)
TEITAC	Subpart C 4-B
UAAG 1.0	Checkpoint 4.8
WCAG 2.0	1.2.3, 1.2.5, 1.2.7

9.5.2.1 Analysis

Addresses user needs: 2-1.

Sufficient extant standards coverage exists to draft procurement legislation.

9.5.3 Access to controls

Some provision is required to ensure that the access controls for subtitling and audio description are equal in prominence to volume or programme selection controls.

ES 202 432	5.1 Subtitling, 5.2 Audio description
ISO/IEC Guide 71	8.3 Location and layout of information and controls and positioning of handles 8.3.1 Location 8.3.3 Layout 8.6 Size and style of font in information, warnings and labelling of controls? 8.8 Graphical symbols and illustrations? 8.11 Distinctive form of product, control or packaging 8.12 Ease of handling 8.12.3 Controls 8.12.3.1 Handling 8.12.3.2 Spacing 8.12.3.3 Status 9.3.1 Dexterity 9.3.1.2 Design considerations
ISO/FDIS 9241-20	7.3.3 Users that cannot hear
ISO EN 9241-151	10.9 Designing for input device independence 10.10 Making the user interface of embedded objects usable and accessible?
ISO EN 9241-171	8.3.1 Make controls for accessibility features discoverable and operable
ISO/TR 22411	8.3 Location and Layout of information and controls and positioning of handles 8.3.1 Location 8.3.1.1 Position of information 8.3.1.2 Location of controls 8.3.3 Layout 8.6 Size and style of font in information, warnings and labelling of controls? 8.8 Graphical symbols and illustrations? 8.11 Distinctive form of product, control or packaging 8.12 Ease of handling 8.12.3 Controls 8.12.3.1 Handling 8.12.3.2 Spacing 8.12.3.3 Status 9.3.1 Dexterity
ITU-T FSTP-TACL	5.1, 5.2
TEITAC	Subpart C 4-C

9.5.3.1 Analysis

Addresses user needs: 13-2, 13-4.

Sufficient extant standards coverage exists to draft procurement legislation.

9.6 Audio/visual content

9.6.1 Captions and transcripts

Some provision is required to ensure that pre-recorded audio-only material has a transcript available and that pre-recorded video with concurrent audio, and all real time audio have suitable subtitles for any audio information necessary for the comprehension of the content.

EG 201 103	7.3 Combining media 7.4 Synchronization between different media
ETR 160	7.2.3 Synchronization between media
ISO/IEC Guide 71	8.2.3 Alternatives to auditory information
ISO/FDIS 9241-20	7.3.2 Providing verbal information visually
ISO EN 9241-151	7.2.3.2 Providing text equivalents for non-text media objects
ISO EN 9241-171	10.1.3 Provide accessible alternatives to task relevant audio and video
ISO/TR 22411	8.2.3 Alternatives to auditory information 8.2.3.1 Visual Information 8.2.3.2 Tactile information
ITU-T Recommendation Y.IPTV	6.7.1
JIS X 8341-3	5.4 Non-text information d)
NDA "access-it"	Web 1.5 (Priority 1) Web 1.8 (Priority 1) Web 2.4 (Priority 2)
UNE 153010	Clause 8 contains requirements and recommendations for synchronization of subtitles
508	1194.24(c)
WCAG 2.0	WCAG 2.0-1.2.1 Captions (Pre-recorded) (Level A)
TEITAC	Subpart C 5-A
UAAG 1.0	Checkpoints 2,5 and 4.6
US Part 79.1	47 C.F.R. § 79.2 Accessibility of programming providing emergency information (relating to: Telecommunications Act, Section 713)

9.6.1.1 Analysis

Addresses user needs: 2-1.

Sufficient extant standards coverage exists to draft procurement legislation.

9.6.2 Audio description

Some provision is required to ensure that material containing video and/or audio offers some means of providing a suitable audio description of the visual information necessary for the comprehension of the content.

ES 202 432	5.2 Audio description
TS 102 577	Recommendations 11.8.2a
ISO/IEC Guide 71	Nothing relevant However, the benefits of providing alternative formats are discussed in clause 7.3.3
ISO/FDIS 9241-20	7.2.2 Providing information using sound
ISO EN 9241-171	10.1.3 Provide accessible alternatives to task relevant audio and video 10.6.8 Synchronize audio equivalents for visual events
508	1194.24(d)
TEITAC	Subpart C 5-B
KICS.KO-09.0040	4.54 Complement to and Replacement of Eyesight
US Part 79.1	47 C.F.R. § 79.2 Accessibility of programming providing emergency information (relating to: Telecommunications Act, Section 713)
UAAG 1.0	Checkpoint 2.5
ATAG 2.0	A.2.2.4 Audio Description A.2.2.6 Audio Description (Extended)
WCAG 2.0	1.2.3 Audio Description or Full Text Alternative 1.2.5 Audio Description 1.2.7 Audio Description (Extended)

9.6.2.1 Analysis

Addresses user needs: 1-1.

Sufficient extant standards coverage exists to draft procurement legislation.

9.6.3 Interactive elements

Some provision is required to ensure that interactive elements that are part of synchronized media are covered by the applicable software provisions.

TEITAC	Subpart C 5-C
UAAG 1.0	Checkpoints 4.4 and 4.5

9.6.3.1 Analysis

Addresses user needs: 3-1.

Sufficient extant standards coverage exists to draft procurement legislation.

9.7 Real-time conversation

9.7.1 Real-time text reliability and interoperability

Some provision is required to ensure that if hardware or software provides a real-time voice conversation function it provides at least one means of real-time text communication that meets current accessibility standards.

EG 202 320	6.1 User requirements
TR 101 806	5.1.1 Text/speech conversion
ITU-T Recommendation F.700	Section A.3
ITU-T Recommendation F.703	All
ITU-T Recommendation F.790	10 Requirements for telecommunications services
ITU-T T.14	All
ITU-T Recommendation V.18	All
ITU-T FSTP-TACL	5.3, 5.4, 5.5
RFC 5194	All
255	1193.51(e)
508	1194.23(b),
TEITAC	Subpart C 6-A

9.7.1.1 Analysis

Addresses user needs: 8.3.2 Real-time communication, 6.1.1 Universality, 6.1.3 Text communications, 6.1.4 Conversational quality, 6.1.5 Speech communication, 6.1.12 Multimedia.

Sufficient extant standards coverage exists to draft procurement legislation.

9.7.2 Voice terminal hardware and software

Some provision is required to ensure that hardware or software that provides a real-time voice conversation function meets current accessibility standards for real-time text or supports external connection of such facility through a standard interface.

EG 202 320	All
TR 101 806	5.1.1 Text/speech conversion
EG 202 191	5 Current initiatives for multimodal accessibility
ITU-T Recommendation F.790	10 Requirements for telecommunications services
ITU-T Recommendation V.18	All
ITU-T FSTP-TACL	5.3, 5.4, 5.5
IETF RFC 4504	2.9 Interactive text support
RFC 5194	All
255	1193.51(d)
508	1194.23(a),
TEITAC	Subpart C 6-B

9.7.2.1 Analysis

Addresses user needs: 15-1, 15-2, 15-3, 8.3.1 Real-time communication, 6.1.1 Universality, 6.1.3 Text communications, 6.1.4 Conversational quality, 6.1.5 Speech communication, 6.1.12 Multimedia.

Sufficient extant standards coverage exists to draft procurement legislation.

9.7.3 Voice mail, stored voice services and messaging

Some provision is required to ensure that voice mail, stored voice services and messaging services are accessible to users of real-time text.

ETR 131	All
EG 202 132	10.3.2
EG 202 320	6.2.9
508	1194.23(c)
TEITAC	Subpart C 6-C

9.7.3.1 Analysis

Addresses user needs: 2-1, 8.3.1 Real-time communications, 6.1.9 Service accessibility.

Sufficient extant standards coverage exists to draft procurement legislation.

9.7.4 Caller and status information

Some provision may be required to ensure that products that display communication status information provide equivalent information to users of text terminals.

EG 202 116	9.5.2.2 Music
EG 202 421	7.6.8.2 Access to emergency services for deaf people and people with speech impairments 8.3 Network announcements
TR 103 073	6.3.8 Using interactive voice response (IVR) systems
EG 202 191	8.6 About hearing disabilities
EG 202 320	6.1.10 and 6.2.10 Call progress information
RFC 5194	6.2.4.1 Progress and status information
508	1194.23(e)
TEITAC	Subpart C 6-D

9.7.4.1 Analysis

Addresses user needs: 8.3.1 Real-time communication, 6.1.10 Call progress.

Sufficient extant standards coverage exists to draft procurement legislation.

9.7.5 Video support

Some provision is required to ensure that products and services used to transmit video communications in real time are compatible with one another and provide communication quality suitable to support sign language and lip reading.

EG 202 320	Clause 6
EG 202 534	4.6 Video communication 4.8.2 Deaf and hearing impaired people - Video communication when used for sign language and lip-reading
TR 101 767	6.6.3 Videophone for lip reading
CWA 14835	3.3 Recording and compression of sign language video for the Web
ISO/IEC WD 29136	6.1.3 Sign language and finger spelling display
ITU-T H-series Supplement 1	5.7 Conclusion on performance requirements
JIS X 8341-2	6.7 Language (input/output) 6.7.1 Connection guarantee of alternative means
UNE 139804	8 Video characteristics with LSE 8.1, 8.2, 8.3, 8.4, 8.5, 8.6 and 8.7
TEITAC	Subpart C 6-E

9.7.5.1 Analysis

Addresses user needs: 8.3.1 Real-time communication, 6.1.14 Signing and lip reading.

Sufficient extant standards coverage exists to draft procurement legislation.

9.7.6 Audio clarity for VoIP

Some provision is required to ensure that VoIP telephones and emulation software meets appropriate international standards.

ITU- FSTP-TACL	5.2 - 5.5
TEITAC	Subpart C 6-F

9.7.6.1 Analysis

Addresses user needs: 2-3, 2-9, 8.3.1 Real-time communication, 6.1.5 Speech conversation.

Sufficient extant standards coverage exists to draft procurement legislation.

9.7.7 External alerting devices

Some provision is required to ensure that VOIP telephones and emulation software provides compatibility with external non-auditory alerting device.

ITU-T Recommendation F.790	9.1.4 Ringing tones d)
RFC 5194	5.2.4 R: 25 and 6.2.4.2
TEITAC	Subpart C 6-G

9.7.7.1 Analysis

Addresses user needs: 4-2.

Sufficient extant standards coverage exists to draft procurement legislation.

9.8 Authoring tools

The provisions of this clause represent best practices for authoring tools. To the extent that authoring tools are used to create and publish content for use with a covered service, the incorporation of these provisions will improve the accessibility of the content produced.

9.8.1 Accessible output

Some provision is required to ensure that authoring tools allow the author to produce accessible content for each accessible content format supported.

TS 102 577	Recommendations 11.3.b
ISO/IEC Guide 71	8.2 Alternative format 8.2.1 General considerations: last sentence
ISO/FDIS 9241-20	7.1.3 Supporting simultaneous use of alternate interaction mechanisms? 7.2.2 Providing information using sound?
ISO EN 9241-171	8.5.12 Allow assistive technology to monitor output operations?
ISO/TR 22411	8.2 Alternative format 8.2.1 General considerations: last sentence
ITU-T FSTP-TACL	5.1 (6) Control of devices through a user interface 5.5 Media presentation to the user
TEITAC	Subpart C 7-A
ATAG 1.0	Guideline 1. Support accessible authoring practices Guideline 3. Support the creation of accessible content Guideline 5. Integrate accessibility solutions into the overall "look and feel" Checkpoints 3.5, 1.1, 1.3, 2.2, 3.3, 3.4, 5.2 and 5.3
ATAG 2.0	PRINCIPLE B.1: Production of accessible content "must" (see Foreword) be enabled PRINCIPLE B.2: Authors "must" (see Foreword) be supported in the production of accessible content Guideline B.2.1. Prompt authors to create accessible content Guideline B.3.3. Ensure that features of the authoring tool supporting the production of accessible content are available Guideline B.3.4. Ensure that features of the authoring tool supporting the production of accessible content are documented
WCAG 2.0	4.1.2
GTRIAMS #2	Page 83

9.8.1.1 Analysis

Addresses user needs: 1-1, 1-2, 2-1, 2-2.

Sufficient extant standards coverage exists to draft procurement legislation.

9.8.2 Preserve accessibility information

Some provision is required to ensure that authoring tools preserve all accessibility information necessary, unless the user explicitly indicates otherwise.

EG 202 249	13.2.1 Usability issues relating to Accessibility
TS 102 577	Recommendations 11.3.b
ISO EN 9241-171	8.5.12 Allow assistive technology to monitor output operations?
JIS X 08341-2	5.3 Independence 5.3.1 Guarantee of independence of operation information and data 5.3.2 Guarantee of independence between applications 5.3.3 Requirements for change of design/development specifications
TEITAC	Subpart C 7-B
ATAG 1.0	Guideline 1.2 Ensure that the tool preserves all accessibility information during authoring, transformations, and conversions (Priority 1) Checkpoints 1.2 and 4.3

9.8.2.1 Analysis

Addresses user needs: No exact match - secondary function.

Sufficient extant standards coverage exists to draft procurement legislation.

9.8.3 Prompts

Some provision may be required to ensure that authoring tools or suites provide a mode which prompts authors to create accessible content for accessibility problems that the tool or suite has the capability to correct.

TS 102 577	Recommendations 11.3b
ISO/TR 22411	8.7.4.2 Cognitive aspects of voice instruction 5 th bullet 8.7.6.2 Language support 1 st bullet 1) 8.10.3 Time-constrained task design 2 nd bullet
ATAG	Guideline 3
TEITAC	Subpart C 7-C
ATAG 1.0	Guidelines 1, 3 Check points 3.1, 3.2, 3.4, 2.3, 4.1, 4.2, 4.4, 6.1
ATAG 2.0	Guideline A.2.4 (for the authoring tool user interface) Make it easier to see and hear the interface B.2.1 Prompt Authors to create accessible output

9.8.3.1 Analysis

Addresses user needs: No exact match.

Sufficient extant standards coverage exists to draft procurement legislation.

9.8.4 Accessible templates

Some provision may be required to ensure that authoring tools which provide templates, provide a version which is fully accessible.

TS 102 577	Recommendation 11.3b
ATAG	Guideline 7
TEITAC	4.7.4 7-D
ATAG 1.0	Guidelines 1, 3, 5 Checkpoints 1.4 and 2.2
ATAG 2.0	PRINCIPLE B.1: Production of accessible content "must" (see Foreword) be enabled PRINCIPLE B.2: Authors "must" (see Foreword) be supported in the production of accessible content Guideline B.2.1. Prompt authors to create accessible content Guideline B.3.3. Ensure that features of the authoring tool supporting the production of accessible content are available Guideline B.3.4. Ensure that features of the authoring tool supporting the production of accessible content are documented

9.8.4.1 Analysis

Addresses user needs: No exact match.

Sufficient extant standards coverage exists to draft procurement legislation.

9.9 Information documentation and technical support

9.9.1 Accessible documentation

Some provision is required to ensure that applicable documentation is available in accessible forms.

EG 202 417	Whole document
EG 202 423	4.2.1.1 4.2.1
EG 202 487	13.2.1 User education materials should be offered and made accessible to people with disabilities
TS 102 577	Recommendations 12.5.1f, 12.5.1h, 12.5.1i, 13.2.3.2g, 13.2.3h, 13.2.3.2f, 13.2.3.2, 13.2.3.12d, 13.2.3.2c
ETR 334	5.5.5
ISO/IEC Guide 71	8.2 Alternative format 8.2.1 General considerations 8.3 Location and layout of information and controls and positioning of handles 8.3.1 Location 8.3.3 Layout 8.6 Size and style of font in information, warnings and labelling of controls 8.7 Clear language in written or spoken information 8.7.1 Information available as text 8.7.2 Complexity of information 8.7.3 Printed instructions 8.7.4 Spoken information 8.7.5 Multiple languages 8.8 Graphical symbols and illustrations 8.9 Loudness and pitch of non-spoken communication 8.10 Slow pace of information presentation
ISO/FDIS 9241-20	7.6.3 Aiding understanding 7.6.4 Using understandable vocabulary 7.6.5 Providing information pictorially + remainder of 7.6? 9.1.3 Providing user guidance 9.4.1 Providing accessibility information 9.4.2 Providing information on intended contexts of use
ISO EN 9241-151	6.11 Identifying the Web site and its owner? 7 Content Design (all clauses) 9 Content presentation (all clauses) 10 General design aspects (all clauses)
ISO EN 9241-171	11.1.1 Provide understandable documentation and Help 11.1.2 Provide user documentation in accessible electronic form 11.1.3 Provide text alternatives in electronic documentation and Help 11.1.4 Write instructions and Help without unnecessary device references 11.1.5 Provide documentation and Help on accessibility features 11.2.1 Provide accessible support services 11.2.2 Provide accessible training material
ISO/IEC 26514	12.5.1 Provide understandable documentation 12.5.2 Provide user documentation in accessible electronic form 12.5.3 Provide text alternatives in on-screen documentation 12.5.4 Write instructions without unnecessary device references 12.5.5 Provide documentation on accessibility features
ISO/IEC 18019:2004	<i>(Contains accessibility recommendations for documentation and will be replaced by ISO/IEC 26514 in 2008)</i>
ISO/IEC 10779	5.6 Requirements for terms
ISO/IEC TR 19766	7.2.4 Meaningful icon graphics

ISO/TR 22411	8.2 Alternative format 8.2.1 General considerations 8.3 Location and layout of information and controls and positioning of handles 8.3.1 Location 8.3.3 Layout 8.6 Size and style of font in information, warnings and labelling of controls 8.7 Clear language in written or spoken information 8.7.1 Information available as text 8.7.2 Complexity of information 8.7.3 Printed instructions 8.7.4 Spoken information 8.7.5 Multiple languages 8.8 Graphical symbols and illustrations 8.9 Loudness and pitch of non-spoken communication 8.10 Slow pace of information presentation
JIS X 8341-2	7.1 Electronic document 7.1.1 Operation manual 7.1.2 Characteristics of product information accessibility and interchangeability 7.2 Education 7.3 Assistance for distribution channel 7.4 offer of opportunity of trial use? 7.5 Establishment of service contact unit
NDA "accessIT"	Software 1.11 (Priority 1) Software 1.12 (Priority 1) Public access terminals 1.15 (Priority 1) Public access terminals 2.7 (Priority 2)
UNE 139801	4.8.1, 4.8.2 and 4.8.3
TEITAC	Subpart D 1.1-A
ATAG 1.0	Checkpoints 6.1, 6.2 and 6.3
UAAG 1.0	Checkpoint 12.1
ATAG 2.0	A4.4.2
ACCENT D3.1	4.1 Recommendations on Training Procurement 4.1.1, 4.1.2 4.2 Recommendations on documentation procurement
ACCENT D3.2	Appendix 1, output from the system
GTRIAMS #1	Pages 70 and 71
GTRIAMS #2	Pages 67 and 68
GTRIAMS #3	Pages 78, 79 and 80

9.9.1.1 Analysis

Addresses user needs: 13-14.

Sufficient extant standards coverage exists to draft procurement legislation.

9.9.2 Keyboard shortcuts documentation

Some provision may be required to ensure information about keyboard operation, including available keyboard commands and keyboard navigation mechanisms, is provided in accessible electronic documentation, such as online and context-sensitive help.

EG 202 417	Whole document
TEITAC	No consensus
UAAG 1.0	Checkpoint 12.2
ACCENT D3.1	Appendix 2, Keyboard Access, Requirement 2
ACCENT D3.2	Appendix 1, O/P from the system
GTRIAMS #2	Page 82

9.9.2.1 Analysis

Addresses user needs: 13-10.

Sufficient extant standards coverage exists to draft procurement legislation.

9.9.3 Support services

Some provision is required to ensure that help desk and technical support services offer information on the accessibility features of the product in a manner that accommodates the communication needs of users with disabilities.

EG 202 417	11: Specific guidelines for maximized accessibility
ISO/IEC WD 29136	7.1 Requirements for user support 7.3 Customer support centres
TEITAC	Subpart D 1.2-A
ACCENT D3.2	4.3 Recommendations on Support procurement

9.9.3.1 Analysis

Addresses user needs: 16-4, 16-5, 16-9.

Sufficient extant standards coverage exists to draft procurement legislation.

9.10 Implementation, operation and maintenance

9.10.1 Relay services accessibility

Some provision is required to ensure that access is available in all procured communication systems to relay services for incoming and outgoing calls so as to achieve functionally equivalent communication access by people with disabilities.

ES 202 975	Whole document
EG 202 421	5.3.3 Accuracy of information 7.6.8.2 Access to emergency services for deaf people and people with speech impairments 7.6.9.2 Textphone relay services 7.6.9.3 Signing relay services 7.6.9.4 Automated relay services
EG 202 423	4.3.2 Voice call services
TR 101 806	4.1 Relay service 4.2 Text/text relay service 4.3 Text relay service 4.4 Spoken to spoken relay service 4.5 Videophone relay service 5.1 Basic Text Relay Service (TRS) 5.2 Basic spoken to spoken relay service 5.3 Basic videophone relay service 5.4 Additional services 7.3.2.1 Text relay services 7.3.2.2 Spoken to spoken and videophone relay services
EG 202 320	6.1.17 Relay services
ITU-T FSTP-TACL	5.6 Invocation of media translating services
TEITAC	Subpart D 2-A

9.10.1.1 Analysis

Addresses user needs: 8.2.4, 8.3.2 Real-time communication, 6.1.15 Relay service.

Sufficient extant standards coverage exists to draft procurement legislation.

9.10.2 Video support

Some provision is required to ensure that access is available via point to point real-time video communication and video relay services for incoming and outgoing calls for individuals who need such access.

ES 202 975	Whole document
EG 202 320	6.1.17 Relay services
ITU-T FSTP-TACL	5.3 Media transport
TEITAC	Subpart D 2-B

9.10.2.1 Analysis

Addresses user needs: 8.2.4, 8.3.2 Real-time communication, 6.1.12 Multimedia, 6.1.14 Signing and lipreading, 6.1.15 Relay service.

Sufficient extant standards coverage exists to draft procurement legislation.

9.10.3 Accessibility configuration

Some provision is required to ensure that on installation, product accessibility features are activated or are configured and have infrastructure settings set so that people with disabilities are able to activate and use accessibility features in the products as they need them.

EG 202 116	7.1.2 Adaptability
EG 202 249	5.4 User control and freedom 5.9 User support
EG 202 325	4.1.5 Interpretation of profile data 10.9.2 Guided configuration
TR 102 415	7.4 Ubiquity of access, interoperability, customization and personalization
ISO/FDIS 9241-20	7.1.5 Changing configurations 7.1.6 Returning to default configuration 7.1.7 Saving and retrieving customized configurations
ISO EN 9241-171	8.2.1 Enable individualization of user preference settings? 8.2.2 Enable adjustment of attributes of common user interface elements? 8.2.3 Enable individualization of the user interface look and feel? 8.2.4 Enable individualization of the cursor and pointer? 8.2.5 Provide user-preference profiles 8.2.6 Provide capability to use preference settings across locations? 8.2.7 Enable user control of timed responses?
Nordic Guidelines for Computer Accessibility	4.1 Built-in accessibility 11 The perception of the contents of the display
ITU-T FSTP-TACL	5.1 (4) Control of devices through a user interface
JIS X 8341-2	6.10.1 Presentation of system information? 6.11.1 Setting and releasing of function
NDA "accessIT"	Software 1.1 (Priority 1)
TEITAC	Subpart D 2-C
ACCENT D3.1	Appendix 1, Keyboard 4.1 requirement

9.10.3.1 Analysis

Addresses user needs: 16-1, 16-2, 16-10.

Sufficient extant standards coverage exists to draft procurement legislation.

9.10.4 Accessible content

Some provision is required to ensure that that electronic content used for official government communications is accessible, regardless of the format, medium of transmission or distribution, unless it is distributed only to a small group of known recipients and it accommodates their accessibility needs, or when it is stored for archival purposes only.

ISO/FDIS 9241-20	7.1.8 Supporting assistive technologies (list includes forms of accessible output) 7.2.2 Providing information using sound 9.3.1 Connecting assistive technologies
ISO EN 9241-171	8.4.1 Enable switching of input/output alternatives? 10.6.7 Allow users to choose visual alternative for audio output
ITU-T FSTP-TACL	5.3 Media transport 5.4 Media entry by the user 5.5 Media presentation to the user
TEITAC	Subpart D 2-D

9.10.4.1 Analysis

Addresses user needs: 1-1, 1-2, 2-1, 2-2, 8.2.4.

Sufficient extant standards coverage exists to draft procurement legislation.

9.11 Documents consulted

9.11.1 Published documents consulted

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CEN CWA 14661: 2003 [i.3]: "Guidelines to Standardisers of ICT products and services in the CEN ICT domain".

CEN CWA 14835: 2003 [i.4]: "Guidelines for making information accessible through sign language on the web".

CEN CWA 15778: 2008 [i.5]: "Document Processing for Accessibility".

ETSI EG 201 103 [i.29]: "Human Factors (HF); Human factors issues in Multimedia Information Retrieval Services (MIRS)".

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ETSI EG 202 116 [i.32]: "Human Factors (HF); Guidelines for ICT products and services; "Design for All"".

ETSI EG 202 132 [i.33]: "Human Factors (HF); User Interfaces; Guidelines for generic user interface elements for mobile terminals and services".

ETSI EG 202 191 [i.34]: "Human Factors (HF); Multimodal interaction, communication and navigation guidelines".

ETSI EG 202 249 [i.35]: "Universal Communications Identifier (UCI); Guidelines on the usability of UCI based systems".

ETSI EG 202 320 [i.36]: "Human Factors (HF); Duplex Universal Speech and Text (DUST) communications".

ETSI EG 202 325 [i.37]: "Human Factors (HF); User Profile Management".

ETSI EG 202 416 [i.38]: "Human Factors (HF); User Interfaces; Setup procedure design guidelines for mobile terminals and services".

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- ETSI EG 202 421 [i.40]: "Human Factors (HF); Multicultural and language aspects of multimedia communications".
- ETSI EG 202 423 [i.41]: "Human Factors (HF); Guidelines for the design and deployment of ICT products and services used by children".
- ETSI EG 202 487 [i.42]: "Human Factors (HF); User experience guidelines; Telecare services (*eHealth*)".
- ETSI ES 201 125 [i.47]: "Human Factors (HF); Universal Personal Telecommunications (UPT); Specification of the minimum Man-Machine Interface (MMI) for Phase 1 UPT".
- ETSI ES 202 076 [i.31]: "Human Factors (HF); User Interfaces; Generic spoken command vocabulary for ICT devices and services".
- ETSI EG 202 518 [i.43]: "Human Factors (HF); Speech Processing, Transmission and Quality Aspects (STQ); Acoustic output of terminal equipment; Maximum levels and test methodology for various applications".
- ETSI EG 202 534 [i.44]: "Human Factors (HF); Guidelines for real-time person-to-person communication services".
- ETSI EG 202 745 [i.45]: "Human Factors (HF); Guidelines on the provision of ICT services to young children".
- ETSI ES 202 130 [i.48]: "Human Factors (HF); User Interfaces; Character repertoires, ordering rules and assignments to the 12-key telephone keypad".
- ETSI ETR 160 [i.52]: "Human Factors (HF); Human Factors aspects of multimedia telecommunications".
- ETSI ETR 297 [i.53]: "Human Factors (HF); Human Factors in Videotelephony".
- ETSI ETR 334 [i.54]: "Human Factors (HF); The implications of human ageing for the design of telephone terminals".
- ETSI ETR 345 [i.55]: "Human Factors (HF); Characteristics of telephone keypads and keyboards; Requirements of elderly and disabled people".
- ETSI ETS 300 488 [i.50]: "Human Factors (HF); Terminal Equipment (TE); Telephony for hearing impaired people; Characteristics of telephone sets that provide additional receiving amplification for the benefit of the hearing impaired".
- ETSI ETS 300 375 [i.56]: "Human Factors (HF); Pictograms for point-to-point videotelephony".
- ETSI ETS 300 767 [i.51]: "Human Factors (HF); Telephone prepayment cards; Tactile identifier".
- ETSI SR 002 180 [i.69]: "Human Factors (HF); Requirements for Communication of citizens with authorities/organizations in case of distress (Emergency call handling)".
- ETSI TR 101 806 [i.58]: "Human Factors (HF); Guidelines for Telecommunication Relay Services for Text Telephones".
- ETSI TR 102 068 [i.59]: "Human Factors (HF); Requirements for assistive technology devices in ICT".
- ETSI TR 102 125 [i.60]: "Human Factors (HF); Potential harmonized UI elements for mobile terminals and services".
- ETSI TR 102 133 [i.61]: "Human Factors (HF); Access to ICT by young people: issues and guidelines".
- ETSI TR 102 415 [i.62]: "Human Factors (HF); Telecare services; Issues and recommendations for user aspects".
- ETSI TR 102 520 (11/2006) [i.63]: "Human Factors (HF); Access symbols for use with video content and ICT devices; Development and evaluation".
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- ISO 9241-7: 1988 [i.79]: "Ergonomic requirements for office work with visual display terminals (VDTs) - Part 7: Requirements for displays with reflections".
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- ISO 10075-2 [i.95]: "Ergonomic principles related to mental workload -- Part 2: Design principles".
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- ISO/IEC TR 19765: 2007 [i.116]: "Information technology - Survey of icons and symbols that provide access to functions and facilities to improve the use of IT products by the elderly and persons with disabilities".
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- JIS S 0012:2000 [i.138]: "Guidelines for all people including the elderly and people with disabilities - Usability of consumer products".
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- JIS X 8341-3:2004 [i.140]: "Guidelines for older persons and persons with disabilities - Information and communications equipment, software and services - Part 3: Web content".

- UNE 139801:2003 [i.157]: "Computer applications for people with disabilities - Computer accessibility requirements - Hardware".
- UNE 139804:2007 [i.160]: "Requisitos para el uso de la Lengua de Signos Española en redes informáticas".
- UNE 153010:2003 [i.161]: "Subtitulado para personas sordas y personas con discapacidad auditiva. Subtitulado a través del teletexto".
- Web Content Accessibility Guidelines (WCAG) 1.0. WCAG explains how to make Web sites, applications, and other content accessible to people with disabilities, and many elderly users [i.173].
- Authoring Tool Accessibility Guidelines (ATAG) 1.0. ATAG provides guidelines for enabling, supporting, and promoting the production of accessible Web content by all authors [i.169].
- User Agent Accessibility Guidelines (UAAG) 1.0. UAAG explains how to make browsers and media players accessible to people with disabilities, and how to make them work better with assistive technologies [i.171].
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9.11.2 Draft documents consulted

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ISO/IEC 10779 [i.105]: "Office equipment accessibility guidelines for elderly persons and persons with disabilities".

ISO/TR 22411 [i.98]: "Ergonomic data and ergonomic guidelines for the application of ISO/IEC Guide 71 to products and services to address the needs of older persons and persons with disabilities".

ISO WD 24500 [i.99]: "Ergonomics - Auditory signals for consumer products - Guidelines for all people including elderly persons and persons with disabilities".

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ISO WD 24502 [i.101]: "Guidelines for the elderly and people with disabilities - Visual signs and displays - Specification of age-related relative luminance and its use in assessment of light".

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ISO/IEC WD 29136 [i.121]: "Information Technology - User Interfaces - Accessibility functions for personal computers".

ISO/IEC PDTR 29138-1 [i.118]: "Accessibility considerations for people with disabilities - Part 1: User Needs Summary".

ISO/IEC DTR 29138-2 [i.119]: "Accessibility considerations for people with disabilities - Part 2: Standards inventory".

ISO/IEC DTR 29138-3 [i.120]: "Accessibility considerations for people with disabilities - Part 3: Guidance on user needs mapping".

W3C ATAG 2.0 [i.170]: "Authoring Tool Accessibility Guidelines 2.0" W3C Working Draft 10/03/2008.

W3C UAAG 2.0 [i.172]: "User Agent Accessibility Guidelines 2.0" W3C Working Draft 12/03/2008.

10 Gaps in accessibility requirements

10.1 New user accessibility requirements

In the process of analysing ISO/IEC PDTR 29138-1 [i.118] (the user needs summary), the UN Convention on the rights of persons with disabilities and EG 202 320 [i.36] on Duplex Universal Speech and Text (DUST) communications, a set of user need areas were discovered that have not previously been associated with functional requirements to satisfy them.

Clause 10.2 lists functional requirements which may be necessary to satisfy these newly identified needs and notes standards which refer to them (where they have been found) on which possible new work might be based.

In some cases, no relevant existing standard has been identified. This may indicate an area for additional technical standards to be produced or it may be an area where further research is needed, the need is not relevant or where it is currently not technically feasible to meet the need.

10.2 Additional functional requirements

10.2.1 Non speech audio

Technical standards related to the user requirement to adjust gain, frequency and balance of non speech audio.

ISO/IEC Guide 71	8.9 Loudness and pitch of non-spoken communication 8.20.2 Amplification and adjustment 9.2.2 Hearing <i>ISO/IEC Guide 71:2001, 9.2.2.2, 9.2.2.3, 9.2.2.4</i>
ISO 22411	8.7.4.2 Cognitive aspects of voice instruction 8.7.4.3 Voice warnings or alerts 8.9 Loudness and pitch of non-spoken communication 9.2.2 Hearing see entire clause, especially "9.2.2.2 Sound pressure level of auditory signals"
ISO/FDIS 9241-20	7.3.9 Managing sound frequencies
ISO EN 9241-171	10.6.3 Use an appropriate frequency range for non-speech audio 10.6.6 Use specified frequency components for audio warnings and alerts
JIS X 8341-2	6.2.1 Loudness and frequency

10.2.2 Vibration patterns

No technical standards were found that related to the user requirement to have variation in vibration signals be patterns rather than differences in strength or frequency.

10.2.3 Monaural audio

Technical standards related to the user requirement to have audio information be provided monaurally.

ISO/IEC Guide 71	8.20.2 Amplification and adjustment
ISO 22411	8.20.2 Amplification and adjustment
ISO/FDIS 9241-20	7.3.10 Providing independent controls for different channels
ISO EN 9241-171	10.6.5 Control of background and other sound tracks

10.2.4 Foreground audio discrimination

Technical standards were found that are related to the user requirement to perceive foreground audio information in the presence of background audio (including ambient noise).

ISO EN 9241-171	10.6.5 Control of background and other sound tracks
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10.2.5 Adjustable pitch and balance

No technical standards were found that related to the user requirement to adjust audio characteristics (e.g. pitch, balance).

10.2.6 Information describing layout

Technical standards related to the user requirement to have information describing the layout of the operational parts.

EG 202 132	9.5 Common keys
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10.2.7 Adjustable pitch and balance

No technical standards were found that related to the user requirement to have sufficient quality (e.g. volume, direction, clarity, frequency) for audio cues.

10.2.8 Co-location of feedback

No technical standard were found that related to the user requirement to have visual or tactile feedback occur at the same location as the control.

10.2.9 Physical connection feedback

No technical standards were found that are related to the user requirement to have clear feedback of connector engagement (e.g. power cord, PC card, USB connector, etc.).

10.2.10 No direct contact

No technical standards were found that are related to the user requirement to have clear feedback of connector engagement (e.g. power cord, PC card, USB connector, etc.).

10.2.11 Signed description

Technical standards related to the user requirement to have material containing audio should offer some means of providing a suitable signed description of the audio information necessary for the comprehension of the content.

EG 202 132	9.6 Language selection mechanisms 9.7 Voice and speech user interfaces
ES 202 432	5.3 Signing
EG 202 972	7.4 Accessibility applications enabled through 3G*
ITU-T H-series Sup.1	5.7 Conclusion on performance requirements
CWA 14835	3 Guidelines for sign language in the Web
UNE 139804	Sections 5 and 6

10.2.12 Speech only operation

Technical standards related to the user requirement to ensure operate the product using only speech.

ES 202 076	5.1 Principles of use
ISO/TR 22411	8.7.6.2 Language support ?
ISO/FDIS 9241-20	7.2.5 Providing control using non-visual mechanisms 7.4 Speech (all clauses, especially 7.4.5 Controlling the speed of voice input) 7.5.5 Limiting motor control requirements
ISO EN 9241-171	9.1.1 Provide keyboard input from all standard input mechanisms 9.1.4 Provide speech recognition services 10.5.3 Enable non-pointer navigation to windows
ISO/IEC DIS 10779	5.2 Equivalent information accessibility function requirements?

10.2.13 Protection of information

Technical standards related to the user requirement of protection of the privacy of user's information, even if they are not able to do the "expected" things to protect it themselves.

EG 202 487	6 Privacy and confidentiality guidelines 7 Ethics guidelines 8 Guidelines for legal aspects 10 Integrity guidelines
NDA "accessIT"	Public access terminals: 2.8 Ensure privacy and security during use (Priority 2)
JIS X 8341-2	5.7.1 Prevention of information leak due to alternative means 5.7.2 Appropriate warning to users

10.2.14 Security of information

Technical standards related to the user requirement of security of user's information, even if they are not able to do the "expected" things to protect it themselves.

EG 202 487	6 Privacy and confidentiality guidelines 8 Guidelines for legal aspects 10 Integrity guidelines
NDA "accessIT"	Public access terminals: 2.8 Ensure privacy and security during use (Priority 2)
JIS X 8341-2	5.6.1 Information leak

10.2.15 Avoiding hazards

Technical standards related to the user requirement of products where hazards are obvious, easy to avoid, and difficult to trigger.

EG 202 417	4.4 Legal and safety considerations 6.5 Legal and regulatory requirements (on safety and security) 11 Specific guidelines for maximized accessibility
JIS X 8341-2	5.5 Physical safety

10.2.16 Avoiding injury

Technical standards related to the user requirement of products that do not rely on specific senses or fine movement to avoid injury.

JIS X 8341-2	5.5 Physical safety
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10.2.17 Audio induced seizure

No technical standards were found that are related to the user requirement to avoid auditory patterns that causes them to have seizures.

10.2.18 Chemical allergy

Technical standards related to the user requirement to have products that do not contain chemicals that they may be allergic to.

JIS X 8341-2	5.5.3 Consideration of allergy
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10.2.19 Alternate modes effective

No technical standards were found that are related to the user requirement to have alternate modes of operation that are effective given the time constraints of the task.

10.2.20 Adjust rate of audio alternatives

No technical standards were found that are related to the user requirement to increase the rate of audio alternatives (unless there are minimal audio alternatives).

10.2.21 System preferences take immediate effect

Technical standards related to the user requirement to have preference settings to change immediately preferably without requiring system reboot.

EG 202 972	7.4 Accessibility applications enabled through 3G
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10.2.22 Return system preferences to defaults

No technical standards were found that are related to the user requirement to have accessibility functions that can be returned to an initial state individually or together after each user.

10.2.23 Structure in long audio documents

No technical standards were found that are related to the user requirement to have structure when navigating long audio material.

10.2.24 Wording and symbols easy to understand

No technical standards were found that related to the user requirement to have wording, symbols, and indicators used on products that are as easy to understand as possible given the device and task.

10.2.25 Words and symbols use standard conventions

Technical standards related to the user requirement to have products or services to use standard conventions, words and symbols for their culture (cross-cultural if possible).

EG 202 972	7.4 Accessibility applications enabled through 3G
EG 202 421	4.9.2 Natural language representation 7 Support required for multicultural communication

10.2.26 Clear and easy mechanisms for access features

No technical standards were found that are related to the user requirement to have clear and easy activation mechanisms for any access features.

10.2.27 Support different thinking styles

No technical standards were found that are related to the user requirement to have navigation that supports different thinking styles.

10.2.28 Assistance in understanding hierarchical products

No technical standards were found that are related to the user requirement to understand product if they have trouble thinking hierarchically.

10.2.29 Reducing operation steps

No technical standards were found that are related to the user requirement to have steps for operations that are minimized and clearly described.

10.2.30 Reducing memory requirements

Technical standards related to the user requirement to have interfaces that limit the memorization required of the user to operate them successfully.

EG 202 132	6.3 User meta-requirements 9.8.4 Access control 10.5.3 Map and way finding services
EG 202 417	11.2 Older users 11.5 Users with cognitive impairments 11.6 Young users (children)
JIS X 8341-2	6.6.1 Operation relying on memory

10.2.31 Simple interfaces

No technical standards were found that are related to the user requirement to have simple interfaces that only require them to deal with the controls they need (advanced or optional controls removed in some fashion).

10.2.32 Each function on its own key

Technical standards related to the user requirement to have Each function on its own key rather than having keys change their functions but look/feel the same.

EG 202 416	6 Generic guidelines for set-up procedures 7 Specific guidelines for the set-up and backup of recovery services 8 Specific guidelines for the set-up of services 9 Specific guidelines for maximizing the accessibility of set-up procedures
EG 202 417	5.6 Content, structure and evaluation 5.7 Customization 6.3 Logical structure and consistency 6.4 Specific user guidance 8.4 Accessibility of screen-based content 10.2 Information about mobile services 12.1.2 Usability and accessibility of user guidance
NDA "accessIT"	Application Software: 1.12 Provide accessible documentation, training and support materials (Priority 1) 2.4 Provide accessible packaging, installation and configuration tools (Priority 2)

10.2.33 Knowing a product is usable and how to set it up

No technical standards were found that are related to the user requirement to know that a product is usable by them and how to set it up to work for them.

10.2.34 Information presented in non text form

No technical standards were found that are related to the user requirement to have information presented in an alternative to text based representation.

10.2.35 Wording clear and simple as possible

Technical standards related to the user requirement to have textual material to be worded as clearly and simply as possible.

EG 202 417	5.2 Content management systems 5.5 Illustrations 5.6.3 Translation management with optimized source texts and work flows 5.6.4 Translation validation 6.3 Logical structure and consistency 6.4 Multiple user guidance 9.2 Guidelines for the design of audio user guides 11 Specific guidelines for maximized accessibility
JIS X 8341-2	5.2.1 Use general vocabulary and notation

10.2.36 Ability to comprehend access information

No technical standards were found that are related to the user requirement to have visual information generated by access features (such as captions) not to occur simultaneously with other visual information that they need to view.

10.2.37 Feedback as pictures or symbols

Technical standards related to the user requirement to have Feedback using pictures or symbols.

EG 202 132	7 Terminology, symbols, auditory signals and user guides
EG 202 417	11 Specific guidelines for maximized accessibility
NDA "accessIT"	Application Software: 1.9 Use the simplest language possible for instructions, prompts and outputs and, where possible, supplement it with pictorial information or spoken language (Priority 1)

10.2.38 Alternatives to text

No technical standards were found that are related to the user requirement to have information presented in an alternative to text.

10.2.39 Alternatives to figures of speech

No technical standards were found that are related to the user requirement to textual information presented using figures of speech (such as abbreviations, idioms, metaphors, etc.) is also presented in a way that does not require understanding of those figures of speech.

10.2.40 Multiple disability

Technical standards related to the user requirement for products to be usable by those with multiple disabilities.

NDA "accessIT"	Application Software: 2.5 Provide for users with multiple impairments (Priority 2)
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10.2.41 Editing functions for communication

No technical standards were found that are related to the user requirement that editing functions should be provided in communications.

10.2.42 Emergency text communications

Technical standards related to the user requirement to have emergency services operate with text in addition to other media.

RFC 5011	5 Re4 Multimode Communication
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10.2.43 Multi party text communications

Technical standards related to the user requirement to have information be available regarding the meaning associated with colours and symbols.

EG 202 972	4 Accessibility applications enabled through 3G
RFC 4597	4 Scenarios for media policy control

10.2.44 Information about colour and symbol use

No technical standards were found that are related to the user requirement to be possible to use text conversation in multi party sessions.

10.2.45 Signed description

Technical standards related to the user requirement to have material containing audio should offer some means of providing a suitable signed description of the audio information necessary for the comprehension of the content

ES 202 432	5.3 Signing
ITU-T H-series Sup.1	5.7 Conclusion on performance requirements
CWA 14835	3 Guidelines for sign language in the Web
UNE 139804	Sections 5 and 6

10.3 Summary and conclusions

A study of ISO/IEC PDTR 29138-1 [i.118] and other documents has revealed a significant number of apparent "gaps" between the needs of disabled users expressed in those documents and the functional requirements available to satisfy these needs. It should be noted that one of the base documents is still a draft and that some of the expressed "needs" may not survive into the finally published version, either because they are not specific to disabled users or because they are not considered to be real or subject to practicable solution.

Some process will be required to study these theoretical "gaps" to determine whether they can or should be "filled" or whether further research is needed. This study needs to be carried out in a suitable forum where global consensus can be achieved. This implies a timescale longer than that projected for Phase II of the Mandate. It could be funded from a Framework programme.

Thus it is concluded that any studies to determine and agree any functional requirements needed to fill any gaps between the currently available functional requirements and the needs of disabled users should be performed in a global forum outside the mandated Phase II work. Such a forum should at least include the European Commission and the US Access Board.

11 Conclusions and considerations for M 376 Phase II (and beyond)

11.1 General conclusions

The present document records the successful conclusion of the work arising from the ETSI part of Phase I of Mandate M 376 [i.141].

The information provided, particularly that in clause 9, is sufficient to provide a sound basis for Phase II of the work, to produce a European Standard (Norm), (EN) containing all of the necessary requirements for accessibility in a single source. This EN can contain the requirements in a fully demonstrable and testable form, compliant with ISO/IEC Guide 7 [i.103] that is suitable for use in any future public ICT procurement legislation and which can be used to provide the necessary award criteria.

11.2 Standardization work programme considerations

During the development of the present document, some standardization work programme proposals and considerations have been identified which are reported in the following list:

- It is clear that the EN will need to refer to some other International and/or European standards (such as the W3C WAI guidelines and to others), particularly for test methods (which need to be based on harmonized International requirements). Phase II will need to report these additional standards referred to and describe any new standardization work necessary in an International forum.
- In one or two cases, it has been found that no International standards exist and either new work will be needed in a suitable International forum or available National standards will need to be used.
- Some currently available standards referenced may have been "re-cycled" multiple times from their original research sources, without due consideration of the context of that research and of developments in technology and so may need to be updated and/or complemented. For example many display monitor standards are based on 1980's era monochrome terminals, using vastly different technology than is in common use today. For this reason, newer research may need to be consulted, and existing standards re-validated or replaced.
- In some cases, it is noted that user needs (such as the effect of ageing on vision) have not been fully characterized by previous work and are still the subject of research. In such cases it will be necessary to specify provisional requirements until the necessary research is concluded and can be addressed through standardization work, for inclusion in future versions of the EN.
- Some process will be required to study those theoretical "gaps" between the currently available functional requirements and the needs of disabled users as recorded in clause 10.1. The study to determine whether the gaps can or should be "filled" or whether further research is needed will need to be carried out in a suitable forum, where global consensus can be achieved. Such a forum, which would need to be outside of the Phase II work, should at least include the European Commission and the US Access Board and also possibly ISO/IEC JTC-1 SWG-A.
- It is important to ensure that disability organizations as well as government and industry are involved in this work, elements of which could possibly be funded from some Research Framework programme. The treatment of these gaps should present no major obstacles to a harmonized set of requirements, assuming expected collaboration with the US Access Board during the development process.
- Some of the "gaps" are possibly due to differences in legislation between Europe and the Americas. For example some commentators believe that American requirements for testing of the compatibility of hearing aids and mobile or cordless telephones is unnecessary in Europe in view of EMC legislation [i.11]. Others believe it difficult to meet such European legislation without the availability of relevant standards. This is an area that requires to be further investigated in the Phase II work.

- Other legislative differences relate to exceptions in the applicability of universal access in Section 508 [i.152] requirements which in the Americas are covered by specific legislation elsewhere and the desire within Europe to ensure that there are no exceptions to the provision of accessible ICT. Such anomalies need to be investigated and resolved in the Phase II work.
- The various references in the present document are to the version of the reference at the time. Some of the documents referenced will have been updated or will most probably be published before the development of the EN. Thus some Phase II work will be needed to follow up on this situation. However, this should not constitute any reason to delay the start of Phase II.
- There is a potential for conflict between the requirement for increased volume to assist hearing impaired users set out in clause 9.3.7.5 and European noise at work legislation, particularly in the case of telephone operators and call centre operators.
- It is expected that the EN would be based on the best available information and that necessary, re-occurring updating (with a preliminary recommendation cycle of 3-5 years) would be taken care of in the maintenance of the document.
- Recent work within W3C has identified the question of just how much assistive technology is required before any Web technology can be considered to be accessible and notes that this is a complex topic needing global dialogue before it can be settled. Whether accessibility is provided within the product or service itself or by external assistive technology devices will affect any decision as will national differences in the provision or support of such devices.
- Within Europe, this complexity is compounded by multicultural constraints, such as the range of languages and dialects that may require support. A product or service that is considered adequately accessible in one country may not be considered so in another country where a different language is spoken. These matters will need to be considered during Phase II of the work.
- A reasonable hypothesis, supported by observations at least in Sweden, indicates a possible shift of focus toward the procurement of complete solutions (e.g. communication services), rather than specific solution elements (e.g. communication devices or software clients), that may lead to more generic accessibility requirements being specified at higher levels. As a consequence, it may be reasonable to recommend a study and careful examination of an accessibility quality assessment process applicable to ICT development.
- The addressing and inclusion of user requirements (and specifically, usability and accessibility requirements) prior to, and during the development and standardization process of new, mainstream ICT technologies will help maximize their accessibility (without specifically addressing it at a later stage) and minimize the need to use assistive technologies. Such actions are recommended and should be further encouraged and supported.
- Other recommended actions include the development of standards and guidelines addressing topics such as human factors guidelines for self-eServices, mobile services, inclusive emergency services and usability and accessibility aspects of ICT security, thereby keeping up with ICT development.
- Furthermore, in order to integrate accessibility requirements with the development of ICT technologies at an early stage, it may be beneficial to perform studies to develop a roadmap of forthcoming accessibility technology enablers, envisaging their use and applicability in the future. Such activities may be beneficial for the era beyond Phase II of M 376 [i.141].
- As a considerable part of public procurement (50 % from 2010) will have to be carried out electronically by the time the EN will be ready, the adaptation of the EN and the procurement toolkit should be carefully examined and supported (e.g. support for electronic development, submission and storage of conformity attestations).

11.3 Required deliverables

As specified in Mandate M 376 [i.141], Phase II will start after the agreement by the European Commission of the deliverables of Phase I, with the aim to identify the necessary European functional accessibility requirements for public procurement of products and services in the ICT domain, and to make these requirements available online as part of a procurement toolkit, that will provide guidance and help texts to public procurers.

The most important deliverable of Phase II is a European Standard (EN), specifying the requirements for accessibility for all ICT products and services within each of the technical areas (to be used in terms of technical specifications in the sense mentioned in the public procurement Directives). The draft European Standard should be provided within 12 months of the start of the Phase II work, while the EN should be provided within 18 months (subject to due completion of the approval process by the ESOs that requires 6 months to 9 months of processing).

It is proposed that the EN should be based on the structure and references set out in clause 9 of the present document. For each of the 79 requirements listed, the references given should be consulted and a functional requirement could then be written based on a consensus of the requirements in the references. Each requirement would have to be written in a form that was demonstrable and/or testable.

The functional requirements identified in clause 9 against the user needs are rarely true, full, one-to-one matches to a single user need, and are often overlapping and even contradictory. In addition many of the provisions are not testable statements, but general advice. Significant work will be required to review all the identified clauses, in conjunction with the user needs, to determine the necessary testable requirement or recommendations. Further work may be required if it is decided to classify requirements into priority levels.

11.4 Other deliverables required by Phase II

- Task II.2 is to produce a report listing the standards and technical specifications, (building on deliverable I.1 (d), the present document) that comply with the above mentioned requirements for accessibility. The present document will list all of the documents used in the creation of the functional accessibility requirements and validation procedures that are specified in the EN.
- Task II.3 is to produce guidelines on accessibility award criteria that are relevant to each technical area that can be used in the procurement of ICT products and services. This work would require close co-operation with the authors of the EN, at all stages.
- Task II.4 is to produce guidance and support material for public procurements, which should address at least the following nine aspects:
 - Information Technology planning guidelines on how to integrate accessibility considerations at the planning stage of procuring ICT products (Task II.4.1).
 - Broad circulation of materials on accessible information technology, contained in a database of accessible ICT products and services (Task II.4.2).
 - Technical advice on new ICT hardware or software (Task II.4.3), giving advice on design for all, assistive technology and on accessibility, freely available (ideally on-line), permitting the addition of references to new research material and to details of new technologies.
 - Training of IT staff on the use of the developed material (Task II.4.4). This training could usefully be extended to designers and developers to stress the need to integrate design for all into the planning stages of product and service development.
 - Accessibility support needs and inventory of existing accessibility support services (Task II.4.5). This task would provide information on the needs of disabled and elderly people. It could also provide a listing of typical services and equipment required to meet those needs. The work would be expected to involve research into current European initiatives in the area. Any European wide inventory of support services would be extremely large and unwieldy, and would be difficult to keep up to date. Therefore a directory of service providers would need to be created and maintained separately in each country and on a national basis.
 - Inclusion of accessibility in ICT call for proposals (Task II.4.6). This work would provide advice to procurers on how to include accessibility requirements in invitations to tender. It would be expected to include information on the legislation in the area. It would be expected that there would be a linkage between this information and the accessibility toolkit.
 - Verification of supplier claims of accessibility (Task II.4.7). The EN should contain clearly specified requirements and should contain test methods to verify the specified characteristics.

- Tracking of non-compliance of products and services (Task II.4.8). Guidance should be provided on the recording and monitoring of the inability to purchase compliant products and services with accessibility requirements in tenders so that appropriate action can be taken.
- Information on the testing and conformity aspects (Task II.4.9). Guidance should be provided to procurers on managing the application of accessibility requirements to the various aspects of conformity assessment.
- An online, accessible toolkit, providing structured access to the full content of the EN, the report, the guidelines and the guidance material. It should provide, in particular, thorough guidance and ready text to public procurers who will access it.
 - The work on such a toolkit would need to be preceded by a pre-study, including a detailed evaluation of currently available toolkits (e.g. Danish, Irish, Canadian, US) to determine and understand details of their design, structure and costs and investigation should be made to determine their usability and effectiveness, degree of integration with the respective procurement process and additional requirements criteria.
 - Any new toolkit should build on the experience gained from these existing toolkits. The toolkit should be fully accessible (to W3C guidelines AAA [i.173]). The toolkit should be comprehensively linked to other information contained in clause 4. The toolkit should provide model text for use by procurers when writing specifications and invitations to tender. The toolkit will need to be translated into the complete range of official European languages. The text should be simple and comprehensible and avoid the use of jargon and technical terms as far as possible so as to make it comprehensible to non expert users.
 - Due weight should be given to the need for maintenance of the toolkit so as to keep it up to date and in line with any new developments in the field of ICT.
 - Though primarily intended for procurers, the toolkit should also be available to designers, developers, suppliers, and teachers and students. However it may be necessary to have differing profiles supported for the various categories of users.
 - A pilot version of the toolkit is required to be available on line 12 months after the recruitment of the project team. The toolkit is required to be provided within 18 months of the recruitment of the project team.

11.5 Additional recommendations and considerations

Users of any European accessibility procurement standard and toolkit need to be made aware that simply using the guidance contained within the EN cannot in itself ensure completely 100% accessible products, and that additional processes will still need to be undertaken to ensure full inclusion. The recommendations should therefore be applied within the framework of recognized user-centred design principles and standards, e.g. ISO 13407 [i.97] and the ISO 9241 series, also including usability activities.

Recent work on WCAG 2.0 which has identified the question of just how much assistive technology is required before any Web technology can be considered to be accessible will need to be dealt with, probably outside the work of Phase II, in an global forum. Special attention will require to be given to language dependant (multicultural) factors.

At all stages of the work, a full range of stakeholders should be involved in the development and drafting process. This should include procurers and procurement experts, organizations representing people with disabilities and older people and young children, consumer organizations, industry representatives and relevant academia.

The level and frequency of stakeholders' involvement and chance to influence the work (e.g. through several comment cycles) should be carefully considered, and agreed, in the perspective of the short development timeframe.

It is essential that the online toolkit and should be fully accessible to the W3C guidelines [i.173] at the highest (currently triple A) level. All of the information arising from the Phase II work should be provided in the appropriate, fully accessible form. All of the guidance and support material provided by the Phase II work should be comprehensively linked via the on-line toolkit.

Though primarily intended for procurers, the toolkit should also be available to designers, developers, suppliers, and teachers and students. The EN and its associated report should be made publicly available to all users, free of charge.

The toolkit and its resources should preferably be available in all official EU and EFTA languages (and possibly others), without barriers, at no cost to all users.

It is important to note it will be necessary to set up some mechanism whereby the EN and the toolkit can be regularly updated and whereby the results of any gap filling process can be incorporated. Awareness about the intended update/refresh frequency would ease the task of the Phase II project team(s).

The Phase II work should be performed in collaboration with the US Access Board and possibly, other representatives, in the interest of global coordination to the largest possible extent.

Procurement readiness and compatibility should be considered.

Annex A:

US Section 508 and the Canadian toolkit

A.1 General

This clause provides an introduction to the US Section 508 [i.152] and to the Canadian Toolkit and provides an inventory of the ICT products and services addressed in Section 508 [i.152] and the Canadian Toolkit.

A.2 US (Section 508)

A.2.1 The purpose of Section 508

Section 508 [i.152] of the Rehabilitation Act regulates federal government agencies' purchasing of Electronic and Information Technologies.

The purpose of Section 508 [i.152] and its supporting standards is to build as much accessibility as is reasonably possible into Electronic and information technologies developed, procured, maintained, or used by agencies of the US Federal Government". (65 FR 80503) Section 508 [i.152] Accessibility Requirements for Federal Information Technology.

Arising from 36 CFR 1194.2(c), Section 508 [i.152] applies to electronic and information technology developed, procured, maintained or used by agencies directly or used by a contractor under a contract with an agency which requires the use of such product, or requires the use, to a significant extent, of such product in the performance of a service or furnishing of a product.

Electronic and Information Technology (E&IT) includes information technology and any equipment or interconnected system or subsystem of equipment that is used in the creation, conversion or duplication of data or information.

Information technology includes computers, ancillary equipment, software, firmware and similar procedures, services (including support services), and related resources. Electronic and information technology includes, but is not limited to, telecommunications products (such as telephones), information kiosks and transaction machines, World Wide Web sites, multimedia, and office equipment such as copiers and fax machines.

Section 508 [i.152] is important because the Federal Acquisition Regulation (FAR) requires, through Section 508 and its implementing standards (65 FR 80500 (12/21/00)), that all Federal IT hardware, software and online services be accessible. Its implementation creates a powerful force in the market to make all products accessible.

Federal Acquisition Regulation (FAR) rule making has required Federal agencies to comply with new "accessibility" purchasing rules since June 25, 2001.

A.2.2 The Access Board

The United States Access Board is a Federal Agency which creates the standards for accessibility:

- Access Board v.1 Standards for accessible E&IT became enforceable June 21, 2001.
- Access Board v.2 in preparation now for 2009.

The Access Board and the US General Services Administration (GSA) provide technical assistance to the Federal government concerning the Section 508 [i.152] requirements.

A.2.3 Agencies' responsibilities

All US Federal Agencies are required to evaluate all potential E&IT purchases against the Access Board Standard to satisfy market research requirements and to purchase the most accessible product that is commercially available unless it would pose an undue burden upon the agency.

They are also required to document which requirements a product does not meet if they wish to purchase any product that does not meet all requirements of the Access Board Standard.

A.2.4 The role of the GSA

The GSA's Office of Government-wide Policy, Centre for IT Accommodation (CITA) is charged with educating Federal employees and building the infrastructure to support Section 508 implementation.

The GSA has created and maintains the "buy accessible" tool for agencies to use when procuring.

The Information Technology Industry Council (ITI) partnered with the U.S. General Services Administration (GSA) to create a simple, Internet-based tool to assist Federal contracting and procurement officials implementing the Section 508 regulations.

This work resulted in the production of the Voluntary Product Accessibility Template™, or VPAT™ which is a voluntary industry effort to document how products can be used in meeting 508.

A VPAT™ may be completed whenever a product is determined to be E&IT and is to be sold in the federal space. It supports the Procurement Officers' market research requirements and is considered to be preferable to compliance statements and third party certification because it is created by vendors that understand the product.

A.2.5 Application of Section 508

In Section 508 access is required for employees with disabilities, as well as members of the public seeking information or services from a Federal agency which is comparable to the access and use by Federal employees or members of the public who are not individuals with disabilities.

Section 508 Standards do not need to be used if a procurement is related to national security or intelligence operations, for example cryptography equipment, command and control of military weapons systems or forces, and so on. It does however apply in purchases which are routine administrative functions, such as Army payroll.

The 508 Standard does not apply to certain ancillary procurements made by a contractor which are incidental to them fulfilling a procurement for the federal agency, or to equipment which is deployed and only controllable from an area which is only used by a specific maintenance workforce.

Also in the initial roll out of 508 an exception was also made for smaller purchases, these needed to be one time only and where the entire procurement (that is, not individual items within a larger procurement) totalled of less than \$ 2 500.

Exceptions can also be made in certain cases:

- Where it would require a fundamental alteration to goods or services.
- Where it would create an undue burden on the agency.
- Where a compliant product is not commercially available.

Note that Section 508 also does not require installation of assistive software, or attachment of assistive device at workstations of federal employees without disabilities.

If it is difficult to locate accessible hardware, software or services that do not meet all of the requirements of the Standards, then agencies are required to evaluate whether products are commercially available that meet some but not all of the requirements, and when this is possible, the agency needs to procure the product that "best meets the standards" (65 FR 80502, 1194.2(b)). If the only available products that meet the requirements would impose an undue burden on the agency, then the agency needs to supply supporting documentation with the procurement to "explain why, and to what extent, compliance with each such provision creates an undue burden" 36 CFR 1194.2(a)(2).

A.2.6 Technical requirements under Section 508

The technical provisions of the currently active legislation (as of time of writing) are given in annex A. As these are under active review, and new legislation is expected to be in force when the result of the present work is complete, these provisions are not studied in detail here, and the user needs clause above (which is largely derived from the current Access Board work to revise Section 508) is considered more relevant.

A.2.7 Section 508 accessibility: The FAR Rule

The actual regulations that implement Section 508 in the US are embodied by the Federal Acquisition Regulation Requirements [66 Fed. Reg. 20894 (Apr. 25, 2001) (final)], which "must" (see Foreword) be implemented by each agency as applicable.

The final rule was published April 25, 2001 and became effective June 25, 2001 (60 days after publication), The FAR Rule slightly expanded the definition of "information technology" to include "Electronic and Information Technology" (EIT).

The FAR requires that the requiring official "must" (see Foreword) (66 FR 20895):

- identify which Access Board standards apply to the procurement; then
- perform market research to determine whether compliant products are available; then
- identify which standards do not apply, because, e.g. of non-availability or undue burden; then
- prepare technical specs and minimum requirements, based on market research and needs; then
- submit purchase request.

A.2.8 The Voluntary Product Accessibility Template™ (VPAT™)

A.2.8.1 General

The purpose of the Voluntary Product Accessibility Template™, or VPAT™, is to assist Federal contracting officials and other buyers in making preliminary assessments regarding the availability of commercial "Electronic and Information Technology" products and services with features that support accessibility.

The VPAT™ is not an official part of the regulation, but was created on the joint initiative of the GSA and Industry in order to create an environment in which procuring officers of the federal agencies could effectively carry out their responsibilities under the FAR rule. Without any standardized mechanism to identify products and services in the marketplace that support accessibility, it would be extremely difficult for the officials to know whether the technical provisions were being met. The VPAT™ is considered by the American IT Industry (ITI) to be most cost effective and fair way for industry to provide this information, and is widely used by Federal, state and local governments, as well as institutional and even corporate purchasers of ICT.

It is assumed and recommended that vendors will provide additional contact information to facilitate more detailed customer inquiries.

A.2.8.2 How the VPAT is organized

The VPAT™ consists of a series of tables, which are divided into three columns.

The first or Summary Table provides a snapshot of the Section 508 standards [i.152]. It is divided into subsections (numbers and headings) with hyperlinks that take you directly to the corresponding table in the template.

Each subsequent table contains the actual language of the referenced subsection, divided into its respective subparagraphs.

For each provisions the vendor indicates:

- Supports - When it is determined the product fully meets the letter and intent of the Criteria.
- Supports with Exceptions - When it is determined the product does not fully meet the letter and intent of the Criteria, but provides some level of access relative to the Criteria.
- Supports through Equivalent Facilitation - When there is an alternate way to meet the intent of the Criteria or when the product does not fully meet the intent of the Criteria.
- Supports when combined with Compatible AT - When it is determined the product fully meets the letter and intent of the Criteria when used in combination with Compatible AT. For example, many software programs can provide speech output when combined with a compatible screen reader (commonly used assistive technology for people who are blind).
- Does not Support - When it is determined the product does not meet the letter or intent of the Criteria.
- Not Applicable - When it is determined that the Criteria do not apply to the specific product.
- Not Applicable - Fundamental Alteration Exception Applies - When it is determined a Fundamental Alteration of the product would be required to meet the Criteria (see the access board standards for the definition of "fundamental alteration").

A.2.9 Update of the 508 Standards and the Telecommunications Act Guidelines ("508 Refresh")

The Access Board is currently conducting a review and update of its access standards, input is being solicited by the Access Board using the Telecommunications and Electronic and Information Technology Advisory Committee (TEITAC) (see below), whose final input to the Access Board was completed in April 2008.

These original 508 standards, which were published in 2000, cover products and technologies procured by the Federal government, including computer hardware and software, Web sites, phone systems, fax machines, and copiers, among others, however technology has moved on since that time, and it is becoming increasingly difficult to apply the standards to newer systems.

The new Section 508 will still require Federal departments and agencies that develop, procure, maintain, or use electronic and information technology to ensure that Federal employees and members of the public with disabilities have access to and use of information and data, comparable to that of the employees and members of the public without disabilities, and will not take any step backwards in terms of the level of accessibility required. However the organization and wording will be changed to better reflect the current and future direction of E&IT.

This effort will also incorporate Board guidelines for telecommunications products and equipment covered by section 255 [i.151] of the Telecommunications Act.

A.2.9.1 TEITAC

The Access Board organized an advisory committee (Telecommunications and Electronic and Information Technology Advisory Committee (TEITAC)) to review its standards and guidelines and to recommend changes.

The committee's membership included representatives from industry, disability groups, standard-setting bodies in the U.S. and abroad, and government agencies, among others.

Members were selected from applications received in response to a Board notice published in April of 2006.

All TEITAC activities were open to the public, but only members of the committees could actively participate.

A number of sub-committees took part in the work:

- General Interface Accessibility.
- Web and Software.
- Telecommunications.

- Audio Video.
- Self contained/closed.
- Desktops/Portable.
- Sub-part A.
- Documentation and technical support.
- Editorial Working Group - assembles the drafts and working with the entire committee to produce the final report. The final version of the TEITAC deliverable is available at <http://www.access-board.gov/sec508/refresh/report/>.
- Communications Task Force - provides communication and administration tools.

A.3 The Canadian Accessible Product Toolkit (APT)

A.3.1 General

In Canada, the Accessible Product Toolkit (APT) is a Web-based application designed by the Assistive Devices Industry Office (ADIO) of Industry Canada (a Government department) that provides accessibility requirements and standard to apply to purchases of mainstream products and services. Applying the standards ensures that products meet "Design for All" principles. Use of the Toolkit assists procuring organization to meet their mandated obligations to purchase more accessible goods and services by providing purchasing guidance and suggested specifications that can be used in documents for the selection and contracting of suppliers.

The Toolkit is intended to be used by:

- purchasing managers to inform procurement officers of their product requirements;
- procurement officers to add accessibility clauses to purchasing documents;
- manufacturers to determine, for planning and development purposes, what standards might apply to their products;
- vendors to compare the compliance level of their products to government or national standards.

The APT Web-site covers mainstream technologies and supplies used by the majority of people. It covers the modification or purchase of such standard office equipment such as computers and furnishings.

A.3.2 Product and service categories

The Toolkit is organized in a tree structure, starting with a list of general categories that progressively branch off into more specific categories.

The Starting categories are:

- 1) Documentation, instruction and technical support.
- 2) General office accommodations.
- 3) Hardware.
- 4) Media and content.
- 5) Software.
- 6) Telecommunications products.
- 7) Training.

- 8) Web-sites/Web applications.

A.3.3 Data links

The listings are accompanied by up to four data links listed in the following clauses which contain supplementary information that can be considered for input into contract documentation.

A.3.3.1 Definition

All of the listings contain a link providing either a short or detailed description of the term as it is used in the Toolkit. Definitions are important to help ensure that there is no confusion about what product or service should be considered for purchase. Some types of products or services that might be better described by more specific category names are grouped under broader headings at present. In those categories the definitions include examples of the types of technologies or services referred to in order to aid the user's understanding.

A.3.3.2 Requirements

When an item is specific enough to warrant the assignment of accessibility criteria, the "Requirements" link appears. The Requirements link provides information on publicly available specifications, standards and best practices that can be used to make an appropriate purchase or instruct suppliers on what rules or guidelines they should follow to modify or develop a product or service.

A.3.3.3 Advice

The "Advice" link appears whenever there are significant considerations that should be examined before the related product is acquired. It is important to review the information under this link prior to making purchasing plans.

A.3.3.4 Environmental considerations

This link appears whenever the product or service presents factors related to office air quality or to environmental sensitivities of office staff. It is important to review the information under this link prior to making purchasing plans.

The requirements, advice and environmental considerations links do not exist for every product or service listed. That is because there may not be generally accepted practices for a particular product or service. In these cases, further research may be needed. The absence of these links may also be because the specifications of the particular product are dependent upon customization and the precise needs of the user.

A.3.4 Product Codes on the APT

All of the main categories in the databases have an assigned product code. Searching by product code produces a list of links related specifically to that category. The use the product code search is suggested if it is known what product or service is needed and only related links should be scanned.

Three major procurement code systems are available:

- Goods and Services Information Number (GSIN) in Canada;
- Federal Procurement Codes (FPC) in the United States;
- United Nations Standard Products and Services Code® (UNSPSC®) internationally.

A.3.5 Example

Within the toolkit, clicking on hardware > computer components and peripherals > keyboards gives definition requirements and advice options. The definition rather unexpectedly is a picture of a keyboard - the requirements quote Section 508 - 1194.4, 1194.23 (k) and 1194.25 (c).

The requirements option shows that:

- "1194.23 (k) requires that:

Products which have mechanically operated controls or keys, "shall" (see Foreword) comply with the following:

- 1) Controls and keys "shall" (see Foreword) be tactilely discernible without activating the controls or keys.
 - 2) Controls and keys "shall" (see Foreword) be operable with one hand and "shall" (see Foreword) not require tight grasping, pinching, or twisting of the wrist. The force required to activate controls and keys "shall" (see Foreword) be 2,3 kgs. (22,2 Newtons) maximum.
 - 3) If key repeat is supported, the delay before repeat "shall" (see Foreword) be adjustable to at least 2 s. Key repeat rate "shall" (see Foreword) be adjustable to 2 s per character.
 - 4) The status of all locking or toggle controls or keys "shall" (see Foreword) be visually discernible, and discernible either through touch or sound".
- and "1194.25 (c) requires that:
 - Where a product utilizes touch screens or contact-sensitive controls, an input method "shall" (see Foreword) be provided that complies with 1194.23 (k) (1) through (4)".

The "advice" option states that:

- "Persons with dexterity impairment and those with cognitive disabilities often have trouble using traditional keyboards. The standard layout of letters, numbers and punctuation is known as a QWERTY keyboard because the first six keys on the top row of letters spell QWERTY.
- The QWERTY keyboard was designed in the 1 800 s for mechanical typewriters and was actually designed to slow typists down to avoid jamming the keys. Another keyboard design, which has letters positioned for speed typing, is the Dvorak keyboard. Alternative keyboards available range from keyguards that prevent two keys from being pressed simultaneously, to mini keyboards for small ranges of movement to pressure sensitive pads that can be configured for the task at hand. All these systems gather input from alternative movements or actions that are interpreted as keystroke substitutions".
- Explanations illustrated by cartoon diagrams are given of the need for keys to be tactilely discernable and for the controls to be operated with one hand.

Other searches on the toolkit database show the Canadian Goods and Services Identification Number (GSIN) or U.S. Federal Supply Codes/Product Services Codes (FSC/PSC) codes:

- **N7025060** - Keyboards - Microcomputer.

The U.S. FSC/PSC codes omit the letter prefix.

Or the United Nations Standard Products and Services Code® (UNSPSC®):

- **43211706** - Keyboards.
- **43211804** - Keyboard drawers or shelves.

Annex B:

List of applicable CPV codes

Table B.1: Inventory of publicly procured ICT products and services

CPV	CPV divisions	Number of Awarded Public Contracts
30000000	Office and computing machinery, equipment and supplies	739
30120000	Photocopying and printing equipment	819
30121100	Photocopying equipment	1 734
30121110	Colour photocopiers	419
30121120	Copying equipment	316
30191200	Overhead projectors	66
30191300	Facsimile equipment	168
30200000	Computer equipment and supplies	2 666
30210000	Data-processing machines	139
30211000	Mainframe computer	136
30211100	Super computer	89
30211200	Mainframe hardware	72
30211300	Computer platforms	101
30211400	Computer configurations	100
30213000	Personal computers	1 107
30213100	Notebook personal computers	426
30213200	Laptop personal computers	210
30213300	Portable computers	568
30214000	Workstations	527
30216110	Scanners for computer use	338
30216130	Barcode readers	57
30217200	Computer accessories	236
30217300	Computer supplies	719
30230000	Computer hardware	1 801
30231000	Computers and printers	680
30231100	Computers	545
30231110	Database	118
30231200	Computer equipment	761
30231220	Computer peripherals	449
30231230	Computer terminals	105
30231250	Display screens	502
30231300	Desktop computers	329
30232000	Miscellaneous computer equipment	292
30232100	Back-up equipment	151
30232120	Computer mice	59
30232130	Joysticks	6
30232150	Trackballs	1
30233100	Computer storage units	92
30233141	Disk-storage system	172
30233211	Computer keyboards	65
30233212	Braille pads	3
30233230	Printers and plotters	463
30233231	Laser printers	737
30233232	Dot-matrix printers	62
30233234	Colour graphics printers	152
30233235	Plotters	28
30236000	IT equipment	641
30240000	Software	1 969
30241000	Computer software	933
30241100	Database software	291
30241200	Applications software	454
30241210	Project management software	36
30241300	Mainframe software	30
30241310	Computer programs	78
30241400	Operating-systems software	186

CPV	CPV divisions	Number of Awarded Public Contracts
30241500	Systems software	211
30241600	Utilities software	94
30241700	Multimedia software	56
30242000	Security software	139
30242100	Anti-virus software	104
30244000	Management software	332
30244100	Library management software	81
30244200	Memory-management software	22
30245000	Software packages	580
30245100	Spreadsheet software	12
30245300	Statistical software	27
30246000	Communications software	73
30246100	IT software	139
30246200	Emulation software	11
30247100	Drawing and painting software	3
30248000	Software products	162
30248100	Software applications	153
30248200	Software licences	1 046
30248300	Software upgrade	177
30249000	Miscellaneous software	141
30249100	Computer-aided design software	27
30249200	Digital-mapping software	56
30249300	Educational software	89
30249400	Financial systems software	131
30249410	Accounting software	64
30249500	Office automation software	88
30249600	Word-processing software	12
30250000	Computer systems	765
30251000	Computer control system	81
30252000	Database-management system	163
30253000	Accounting system	30
30253100	Billing system	36
30254000	Information systems	375
30254100	E-mail system	23
30254200	Financial information systems	105
30255400	Clinical information system	72
30256000	Library management system	79
30257000	Imaging and archiving system	175
30259700	Document management system	127
30260000	Servers	1 391
30261000	Network servers	223
30262000	Computer servers	391
30263000	File servers	57
30264000	UNIX or equivalent servers	181
30265000	Printer servers	15
31154000	Uninterruptible power supplies	136
32000000	Radio, television, communication, telecommunication and related equipment and apparatus	669
32232000	Video-conferencing equipment	136
32250000	Mobile telephones	126
32252000	GSM telephones	38
32260000	Data-transmission equipment	126
32320000	Television and audio-visual equipment	178
32322000	Multimedia equipment	220
32323000	Video monitors	62
32323100	Colour video monitors	66
32323300	Video equipment	182
32324000	Televisions	29
32342440	Voice-mail system	9
32351200	Screens	77
32400000	Networks	395
32412000	Communications network	174
32420000	Network equipment	622

CPV	CPV divisions	Number of Awarded Public Contracts
32500000	Telecommunications equipment and supplies	516
32510000	Wireless telecommunications system	134
32540000	Switchboards	50
32543000	Telephone switchboards	141
32550000	Telephone equipment	279
32551300	Telephone headsets	19
32552110	Cordless telephones	24
32552120	Emergency telephones	19
32552600	Entrance telephones	16
32570000	Communications equipment	284
32581000	Data-communications equipment	90

It is intended that the inventory will be reconciled with American and Canadian data.

Annex C:

Procurement legislation and ICT products and services procured in the EU and EFTA Member states

C.1 Process and results

This information was obtained by several means including the contacting, via email, of over 270 individuals listed in the European Public Procurement Network who were invited to provide national information addressing:

- Existing ICT procurement requirements that address accessibility.
- An inventory of publicly procured ICT products and services.

The lists of individuals was understood to be up-to-date and despite a small number of returned emails ("recipient unknown"), the overall response rate was low. A log was maintained of all emails sent and the responses received. Where possible the information received was checked against government Web sites before being incorporated into the second draft.

The same respondents were again contacted via email when the second public draft was available and each was provided with the information pertaining only to their own country. They were asked to review and confirm (or correct) the information. The responses returned came from the same respondents who replied to the first email approach.

Other sources of information used to gather the information included here, were:

- Government Web sites.
- Known individuals and contacts involved in ICT accessibility.
- Various consultants' reports, including the Measuring Progress of *e*Accessibility in Europe (MeAC) study [i.27], for which permission was provided to re-use.

In addition, information was sought and obtained from Japan and Australia.

C.2 Austria

C.2.1 Procurement legislation

The community Directives on public procurement are transposed in the Federal Law on Public Procurement, the Bundesvergabegesetz 2002 - BVergG (BGBl. I Nr. 99/2002). A corresponding reference listing the Directives is stated in paragraph 192.

Furthermore, due to the federal system laid down in the Austrian Federal Constitution Law there are nine additional different Landesvergabekontrollgesetze ("Länder" laws on the control of public procurement) establishing a remedy system in accordance with the Directives 89/665/EEC [i.12] and 92/13/EEC [i.14].

C.2.2 Products and services procured

Information not available.

C.3 Belgium

C.3.1 Procurement legislation

The EU Procurement Directive has apparently had little impact on eAccessibility since no real legislation has been made. Only, accessibility requirements relating to Web sites are now included in public procurements since most public procurements include the demand to make them accessible (they most often refer to the AnySurfer guidelines).

A law implementing Directive 2004/18/EC [i.25] is now being prepared by the Chancellery of the Prime minister.

C.3.2 Products and services procured

Information not available.

C.4 Bulgaria

C.4.1 Procurement legislation

The legal framework for the Bulgarian public procurement is divided into two separate regimes.

The **Public Procurement Law PPL** (SG 56/22.06.1999) with a recent amendment (SG 43/26.04.2002) regulates the bigger procurements above the thresholds. It covers the procurement process from the planning stage to contract award and signing. The same rules apply to all proceedings conducted by central government, local governments (municipalities), other public institutions spending public funds as well as both public and private utilities. The same regime applies to the different types of procurement - works, services and goods. The current thresholds for public works are set at Euros 300 000 (600 000 Leva); supplies at Euros 25 000 (50 000 Leva); and public services at Euros 15 000 (30 000 Leva).

The **Ordinance on Public Procurement** under the Thresholds (SG 36/02.05.2000) regulates the procedures for smaller public contracts.

In the description of coverage, the provisions of the PPL are different to the provisions of EU Directives. The Directives use more general definitions (especially the concept of "body governed by public law"), while the PPL uses detailed enumeration. This may lead to some discrepancies (not all bodies governed by public law might be included). Additionally the types of contracts covered are defined in different way to those in the Directives. In the PPL there is an exhaustive list of services included, while in Directive 92/50 there is an open definition of services included, and the list of exclusions. The difference might lead to the situation that not all services covered by the Directive 92/50 are covered by the PPL.

The Public Procurement Register (PPR), Internet address www.government.bg/rop publishes information about the procedures for awarding procurement contracts, information on all procuring entities, information about number of tenders received, the number of eligible tenders and the number of rejected tenders, as well as information about the awarded contracts. The latter includes the subject of the contract, the period of performance, the total contract value and terms of payments.

C.4.2 Products and services procured

Information not available.

C.5 Cyprus

C.5.1 Procurement legislation

The following clauses detail the ICT hardware, software and services that are procured by Government agencies in Cyprus.

C.5.2 Products and services procured

C.5.2.1 Hardware

- Desktop PCs.
- Portable PCs.
- Notebooks.
- Mini Notebooks.
- Tablet PCs.
- Palmtop PCs.
- Printers.
- Laser (also with Ethernet card).
- Inkjet.
- Slip Printers.
- ID Card Printers / with laminator.
- Dot Matrix.
- Portable Printers.
- Line Printers.
- LaserLine Printers.
- Servers (database/application/development/Web/mail/DNS/backup/proxy/ etc.).
- Peripherals.
- Scanners.
- Plotters.
- Digitizers.
- Multifunction Machines (Printer/Copier/Scanner/Fax).
- Networking, Internet and Security.
- Switches.
- Routers and Dial Up Routers.
- Firewalls.
- SAN FC Switches.

- AntiSpam Equipment.
- Intrusion Detection Equipment.
- Cabling.
- Storage.
- External Disk Storage Arrays.
- Optical Disks Library - WORM.
- External Tape Backup Systems.
- Racking Equipment.
- Racks/Rack Equipment.
- Cabinets.
- KVM Switch.
- UPS.
- Individual Monitors (usually 17" TFT and 19" TFT).
- Other.
- Projector.
- Touch Screens.
- Digital Cameras.
- OCR-B Readers for MRZ lines.
- DEC Servers.
- USB Memory sticks, etc.
- Various Upgrades of Hardware.
- Internal/External CD-RWs.
- Internal/External DVD-RWs.
- Additional Graphics Cards.
- Additional Hard Disks.
- Additional Memory.
- External Hard Disks.
- Network Cards.

C.5.2.2 Services

- Installation/Configuration/Set up Services.
- Training Services.
- Operational Support Services.
- Maintenance Services for both hardware and software, including subscription services for various software.

- Software Development/Upgrading Services.
- Customization of Ready made software.
- Feasibility Study / Definition of requirements (software and/or hardware).
- Consulting/Project Management services.
- Subscription to Legal Bank - Leginet.

C.5.2.3 Software

- **Operating Systems:** Various versions of Unix (Linux, AIX, HP-UX), Microsoft Various Versions, MAC OS Various Versions.
- **Office Applications:** MS Office for PCs and MACs (various versions), MS Proofing Tools, MS Project, MS Visio Standard, MS Visio Professional.
- **Databases:** Oracle (various versions and additional tools and suites), Oracle RDB, MS SQL Server 2000/2005/Enterprise, Informix SE, Informix 4GL RDS, MS Access, MS FoxPro.
- **Architectural/CAD/Design/GIS/Engineering/Mapping Software:** ArcGIS - ArcInfo, ArcGIS - ArcEditor, ArcGIS - 3D Analyst, ArcPress, ArcGIS - Publisher, ArcGIS - Spatial Analyst, ArcGIS - Survey Analyst, ArcGIS - Data Interoperability, PLTS for ArcGIS - Aeronautical Module, AutoCAD, AutoCAD LT, Autodesk MAP, Autodesk Raster Design, Autodesk 3Ds Max, Autodesk Architectural Desktop 3D, Autodesk Civil 3D, AutoCAD Revit Series Cross, Caris LOTS (Limits and Boundaries), Caris GIS Professional, Liscad Standard, Liscad CAD, Liscad Resource Editor, Liscad Modeling, Liscad Volumes, Liscad Background Images, MapInfo Professional, Primavera Engineering and Construction for scheduling engineers, ENVI Remote Sensing Software, FESPA.
- **Web, Analytics, Development, Design, Imaging and Publishing Tools (for PCs and Mac):** Adobe Acrobat, Adobe Acrobat Professional, Adobe Design CS3, Adobe Dreamweaver, Adobe Flash Professional, Adobe Illustrator, Adobe Photoshop CS2, Adobe Photoshop for MAC, Adobe Photoshop Elements, Java Runtime Environment, BI Web Light Users, CorelDraw Graphics Suite X3-Box, Macromedia Freehand, ImageStation Automatic Triangulation - SFT00739, Microstation V8 XM Edition, Microsoft Office Publisher, MS Web Server IIS, Microsoft.Net Studio, MS Visual Studio, Quark Xpress Various Versions and Upgrades, WebTrends Analytics 8 Standard, Redix Autoany XML Format Converter engine.
- **Safety and Security Software:** Backup Software, Clustering/High Availability Software, Antivirus, AntiSpam, Intrusion Detection, SSL Certificate Licenses.
- **Mailing Software:** MS Exchange Server Standard Edition, Lotus Domino.
- **OCR Software:** ABBYY FineReader and FineReader Pro Various Versions.
- **Statistical:** SPSS/WIN Advanced Models, SPSS/WIN Amos, SPSS/WIN Base System, SPSS/WIN Categories, SPSS/WIN Answer Tree, SPSS/WIN Exact Tests, SPSS/WIN Regression Models, SPSS/WIN Tables, SPSS/WIN Trends, SPSS Complex Samples, SAS Base, SAS ETS, SAS Access, SAS Assist, SAS FSP.
- **Content Management:** FileNET Software.
- **Sound Editing Software for Mac:** Toast Titanium.
- IDEA Data Analysis Software.
- MySAP ERP.
- NFS Maestro/Connectivity Tool.
- Parallels Desktop for MAC.
- VMWare Workstation Standard.

- Winsock RSHD/NT and RSHD/95.
- Delta Bank.

C.6 Denmark

C.6.1 Procurement legislation

In Danish law the public procurement s are directly applicable since they are incorporated as they stand. The public procurement Directives have been implemented by the following governmental orders:

- Governmental order number 649 of 30 July 2002 concerning the procedures for the award of public works contracts in the European Union.
- Governmental order number 650 of 30 July 2002 concerning the procedures for the award of public supply contracts in the European Union.
- Governmental order number 651 of 30 July 2002 concerning the procedures for the award of public service contracts in the European Union.
- Governmental order number 652 of 30 July 2002 concerning procurement procedures of entities operating in the water, energy, transport and telecommunications sectors.

Each Directive is printed as an annex to the respective governmental order. Thus the actual text of the Directives constitutes the current legislation in the field of public procurement in Denmark.

C.6.2 Products and services procured

Information not available.

C.7 Estonia

C.7.1 Procurement legislation

The new Public Procurement Act (RTI,21.02.2007,15,76) transposing Directives 2004/17/EC [i.24], 2004/18/EC [i.25], 89/665/EEC [i.12], 92/13/EEC [i.14] and 2005/51/EC [i.26] has been in force since 1 of May 2007.

According to the Public Procurement Act e-Accessibility may be referred to in the procurement documents. However, so far, the Government has not defined any terms of reference for eAccessibility in the public procurement of services and products.

C.7.2 Products and services procured

Information not available.

C.8 Finland

C.8.1 Procurement legislation

The Finnish Act on public procurement, Laki julkisista hankinnoista, (348/2007) implements the revised EU Directives 2004/18/EC [i.25] and 89/665/EEC [i.12] and notes that whenever possible, technical specifications should be defined so as to take account of the needs of people with disabilities although it does not explicitly refer to them.

C.8.2 Products and services procured

Information not available.

C.9 France

C.9.1 Procurement legislation

Incorporation of the Directives

"Classical" Directives (supplies/works/services)

Directives 93/36/EEC [i.16] and 93/37/EEC [i.17] of 14 June 1993 and Directive 92/50/EEC [i.15] of 18 June 1992 on the coordination of procedures for the award of public supply, works and service contracts respectively have been incorporated:

For persons subject to the Public Procurement Code (PPC), by:

- Decree n. 2001-210 of 7 March 2001 adopting the Public Procurement Code.

For persons not subject to the Public Procurement Code, by:

- Amended Act n. 91-3 of 3 January 1991 on the transparency and conformity of procurement procedures and on rules requiring certain contracts to be advertised and open to competition.
- Amended Decree n. 92-311 of 31 March 1992 on rules requiring certain public supply, works and service contracts to be advertised and open to competition.

Council Directive 93/38/EEC [i.18] of 4 June 1993 coordinating the procurement procedures of entities operating in the water, energy, transport and telecommunications sectors.

For persons subject to the Public Procurement Code:

- incorporated by Decree n. 2001-210 of 7 March 2001 adopting the Public Procurement Code.

For persons not subject to the Public Procurement Code, incorporated by:

- Act n. 92-1282 of 11 December 1992 on procedures for the award of certain contracts in the water, energy, transport and telecommunications sectors (French Journal Officiel of 12 December 1992).
- Decree n. 93-990 of 3 August 1993 on public procurement procedures in the water, energy, transport and telecommunications sectors.

Directive 89/665/EEC [i.12] of 21 December 1989 on the coordination of the laws, regulations and administrative provisions relating to the application of review procedures to the award of public supply and public works contracts.

Without distinguishing between persons subject and persons not subject to the Public Procurement Code:

- incorporation by the act of 4 January 1992 (French Journal Officiel of 7 January 1992) and by Decree n. 92-964 of 7 September 1992 amending the Administrative Courts Code and the Civil Procedure Code and rounding out the above-mentioned act of 3 January 1991.

The pre-contractual summary proceedings are defined by Article L. 551-1 of the Administrative Justice Code in its wording derived from Act n. 2000-597 on summary proceedings before the administrative courts.

Directive 92/13/EEC [i.14] of 25 February 1992 coordinating the laws, regulations and administrative provisions relating to the application of Community rules on the procurement procedures of entities operating in the water, energy, transport and telecommunications sectors.

Incorporated by:

- Act n. 93-1416 of 29 December 1993 on remedies regarding the award of certain public supply and works contracts in the water, energy, transport and telecommunications sectors.
- The ministerial order of 20 September 2001 stipulating the conditions in which the certificates of conformity of procurement procedures and performance of public contracts can be issued to public bodies operating in the drinking water, energy, transport and telecommunications sectors.
- The ministerial circular of 24 September 2001 on the implementation of a conciliation procedure for disputes concerning the contract award conditions in the water, energy, transport and telecommunications sectors.

C.9.2 Products and services procured

Information not available.

C.10 Germany

C.10.1 Procurement legislation

The following domestic legislation currently governs the field of public procurement:

- Act against Restraints of Competition - 4th part; implementing the European procurement rulesTM Ordinance on the Award of Public ContractsTM Code for Awarding Public Services Contracts, part A (VOL/A) and Code for the Award and Contracting of Public Works, part A (VOB/A) with sections 2 to 4 and Code for Awarding Freelance Services Contracts.
- Federal Budget Code with provisional administrative rules on Section 55TM VOL/A and VOB/A Sections 1 for national procurement law (below the EU thresholds) and analogue rules in the Länder and municipalities.

Accessibility is not directly included in any procurement regulations; the Additional Contract Conditions is the place where accessibility requirements could, in principle, be placed.

C.10.2 Products and services procured

Information not available.

C.11 Greece

C.11.1 Procurement legislation

Directive 93/36/EEC [i.16] as amended by European Parliament and Council Directive 97/52/EC [i.19] is implemented by Presidential Decree 370/95 as amended by Presidential Decree 105/2000.

Directive 93/37/EEC [i.17] as amended by European Parliament and Council Directive 97/52/EC [i.19] is implemented by Presidential Decree 334/2000 as amended by Presidential Decree 336/2002.

Directive 92/50/EEC [i.15] amended by European Parliament and Council Directive 97/52/EC [i.19] and Commission Directive 2001/78/EC [i.22] is implemented by Presidential Decree 346/1998 as amended by Presidential Decree 18/2000 and Presidential Decree 101/2003.

Directive 93/38/EEC [i.18] amended by Directive 98/4/EC [i.20] of the European Parliament and of the Council is implemented by Presidential Decree 57/2000 and Directive 98/4/EC [i.20] has been implemented by Presidential Decree 22/2002.

Directive 89/665/EEC [i.12] has been implemented by Law 2522/1997.

Directive 92/13/EEC [i.14] has been implemented by Law 2854/2000.

C.11.2 Products and services procured

Information not available.

C.12 Hungary

C.12.1 Procurement legislation

The Public Procurement Act (Act CXXIX of 2003 and the Modification Act CLXXII of 2005) is fully harmonized with the latest EU legislation on public procurement. The act regulates governmental and public orders for goods, services and construction projects. It does not specifically refer to *e*Accessibility.

Whilst it does not stipulate that suppliers supplying *e*-Accessible products and services should be given preference in the public procurement process and decision, it does stipulates that the special needs of disabled should be taken into consideration in all public procurement cases.

C.12.2 Products and services procured

Information not available.

C.13 Iceland

C.13.1 Procurement legislation

The public procurement Directives have been implemented by the following governmental orders:

- The public procurement Act n. 84/2007.
- The public projects procedures Act n. 84/2001.

The above mentioned Acts implemented the procurement Directives on public works, supplies and services by the European Parliament and Council Directive 2004/17/EC [i.24], the utilities Directive as amended by Directive 2004/18/EC [i.25] of the European Parliament and of the Council and the Remedies Directives.

The Act contains further detailed rules concerning the Complaints Board competence and organizations, the procedures before the Board etc. Furthermore the above mentioned Act contains provisions, which implement the Commission Regulation (EC) No 1564/2005 [i.8] on standard forms.

Also the public procurement Act in Iceland contains instructions to the state authorities concerning purchasing of construction and work contracts, services and goods below the thresholds of the EU-Directives.

The Central Government in Iceland does not yet apply special instructions or requirement for accessibility when purchasing ICT equipment, but is aware of the necessity of such rules.

C.13.2 Products and services procured

Information not available.

C.14 Ireland

C.14.1 Procurement legislation

The EU Directive 2004/18/EC [i.25] was transposed into Irish legislation on 22 June, 2006, via Statutory Instrument SI No. 329 of 2006, the procurement regulations. It includes provisions for accessibility:

- Part 5: Specific rules governing specifications and contract documents.

Article 23(2) requires that "in awarding a public contract, a contracting authority "shall" (see Foreword), as far as practicable, ensure that the technical specifications for the contract take account of the need to prescribe accessibility criteria for all persons who are likely to use the relevant works, products or service, particularly those who have disabilities".

Schedule 3 states that "Technical specification", when used in relation to a public supply or service contract, means "a specification in a document defining the required characteristics of a product or service, such as quality levels, environmental performance levels, design for all requirements (including accessibility for disabled persons)".

C.14.2 Products and services procured

No list is available but tenders use CPV codes for specification purposes.

C.15 Italy

C.15.1 Procurement legislation

Legislative Decree (modified by Law 21st July 2000, n.65) 17th March 1995 157 which implements the Directive 92/50/CEE [i.15] on public procurement

Legislative Decree 17th March 1995 158 which implements Directives 90/531/EEC [i.13] and 93/38/EEC [i.18]

Legislative Decree 1998 402 which implements the Legislative Decree 358/92 to the Directives 93/36/EEC [i.16] and 97/52/EC [i.19].

Legislative Decree 25th November 1999 525 which implements the Directive 98/4/EC [i.20].

Legislative Decree 9th April 2003 67 which implements the Directive 2001/78/EC [i.22].

C.15.2 Products and services procured

Information not available.

C.16 Latvia

C.16.1 Procurement legislation

By adopting the Public Procurement Law, Latvia has implemented the directive 2004/18/EC [i.25]. This law has been in effect as from 1 May 2006. In principle it allows the inclusion of accessibility requirements in public contracts. It is reported that so far there are no indications that recommendations on accessibility of this directive are taken into account in requests for tenders.

National legislation that currently regulates the State's public procurement sector:

- Cabinet Regulation 376 Procedures for the Application of Methods for Selection of Tenderers and for Choice of Tenders 31st October 2000.
- Cabinet Regulation 742 Procurement Commission's Action 23rd December 2003.
- Cabinet Regulation 743 Procedures for Open Competition in relation to Purchase of Goods 23rd December 2003.
- Cabinet Regulation 744 Procedures for Open Competition with Respect to Performance of Construction Work 23rd December 2003.
- Cabinet Regulation 745 Regarding Open and Restricted Competition Procedures for Provision of Services 23rd December 2003.

C.16.2 Products and services procured

Information not available.

C.17 Liechtenstein

C.17.1 Procurement legislation

The original Act on public procurement (ÖAWG, LGBI. 1998 Nr. 135) was divided into the Act on public procurement (ÖAWG, LGBI. 1998 Nr. 135, amended with LGBI. 2005 Nr. 218) and the Act on utilities procurement (ÖAWSG, LGBI. 2005 Nr. 220).

Therefore the following acts, ordinances and announcements were issued in these two areas:

- Act of 19 June 1998 on the award of public works, supply and services contracts (Act on public procurement, ÖAWG), LGBI. 1998 Nr. 135, amended with LGBI. 2005 Nr. 218.
- Ordinance of 3 November 1998 on the award of public works, supply and services contracts (Ordinance on public procurement, ÖAWV), LGBI. 1998 Nr. 189, amended with LGBI. 2005 Nr. 222 and 2005 Nr. 263.
- Announcement of 20 December 2005 on the threshold according to the EEA Agreement as well as to the WTO-Agreement, LGBI. 2005 Nr. 264.
- Act of 21 September 2005 on the award of public works, supply and services contracts in the water, energy, transport and telecommunications sector (Act on utilities procurement, ÖAWSG), LGBI. 2005 Nr. 220.
- Ordinance of 8 November 2005 on the award of public works, supply and services contracts in the water, energy, transport and telecommunications sector (Ordinance on utilities procurement, ÖAWSV), LGBI. 2005 Nr. 223.
- Announcement of 20 December 2005 on the threshold in the utilities sector according to the EEA Agreement as well as to the WTO-Agreement, LGBI. 2005 Nr. 265.

Furthermore, accessibility is not yet included in any procurement regulations because the Directives 2004/17/EC [i.24] and 2004/18/EC [i.25] are not incorporated into national law at present. Liechtenstein will bring of 2008.

C17.2 Products and services procured

Information not available.

C.18 Lithuania

C.18.1 Procurement legislation

Public procurement in the Republic of Lithuania is regulated by the Law on Public Procurement and about 20 legal acts of secondary legislation that were prepared for implementation of the requirements laid down in the Law. The First Law of the Republic of Lithuania on Public Procurement was adopted on 13th August 1996. However this Law was based on the UNCITRAL Model Law. The Law on Public Procurement, which was adopted on 3rd December 2002 and came into force in March 2003, was the first Law completely harmonized with public procurement Directives.

The Law consists of 5 different chapters covering the following:

- General provisions.
- The requirements for public procurements of public authorities (classical sector) above the threshold value.
- The requirements for public procurements of entities operating in water, energy, transport and telecommunications sectors (utilities sector) above the threshold value.
- The requirements for public procurements below the threshold value (simplified procurement procedures).
- The requirements for procedures of reviewing of complaints and claims, reconciliation, attestation and payment for damages.

C.18.2 Products and services procured

Information not available.

C.19 Luxembourg

C.19.1 Procurement legislation

Luxemburg has adjusted its public procurement legislation to the rules of the Procurement Directives.

The main principles constituting the basis of the national legislation on public procurement are the following:

- Principle of non discrimination of enterprises (art. 4 of the Law of 30th June 2003).
- Principle of competition.
- Principle of using of open tendering procedures.
- Principle of transparency.
- Principles of equality.
- Principle of impartiality.
- Principle of using of selective tendering procedures.
- Principle of environmental protection and promotion of sustainable development (art. 4 of the Law of 30th June 2003).

C.19.2 Products and services procured

Information not available.

C.20 Malta

C.20.1 Procurement legislation

It is expected that eAccessibility will be addressed in procurement regulations. The Foundation for IT Accessibility (FITA) based within Malta Information Technology and Technical Services (MITTS) Ltd, has been working on a set of guiding principles relating to ICT and accessibility for disabled persons. It is anticipated that FITA and KNPD's proposals in relation to accessibility in ICT Procurement will be included in the new regulations

C.20.2 Products and services procured

Information not available.

C.21 Netherlands

C.21.1 Procurement legislation

So far, the Services, Supplies and Works and the Utilities Directive have been implemented in the Dutch national legislation in a framework law (the Raamwet). This framework law forms the basis of existing and future European procurement legislation. The EU Directives are indicated as obligatory by the Algemene Maatregel van Bestuur (AmvB). This means that the text of the Dutch procurement law is mainly the same text as the EU Directives.

So far Directives 2004/17 and 2004/18/EEC have not been implemented in the Dutch legislation.

C.21.2 Products and services procured

Information not available.

C.22 Norway

C.22.1 Procurement legislation

A new Directorate is under establishment: The Agency for Public Management and eGovernment (DIFI). This is going to be the specialist body both for public procurement and ICT, as well as Design for All in both these fields. But they are far from ready with a clear policy. The Ministry of Government Administration and Reform is responsible for ICT policy and public procurement. They have issued a white paper "An Information Society for All" that defines a policy on Design for All and there is a short version in a Summary.

The Government uses standards as reference for their functional requirements for ICT equipment, and these are listed in the "Reference catalogue for IT standards in the public sector". This document is in Norwegian but the most relevant is the WCAG 1.0, i.e. the WAI guidelines that they are used as quality standards in the Norge. No Web site. They were implemented on December 17th 2007 as official standard for Norwegian public Web sites.

Finally, there will be a Discrimination and Accessibility Act adopted during the spring of 2008 (implemented from 1st January 2009) and it will include requirements for Design for All of ICT. At present the Ministry is working on an official definition of DfA in ICT for this legal act, but it is not clear yet which standards the Government will relate. In January 2008, an eGovernment network was established to make an overview of all relevant DfA standards in different fields and select the indicators for measuring accessibility in various fields including ICT.

C.22.2 Products and services procured

Information not available.

C.23 Poland

C.23.1 Procurement legislation

The Polish public procurement legislation dates back to 1994 when the first Act on Public Procurement was adopted. The Act was amended a couple of times in the following years, mainly with the aim to clarify its rules and definitions, broaden the scope of application and make the procurement process more transparent. The adjustment of the Polish procurement provisions to the EU requirements was a major factor in the preparation of new legislation. The new Public Procurement Law was adopted on 29 January 2004 and replaced the Act of 1994. In April 2006 the Public Procurement Law was largely amended in order to implement the provisions of the EU Directives 2004/17/EC [i.24] and 2004/18/EC [i.25].

Article 91.2 states that tender evaluation criteria "shall" (see Foreword) be price, or price and other criteria linked to the object of the contract, in particular quality, functionality, technical parameters, use of best available technologies with regard to the impact on the environment, exploitation costs, after sales service and period of contract performance. Inclusion of accessibility criteria is not specifically mentioned in the document, but in principle is allowed.

C.23.2 Products and services procured

Detailed data not collected.

C.24 Portugal

C.24.1 Procurement legislation

In Portugal, since October 2003 all the public administration services in all requests for tenders aiming at production of digital content (online services) should include an annex about "Accessibility to the Web by citizens with special needs". This tries to contribute to the implementation of the Resolution of the Council of Ministers (RCM 97/99) on the e-Accessibility of Web sites from Public Administration (central and local) and ensure the conformity of public digital contents purchased with the W3C directive.

The resolution 110/2003 of the Council of Ministers in August 2003 on a National Programme for the Participation of Citizens with Special Needs in the Information Society (PNPCNESI) gives special attention to the development of actions and programmes towards a better integration in society of citizens with special needs.

With a potential impact on ICT procurement processes the programme aims, among other objectives, at minimizing digital barriers generated in digital contents conception and in interfaces of soft and hardware. For such purpose special attention is given to:

- public administration online contents;
- software used in workplace;
- multimedia applications used in education;
- third generation mobile and digital TV interfaces.

At the operational level the programme defines specific actions to be carried that are of relevance for this issue:

- A3.1. - Inclusion of CNS concerns in the legislation and regulation of Public Television Service and Digital Terrestrial Television.

- A3.3. - Conditions of public financing: any request for publicly funded Web sites have to ensure the accessibility of the Web contents.
- A3.4. - Technical Specifications in (public) Tenders for ICTs: "must" (see Foreword) to include accessibility specifications as often as possible.

Resolution 120/2006 (August 2006) started the National Action Plan for the Inclusion of People with Disabilities which, although not centered on ICT launched the First Action Plan (2006-2009) for the Integration of Handicapped People. In both initiatives the basic target population was People with Disabilities and the Elderly.

Portuguese Law 38/2004 of the 18th August 2004 defines the general bases of the legal system for prevention, habilitation, rehabilitation and participation of people with disability and includes:

In Article 43 - Information:

- The State and other public and private bodies "must" (see Foreword) provide information on services, resources and benefits available for people with disability in an accessible form, particularly in *braille*, large print, audio, sign language or suitable records on computer.
- Media organizations "must" (see Foreword) make information available to people with disability in an accessible form as well as contribute to raising public awareness, with the aim of removing discriminatory practices based on disability.

In Article 44 - The information society:

- By means of drafting a national plan for promoting accessibility, the State is responsible for adopting specific measures to ensure access by people with disability to the information society.

C.24.2 Products and services procured

Information not available.

C.25 Romania

C.25.1 Procurement legislation

The national legislation transposes the principles and the provisions of the following EU Directives:

- Council Directive 93/36/EEC [i.16] (The Public Supplies Directive).
- Council Directive 92/50/EEC [i.15] (The Public Services Directive).
- Council Directive 93/37/EEC [i.17] (The Public Works Directive), European Parliament and Council.
- Directive 97/52/EC [i.19] amending Directives 92/50/EEC [i.15], 93/36/EEC [i.16] and 93/37/EEC [i.17].
- Council Directive 93/38/EEC [i.18] (The Utilities Directive), Directive 98/4/EC [i.20] of the European Parliament and of the Council amending Directive 93/38/EEC.
- Council Directive 89/665/EEC [i.12] (The Public Remedies Directive).
- Council Directive 92/13/EEC [i.14] (The Remedies Utilities Directive).

No references were discovered of specific requirements for eAccessibility.

General principles

In Romania ICT equipment and services are procured centrally.

The Romanian legislation regarding public procurement ensures the following principles of awarding the public procurement contract:

- free competition, that is ensuring all the conditions for any supplier, services provider or undertaker, irrespective of their nationality, to have the right to become a contractor, according to the law;
- efficient use of public funds (meaning the use of the competition system and economic criteria for the awarding of the public procurement contracts);
- transparency, that is the availability of relevant information regarding the use of the procedure for the award of the public procurement contract for those interested (concerned);
- equal treatment, that is the use, in a non-discriminatory manner, of the selection criteria and of the criteria for the award of the public procurement contract, ensuring for each supplier, services provider or works provider equal chances to be awarded the public procurement contract;
- confidentiality, that is guaranteeing the protection of the commercial secret and the intellectual property of the tenderers.

Procurement legislation

The framework legislation in this field consists of Emergency Government Ordinance (EGO) n.60/2001 regarding public procurement approved by Law n. 212/2002. Based on this framework legislation, the following normative acts have been adopted:

- Governmental Decision (GD) n.461/2001, which approves the norms for the implementation of the EGO, n.60/2001 regarding public procurement.
- Order of the Minister of Public Finance n.1012/2001 for the approval of the structure, the contents and the way for using the Standard Documentation for the elaboration and the presentation of the tender, for public procurement of goods.
- Common Order of the Minister of Public Finance and the Minister of Public Works, Transportation and Housing n.1013/873/2001 for the approval of the structure, the contents and the way for using the Standard Documentation for the elaboration and the presentation of the tender for public procurement of services.
- Common Order of the Minister of Public Finance and the Minister of Public Works, Transportation and Housing n.1014/874/2001 for approval of the structure, the contents and the way for using the Standard Documentation for the elaboration and the presentation of the tender, for public procurement of works.

C.25.2 Products and services procured

Information not available.

C.26 Slovakia

C.26.1 Procurement legislation

From 1st January 2000, public procurement in Slovakia has been regulated by the Act No. 263/1999 Corpus Juris on Public Procurement and on the Modification and Amendment of Certain Acts ("the Act"). According to this Act, a new institution was established - The Office for Public Procurement ("the Office"). It started its activities on 1st January 2000. The Office is an independent central state administration authority.

The system of public procurement in Slovakia is decentralised. Financial limits (thresholds) set by this law have been applied since the year 2000 in case of goods and services costing 500 thousand crowns, or more (VAT excluded) and construction works costing 1 million crowns, or more (VAT excluded) during a calendar year or during the term of a contract. Basic principles of the system of public procurement are: efficiency, transparency, equal treatment of tenderers and securing a competitive environment. The Office has been collecting various information on public procurement via statistic surveys. It regularly informs the Government on its activities and the public via the internet. Information about activities of the procuring entities, issued standard bidding documents and the decisions of the Office will be published in its journal (from 1st January 2001).

The Act stipulates the methods and proceedings of the procuring entities resulting in the choice of a reliable, competent contracting partner in regard to the delivery of goods, works and services. By adopting this Act, the Slovak Republic has fulfilled the second level of the legal approximation in the field of public procurement in accordance with the legislative framework of the European Union; at the same time, it has made a radical step toward the quality improvement of the process of public procurement in the Slovak Republic.

C.26.2 Products and services procured

Information not available.

C.27 Slovenia

C.27.1 Procurement legislation

Revised EU Directives were expected to be implemented in 2006. There is no evidence of attention to eAccessibility to date.

Slovenia has amended its Public Procurement Act (PPA) following the requirements of the European Commission. This is to make the legislation implement the EU Law. Slovenia has also introduced these changes to make the domestic law less rigid and more practicable for all the users.

Public Procurement in Slovenia complies with the principle of freedom of access to public purchasing, equality of treatment and transparency of procedures. The PPA regulates procurement operations at all levels in the country-state and local level, including utilities using budgetary funds, directly and indirectly. The definitions of the Law are consistent with the EU Directives. At present, efforts are currently being devoted to the task of achieving total compliance with the European law.

Of the public procurement marketplace in Slovenia the present legislature applies to users of public monies i.e. to public authorities and entities governed by public law; also to the bodies having legal personality that are established for the specific purpose of meeting needs in the general interest and on noncommercial basis; furthermore, all undertakings over which public authorities exert predominant influence, either by owning them or participating financially therein, are bound by law as contracting authorities.

C.27.2 Products and services procured

Information not available.

C.28 Spain

C.28.1 Procurement legislation

The Law on public procurement was approved on 2007-10-30 and published on 2007-10-31 as Law 30/2007, of October 30th, on Contracts of the Public Sector (LEY 30/2007, de 30 de Octubre, de Contratos del Sector Publico). This law is a transposition of the 2004 EU Directives on public procurement.

Article 101 states that technical requirements take into account universal accessibility and design for all, in relation with the Spanish Law on Equality of Opportunities, Non Discrimination and Universal Accessibility for People with Disabilities (Law 51/2003, approved on 2003-12-02).

Those accessibility requirements are defined in specific legislation, the Royal decree on basic accessibility requirements for ICT (see clause 8.4.27 for details).

C.28.2 Products and services procured

In Spain there are three levels of public administration: general (ministries and global agencies), autonomic (regional administrations) and local (municipalities). At the general level there is the Centralized Procurement System (SAC). SAC is managed by the Ministry of Economy and Taxes, and is the main point of public procurement in Spain (although there are others, for example, in the Catalanian Administration). The SAC system manages most of the public procurement made by the ministries, including ICT products. The SAC contains a catalogue of products that can be purchased by the global public administration. When products are outside the catalogue, other means of purchasing are used, such as negotiated procedure, open procedure, restricted procedure, minor contract and others. These procedures are defined in law 30/2007.

There is an annual report on the use of ICT technologies in the Spanish global administration: "REINA report 2007. ICT in the State Administration" (NIPO: 326-07-057-0. Spanish Ministry of the Public Administration. URL: http://www.csi.map.es/csi/reina2007/informe_reina_2007.pdf - in Spanish). According to the present document, the SAC handled around the 25% of the ICT purchases in year 2006.

The types of purchasing used are:

- Negotiated procedure (33 %).
- SAC catalogue (25 %).
- Open procedure (20 %).
- Restricted procedure (5 %).
- Minor contract (2 %).
- Others (4 %).

The REINA report lists the following categories of ICT products purchased in Spain:

- Computing:
 - Hardware (23 %):
 - Multi-user systems (big, medium, small).
 - Personal computers (servers, desktop, portable, PDA).
 - Other devices (storage systems, printing systems, network and communications, other).
 - Software (13 %).
 - Services (33 %):
 - Exploitation.
 - Data preparation and transmission.
 - Development and maintenance.
 - Support.
 - Training.
 - Consulting.

- Others.
- Personnel (29 %).
- Others (3 %).
- Telecommunications:
 - Services:
 - Fixed telephony.
 - Mobile telephony.
 - Data and text transmission.
 - Internet access.
 - Other services.
 - Investments.

C.29 Sweden

C.29.1 Procurement legislation

In Sweden the Public Procurement Act implements the EC Directives on public procurement into national law. These Directives i.e. 93/36/EEC [i.16], 93/37/EEC [i.17] and 92/50/EEC [i.15] as amended by 97/52/EC [i.19] and 93/38/EEC [i.18] as amended by 98/4/EC [i.20]. Directives 89/665/EEC [i.12] and 92/13/EEC [i.14] are implemented into the same act.

Directive 2001/78/EC [i.22] is implemented in a specific regulation.

Apart from the explicit provisions implemented from the Directives the Swedish law contains a general clause, denominated the principle of good business practice: The award of public contracts should be so arranged as to take advantage of existing competition and should also in other respects accord with the conventions of good business practice. No unwarranted considerations should affect the treatment of tenderers, candidates or tenders. This provision is considered to cover the general principles of nondiscrimination, equal treatment, mutual recognition and transparency.

The Public Procurement Act contains seven chapters:

- General provisions.
- Supply contracts above the threshold values.
- Works contracts above the threshold values.
- Contracts within the utilities sectors above the threshold values.
- Service contracts (A-services) above the threshold values.
- Contracts below the threshold values and B-services.
- Remedies.

The following regulations are subordinate to the Public Procurement Act:

- The regulation on standard forms for notification of public procurement.
- The regulation on threshold values.
- The regulation on technical specifications in public procurement.

- The regulation on written evidence in public procurement.
- The regulation on co-ordination of government purchasing.

C.29.2 Products and services procured

C.29.2.1 Products

Textphones:

- Procured by: The Swedish Institute of Assistive Technology - SIAT.
- Web: www.hi.se.
- Requirement specification: Total conversation units, text phones and videophones, SIAT 1 Sept 2005.

Total conversation units:

- Procured by: The Swedish Institute of Assistive Technology - SIAT.
- Web: www.hi.se.
- Requirement specification: Total conversation units, text phones and videophones, SIAT 1 Sept 2005.

Videophones:

- Procured by: The Swedish Institute of Assistive Technology - SIAT.
- Web: www.hi.se.
- Requirement specification: Total conversation units, text phones and videophones, SIAT 1 Sept 2005.

C.29.2.2 Services

Speech-to-speech relay service:

- Procured by: National Swedish Post and Telecommunications Agency.
- Web: www.pts.se.
- Requirement specification.

Text relay service:

- Procured by: National Swedish Post and Telecommunications Agency.
- Web: www.pts.se.
- Requirement specification.

Video relay service:

- Procured by: National Swedish Post and Telecommunications Agency.
- Web: www.pts.se.
- Requirement specification.

C.29.2.3 Software

Information not available.

C.30 Switzerland

C.30.1 Procurement legislation

At the national level, Switzerland has federal and cantonal legislations.

i) Federal legislation

The Federal law of the 16th December 1994 on government procurement, passed by Parliament, sets all the basic rules for procurement above GPA thresholds.

The Ordinance of the federal Council of the 11th December 1995 on government procurement sets detailed rules for procurement under and above GPA thresholds.

The Ordinance of the 19th November 2003 on the elimination of in and a directive of May 2005 requires them to meet standard AA of the WAI guidelines.

Furthermore, the Federal Office of Information and Technology, Systems and Telecommunication (FOITT) organizes courses for governmental employees, teaching them how to create accessible Web sites.

Other legislation includes:

- Federal law on the internal market, 6th October 1995, which sets up (art. 5) the basic principle of non-discrimination for all government procurement in Switzerland.
- Federal law on cartels and other restrictions to competition, 6th October 1995.
- Ordinance on the adaptation of thresholds (on a yearly basis), Federal Department of Economy.
- Ordinance on the exemption to government procurement rules, 18th July 2002, Federal Department on Transportation, Energy and Telecommunication, for exemptions under the Swiss-EC Agreement.

ii) Cantonal legislation

The 26 Swiss cantons (14) operate under an Intercantonal Agreement on government procurement dated 25th November 1994, and its Executive Directives, 1995. All the cantons have joined this Agreement and translated it in their legislation. Major differences between the cantons and the federal government include:

- the non-incorporation by the cantons of the possibility to negotiate during the tender process;
- the obligation - after an award decision - to wait until the ten-days deadline for submitting complaints has elapsed before signing any contract;
- the possibility for decisions from the Administrative Court to be appealed to the Federal Court.

C.30.2 Products and services procured

Information not available for reasons of confidentiality.

C.31 UK

C.31.1 Procurement legislation

The EU Directives on procurement are intended to be implemented by the Office of Public Sector Information (2006) "UK Public Contracts Regulations 2006" which regulates procurement procedures for most public authorities in the UK.

Article 9(3) on technical specifications states that a contracting authority ""shall" (see Foreword), wherever possible, take into account accessibility for disabled persons or the suitability for design for all users".

C.31.2 Products and services procured

Information Technology

Batteries

Computer Accessories

Docking Stations

Port Replicators

Multimedia Kits

Speakers

Switch Boxes

Computer Switch Boxes

Peripheral Switch Boxes

Universal Serial Bus Hubs

Accessories Other

Computer Components & Cables

Cables

Chassis Components

Computer Chassis

Network Equipment Chassis

Stacking Components

Components Other

System Boards/Cards

CPU Processors

Graphic/Video Cards

Interface Bus

Memory Cards

Motherboards

Network Interface Cards

RAID Controllers

SCSI Adapters

Wireless Network Interface

System Cards Other

Computer Input Devices

Accessories

Barcode Reader

Graphics Tablets

Keyboards

Microphones

Mouse/Trackball

Input Devices Other

Desktops

Laptops/Notebooks

Monitors

Accessories

Arms/Stand

Glare Screens

Computer Displays

CRT Monitors

Dumb Terminals

LCD Panels and Monitors

Plasma Displays

Touch Screens

Network Service Equipment

Concentrators/Hubs

Gateway

ISDN Access Devices

Modems

Routers

Switches

System Equipment Rack

	Wireless Internet Gateway
	WLAN Equipment & Components
Printers	
	Dot Matrix
	Inkjet
	Laser
	Line Matrix
	Multi-Functional Devices
	Photo
	Plotters
	Thermal Tape
	Printers Other
Printer Consumables	
	Fusers & Accessories
	Ink Cartridges
	Printer, Facsimile and Photocopier Drums
	Ribbons
	Toner
	Printer Consumables Other
Scanners	
	Scanner
	Scanner Accessories
Servers	
	Computer
	High End
	Print
Software	
	Accounting/Finance
	Accounting
	Finance & ERP
	Financial Analysis
	GIS Services
	Games, Family & Music
	Spreadsheet
	Time Accounting
	Backup/Archival
	Business Function
	Database
	Database Management
	Database Reporting
	Desktop Publishing
	Graphic, Photo Imaging
	Development
	License Management
	Office Suite
	Operating Systems
	Project Management
	Network
	Other
Storage Devices	
	Accessories
	CD
	Drives
	Read Only
	Read/Write
	Removable CDs
	DVD
	Drives
	Read Only
	Read/Write
	Removable DVDs
	Flash Memory

- Floppy Drives
- Hard Disk
 - Arrays
 - Drives
- Storage - Mass
- Media Storage Devices
- High Capacity
 - Removable Blank Disks
 - Removable Drives
- MO
 - Disks
 - Drives
- Tape
 - Arrays
 - Blank Tape
 - Drives
- Storage Devices Other
- Tablet Computers
- Thin Client Computers
- Toner
- Workplace & Office
 - Communications
 - Data Voice or Multimedia Network Equipment
 - Office Equipment & Output Devices
 - Fax
 - Multi-Functional Devices
 - Calculators & Cash Registers
 - Duplicating Equipment
 - Paper Shredding Machines
 - Photocopiers
 - Printer, Photocopier & Facsimile Accessories
 - Printers
 - Dot Matrix
 - Inkjet
 - Laser
 - Line Matrix
 - Photo
 - Plotters
 - Scanners
 - Scanner
 - Scanner Accessories
 - Presentational Aids, Printing, Photographic & Audio

Annex D: National eAccessibility procurement requirements

D.1 Procurement requirements in EU and EFTA Member states

D.1.1 Austria

e-Accessibility, especially accessible Web design has become an important factor in Austria during the last years. New laws have been legislated that form the legal framework for e-Accessibility in Austria. The legal framework is based on the following laws:

- **Federal constitution:** The article 7 of the federal constitution formulates the equality principle and also standardizes the anti-discrimination of people with disabilities. The federal state as well as all provinces and municipalities confess to ensure the equal treatment of people with and without disabilities in all areas of daily life.
- **E-government law:** The law covers a wide range of provisions governing unambiguous electronic identification, standard electronic documents, data protection, electronic communications, electronic signature, electronic delivery, procedures and proceedings within all levels of government as well as guidelines regarding accessibility. The E-government law establishes legally the barrier-free access to internet information from public authorities for people with disabilities by 01.01.2008. After this date, the Web presence of public authorities "must" (see Foreword) be compliant to International standards on Web accessibility. At least conformity with WAI Level A is demanded.
- **Equality Law for People with Disabilities:** The Equality Law for People with disabilities defines that constructions and other environments, means of transportation, technical objects of utility, systems for information processing as well as other areas of life are accessible for people with disabilities, if people with disabilities can make use of them in an usual way, without special difficulties and without help. The law refers to valid standards in the areas of buildings and technical equipment as well as to WAI guidelines concerning offers in the internet. Web offers and services that are not accessible are representing therefore indirect discriminations. The obligation to remove barriers is however bound to the reasonableness of removing them.

To inform users of e-government applications about trustworthiness and safety of an e-government Web site the Austrian E-government seal has been developed. The operators of the internet platforms commit themselves to sustain the compliance to all quality criterions. Additionally the platforms that use the e-government seal will be re-evaluated every three years. Furthermore the Austrian Government has released a guide for accessible Web design as well as a style guide for e-government forms.

The growing awareness and legal requirements towards accessibility made public administration more accessible and better usable. In 2007 the Austrian Federal Chancellery together with all ministries has carried out an internal study to identify the current level regarding implementation of accessibility on public Web pages. During the study 68 domains have been self-evaluated. The average degree of fulfilment regarding WAI A criterions of all domains are considerable 94 %. 57 (of 68) domains have also been evaluated regarding WAI AA, the degree of fulfilment was between 75 and 100 %. 46 (of 68) domains have been evaluated regarding WAI AAA, the degree of fulfilment was between 54 and 100 %. The evaluation results show the current state regarding implementation of accessibility in Austria, however they also deliver a clear picture that there is still the need for improvement in many areas to reach the highest level of accessibility at public Internet platforms. Furthermore there is a clear request of an official certification for accessible Web pages.

These main focuses of future activities identified during the evaluation are to guarantee the accessibility of future software and applications as well as the improvement of existing solutions. Additionally a subtly differentiated consideration of Web based software or applications and not Web based software or applications is necessary in which accessible hardware may not be disregarded.

The general contractual conditions for IT procurement at federal level (AVB-IT) form an important part of the legal framework for public procurement of IT for federal administrations. Currently, the AVB-IT are under scrutiny and will be amended to include an accessibility statement. In this statement applicants will have to explain, how people with disabilities can use their product without barriers and how it fulfils international guidelines. A contact person "must" (see Foreword) be named for further questions regarding accessibility.

D.1.2 Belgium

Public Web sites

An ambitious Web accessibility project has been established by the Flemish Government, with the purpose to make all Flemish government Web sites accessible by the end of 2010. "ToegankelijkWeb" requires Web site owners to apply the AnySurfer (formerly BlindSurfer) guidelines, which have been slightly altered to deal with some practical issues. Although there's no legal obligation, Web site owners are strongly encouraged to make their sites accessible and are supported in this endeavour (auditing costs are remunerated, free courses are available). This only applies to Web sites that are maintained by personnel of the Flemish Government (approximately 300 Web sites and Web applications). BlindSurfer is a collective organization of Belgium's largest organizations for the blind and visually impaired: Blindenzorg Licht en Liefde for the Flemish part of Belgium (Dutch speaking) and Oeuvre Nationale des Aveugles for the Walloon Region (French speaking). BlindSurfer is mainly known for granting quality labels. The guidelines are based on W3C WCAG1 [i.174]. AnySurfer is the revamped BlindSurfer (as of July 2006).

Telecommunications

The Belgian Institute for Post and Telecommunications (IBPT) - the independent regulatory authority for telecoms - has made (in 2002) suggestions concerning :

- the future evolution of universal service and people with disabilities regarding new quality criteria (e.g. to ensure the accessibility of phone boxes for people with visual, hearing or intellectual disabilities and those with reduced mobility);
- the inclusion of mobile phone services in the provisions to be made available to disabled people and to allow the current social service provision for telephones to apply to either mobile or fixed line;
- making internet access easier and cheaper for disabled people as part of social services included under universal services;
- the recommendation regarding the accessibility of public phone boxes for disabled people.

The Consultative Committee of Telecommunications was created under the existing universal service law in order to advise the IBPT and the Minister of Telecommunications on all issues concerning telecom services, telephone service provision and universal service. Following the recommendations of the IBPT, the Committee considered, in 2004, the recommendation regarding the accessibility of public phone boxes for disabled people. However, Belgacom the universal service operator has apparently asked for a modification of universal service obligations in order to remove public phone boxes from these obligations because of their decreasing use since the uptake of mobile phones. No progress has been made.

D.1.3 Bulgaria

Action Plan eEurope+ was the basic document which set the priorities for development of the Information society in Bulgaria. It recommends implementation of the basic directions of the Web Accessibility Initiative (WAI) of W3C Consortium (<http://www.w3.org/WAI/>) in the public Web pages. On its base the National Program for Information Society Development in Bulgaria was realized in 2001. It includes activities for adoption of Design for all standards about accessibility of the ICT products and about improving opportunities for employment and social incorporating of the people with disabilities. It relied on public-private partnership and collaboration on behalf of the European standardizing organizations and European Commission. The principles of WAI have advisable character. In some countries they have been adopted as norms which guarantee the effect of their implementation. The former Ministry of Transport and Communications (MTC) together with branch associations and non-governmental organizations realized activities in Principles of accessibility popularizing and it foresaw survey in opportunities of their acceptance as norms in the national legislation.

With the financial aid of the former Agency for Development of the Communications and ICT in the structure of MTC in 2003 MTC realized two initiatives related with internet access insurance of people with disabilities. An examination and analyze of the basic requirements for creating internet access place for people with disabilities was completed with the purpose of their integration in the information society. A business plan about the necessary equipment for one universal place for access and training of different categories people with disabilities was prepared according to the available communications of the living place type. A specialized portal was created in full response to W3C access requirements, level "A" and in a great degree to level "AA" which permitted access by people with sight, hearing and vocal impairments to Web documents and information related mainly with their specific needs and necessities.

On the occasion of the European Year of People with Disabilities the Council of Ministers (CM) prepared the Bulgaria for All Program. Within its framework Bulgarian software was developed for synthetic speech under WINDOWS for blind people. Information access for blind people was ensured throughout established Bulgarian version for reading machines, opportunity computers with Braille and synthetic speech to work in Bulgarian was also ensured. In the Sector Policy in communications, an accent was put in the field of standard harmonization; universal service delivery field and customer interests protection.

The Regulation about Order and Conditions for insuring universal communication service, according to the Telecommunications Law, foresees insuring access to fixed telephone services for people with disabilities, like:

- free of charge telephone directories, including alternative telephone directories;
- consumer communication devices with deaf consumers' facilities;
- considering access to Short Message Service (SMS) to the emergency-call number;
- facilities for blind consumers;
- free of charge including in the service "Limitation of the outgoing calls";
- telephones for public use installation accessible for customers in wheelchairs;
- telephones for public use installation with text link or another kind link;
- detailed account insuring in accessible format;
- account payment at home.

In Bulgaria only the satellite television is fully digitalized at present. The Sector Policy in Communications foresees full digitalization of the cable television till 2010, full covering of the country with digital land television till 2015, inculcating of the digital broadcast system DAB till 2015 and digital broadcast fewer than 30 MHz (DRM) till 2020. In relation with Media Section of the Council of Europe activities on behalf of Bulgaria was made a proposal in the draft Recommendation about Democratic and Social Influence of the digital broadcasting to be added a text which requires the Electronic Program Guidance (EPG) and digital decoders to be consistent with the special needs of the people with disabilities and lack of foreign language knowledge as well with the aim to be maximal accessible for all the members of the society without sense of age, language knowledge and disability.

For access of people with sight impairments to the digital television services is necessary to be established for example sound description, sound subtitles. That way changes in the national legislations are needed and creating of European standards about format and sound description delivery as well.

e-Inclusion Strategy

State Agency for IT and Communications (SAITC) set the main objectives related to enhancement of knowledge based economy as well as Information Society priorities. The objectives which concern the policies on e-Inclusion include:

- creating a better environment for use and development of Information Technologies;
- improving computer literacy;
- creating skilled workforce;
- providing equal opportunities for Bulgarian citizens for access to Information resources and services and for acquiring skills for their use;
- creating new quality of life, based on contemporary Information Technologies.

Promoting e-Inclusion is also defined as one of the Information Society priorities in Bulgaria. Other Information Society priorities in Bulgaria defined are as follows:

- Developing the ICT infrastructure and deploying e-services.
- Encouraging public-private partnerships for investment in ICT and innovation.
- Building an effective information environment and interoperability standards.
- Developing Research and Innovation infrastructure.
- Promoting a full range of e-services for economic and social challenges.
- Measures which are laid down in relation to e-Inclusion in Bulgaria are.
- Supporting a lifelong learning initiative for increase in qualification and computer literacy.
- Increasing the number of Public Internet Access Points, mostly in libraries.
- Supporting the establishment of rich content through the introduction of new Public Private Partnership models.
- Adopting the principles of Web Accessibility Initiative as norms in the national legislation.

Important policies in place

- National Strategy about Equal Opportunities for People with Disabilities, 2003.
- State Policy for Information Society Development, 2006.

D.1.4 Cyprus

The inclusion of *e*Accessibility functional requirements in the Governmental Tender Specifications is applied selectively on a case by case basis depending on User requirements to be procured by the involved Governmental Department. Because of the small size of Cyprus the cost for the inclusion of *e*Accessibility criteria in all ICT projects may be prohibitive, thus is done selectively. The Social Welfare Services (SWS) is the responsible Department for the introduction/adoption of *e*Accessibility standards in Cyprus. Efforts and initiatives are still at an early stage. SWS in cooperation with the Department of Information Technology Services (ICT responsible government department) participate in the eInclusion Committee and the Cyprus Government will adopt and build upon the guidelines that are being discussed and provided by this committee.

Public Web sites

As far as Public Web Pages are concerned however, most of the public Web sites comply with Web Accessibility Guidelines (WAG). The majority, but not all of the Web Sites are developed in-house according to WCAG. If not developed in-house, vendors are provided with the relevant standards for public Web site development.

D.1.5 Denmark

In Denmark there are no specific legal obligations to procure accessible ICTs, but a toolkit has been developed for supporting the preparation of invitations to tender, development and acquisition of accessible equipment and systems by the governmental authorities. The service is operational now for quite some time and it currently it is on average 150 times per month. The toolkit incorporates a number of *e*Accessibility standards/guidelines applying to different kinds of ICT components, namely hardware, software, and Web-solutions. Among others these are the Section 508 of the US Rehabilitation Act, the "Guidelines for Procurement of Accessible Personal Computer Systems", industry guidelines from IBM and Microsoft, the Web Content Accessibility Guidelines (WCAG) of the W3C, and the Danish Government Guidelines for Public Homepage. More information regarding the Accessibility Toolkit is presented below.

Public Web sites

From 1 January 2008, all new public IT solutions "shall" (see Foreword) make use of the mandatory Open Standards, unless there are significant reasons for not complying with these standards. The mandatory use of Open Standards includes also Web accessibility recommendations. This will encourage public authorities to implement Web accessibility requirements in all new Web sites and major developments on existing sites. For that the public authorities can use the toolkit when preparing the performance specification for their procurement of an accessible IT-solution.

Telecommunications

Public responsibility for meeting the needs of disabled persons in the telecommunications area is placed on the telecommunications authorities (the Ministry of Science, Technology and Innovation and the National IT and Telecom Agency) and is primarily implemented via the universal service obligation (USO), under which special telecommunications services "must" (see Foreword) be made available to certain defined groups of disabled persons (Consolidated Act No. 780 of 28 June 2007 on Competitive Conditions and Consumer Interests in the Telecommunications Market, section 16(2), no. 4) and Executive Order No. 1262 of 9 December 2005 on Universal Services. The National IT and Telecom Agency is currently working on a revision of the Executive Order. TDC A/S (referred to as TDC in the following) has been appointed by the National IT and Telecom Agency as USO provider for the period 1 January 1998 to 31 December 2008 and thus has the obligation to provide the special telecommunications services for disabled persons. In 2008, there will be a new appointment of one or more USO providers.

Besides the USO regulation, requirements have been laid down in telecommunications legislation for all owners of telecommunications networks and providers of voice telephony services to ensure access to making calls to the public emergency service (112) and to the USO provider's text telephone service and the emergency call number of that service (Executive Order No. 1031 of 13 October 2006 on Provision of Electronic Communications Networks and Services, section 3).

Furthermore, the Minister of Science, Technology and Innovation is authorized to lay down rules for the establishment and operation of payphones, containing minimum requirements for providers of payphones, including rules to meet the special needs of disabled end-users (Consolidated Act No. 780 of 28 June 2007 on Competitive Conditions and Consumer Interests in the Telecommunications Market, section 12).

In connection with the specification of USO terms, the National IT and Telecom Agency has also laid down requirements for the quality of USO services (Terms for TDC A/S's Handling of Certain USO Services in the Telecommunications Sector, Annex 7), including the special disability services.

For the Directory Assistance for Handicapped People, the requirements specify a supply time for initial connection, subject to valid documentation, of maximum eight days, including the forwarding of a PIN code. It is also required that the response time for calls should be less than 15 seconds, excluding normal set-up time.

It is required that the accessibility of the communication centre should be 90 % and that the waiting time on queue to the centre should be 20 seconds on average. Requirements have been set for the fault rate of equipment used for the text telephone service.

The Public procurement toolkit

The Danish public procurement toolkit is a Web based application aiming to assist public procurers in successfully implementing *e*Accessibility requirements in their procurement processes or, more specifically, in their tenders and contracts. To reach this aim, the toolkit incorporates a number of *e*Accessibility standards/guidelines applying to different kinds of ICT components, namely hardware, software, and Web-solutions. Among others these are the Section 508 of the US Rehabilitation Act, the "Guidelines for Procurement of Accessible Personal Computer Systems" as set out by the EU's ACCENT project, industry guidelines from IBM and Microsoft, the Web Content Accessibility Guidelines (WCAG) of the W3C, and the Danish Government Guidelines for Public Homepages (for a full list of the incorporated standards/guidelines cf. the resources list below). The toolkit covers the procurement of:

- ICT hardware.
- Software.
- Web sites and Web-based applications.

It is a Question & Answer (Yes/No) based process that is accessed via a public Web site which at the end gives specific functional requirements of the procured ICT in order to address accessibility.

Background

The toolkit was created by a Centre of Excellence based at the Danish National IT and Telecom Agency. The Agency is formally a part of the Danish Ministry of Science, Technology and Innovation. The Centre of Excellence was created in May 2003 by the ministry with the specific aim to support the national political goal of an inclusive and non-discriminative information society. The current version of the toolkit was first presented to the public on a conference in Copenhagen in September 2005.

eAccessibility toolkit in public procurement in Denmark

The toolkit is designed to provide a list of specific eAccessibility requirements for a given hardware, software or Web-solution to be procured. This specification list can then become part of a tender and contract. On the one hand this helps the tenderers to estimate the needed efforts, on the other hand it can be used by the procurer to a) compare the different tenders and b) review the performance of the awarded contract afterwards. The requirements returned by the toolkit are not merely a copy of the underlying guidelines/standards (e.g. of the WCAG) but have been analysed grouped and further elaborated (by the Center of Excellence) into specifications directly applicable to the features of the solution to be procured. In addition, the toolkit also provides guidance on why the authorities have to provide accessible solutions and on the problems caused by inaccessible ones.

Underlying specifications

List of guidelines/standards incorporated into the toolkit, sorted by type of solution.

Hardware

- "Section 508 of the Rehabilitation Act of 1973, § 1194.26 Desktop and portable computers".
- "Section 508 of the Rehabilitation Act of 1973, § 1194.25 Self contained, closed products".
- "Guidelines for Procurement of Accessible Personal Computer Systems" EU project ACCENT.
- "Section 508 of the Rehabilitation Act of 1973, § 1194.25 Self contained, closed products".
- "Section 508 of the Rehabilitation Act of 1973, § 1194.26 Desktop and portable computers".
- "Guidelines for Procurement of Accessible Personal Computer Systems" EU project ACCENT.
- ITU-T Recommendation E.161 (02/2001): "Arrangement of digits, letters and symbols on telephones and other devices that can be used for gaining access to a telephone network".

Software applications and operating systems

- "Section 508 of the Rehabilitation Act of 1973, § 1194.21 Software Applications and Operating Systems".
- "Section 508 of the Rehabilitation Act of 1973, § 1194.22 Web based intranet and internet information and applications".
- "IBM Software Accessibility Checklist v. 3.1".
- "Irish National Disability Authority IT Accessibility Guidelines v. 1.1, Application Software" "Guidelines for Keyboard User Interface Design" from Microsoft.
- "Authoring Tool Accessibility Guidelines 1.0" from W3C/WAI".

Web based Internet information and applications

- "Section 508 of the Rehabilitation Act of 1973, § 1194.22 Web based intranet and internet information and applications".
- "Section 508 of the Rehabilitation Act of 1973, § 1194.21 Software Applications and Operating Systems".
- "Web Content Accessibility Guidelines 1.0" from W3C/WAI.
- "The Danish Governments guideline for Public Homepages".

- "Accessibility Design Guidelines for the Web" from Microsoft.
- "Creating Accessible PDFs with Special Consideration for Publication Release Notices".

How it works

When a public procurer plans the procurement of an ICT component with the aid of the toolkit, he has first to choose between three different types of solutions: hardware, software or Web-solution (i.e. a Web site or a Web-based application). Then he has to answer 5-10 questions to specify the required features of the solution, e.g. whether a computer to be bought "shall" (see Foreword) be a desktop computer or a laptop. For every question the toolkit offers a help entry, describing the respective feature in more detail. According to the features selected the toolkit generates the list of requirements specific to the item to be procured. In a final step, the procurer has to select the overall level of *e*Accessibility the item "must" (see Foreword) meet. There are three levels of *e*Accessibility, comparable to the WAI A, AA and AAA priorities of the WCAG. Priority 1 contains specifications that "must" (see Foreword) be met to ensure a basic accessibility. Priority 2 contains specifications that should be met in order to allow easier access for a majority of impaired users. Priority 3 specifications may be met to further facilitate access. A long and a short version of the list of requirements is stored on the Web server and can later be accessed via a fixed URL.

Some conclusions

Since, there are in Denmark no legal obligations to procure accessible ICTs, the toolkit project therefore had to choose another implementation approach like the US Model, where the requirements of Section 508 are a mandatory part of every ICT procurement. From 1 January 2008, all new public IT solutions "shall" (see Foreword) make use of the mandatory Open Standards, unless there are significant reasons for not complying with these standards. Mandatory use of Open Standards includes Web accessibility recommendations. This will encourage public authorities to implement Web accessibility requirements in all new Web sites and major developments on existing sites. For that the public authorities can use the toolkit when preparing the performance specification for their procurement of an accessible IT-solution.

The decision for the factual usage of the toolkit lies with each institution, as well as the concrete implementation into the procurement process and the choice of the requirements to be applied.

The Toolkit does not include a list of special products which achieve certain accessibility standards, but instead offers information on how a special hardware, software or Web-solution should be designed in general to be accessible. Herewith the Toolkit gives consideration to the fast changing market, which launches new products, makes changes in product styles and technical configuration and phases out products in due course. According to the features selected by using the Toolkit it generates the list of requirements specific to the item to be procured, and gives therewith an universal, not becoming obsolete, information on how a hardware, software or Web-solution should be designed to be accessible. With a very easy to handle Q&A system the toolkit identifies the specific use of the required ICT product and suggest functional specifications that address *e*Accessibility. The toolkit is not available in English but there is a flash animation that describes selectively how it works in English.

As the toolkit is still relatively young application, there exists as yet no much information on its actual use and the impact it has on the procurement processes in the different government agencies. On average the tool is used 150 times by the Governmental Agencies every month. For more detailed statistics, please check <http://vkassen.oio.dk/statistik/>.

There are currently no plans for further developments of the toolkit.

Resources/Useful information

eInclusion at EU report on the Public Procurement Toolkit in Denmark <http://www.einclusion-eu.org/ShowAnalysisReport.asp?IDFocusAnalysis1=17>.

Danish Public Procurement Toolkit <http://vkassen.oio.dk/guide/> (Web interface of the toolkit (in Danish)).

National IT and Telecom Agency at the Ministry of Science, Technology and Innovation <http://en.itst.dk/> (Responsible for the creation of the public procurement toolkit).

Adapt A/S <http://www.adapt.dk/> (Technical development of the toolkit).

D.1.6 Estonia

There are currently no mandatory accessibility requirements for ICT products and services in Estonia.

Public Web Sites

The Department of State Information Systems of the Ministry of Economic Affairs and Communications has been working on guidelines concerning the State IT Architecture and Interoperability. The document encourages adherence to the Web Content Accessibility Guidelines (WCAG). The document will be discussed and modified accordingly annually. The Department also recommends following the WAI guidelines and this has been followed to some extent.

In its yearbook for the 2006, the Ministry of Economic Affairs and Communications states in its Information Society Strategy for 2013, that by widening access to digital information and increasing possibilities for participation, Estonia wants to achieve a situation where all public sector Web sites will be accessible for people with special needs. Under "Action Field 1" (Development of citizen-centred and inclusive society Broadening technological access to digital information) the planned activities include: bringing public sector Web sites into compliance with WAI (Web Accessibility Initiative) "quality criteria".

Functional accessibility general requirements are presented in "Estonian IT Interoperability Framework", specifically in the document "Requirements for Web site content". For example, according to provisions of Estonian IT Interoperability Framework, prepared in developing state portals, the recommendations of the Web Content Accessibility Guidelines Working Group (WCAG WG) are encouraged.

Telecommunications

The Electronic Communication Act (RT I 2004, 87, 593) transposes the Universal Service Directive (2002/22/EC) as well as other relevant telecom directives (1999/5/EC, 2002/19/EC, 2002/20/EC, 2002/21/EC, 2002/77/EC, 2002/58/EC) into Estonian law. It includes a general obligation to take into consideration the needs of a person with special needs. Those statements are general and no specific measures are foreseen, nor implemented.

There appear to be no specific measures implemented by telecom operators in Estonia specifically designed for disabled users.

In the report: "Estonian IT Policy": Towards a More Service-Centred and Citizen-Friendly State. Principles of the Estonian Information Policy 2004-2006: clause 2.1 Main Objectives. eInclusion, states "In order to improve conditions necessary for coping in the information society as well as to avoid digital divide, access to ICT will be facilitated for the socially disadvantaged: the development of public internet access points (PIAPs) will be continued and basic computer skills will be ensured for all members of the society, including those representing risk groups.

Public sector Web pages that have been created with the aim to inform wider public and provide e-services for citizens and entrepreneurs will be brought in accordance with the "Web Accessibility Initiative Guidelines".

Current implementation of strategy: Information Society Strategy implementation plan 2007-2008, was adopted by Estonian Government decision on 22 November 2007.

D.1.7 Finland

The Finnish legislation notes that whenever possible, technical specifications should be defined so as to take account of the needs of people with disabilities.

Procurement Support

The majority of the governmental public procurement procedures in Finland take place through Hansel Ltd, which is the central procurement unit of the State of Finland. The Company clusters together the State's procurement volume and through competitive tendering establishes framework arrangements for procurement of products and services. Hansel's framework agreements can be utilized by the State's procurement units, such as ministries and ministerial offices, as well as State agencies and publicly-owned enterprises.

The company's arrangements are organized in eight service unit: Vehicle and Transportation Services, Travel Services, ICT Services, Fuel and Energy, Office Supplies, Financial Services, Administrative Services and Material Services. The company Web site contains an inventory of publicly procured mainstream ICT products and services (in Finnish).

In Finland the JUHTA (Advisory Committee on Information Management in Public Administration) has prepared the JHS - Public Administration Recommendations, for governmental public procurement. These currently take the form of guidelines and recommendations, rather than requirements.

The Public Administration Recommendations (JHS-recommendations) provide information management guidelines for public administration (both governmental and municipal). A JHS-recommendation can be a uniform procedure, definition or instruction to be used in public administration. The JHS-system aims to improve the interoperability of information systems and the compatibility of data in them, to facilitate cross-sector process development and to make the use of existing data more efficient. The recommendations also aim to minimize overlapping development work, guide the development of information systems and facilitate good common practices in public administration. The recommendations are approved by the Advisory Committee on Information Management in Public Administration (JUHTA) and the writing process is co-ordinated by the JHS-section, appointed by JUHTA.

The following are abstracts of the JHS recommendations:

- JHS 129 Guidelines for designing Web services in the public administration. The recommendation provides public authorities with guidance on how to plan, implement and purchase online services. The recommendation describes the process for producing online services, with main emphasis on providing good services and implementing a user interface designed especially for end users. Particular account has been taken of ensuring the usability and accessibility of online services. The recommendation also includes application guidelines for online services with regard to the use of meta data as described in the JHS 143 (Metadata in the description and administration of documents) recommendation. Renewed in 13/12/2000.

(There is a recommendation which is dedicated to compliance with WAI guidelines. In addition, the Act on Electronic Service in the Administration requires authorities to offer Web services so that they can be used with the most common tools. Accessibility is also a part of quality criteria for Web services published in 2004 by the Government Office. Web criteria provide a tool for public sector organizations for evaluation and development of their own sites. A Quality Award based on quality criteria and on the selection of best practices in certain areas is under preparation.)

- JHS 157 Public access terminals in public administration. The recommendation aims to give public actors instructions on the procurement of public access terminals and related software and services, and on the introduction, location, use, management and maintenance of terminals. The recommendation divides public access terminals into network terminals and more sophisticated terminals for online transactions. The former are designed mainly for the use of the Internet, for example to search information, and the latter for more demanding online transactions. The aim has been to take account of any special groups as well as possible, particularly when defining the configuration of terminals used for demanding online transactions. The recommendation applies to all Government agencies and public bodies that provide customers with public access terminals.

Public Web Sites

An Act on Electronic Service and Communication in the Public Sector (13/2003, 24/01/2003) applies to the dwellings/premises of administrative, judicial, prosecution and enforcement matters. The Act requires that the authorities "shall" (see Foreword) aim to use equipment and software that is technically as compatible as possible with AT tools and, from their customer's point of view, as user-friendly as possible.

NOTE: This legislation, by extension, requires authorities to seek to offer Web services so that they can be used with the most common AT tools.

In 2005 the Ministry of Transport and Communications published details of an action programme entitled "Towards barrier-free communication" which called for all public sector tenders for Web site design to include the requirement of accessible contents. The current 2007 policy aims to promote active inclusion of all citizens in information and communications services.

D.1.8 France

Web sites

Accessibility of all public on-line services is made mandatory.

Public digital communication services (public Web sites in particular, but also phone and TV services) "must" (see Foreword) be accessible to people with disabilities according to the international standards. The law does not specify more the services that are concerned. Nor does it refer to specific standards.

This article (Article 47) is a part of general law (Law n° 2005-102 of 11 February 2005) supporting inclusion of people with disabilities in France. The article is specific to the accessibility of public digital communication services and it creates a new obligation on public sector service providers in France.

A decree will state the rules, methodology, delays (not more than 3 years) and penalties. The public agency in charge of this field was ADAE (the name has changed, now the name is DGME). This decree should also specify measures concerning training courses for the civil servants in charge of these public services (contents, process,..). The decree has not been published yet.

The only official technical reference concerning eAccessibility in France is the "Référentiel accessibilité des services Internet de l'administration française". This document has been published by the ADAE (Agence pour le Développement de l'Administration Electronique) in February 2004. This document intended to provide a technical, methodological and organizational framework on French administration sites and services accessibility on Internet and Intranet. It was comprised of two parts: one dedicated to the presentation of accessibility criteria and the second one on usability criteria. It is based on AccessiWeb criteria from the BrailleNet Association, with a clear coverage of the WCAG1.0.

D.1.9 Germany

Web sites

The German **law for the equality of handicapped people** known as the "Behindertengleichstellungsgesetz" (**BGG**) aims to eliminate any discrimination against people with disabilities. More specifically, BGG § (Section) 11 *Regulations for a barrier-free information technology* (BITV) obliges public bodies of the federal republic of Germany to have their Web sites accessible to people with disabilities since beginning of 2006. In this context, they have to comply with the WAI WCAG 1.0.

In more detail, the barrier-free information technology regulation (BITV) applies to all Internet Web sites as well as all publicly accessible Intranet ones owned or operated by the federal/public administrations (§ 1).
http://bundesrecht.juris.de/bgg/_11.html.

The previous law is not applicable to private and commercial Web sites.

Telecommunications Requirements

Telecommunications Act (Telekommunikationsgesetz) May 2004 transposed the EU Universal Service and other Directives, with the universal service provisions being similar to those provided for in earlier legislation. Until recently, this act had no specific reference to people with disabilities and no impact on eAccessibility. But § 45 was added in February 2007. First step in this § is the determination of the overall demand for the set-up of an exchange (relay) service for deaf and hard of hearing. Currently this demand is being verified via a pilot project TESS (a text and video relay service), done by the Deutsche Gesellschaft (Deaf and Hard of hearing community) and on voluntary basis by the Deutsche Telecom (big national operator). Format and implementation of the service has not yet been defined. Theoretical all operators are affected by the law, but which operator will run the service and to what extent, can be said after the demand is verified and the pilot is finished.

Other

Also, in the framework of the BITV, a new project "Richtlinie zur barrierefreien Gestaltung von Infoterminals" (Guidelines for accessible design of info-terminals) has been developed. These guidelines concern accessible design of information terminals including the design of related hardware and software. However, the BITV does not impose any obligatory requirements in this area so the guidelines are voluntary.

D.1.10 Greece

In general, the eGovernment Framework (e-GIF) is modelled on the UK one. It includes the statement that "Government information systems should be designed in such a way in order to support channels that provide accessibility for people with special needs". On the basis of this, Calls for Tender for public Web sites require at least compliance with Level A of WAI. There is awareness of the issue amongst the public administration but it is not much on the agenda of disability organizations. More information can be found at <http://www.e-gif.gov.gr/>.

Public Web sites

The Functional Requirements for the projects in ICT systems as well as in Web portals procured and managed by the Information Society Agency coordinated by the Ministry of Finance are rather limited since it is based on general and basic recommendations from W3C/WAI/WCAG.

More specifically, in order to address the special access needs of people with disabilities as well as the needs of other disadvantaged groups, the design of any Web portal procured by the Information Society Agency is based on the directions provided by the European Commission at http://ec.europa.eu/information_society/soccul/index_en.htm. Similarly, the Web Content Accessibility Guidelines found at <http://www.w3.org/TR/WAI-WEBCONTENT/> and <http://www.w3.org/WAI/WAIDA/> should be considered.

D.1.11 Hungary

Public Web sites

The Hungarian Inter-Departmental Conciliatory Committee for Government Information Technology (KIETB) has recently published version 2.0 of its Recommendation on government Internet-based activities which encourages adherence to the Web Content Accessibility Guidelines (WCAG) in order to develop government Web sites accessible to the blind and visually impaired.

The updated recommendation, known as "KIETB 19", incorporates more than a dozen new elements to the original document issued in December 2003, including references to relevant laws that came into effect after the publication of the first version of the Recommendation. Public sector bodies that entirely comply with the KIETB 19 requirements will be able to display the "KIETB Recommendations Compliant Governmental Web site" logo on their Web pages.

Moreover, a wide selection of Government financed tenders, complemented by EU-financed tenders, are supporting content development for disabled people and software development for improving access to electronic information for disabled people.

Telecommunications

Act No 100/Act on Electronic Communications 2003 implemented the EU Directives and stipulates that at least 3 per cent of all compulsory public telephone stations "must" (see Foreword) be fit to accommodate the hearing-impaired and disabled persons.

Article 2d setting out the objectives and basic principles, includes a requirement to address the needs of specific social groups, in particular disabled users and low-income user.

Radio equipment or electronic communications terminal equipment included in certain classes may be required to support certain features in order to facilitate its use by users with a disability. Consumers with low incomes or with special social needs, as specified in legal regulation, may be provided support from the central budget for accessing universal electronic communications services.

There is a planned decree which refers to subsidies to be given to disabled person when using electronic telecommunication services and another decree is set to provide for the creation of a Central Fund for financing telecommunication related subsidies for disadvantaged persons.

In 2004 the Ministry of Informatics and Communication passed Decree 19/2004 on the Rules of Granting Subsidies for Indigent Subscribers of Universal Electronic Communication Service (fixed line telephone and internet service).

The Article 3 of this decree stipulates that those subscribers who get:

- disabled persons' allowance;

- extra family allowance;
- regular social support;
- elderly people's allowance (note: not identical with pension);
- medical care allowance (note: not identical with health care insurance)

are entitled to a subsidy of 1 000 HUF/month (cca. 4 euro) from the state budget if they apply for this subsidy at the electronic communication service provider company.

D.1.12 Iceland

Public Web Sites

The Central Government Website - Accessibility Policy

The Government Offices of Iceland have resolved to make the Central Government Web site accessible to the handicapped, and aim for all its content to conform at least to the guidelines of <http://www.w3.org/TR/WCAG10/full-checklist.html> WCAG 1.0, Level A, by 1 July 2007.* The Government Offices will review their policy annually, so as to fulfil even better the requirements for making the Web site accessible to everyone. Any individual ministry may adopt the objective of achieving a certain accessibility level sooner than stipulated by the common accessibility policy for the Government Offices, and may refer to this on the ministry Web site. The role of ensuring that the Central Government Website always fulfils adopted accessibility objectives "shall" (see Foreword) be in the hands of the Web site management of Government Offices.

Central Government Web site pages fulfilling the accessibility policy "shall" (see Foreword) be specifically identified through a W3C icon which is placed at the bottom of the leftmost panel and links to a page telling what the icon represents.

Although the Central Government Web site in some instances points to the Web sites of institutions, social organizations or businesses, the accessibility policy of the Central Government Web site applies solely to that Web site, not to the Web sites being referred to.

Third-party content which appears on ministry Web sites "shall" (see Foreword) meet requirements on accessibility for everyone. In addition, software vendors dealing with the ministries shall be requested to describe how their product gives consideration to accessibility, and ministry staff "shall" (see Foreword) have guaranteed access to the software necessary for making content accessible.

Measures "shall" (see Foreword) be taken for staff to receive the training needed for their particular jobs and roles, with retraining provided as accessibility requirements develop or new technology emerges. In part, this is to be accomplished by creating a special information page on accessibility at the Government's information technology Web site.

The WCAG 1.0 criteria originated in 1999. Lately, they have been reviewed under the working name of WCAG 2.0. It is expected that the revised criteria will take effect during 2007 and at the same time become the criteria for the Central Government Web site.

Proviso

Certain older PDF files on the Central Government Web site are inaccessible for screen readers. If a PDF document proves inaccessible, please contact the ministry involved and efforts will be made to find an acceptable solution.

D.1.13 Ireland

Procurement Support

The Public Procurement Toolkit was developed by the National Disability Authority (a statutory body which advises government on disability issues) with minimal involvement from other government bodies. There is little awareness of it and no obligations for anyone to use it.

The Toolkit is a guidance document for procurers which addresses how to go about including accessibility considerations within the process. It does not therefore constitute functional accessibility requirements itself. However, it references the NDA IT accessibility guidelines (available at <http://universaldesign.ie/useandapply/ict>) which are functional accessibility guidelines. It is these which should be described in this document. They cover the 5 functional areas listed:

- 1) web technologies;
- 2) public access terminals;
- 3) application software;
- 4) telecoms; and
- 5) smart cards.

Public Web Sites

Irish government policy has been shaped by the Information Society Commission, the Programme for Prosperity and Fairness, and the Inter-Departmental Implementation Group on the Information Society.

In October 1999, the report of the Inter-Departmental Implementation Group on the Information Society emphasized user-centred Web site design and consists of a number of recommendations with explanations. Recommendation 1.1 states the guiding principle that "Web sites should be designed and operated in accordance with the needs of users". Section 7 deals with accessibility, stating that "The key principle underlining accessibility is that Web sites should be easy for everyone to use, including people with a disability".

In 2002, the government restated its commitment to accessibility online in the document *New Connections: A strategy to realize the potential of the Information Society*.

The third report of the Information Society Commission (Dec 2000) in Section 6.3.2 recommended that:

- "Web sites should comply with WCAG Double-A by the end of 2001;
- accessibility be included as a requirement in all tenders for government Web site design with immediate effect;
- all public service tenders should specify compliance with universal design principles for IT projects with immediate effect".

Section 28 (2) of the Code of Practice (see under **Legislation**) states:

"Where a public body communicates with the public through electronic format it "must" (see Foreword) ensure that, as far as practicable, the contents of its communications are made accessible to a person with a visual impairment availing of adaptive technology. Such technology may include screen readers, Braille output devices and screen magnification software.

A public body can achieve this by:

- establishing what is entailed in making electronic communications accessible and understanding the needs of those using adaptive technology;
- reviewing existing practices for electronic communications in terms of accessibility against relevant guidelines and standards, e.g.:
 - NDA IT Accessibility Guidelines for all computers, information kiosks, interactive services with an ICT front end (e.g. Revenue's on-line service Web forms, electronic voting machines), e-mail and other application software, and other Public Access Terminals used by the public (consult <http://universaldesign.ie/useandapply/ict>).
 - Double A level conformance with the Web Accessibility Initiative's (WAI) Web Content Accessibility Guidelines (WCAG), see <http://www.w3.org/WAI/>. The Department of the Taoiseach's "New Connections - A Strategy to realize the potential of the Information Society" states that "all public Web sites are required to be WAI (level 2) compliant by end 2001".

- Planning to ensure that all such communications are produced, as far as practicable, in a format that is accessible to persons with visual impairment using adaptive technology such as, e.g. screen readers or speaking browsers, etc. as appropriate".

Telecommunications

The European Communities (Electronic Communications Networks and Services) (Universal Service and Users' Rights) Regulations, 2003 transposes the EU Universal Service and Users' Rights Directive (Directive 2002/22/EC [i.23]) into Irish law.

Article 5(1) states that a designated undertaking "shall" (see Foreword) ensure that public pay telephones are provided to meet the reasonable needs of end-users in terms of the geographical coverage and lays down the number of telephones and the accessibility of such telephones to disabled users and the quality of services.

Article 6(1) states that the Regulator may with the consent of the Minister, specify obligations applicable to designated undertakings, designated for the purpose of ensuring that disabled end-users can enjoy access to and affordability of publicly available telephone services, including access to emergency services, directory inquiry services and directories, equivalent to that enjoyed by other end-users.

Article 6(2) states that the Regulator may specify the terms and conditions to be complied with by designated undertakings for the purpose of ensuring that disabled end-users can take advantage of the choice of undertakings and service providers available to the majority of end-users.

On the 25th July 2006 COMREG published a Decision Notice entitled "The Future Provision of Telephony Services Under Universal Service Obligations". This document maintains the regime that Eircom remains the sole Universal Service Provider until June 2010 and outlines the decision on the obligations on Eircom (the USP) to provide specific services for disabled users. The USP is required to provide.

For users who are hearing-impaired:

- inductive couplers;
- amplifier phones;
- visual / loud sound alert when the telephone rings.

For users that are hearing and/or speech impaired:

- Text Relay Service;
- rebate scheme for text telephone users to equalize call costs.

For users with limited dexterity or mobility:

- push button phones with speed and automatic redial;
- handsfree/loudspeaker phones.

For users with restricted vision:

- restricted vision phones that allow numbers to be found easily;
- braille billing free of charge.

For users unable to use the paper directory because of a disability:

- special directory enquiry arrangements to allow free usage of directory enquiry services.

Also, the USP is required to provide a dedicated section of its Web site, accessible from the homepage, with information on the services it provides which are of particular interest to people with disabilities. It is also required to maintain a Code of Practice concerning the provision of services for people with disabilities and to periodically review and, where appropriate, amend the Code in consultation with the National Disability Authority (NDA) and other representative bodies.

National Legislation/ Public Policy/Action Plans

There is significant legislation and public policy relating to IT accessibility in Ireland. The accessibility of services delivered through Web sites and other types of information and communication technology are covered under three pieces of Irish legislation:

- the Employment Equality Act (1998);
- the Equal Status Act (2000, 2004); and
- the Disability Act (2005).

The Employment Equality Act (1998) covers employment of people with disabilities and provision of accessible technologies to employees.

The Equal Status Acts (2000 and 2004) cover various forms of discrimination, including discrimination on the basis of a disability. Under the Act, anyone selling goods or providing services "must" (see Foreword) do all that is reasonable to accommodate the needs of a person with a disability. This involves providing special treatment or facilities in circumstances where, without these, it would be impossible or unduly difficult to avail of the goods or services.

The Disability Act (2005) contains specific accessibility requirements for public sector organizations.

Section 26 of the Act requires that any service should provide access to persons with disabilities where practicable and appropriate. Also that expert advice should be available to ensure the organisation's services are accessible. Section 26 also sets out that an "Access Officer" should be in place to arrange for and co-ordinate assistance and guidance to persons with disabilities accessing the organisation's services.

In Section 27 it requires public bodies to ensure that the goods and services that they purchase are accessible, unless it would not be practicable or justifiable on cost grounds or would result in an unreasonable delay.

In Section 28 it states: "Where a public body communicates in electronic form with one or more persons, the head of the body "shall" (see Foreword) ensure, that as far as practicable, the contents of the communication are accessible to persons with a visual impairment to whom adaptive technology is available".

The Disability Act is supported by a Code of Practice on Accessibility of Public Services and Information Provided by Public Bodies. This Code of Practice was prepared at the request of the Minister under Section 30 of the Disability Act to guide public bodies to meet their obligations contained in Sections 26, 27 and 28.

D.1.14 Italy

Public procurement

The Stanca Law, mainly aimed at public agencies, recommends to public bodies to purchase / acquire accessible IT products and services. The purchase of non-accessible IT "must" (see Foreword) be "adequately motivated" by the procuring administration. In the case of public Web sites, public organizations are obliged to purchase products and services responding to accessibility requirements, or the contract may be considered null and void. In this case, according to Italian regulation, there may be disciplinary action against the public officers responsible for the contract stipulation. This is a strong measure to ensure compliance by public officers.

The law reiterates the obligation (already foreseen in previous legislation) for public and private organizations to provide assistive technologies and accessible IT equipment for their disabled employees, including teleworking equipment. Public employers "must" (see Foreword) respect this obligation, but within the limits of their available budget.

The procurement of IT products and services has to be overviewed by CONSIP, the Italian centralized public procurement agency. Public agencies "must" (see Foreword) either pick a product out of the CONSIP catalogue or launch a public call for tenders.

Public Web sites

"Stanca" Law 09-01-2004 (along with the related decrees and regulations) is the main law on *e*Accessibility in Italy. The Law states that everyone has the right to share the benefits of the Information Society and *e*Government, that public administrations have the duty to provide accessible information and services on their Web sites (and also invites private entities to do likewise) and that accessibility requirements "must" (see Foreword) be taken into account in public procurements of ICTs. It also states that the accessibility enforcement policies "must" (see Foreword) be monitored and fostered at both national and local level. The law covers public services and private organizations delivering public services.

Two subsequent decrees implemented the Law: the Decree of the President of the Republic (March 1, 2005, No.75) - Implementation Regulations and the Ministerial decree (July 8, 2005) containing the Technical Rules. The technical requirements were drafted with a view to having a shared consensus with associations and companies and also to be compliant with international recommendations (ISO, W3C, Section 508 etc.). They can be periodically updated whenever relevant changes are made to international accessibility rules. An assessment methodology was also developed. Public administrations may carry out a self-assessment or use a third-party from a list of officially recognized evaluators.

The main provisions regarding public Web sites are:

- public administrations cannot draw up, modify or renew contracts for the development and maintenance of Web sites if they fail to respect the accessibility requirements;
- all existing contracts "must" (see Foreword) be updated to meet such requirements within twelve months;
- any stipulated contract failing to respect such requirements "shall" (see Foreword) be declared null and void.

Failure to comply with the Law may entail both executive responsibilities and disciplinary actions, as well as any civil liability provided for by the current anti-discrimination law.

Telecommunication

Affordability, accessibility of payphones at public places, and (some aspects of) an obligation to supply accessible equipment are regulated (Telecom Italia also provides accessible domestic phones to disabled people that request it, at the same prices foreseen for the standard telephones).

Service provision responsibilities in Italy are as follows:

- Telecom Italia is the telecommunications company in charge of providing the Universal Service Obligations; as of 1st January 1998 other telecommunications companies may be appointed for the provision of the US in all or part of the national territory.
- The national directive (DPR 19 September 1997, n. 318, art.7, comma 11) stipulates that the Authority for the Guarantee of Communications may consent reduced financial terms for specific relevant groups of clientele in the form of social welfare. The Authority for the Guarantee of Communications has issued Resolutions 314/00/CONS and 330/01/CONS establishing that Telecom Italia "must" (see Foreword) apply a reduction of 50 % to the monthly category B telephone bills at its own expense for those suffering significant financial or social difficulties, as well as the total exemption of those who use DTS (Telephone Devices for non-hearing/speaking people) communication systems.

The decree (DPR) of the 19th of September 1997 sets the duty for the telecoms national provider, Telecom Italia, to supply accessible telephones to disabled people. A resolution based on this decree specifies how many public telephones should be provided: this depends on the size of the Municipality and of the local population (art.1 of the resolution). Moreover, the resolution specifies the location of the public phones. Nevertheless, currently, airports and train stations are provided with such phones, but the provision for the country as a whole is not as good.

NOTE: Not clear if this refers to specific accessibility features for disabled people?

D.1.15 Latvia

The situation in Latvia is unclear and it appears that minimal progress has been made in implementing accessibility requirements for public procurement.

Public Web Sites

There are no formal initiatives in place and examples of good practice based on WAI guidelines are the only relevant development. The Web site of Ministry of Welfare is so designed that it is accessible for people with visual impairments - (WAI level A).

Telecommunications

The Law of Electronic Communications, which was adopted on the 28th October 2004 implements the Directive 2002/22/EC [i.23] on universal service.

The universal service defines the minimum level of electronic communications services, of defined quality and at an affordable price, which "must" (see Foreword) be provided to all existing and potential users. This level is determined in Regulations on universal service in the area of electronic communications.

These regulations empower the commission to take a decision that the public telephone network operator "shall" (see Foreword) perform special measures in order to ensure publicly accessible electronic communications services for disabled persons.

In practice, the operator of the fixed telecommunication network, Lattelekom, applies a discount for the deaf using text telephones and for disabled having a certain degree of disability.

D.1.16 Liechtenstein

In Liechtenstein there are at present no country-specific procurement requirements or legislation (2007-11-27).

D.1.17 Lithuania

Public Procurement

The EU Directive 2004/18/EC (17) was transposed into Lithuanian legislation on 22 December 2005 (Law on Public Procurement 22 December 2005, X-471) (see English version http://www3.lrs.lt/pls/inter3/dokpaieska.showdoc_l?p_id=273790). The Law in the same way as the above mentioned directives includes provisions for accessibility.

Article 25 (1) provides that in awarding a public contract, a contracting authority "shall" (see Foreword), as far as possible, ensure that the technical specifications for the contract take account of the need to prescribe accessibility criteria for all persons who are likely to use the relevant supplies, services or works, particularly those who have disabilities.

"Article 25. Technical Specification 1. Supplies, services or works in procurement "shall" (see Foreword) be described in technical specifications contained in contract documents. Certain definitions of technical specifications "shall" (see Foreword) be given in annex 3 to this Law. Whenever possible these technical specifications should be defined so as to take into account accessibility criteria for people with disabilities or design for all users".

"Annex 3 to the Law on Public Procurement states the definition of Technical specifications. The definitions also include accessibility for disabled people:

- 1) **Technical specification in the case of public works contracts** means the totality of the technical prescriptions contained in particular in the tender documents, defining the characteristics required of a material, product or supply, which permits a material, a product or a supply to be described in a manner such that it fulfils the use for which it is intended by the contracting authority. These characteristics "shall" (see Foreword) include levels of environmental performance, design for all requirements (**including accessibility for disabled persons**) and conformity assessment, performance, safety or dimensions, including the procedures concerning quality assurance, terminology, symbols, testing and test methods, packaging, marking and labelling and production processes and methods. The data "shall" (see Foreword) also include rules relating to design and costing, the test, inspection and acceptance conditions for works and methods or techniques of construction and all other technical conditions which the contracting authority is in a position to prescribe, under general or specific regulations, in relation to the finished works and to the materials or parts which they involve.
- 2) **Technical specification in the case of public supply or service contracts** means a specification in a document defining the required characteristics of a product or a service, such as quality levels, environmental performance levels, design for all requirements (**including accessibility for disabled persons**) and conformity assessment, performance, use of the product, safety or dimensions, including requirements relevant to the product as regards the name under which the product is sold, terminology, symbols, testing and test methods, packaging, marking and labelling, user instructions, production processes and methods and conformity assessment procedures".

Finally, the Article 24 (4) of the Law on Public Procurement provides that contracting authority may lay down special conditions for the performance of a contract relating social requirements. For example, contracting authority may to allow the participation in public procurement only to those entities and agencies employing certain percentage of disabled, etc.

"Article 24. Contract documents 4. Contracting authorities may lay down special conditions for the performance of a contract, **relating to social** and environmental requirements, provided that these are compatible with Community law".

Public Web sites

Resolution No. 1054 sets the main requirements to be respected by government and local authorities' Web sites. One of the Resolution's requirements is adaptation of public Web sites for the people with disabilities. Coordination of the measure is assigned to the competence of the Information Society Development Committee. Standard is issued by the Information Society Development Committee operating under the auspices of the Government of the Republic of Lithuania.

This standard set the requirements for government, local authorities and public institutions Web sites based on WAI. This standard is obligatory for public bodies.

Telecommunication

Law on Electronic Communications, 15 April 2004, No. IX-2135 provides requirements for universal services in Lithuania and includes obligations to ensure telecommunication services [are] accessible to people with disabilities. According to the article 31.4 of the law, providers of electronic communication services have to ensure accessibility of electronic communications services for people with disabilities. telecoms operators (in Lithuania at present TEO LT) to fulfil the requirement regarding accessibility of pay telephones (for 10 % of all public phones booths: instruction of public phone use has to be printed in 16 size font and properly illuminated at dark day time and they "must" (see Foreword)" be built in accordance to a specific standard STR 2.03.01:2001 "Buildings and territories: requirements for disabled needs".)

D.1.18 Luxembourg

Luxembourg does not have any national law in force requiring the accessible design of Web sites. However, there are mandatory guidelines for the Web sites of all the public institutions. More specifically, the official normative document, Charte de normalization de la presence sur Internet de l'état, was published in May, 2002 and was approved by the National Commission for Information Society. The following are the main goals of this effort:

- Develop a corporate identity for all public portals and Web sites of the Grand Duchy of Luxembourg.
- Create public Web sites that meet criteria such as usability and accessibility.

D.1.19 Malta

Public Web sites

The Equal Opportunities Act (Disabled Persons) of 2000 provides the basis for public Web sites to be accessible but it does not explicitly states that.

The Foundation for IT Accessibility (FITA) based within Malta Information Technology and Technical Services (MITTS) Ltd, as the Government's principal advocate and coordinator for making information technology accessible for disabled people, has been working on a set of guiding principles relating to ICT and accessibility for disabled persons. The Foundation acts both proactively and reactively in notifying organizations of ICT accessibility issues and cooperating with them to rectify these issues. FITA and KNPD (National Commission for Persons with Disability) are supported by the Government's Central Information Management Unit (CIMU) in these endeavours to enhance ICT social inclusivity.

Telecommunications

Electronic Communications Networks and Services (General) Regulations (Legal Notice 412 Of 2004) obliges accessible public telephone networks i.e. Amplified Telephone Sets Telephone sets designed for the hearing impaired or persons having partial voice loss. It is also equipped with a call indicator that flashes when the telephone rings. The set is also fitted with an inductive coupler, facilitating a person using a hearing aid. Also on offer are: Portable Amplifiers, Tone callers, Silent Call Indicator, Large Button Telephone Sets, and Text Telephone Apparatus.

D.1.20 Netherlands

Public Web sites

In the Netherlands, eAccessibility (more precisely: compliance with WCAG 1.0 AA level) is embedded in a quality model for Web interfaces that is called the Web Guidelines. In 2004, these Web Guidelines (see www.webrichtlijnen.nl/english/) were primarily developed as an instrument to strengthen the procurement process of government organizations, related to Web sites and Web applications. Since April 2007, the Web Guidelines are a national standard.

Formal policy

In June 2006, a ministerial decision (decree) on the quality of government Web sites was published. This decree is based on the Web Guidelines and is mandatory for national level government organizations in the Netherlands. The decree was preceded by a motion, submitted by members of the Netherlands' Parliament. The motion stated "that all government Web sites should be accessible to all citizens". More information on the motion and the decree is available at www.webrichtlijnen.nl/english/decision/. The content and temporisation of the decree are aligned with the objective of i2010 (Riga, Ministerial Declaration June 2006). Other government organizations in the Netherlands - provinces, water boards and municipalities - have formally agreed to use the Web Guidelines in new Web projects.

Conformance

For conformance assessment purposes, a normative document was developed in close co-operation with the Quality Mark Drempelvrij.nl (www.drempelvrij.nl) Foundation and the Bartiméus Accessibility Foundation (www.accessibility.nl). The normative document and the supporting caesura and sampling document are available at www.drempelvrij.nl/webrichtlijnen (the page is in Dutch; the downloadable documents are in English).

Furthermore, an instrument has developed for automated conformance testing. 47 out of 125 Web Guidelines can be reliably tested automatically. For the other guidelines, manual inspection remains necessary. The results of manual inspection can be integrated in the report that the instrument produces. In the public version (also available in English, see www.webrichtlijnen.nl/english/test/), up to 10 pages can be tested simultaneously. Another version is a benchmarking instrument, in which government Web sites are evaluated on a regular basis. The results are available (in Dutch only) at www.webrichtlijnen.nl/monitor/.

The normative document was reviewed by several stakeholders, including W3C. A Web site that conforms to the Web Guidelines always is in line with the WCAG 1.0 priority 1 and 2 checkpoints. To substantiate this claim, the normative document closely follows WCAG 1.0; all priority 1 and 2 checkpoint of this specification are part of the normative document. Many of the Web Guidelines are defined as success criteria of WCAG 1.0 checkpoints. When the Web Guidelines were developed in 2004, the then available draft version of WCAG 2.0 was used. After the WCAG 2.0 specification reaches a formal status, a new version of the normative document will be made in which the WCAG 2.0 checkpoints are used.

Warranting accessibility after procurement

The Web Guidelines play an increasingly important role in the procurement process: in the acquisition phase, in contracts, during realization and afterwards before formally accepting.

However, experience has shown that this does not *guarantee* an accessible end result. Accessibility requirements may get "lost" after the procurement phase. During implementation, the subject often is not sufficiently prioritized. As a consequence, accessibility is at risk of becoming a "negotiable requirement" when complications occur (caused by time, money or both). To help prevent this from happening, a process model is being developed in 2008.

Style guide

In 2005, all ministries in the Netherlands decided to redevelop their corporate Web sites based on a common style guide. Application of the Web Guidelines quality model is designated mandatory in this style guide. An English version is available at <http://stijlgids.overheid.nl/>.

Worth mentioning in this context is the solution for accessible audio and video content. It was developed under the supervision of the Style Guide working group. See www.minvws.nl/en/video/ for details and www.accessibility.nl/internet/artikelen/audiovideo?languageId=2 for background information on the subject.

D.1.21 Norway

Formal policy

The present Norwegian Government's inaugural address in 2005 emphasized measures to achieve universal design in new technology and follow an offensive ICT policy in the public sector. All technological development in the fields of ICT and media are to be based on the principle of universal design, and to ensure that various ICT and Web based services are not yielding new and extensive barriers. In a forthcoming Act on Discrimination and Accessibility it is proposed to include a deadline for including universal design, and all new information and communication technology "must" (see Foreword) be accessible after 2011 (Press release 81 of 04.07.2007).

Relevant legal measures include:

- The Act on intellectual works from 2005 regulations on productions and licences for the production and use of intellectual works by disabled people. This includes production of literature in special formats.
- The Act on electronic communication from 2004, which covers all forms of electromagnetic signals. A guideline to the Act from 2004 requires that operators having an obligation to deliver such services according to the § 5-1, first paragraph No. 5, "must" (see Foreword) deliver services to disabled people and others with special needs.
- The Act on public procurements has since 1st January a clause requiring the demand of universal access in planning of public procurements as well as in the technical annex to the tender.

- The draft anti-discrimination and accessibility Act was presented by the Government on April 4th 2008. It includes an obligation to ensure that all new ICT solutions are to follow the principle of Design for All from 1st July 2011 while existing ICT solution "must" (see Foreword) be universally designed from 1st January 2021. ICT is defined as technology and systems of technologies used to express, create, recreate, exchange, store, publish and disseminate information, or in any other sense making information usable.

An evaluation has been made on calculated costs concerning the requirement for universally designed ICT. It is calculated by Statistics Norway that the collected costs of ICT in the public sector (including leasing) was 4,9 billion Kroner in 2005, including 2,8 billion Kroner for computer equipment, 1,1 billion kroner to software, 450 million Kroner to self-development of software and 550 million kroner to the leasing of computer equipment. There are no more recent surveys of these expenditures, but it is estimated that the Government spending in software is constitutes 2 billion Kroner per year, mainly concentrated on larger, heavy professional systems. Public enterprises in 2006 used a total of 4,7 billion Kroner on ICT. 50,4 % was used to buying hardware and 23,7 % to buy software. 658,9 million Kroner went to leasing computers and software and 549,6 millions to self-development of software for own use.

There will be increased expenses in ensuring Design for All of the user-centred or public systems. An estimation made by NTNU on additional costs concluded that they will constitute 0,4 % to 1,0 % for general software and 1 % to 5 % for specially developed software. If it is furthermore calculated that up to 10 % of the costs in larger ICT projects are connected to the public services of the systems, the additional cost will be about 10 million Kroner or € 1 250 000 a year.

Regarding hardware there are much more limited costs for ensuring Design for All. For cash points/mini banks the cost is estimated at 1 % of the total cost, or about € 375. For ticket vending machines the calculation is more diffuse because transfer to Web based solutions will ensure much more effective solutions. For queuing machines the additional costs will vary between € 625 and € 1 875 for each machine. Thus costs will be very limited or constitute between 1 % to 5 % of the enterprise's total costs for hardware solutions.

Action plans

The Report to the Storting No 17 from 2006 lists several measures to ensure universal design of ICT:

- Public electronic services are to follow the principle of universal design wherever possible, and guidelines be developed as well as detailed standards, besides indicators for monitoring and evaluation. These will possibly also be introduced in public reporting systems like KOSTRA and StatRes.
- WAI criteria are recommended for public Web sites and as a clause for granting public funding to other Web sites.
- A new action plan for accessibility for all will be developed and ICT will be focused upon in particular.
- A special centre of excellence, IT-Funk (<http://www.itfunk.org/docs/english.html>) was established in 1998 and is financing projects aiming at improving accessibility for disabled people to ICT products and services, in particular in the fields of education, employment, methods for user participation in R&D of ICT solutions and standardization work.

"eNorge 2009 - the digital leap" (http://www.regjeringen.no/upload/FAD/Vedlegg/IKT-politikk/enorge_2009_komplett.pdf) is a strategic plan for Norwegian ICT policy, aiming at among others adaptation of electronic services and tools for all. The aim is to make 80 % of all public Web sites fulfil quality criteria for accessibility according to the quality assessment body Norge.no. Measures include the establishment of a "citizen's portal" - Mypage (<http://www.norway.no/minside/Default.asp?>), and Altinn (<https://www.altinn.no/en/>), which is a portal facilitating access to public forms, etc. and a survey of user satisfaction of public services, national targets for digital competence and surveys of digital skills.

Conformance

Norge.no is the main third party entity making surveys of accessibility of public and private Web sites. Since 2001 such surveys have been made on access for disabled people to Web sites based on quality criteria that are also functioning as guidelines for many public authorities and enterprises. Surveys were made in 2001 and 2003 and thereafter on annual level (<http://www.norge.no/kvalitet/>).

D.1.22 Poland

It would appear that minimal progress has been made in implementing accessibility requirements for public procurement. However, a number of initiatives are now underway.

Public Web Sites

There is no legislation or regulation specifically addressing *e*Accessibility of public Web sites although there are some recommendations (i.e. **Informatization Strategy for Republic of Poland: ePoland 2004-2006**), accepted by The Council of Ministers. These are non-binding since there are no negative sanctions for non-compliance or for not following these guidelines.

There is legislation that could, in principle, offer a legal basis for requiring public Web sites' accessibility. Thus the Polish Constitution in article 61 guarantees the right of access to public information; the Act on Access to Public Information (6 September 2001) defines the types of information that should be accessible, but not the ways to ensure accessibility. However, Web accessibility guidelines were not included in the Council of Ministers regulation on minimal requirements for telematic systems in public administration.

Relevant recent initiatives include:

- The resolution of the Internet Society Poland Board nr 18/2006 from 4 IX 2006 about standards used during development and realization Internet services.
- ISOC recommendations about translation into Polish documents important for e - availability Web Accessibility in Polish - the project of translation into Polish WAI documentation and other documents concerning that domain.
- Ministerial document "Proposed directions of Information Society development in Poland to 2020." - numerous mentions about preparing and rendering available IS technologies to disabled persons (inter alia e - health, e - learning, e - democracy).
- Osiolki.net - a Web site listing pages not matching W3C requirements.

In March 2006 a white paper on the New Public Information Bulletin proposed that the regulation for this should be amended to included accessibility requirements for the online version, as well as for all other public administration Web sites (WAI guidelines for accessibility for people with disabilities, older people or those who use less popular operating systems and internet browsers). However, it appears that this may not have been implemented.

The Informatization Strategy for Republic of Poland: e-Poland 2004-2006 (accepted by The Council of Ministers 13/01/2004) recommends that public services such as the submission of tax returns, applications for identity cards or driving licences, e-Health should be developed. Although the strategy (e-Poland) takes into account the issues concerning disabled people, it would appear that it omits some important basic issues such as using WCAG standards in public administration services.

Telecommunications

The Telecommunications Law (2004) requires that Public Telecommunication Service Providers have to ensure that "users, including disabled users, derive maximum benefit in terms of prices, choice of service and quality". In the case of disabled people it refers to:

- common and equal access to all telecommunication service;
- providing necessary facilities for disabled people;
- necessary amount of public phones accessible and adequate service prices for disabled people.

This Law (which is based, among others, on the EU Universal Service Directive) has imposed on Telecommunication Service Providers (TSP) the implementation of regulations providing equal access to services and in case of disabled people it refers to following obligations:

- providing telephone adjusted to individual needs of the impaired person;
- providing access for disabled people to telephone booths (for example amplifier, special keyboard, etc.);
- providing special phone cards marked in a way that make them usable for people with vision impairments.

Additionally, under some conditions, the main Polish operator (TP SA.) provides disabled people with a special 50 % discount. All obligations are precisely defined in the Telecommunication Law and additional documents. Fulfilment of the aforementioned regulations is supervised by The Office of Electronic Communications.

D.1.23 Portugal

Despite the existence of an emergent concern about eAccessibility issues, there is no formal regulation or legislation towards its inclusion in ICT public procurement processes. However there are laws and initiatives which will enhance the adoption of the accessibility criteria in ICT public procurement.

Support for Procurers

The ACESSO Unit (part of the government structure addressing the Information Society issues) has the responsibility to support the Government and Public Services in the progressive integration of the citizens with special needs in the Information Society. Specifically concerning the ICT's public procurement, this Unit developed the following actions:

- Technical specifications annex for ICT's Public Tenders.
- Guidance papers and CD-ROM toolkits (Portuguese translation of WAI guidelines).
- Provides a Web accessibility helpdesk for Webmasters.
- Training on Web accessibility.
- Accessibility Gallery (list of all accessible public sites).

Although scarce actual evidence can be found with respect to direct acquisition of ICT equipments in which ICT accessibility criteria is included, it is possible to identify some examples of procurement processes in the acquisition of ICT services:

- At the National level: most recently created public sites and on-line services include accessibility criteria.
- At the Regional/local level: evidence shows that projects under "Digital Portugal" include accessibility criteria in the evaluation methodology for the definition of projects to be financed.

Public Web Sites

The Resolution of the Council of Ministers (RCM) 97/99 states that information layout and presentation in the Public Administration Web sites (central and local) should allow or facilitate the access by persons with special needs. The accessibility should address at the minimum the relevant information for understanding and search of the Web sites content. More specifically, the Public Administration organizations should adopt writing and layout formats in their Web sites that ensure:

- the reading without the use of vision, precise mobility, simultaneous actions, etc.; and
- the possibility to obtain information and do research through hearing, visual and tactile interfaces.

According to this resolution, the public Web sites that accomplish the accessibility requirements referred to previously, should indicate this characteristic using a clearly recognizable symbol.

In 2000, a team of the ACESSO Unit (UMIC - Unit of Mission, Innovation and Knowledge), published a brochure concerning "Visibility requirements" to support the improvement of the existing public Web sites. It defined a set of basic accessibility requirements and the inherent technical specifications that allow for visiting the site and contact its responsible, and fosters learning and exchange of experiences about accessibility between those responsible for the Public Administration's Web sites. The requirements included in the brochure relate to the presentation of information, contact, navigation and conformity (with Web accessibility guidelines W3C, presentation of accessibility symbol, etc.).

The measures of the RCM 97/99 also pursue the Recommendation and Resolution of the Parliamentary Commission for Constitutional Affairs, Rights, Freedoms and Guarantees regarding the Accessibility Petition, approved on the 30th of June, 1999, which called for the adoption of appropriate measures to guarantee to all citizens with special needs full accessibility to information made available on the Internet.

RCM 97/99 was updated by the RCM 155/2007 of October 2. This legislation has two goals, requiring:

- Level "A" until December 2007.
- Level "AA" until March 2008 to services Web sites.

RCM n°110/2003, the National Programme for the Inclusion of Disabled People in the Information Society, in Action 1.2 establishes a mechanism for monitoring and receiving suggestions and claims concerning public Web sites accessibility and general ICTs used in services of Public Administration.

From 2000 to 2004, UMIC has promoted several training actions for the Webmasters of Public Administration organizations, aiming at the improvement of accessibility requirements for those with special needs in accordance with the RCM 97/99. Since 2004/2005, the UMIC gives direct consultancy to the teams responsible for the Web sites/portal development in public organizations during its development and tries to correct some accessibility aspects.

RCM n°120/2006 the first Action Plan for the Integration of the Persons with Disability or Incapacity (2006-2009) under Action 1: Accessibility and Information, Strategy 1.2 - Promote access to communication and information, includes a measure to guarantee, in conjunction with UMIC (Unit of Mission, Innovation and Knowledge) the application of the Web accessibility standards in public administration Web sites.

RCM n° 9/2007, the National Plan for the Promotion of Accessibility 2007-2015 in action 2.5.b) Electronic access to public services intends to ensure accessibility for people with a disability (namely people with vision and hearing impairments) to public services available in electronic format. The entities responsible for the execution of this action will be several national ministries (Ministry of Justice, Ministry of Economy and Innovation, and the National Bureau for the Rehabilitation and Integration of Persons with Disabilities (SNRIPD)). According the RCM document, the deadline for the execution of this measure is February 2008.

According to the results of an external evaluation of the public administration Web sites' accessibility, one future intervention aiming to introduce the accessibility requirements of the W3C appears urgent. The UMIC during 2007 will do an assessment of the work undertaken in the past, of the advances achieved and define the priorities for action for the future.

Telecommunications

Law 5/2004 transposes the EU Universal Service Directive and other associated directives into the national communication legislation. It includes some requirements in the field of accessibility of services by the citizens with special needs, namely, in its section respecting the universal service and additional obligatory services.

Article 91 states that specific measures for users with disabilities could be developed in relation to public phones, emergency services, phone directories and its information services. The specific offers could include:

- the offer of phones or public places with text or similar measures, for deaf persons or with speech communication disabilities;
- the provision of services of phone information, or similar measures, gratuitously for blind persons or with visual disabilities;
- the provision of a detailed invoicing in alternative formats, on request made by a blind person or with visual disabilities.

This legislation provides a basis for a range of measures to be introduced. It is also stated in the national law that the National Regulatory Authority could adopt specific measures to ensure that the users with disabilities could have the possibility to choose a service provider as is the case for the majority of users.

The legislation has also imposed obligations or made an impact in the following areas:

- telecommunication equipment is available free of charge for disabled users under the Law;
- there is a legal obligation to apply special tariffs to disabled people;
- it is stipulated that the NRA (national regulatory authority) should evaluate the situation and decide special price packages;
- directory services are produced in Braille by the universal service provider; a special number 118 Braille is available for blind and partially sighted clients free of charge (20 calls per month) for information services;

- 112 emergency service is available for deaf and speech impaired people. Installing text phones in the 112 emergency call centres across the country as well as training of the staff is envisaged.

The National Programme for the Inclusion of Disabled People in the Information Society (RCM n°110/2003) in:

- Action 1.4 - Enables the matching and availability of information in Braille and audio, namely through the evolution of the Electronic Mailbox Braille Service (MECBraille) and conversion services of text messages into audio format.
- Action 3.2 - Adapts the "Universal Telecommunications Service" concept to take into consideration the needs and requirements of citizens with special needs.
- Action 8.1 - Promotes and steers the implementation of the commitments established by the operators of communication networks of 3rd generation regarding *e*Accessibility.

However, at the time of writing the present document there are no relay services in Portugal.

Some of the telecommunication operators have offered special tariffs for the use of ICT services or equipment by users with disabilities and have launched other initiatives to support the use of the telecommunication services and equipment such as: the delivery in schools of speech synthesizers in the Portuguese language and making available display readers and speech synthesizers for mobile phones.

The National Plan for the Promotion of Accessibility In (RCM n° 9/2007) in, Action 2.5.d), seeks to ensure the availability of phones allowing text communication in shopping centres and transportation stations in the main cities. This action will be executed under the responsibility of the Ministry of Sciences, Technology and Higher Education/Unit for Innovation and Knowledge (UMIC), the PT Communication operator and the UMTS (National Communication Authority) working group. The expected period for the execution of this action is January 2007 - January 2009.

D.1.24 Romania

There are currently no mandatory accessibility requirements for ICT products and services in Romania.

Public Web Sites

No detailed information is available. However, Law 161/2003 stipulates the guidelines for Web pages that would assure an easy access for all citizens, ensuring that no barriers are created by using ICT in interaction with public administration.

Public Policy/Action Plans

A new strategy is in preparation for the reform of public administration by ICT means that would include *e*Accessibility issues. Furthermore, Web design guidelines for public administration are in preparation.

D.1.25 Slovakia

The Slovakian Information Society Strategy and Action Plan makes reference to WAI. More specifically, the Action Plan also outlines plans to develop a public procurement portal, the purchase and operation of which will be in accordance with the conditions of accessibility of ICTs to disabled people. However, currently there is no more information regarding that. On the other hand there are some other first initiatives mainly from the University of Kosice that advance Web Accessibility. More specifically, the University of Kosice is the coordinator of a European project Access e-Gov that aims to support the provision of accessible e-government services by Municipalities and public organizations.

D.1.26 Slovenia

Public Web Sites

The "National Guidelines to Improve Built Environment, Information and Communications Accessibility for Disabled Persons" (December 2005) state that it is necessary to assure/provide information in an adjusted format for disabled people; that the information and other services of the government on the Web should be equally accessible to all citizens; that disabled should be made more aware of possibilities offered by ICTs, and that wider accessibility to ICTs should be available to disabled.

The main objective of these guidelines is to create a friendly and pleasant environment for living and working for all people. They are based on the Constitution of the Republic of Slovenia. The Ministry of Labour, Family and Social Affairs with its Directorate for disabled is responsible for the implementation and monitoring of this Strategy.

These guidelines were adopted by the Slovenian Government and are legally binding. The specific aims of relevance for eAccessibility are:

- to overcome the obstacles in the communication infrastructure and in built infrastructure/environment;
- to ensure access to education;
- to provide the information in a proper form for sensory disabled people and for those with cognitive disabilities;
- to ensure access to the public transport;
- to ensure that the eGovernment services are accessible to disabled people;
- to ensure the inclusion of disabled people in the accessibility programmes; and
- to enhance the development and inclusion of the disabled people to the ICTs.

One of the goals in the Strategy of Work and Development of the Public Administration in Slovenia on World Wide Web (2004) is to ensure that all public administration Web sites work well for all users (including disabled people) and that they can be easily accessed. It recommends that Slovenian public administration bodies should follow the guidelines and standards on accessibility of Web sites for people with disabilities.

This Strategy does not relate to the "Easily Reached Slovenia " and is not part of the same package. However Design Recommendations for Public Web Pages are part of the Strategy and the most important measure at present is the harmonization of Governmental Web pages to create unique entering portal for eGovernment. The Ministry of Public Administration is responsible for implementation and monitoring this work. There are no sanctions foreseen in case of non-compliance.

In the Design Recommendations for Public Web Pages the Ministry of Higher Education, Science and Technology, Department for Information Society recommends that, when designing public Web pages, it would be necessary to follow at least level A of the WCAG 1.0 recommendation (single A).

The Ministry of Public Administration is responsible for implementation and monitoring. There are no sanctions foreseen in case of non-compliance.

In the Government Action Plan for Disabled Persons 2007-2013, Provision 3.9: states that information and other services of the government on World Wide Web should be equally accessible to all citizens.

On 30th of November 2006 the Slovene Government adopted Action Plan for Disabled Persons 2007-2013. Ministry of Labour, Family and Social Affairs with its Directorate for disabled is responsible for monitoring. There are no sanctions foreseen in case of non-compliance.

Telecommunications

The Decree on measures for disabled end users requires that the institution, which manages the general service for disabled users "must" (see Foreword) ensure that the service is stable, permanent and without interruptions.

If the required service is not implemented in a proper way ("*stable, permanent and without interruptions*") the Post and Electronic Communications Agency of the Republic of Slovenia can terminate the contract with the provider.

The Rules on the categories of consumers entitled to special tariff options or packages define special categories of consumers, which either have low income or are disabled, and are therefore justified to receive (from the suppliers of the general services) better purchase conditions (than people who purchase services under normal commercial conditions).

The Broadband Connections Strategy clearly states that disabled people are entitled to get a subsidy for broadband connections. The agency responsible for the implementation of broadband connections subsidies is the Academic and Research Network of Slovenia (ARNES).

According to the criteria adopted by the Ministry of Labour, Family and Social Affairs and approved by the Ministry of Information Society certain groups of disabled persons (blind and visually impaired, deaf and hard of hearing) have free Internet access.

D.1.27 Spain

As previously noted, Spain has three levels of public administration: general, autonomic and local. The following applies mainly for the general level, as the autonomic administrations can develop local legislation in many sectors.

Public Web Sites

The Spanish Law 34/2002 on Services of the Information Society and Electronic Trade (published on 2002/07/12) has content dealing with accessibility to the information provided by electronic means, covering all the Web pages of public administrations (fifth additional disposition). It states that public administrations should adopt the required measures in order to have their internet content accessible to disabled or elderly people. Also, the adoption of standards on accessibility will be promoted for the service providers and hardware/ software producers in order to ease access to digital content for disabled or elderly people.

The law includes an obligation to fulfil generally recognized accessibility criteria, without mentioning W3C. Although it does not make it compulsory it indicates that the application of the law should be based on a standard, in this case the Standard of Computer Accessibility that includes accessibility of the Web.

In article 8 the law provides sanctions. It states that where any service provider contravenes the principles of the legislation, (including the principle of non-discrimination to people with disabilities), appropriate actions could be taken.

Also, the Ministry of Labour and Social Affairs has established by Royal Decree a new Arbitration Process for disabled people, adopting the existing model of the Consumption Arbitration System.

The Law 51/2003, Law on Equal Opportunities, Non-Discrimination and Universal Accessibility for Persons with Disability establishes the basic conditions of accessibility and non-discrimination for access and use of technologies, products and services related to the information society and social communications media. The basic conditions for accessibility and non-discrimination for the access to the use of these technologies, products and services is obligatory, within 4 to 6 years from the entry of the law.

This deadline applies to all new products and services; the deadline for existing products and services is 8 to 10 years. It also includes references to having a training curriculum in the field of design for all functioning in all educational programmes, two years from the entry of the law.

The law establishes the "accessibility timeframe" for all environments, products and services, which would include public Web sites. Article 10 establishes the basic conditions for access and use of ICT technologies, products and services and of any means of public communication including public Web sites. A draft Decree is considering imposition of substantial financial and administrative sanctions.

Under **Law 34/2002** and **Law 51/2003**, and Royal Decree 1494/2007, when public procurement concerns the design and maintenance of Web sites, it is required, in technical specifications that the AA accessibility level is met (by 28/02/2008). Currently the State has the right to ask any organization hired to provide the products and services that are as accessible as possible.

The Law on Electronic Access of citizens to Public Administration (law 11/2007, published on 23/6/2007) shows that the law will ensure the right of every citizen to communicate with the Public Administration by electronic means. This law includes accessibility as one of its principles (article 4) and states that further decrees will define the accessibility requirements (seventh final disposition).

The Royal Decree 209/2003 on Registries and Telematic Notifications (published on 28/2/2003) concerns the regulation for registries, telematic notifications and the use of telematic means regarding the provision of certificates for citizens. The ministerial order PRE/1551/2003 (published on 13/6/2003) developed the first final disposition of the royal decree 209/2003 and mandates to apply WCAG 1.0 AA accessibility level for the telematic registries and the telematic notification systems of the public administrations.

The Royal Decree 1494/2007, of November 12th, which adopts the regulation on the basic access conditions for people with disabilities to the technologies, products and services related with the information society and media refers as far as possible to standards when defining the accessibility requirements. This decree defines one of the sets of accessibility conditions referred to in the Law 51/2003. There are conditions established for:

- Customer services, contracts, invoices and other documentation (article 3).
- Mobile phone services (article 4).
- Web sites of the public administration (article 5).
- Other Web sites (article 6).
- Certification of accessibility (article 7).
- Hardware and software (article 7).
- Electronic signature (article 8).
- Television content (article 10).
- Digital television (article 11).
- Institutional advertising of the National administration (article 12).

The decree also defines deadlines for products and services to be accessible:

- December 4th, 2009 for all new products and services.
- December 4th, 2013 for the existing ones (if reasonable adjustment can be achieved).

The public Web sites have more strict deadlines:

- November 22nd 2007 (one day after publication), for new Web sites to comply with priority 1 (WCAG A).
- May 22nd 2007 (six months after publication), for existing Web sites to comply with priority 1 (WCAG A).
- December 31st 2008 for all public Web sites to conform to priority 2 (WCAG AA).

Law 49/2007, of December 26th, established the regime of infractions and penalties in the area of equality of opportunities, non discrimination and universal access for people with disabilities, provides a definition of infractions (three levels: weak, severe or very severe) for several cases and defines economic penalties.

D.1.28 Sweden

Sweden has a 30-year long tradition of combined usability and accessibility requirements used in public ICT procurement, to some extent.

The Swedish Agency for Public Management (Statskontoret) has developed guidelines on usability and eAccessibility in public procurements of ICT: "Anvisningar för krav på användbarhet och tillgänglighet i Statskontorets IT-upphandlingar (Guidance for requirements on usability and accessibility in Statskontoret IT procurement), 2003/05/28)".

A description of how to buy with accessibility within a framework procured agreement for government related bodies is a Statskonteret document "Avropa användbart. Vägledning för bedömning av användbarhet vid avrop från ramatval" (Purchasing agreements. Guidance for assessment of usability in connection with purchasing according to a framework agreement). This document gives non-specific advice for how to evaluate accessibility needs and fulfil them.

Apart from this, there are other laws and regulations in Sweden that can encourage attention to *e*Accessibility in public procurements. Specific laws such as the Law on Work Environment and Law on Rehabilitation state that the employer "shall" (see Foreword) design the work place according to the capabilities of the individual employee, and through not stated in the law itself, the employer should acquire ICT systems which satisfy accessibility requirements. An employer is also responsible for setting up a vocational rehabilitation plan if an employee acquires an injury, disease or disability. This involves a review of the complete work situation of the individual, including his/her ICT workstation. The review could result in a need for a redesign of the workstation and to acquire an assistive device.

Authorities working centrally with public procurement of ICT in Sweden or have recently made procurements with accessibility requirements included.

Public procurement coordination is performed by Statlig Inköpssamordning information can be found at www.avropa.nu with an English version at http://www.avropa.nu/templates/Page_9.aspx.

Verva, the Swedish Administrative Development Agency, is now responsible for negotiating framework agreements that can then be used by public authorities when purchasing ICTs. They are currently developing guidelines for the inclusion of *e*Accessibility in framework agreements. Verva has guidelines, the Swedish National Guidelines for Public Sector Web sites, which includes accessibility requirements.

Verva is also procuring telecommunications and IT equipment and services and the requirements to be used are set out in "Användbarhetskrav i ramavtalsupphandlingar". Most of the requirements are inspired by US Section 508, suitably adapted to European conditions.

Hjälpmedelsinstitutet (HI), the Swedish Institute of Assistive Technology (SIAT) procures communication aids for the county councils for the non-job-related aspects of people with disabilities.

HI procures:

- text telephones;
- video phones;
- total conversation units;
- hearing aids;
- hearing support equipment; and
- local communication aids.

Handisam, the Swedish Agency for Disability Policy Coordination is responsible for accessibility guidelines for accessible government bodies and has a role as general advisor for accessibility in Sweden. They have a comprehensive guideline, that details requirements on government related bodies, including procurements for many areas including ICT.

The Swedish National Post and Telecom Agency procures the following accessible communication services for people with disabilities:

- Text relay service.
- Video relay service.
- Speech-to-speech relay service.
- There are requirement specifications available for all these services.

The County council of Västra Götaland has performed an *e*Learning procurement with some accessibility requirements. It requires:

- following of the WAI guidelines;
- a minimum character size and specified font;
- a specified minimum contrast.

D.1.29 Switzerland

Since 1998, when the Federal Government first agreed on an Information Society Strategy, principles like "Access for all to ICT" and "Empowerment for All to use ICT" were promoted. No separate e-Inclusion strategy has been adopted so far.

Switzerland hosted the World Summit of the Information Society 2003 in Geneva (WSIS) where the global digital divide was discussed and agreed to the Geneva Declaration and Action Plan, as well as to the activities which followed the WSIS 2005 in Tunis.

Switzerland agreed to the Riga declaration in June 2006.

An e-Inclusion network composed of members from public administrations and NGOs (working mostly in the fields of cultural diversity, equality for the handicapped and with senior citizens) drafted a national e-Inclusion action plan, with concrete projects and initiatives in the context of e-Inclusion. It was presented to a wider public at a national e-Inclusion conference in November 2007.

The e-Inclusion network will continue and enlarge its activities in 2008, coordinating the implementation of the projects related to the e-Inclusion action plan and promoting new projects and initiatives.

e-Inclusion Strategy

A distinct e-Inclusion Strategy does not exist so far.

The Federal Council has revised, updated and augmented its 1998 Strategy: Strategy of the Federal Council for an Information Society in Switzerland, January 2006.

The Federal Council wishes to exploit the opportunities offered by the use of information and communication technologies ICT have the potential to extend the capabilities and communication possibilities of people, businesses and institutions.

One of the principles defined in the strategy includes.

Access for All: All the inhabitants of Switzerland are part of the information society and have equal and unimpeded access to ICT in order to make use of them in accordance with their private and professional needs. In the process, consideration is given to the needs of potentially disadvantaged groups within the population. In particular, the Confederation promotes measures to ensure gender equality.

Empowerment for All: Using ICT technology and content of is one of the basic skills of everyday life. Members of society "must" (see Foreword) be empowered to use the available media for searching and compiling information, for forming opinions and for independently expressing their own opinions. This entails lifelong learning for everyone.

The strategy is being implemented in the competent departments and offices. An Interdepartmental Information Society Committee (IISC) is coordinating the work in accordance with a mandate from the Federal Council.

In 2008, the implementation work related to the Strategy of the Federal Council will be discussed and the political decision taken on which further actions have to be taken to foster and promote the information society in Switzerland.

Important policies in place

Public-private Partnership School on the Net: <http://www.educa.ch/dyn/197368.asp>. The aim of the programme is to provide a suitable ICT-infrastructure to all schools in Switzerland and empower the teaching staff to use ICT in the classroom. The programme, which is jointly financed by public and private actors, has come to an end mid-2007. Different actors confirmed however their intention to continue their activities also in the forthcoming years in the context of this programme. The Public-private Partnership School on the Net has been considered a success by all parties involved.

e-Inclusion Legal Framework

Law in practice

Many of the issues which are presented under an e-Inclusion heading can be traced back to the Swiss Constitution which has been in force in its present form since 2000. In particular the right to equality for the handicapped, and linguistic and cultural diversity are mentioned.

The Federal Law on the Abolition of Discriminations concerning People with Disabilities has been in force since 1st January 2004. The law and its accompanying ordinances treat, among other items, the accessibility of public Web sites.

In 2004 the Federal Council installed a Federal Bureau for the Equality of People with Disabilities. Among other tasks it supervises the implementation of the Federal Law mentioned above.

The Federal Law on the Principle of Transparency in the Administration has been in force since July 2006. It grants every citizen access to documents produced in public administrations on demand. The right to access can be restricted if e.g. security or data protection issues are involved.

The Universal Service Licence under the Telecommunications Law accorded to Swisscom Fixnet SA for the period of 2003-2007 fixes a certain quality of connection (analogue and ISDN) to be available for every household in Switzerland at an affordable price. The Universal Service Licence is under revision at present and will then, among other changes, include broadband access instead of ISDN. It will come into force on 1st January 2008. The public invitation to tender for the licence has been launched mid-2007.

D.1.30 UK

National Legislation/ Public Policy/Action Plans

The Disability Discrimination Act (DDA) 1995 aims to end the discrimination that many disabled people face. This Act has been significantly extended, including by the Disability Discrimination Act 2005. It now gives disabled people rights in the areas of:

- employment;
- education;
- access to goods, facilities and services;
- buying or renting land or property, including making it easier for disabled people to rent property and for tenants to make disability-related adaptations.

In March 2005 the UK Government Cabinet Office published the e-Government Interoperability Framework which sets out the government's technical policies and specifications for achieving interoperability and Information and Communication Technology (ICT) systems coherence across the public sector to provide better public services tailored to the needs of the citizen and business. The e-GIF defines the essential pre-requisites for joined-up and web-enabled government. Adherence is mandatory across the public sector.

"UK Government" includes central government departments and their agencies, local government, and the wider public sector, e.g. non-departmental public bodies (NDPBs) and the National Health Service (NHS). The devolved administrations (Scotland, Wales, Northern Ireland) are covered through the mechanisms described in the document.

Accessibility is specifically addressed in clauses:

- 2.23: Government information systems will be designed to meet UK legislation and to support channels that provide accessibility for disabled people, members of ethnic minorities and those at risk of social/digital exclusion.
- 2.34: Personalization technologies may also be used to support groups such as ethnic minorities and visually impaired or blind people (e.g. by using text translation, larger fonts and graphics, audio, etc., via a transcoder). Such aspects are covered by the "Guidelines for UK government Web sites".

The products and services (e-services and channels) addressed are referenced on clause 2.36:

- Computer workstations.
- Other channels, such as kiosks, PDAs, smart phones and iDTV.
- Mobile phones.
- Video Conferencing Systems over IP.

- Voice over IP (VoIP) systems.
- Smart cards.

Compliance is by self regulation and testing and is the responsibility of the "systems senior owner". Compliance is one of the criteria to be used when deciding on the release of funding. Non-compliance will result in loss of project approval or funding.

e-GIF defines the technical policies and specifications governing information flows across government and the public sector. They cover interconnectivity, data integration, e-services access and content management. The e-GIF contains the high level policy statements, management, implementation and compliance regimes, whilst technical policies and specifications are contained in the Technical Standards Catalogue (TSC).

The Technical Standards Catalogue (TSC), currently at version 6.2 defines the minimum set of specifications that conform to the technical policies as defined in e-GIF. It lists internet, web specifications and standards to be used in conjunction with the e-GIF. International standards are given preference over European standards, which in turn have preference over UK standards.

In clause 3 (Issues under consideration) of current draft of the TSC (V6.2, September 2005) references are made to proposed new policies for accessibility and usability. The technical policies for providing accessibility and usability are:

- Government information systems will be designed to meet UK legislation and to support channels that provide accessibility for disabled people.
- Government information systems will be designed to meet the requirements of the Disability Discrimination Act 1995 (DDA 1995) and the Disability Discrimination Act 2005 (DDA 2005). The DDAs place a legal obligation on a department that offers a service to the public to make all reasonable adjustments where services would otherwise be impossible or unreasonably difficult for disabled people to use.
- Government information systems will be designed so that anyone with an impairment that affects their use of this equipment is not disadvantaged or excluded by these systems.
- Designers and developers of Government information systems are to be fully aware of, and complying with a set of technical standards for accessibility and usability specified in the technical standards catalogue.

In clause 7, table 14 lists "Specifications for accessibility and usability". The table includes ISO/TS 16071:2003 [i.102] Ergonomics of human-system interaction - Guidance on accessibility for human-computer interfaces, several W3C WCAG Guidelines and ISO/IEC Guide 71 [i.104].

UK Government includes central government departments and their agencies, local government, and the wider public sector, e.g. non-departmental public bodies (NDPBs) and the National Health Service (NHS). The devolved administrations (Scotland, Wales, Northern Ireland) are covered through the mechanisms described in the document.

Since December 2006, there has been a legal duty on all public sector organizations to promote equality of opportunity for disabled people through the Disability Equality Duty (DED) which covers the full range of what public sector organizations do - including policy making and services that are delivered to the public.

A Code of Practice explicitly sets out the terms public authorities are required to include in external contracts to ensure the inclusion of disability considerations and gives examples of the procurement of new IT systems and the re- design of a department's Web site by external contractors as services to which the procurement policy applies under the DED. There is an explicit reference to the need to ensure that Web sites are fully accessible to disabled people.

The Office of Government Commerce (OGC) guidance "Social Issues in Purchasing" states that whenever public authorities purchase goods that may be used by disabled people then this should be appropriately reflected in the specification. For example, it will generally be advisable for public authorities to assume that their employees and potential users of equipment are likely to include people with a range of disabilities, and so the specification should state that the goods to be supplied should be useable by disabled people. This could include IT equipment and software.

Public Web Sites

The Disability Discrimination Act 1995 (DDA) contains provisions to prevent discrimination against disabled people by service providers and requires service providers to make (reasonable adjustments in order to make) services accessible to disabled people. The Code of Practice to part III of the Act (A practical guide on how the DDA applies) gives the example of a Web site as a service that is covered by the Act.

The DDA specifically refers to communication and information services as being covered by the provisions and the Code of Practice to the Act refers to telecommunications and broadcasting organizations as being service providers covered by the Act.

While primarily a "horizontal" type of legislation, it has reportedly stimulated some public institutions to address the accessibility of their web-based services as well as helping to drive some of the debate on web accessibility and has raised the awareness of the issue.

The Cabinet Office Guidelines for UK Government Web sites May 2002 (Updated 2003) are a best practice framework for guidance on the management of UK government Web sites that has been prepared by the Government Cabinet Office. They set targets for public Web sites of priority AA of version 1 of W3C guidelines. The guidelines are not mandatory and try to enable interoperability and accessibility at the same time. These guidelines have been to date the main direct measure to encourage accessibility of public Web sites. They cover central and local government Web sites.

Central Office of Information (COI) guidelines on the naming and registering of Web sites (July 2007) include accessibility rules and penalties for UK government ecommunicators, Internet Service Providers and those interested in registering government domain names. It states.

"The conditions of use for a .gov.uk name:

- 77. The applications (Web, email, etc.) using a .gov.uk domain name "must" (see Foreword) comply with current UK legislation and support channels that provide accessibility for disabled people, members of ethnic minorities and those at risk of social/digital exclusion. Legislation includes Copyright, Data Protection Act, Disability Discrimination Act and Welsh Language Act.
- 78. The minimum level of accessibility for government Web sites is Level Double-A of the W3C guidelines. Web sites "must" (see Foreword) satisfy this requirement by December 2008, as set out in Delivering inclusive Web sites (TG102).
- 88. When your Web site goes live you "must" (see Foreword) inform the gov.uk Naming and Approvals Committee directly by email to naming@coi.gsi.gov.uk confirming:
 - a) the .gov.uk URL of your home page;
 - b) the date that it went live as a public Web site; and
 - c) confirm that your Web site complies with and will continue to comply with the accessibility recommendation for public sector sites, that is, W3C WAI Level AA.

Failure to comply with this may result in the name being withdrawn".

"Withdrawal of a .gov.uk name:

- 91. The following summarizes conditions that may result in withdrawal of a .gov.uk domain name.
 - a) Persistent failure to maintain an accessible and functional Web site. For example, obsolete and de-commissioned domains - where there is persistent delivery of, for example, a code 404 page.
 - b) Persistent failure to meet the minimum technical standards for government Web sites, including accessibility and coding standards."

Telecommunications

Under the Communications Act 2003, the following obligations are applied through the Universal Service Obligation:

- funding of text relay service (applies to BT only by means of a specific universal service condition);
- access to text relay service and rebate scheme (all providers through the general conditions);
- certain requirements to make all public payphones accessible to customers with disabilities (all public payphone providers);
- at least 75 % of public payphones provided in the UK, and 50 % of those provided in Hull "must" (see Foreword) be accessible by reasonable means to customers in wheelchairs;

- at least 70 % of all public payphones "must" (see Foreword) incorporate additional receiving amplification (note that there is a distinction between public call booths and "managed" payphones, i.e. on private sites) - it is proposed to increase this and also restore a requirement for inductive coupling;
- directory information free of charge and through connection (all providers);
- bills/contract provision in Braille/large print (all providers);
- priority fault repair (all providers);
- safeguard third party bill management (all providers).

Other National Standards

(BS) PAS 78 Guide to good practice in commissioning accessible Web sites states in its scope that This Publicly Available Specification outlines good practice in commissioning Web sites that are accessible to and usable by disabled people.

It gives recommendations for the management of the process and guidance on upholding existing W3C guidelines and specifications, involving disabled people in the development process and using the current software-based compliance testing tools that can assist with this.

It is applicable to all public and private organizations that wish to observe good practice under the existing voluntary guidelines and the relevant legislation on this subject, and is intended for use by those responsible for commissioning public-facing Web sites and Web-based services states in its scope that "Though the inclusive approach ultimately encompasses the whole of business and management, this part of BS 7000 provides guidance on managing inclusive design at both organization and project levels. It seeks to link design thinking with the core concerns of organizations in other established business disciplines".

D.2 Other national requirements

D.2.1 Australia

Australian Commonwealth departments and agencies are required by the Disability Discrimination Act 1992 to ensure that online information and services are accessible by people with disabilities.

Procurement Support

See the checklists in the final paragraph of the **The Government of Western Australia** section (next).

Public Web sites

For the **Commonwealth Government**, see under National Legislation/ Public Policy/Action Plans.

Clause 4 of **The Government of Western Australia**, Department of the Premier and Cabinet, Guidelines for State Government Web sites (Version 2.1, 14/06/2006) addresses Accessibility (recommendations).

NOTE: These guidelines appear to apply only to Western Australia. Guidelines prepared by the state of Victoria and ACT are referenced within the document.

The WCAG 1.0(?) from the WAI of W3C are recommended, with references to the Australian Human Rights and Equal Opportunity Commission and Disability Discrimination Act 1992.

The three priority levels of WGAG are explained and for Western Australia Web sites the "W3C Accessibility Guidelines "must" (see Foreword) be applied when developing a new Web site":

- It is recommended that Western Australia government Web sites are *at the very least* Priority 1 accessible.
- It is recommended that Western Australia government Web sites *should meet* Priority 2.
- Priority 3 improves access to Web documents *for all user groups* and is the optimum strategy for Western Australia government Web sites.

- If utilizing commercial developers, it is advisable to ensure Priority 3 or Priority 2 are included as well as Priority 1 as a requirement in any tenders or contracts. However, for existing Web sites, a business case should be undertaken to evaluate the cost of repair versus the cost of rebuilding to reach compliance.
- When correcting existing Web sites for compliance, it is more efficient to fix all issues to ensure compliance with either: Priority 1, Priority 2 or Priority 3, within a particular page/section, than working through the issues in W3C priority order.

Validation of accessibility (user feedback and testing) is recommended plus a clause on FAQs. A simple checklist is also provided, with the following questions:

- Ensure the Web site complies with W3C Web Content Accessibility Guidelines.
- Does the Web site adhere to Priority 1 of the Guidelines, which "must" (see Foreword) be addressed as a basic requirement of Web accessibility?
- Does the Web site adhere to Priority 2 of the Guidelines, which should be addressed as a basic requirement of Web accessibility?
- Does the Web site adhere to Priority 3 of the Guidelines, which may be addressed as a discretionary requirement of Web accessibility?
- Are automated tools and a human review used to periodically validate the Web site's accessibility?

Telecommunications

The Telecommunications (Equipment for the Disabled) Regulations (1998) legislation contains three parts:

- Part 1 contains Preliminary Information.
- Part 2 addresses the Universal Service Obligation and the Supply of standard telephone services.

In Regulation 4 (Universal service regime):

- (1) Part 7 of the Act establishes a universal service regime for Australian telecommunications.
- (2) Under subsection 149 (1) of the Act, the Universal Service Obligation is the obligation:
 - (a) to ensure that standard telephone services are reasonably accessible to all people in Australia on an equitable basis, wherever they reside or carry on business; and
 - (b) to ensure that payphones are reasonably accessible to all people in Australia on an equitable basis, wherever they reside or carry on business; and
 - (c) to ensure that prescribed carriage services are reasonably accessible to all people in Australia on an equitable basis, wherever they reside or carry on business.
- (3) To the extent necessary to achieve this obligation, it is part of the universal service obligation:
 - (a) to supply standard telephone services to people in Australia on request; and
 - (b) to supply, install and maintain payphones in Australia; and
 - (c) to supply prescribed carriage services to people in Australia on request.

In Regulation 5 (Supply of standard telephone services):

- Under subsection 142 (2) of the Act, a reference in Part 7 of the Act to the supply of a standard telephone service includes a reference to the supply, to a person with a disability, of:
 - (a) customer equipment of a kind specified in the regulations; and
 - (b) other goods of a kind specified in the regulations; and
 - (c) services of a kind specified in the regulations;

where the equipment, goods or services, as the case may be, are for use in connection with the standard telephone service.

- Part 3 addresses Customer Equipment.

In Regulation 7 (Customer Equipment communication using the National Relay Service):

(1) The National Relay Service is described in Part 7A of the Act as a service that:

- (a) provides persons who are deaf, or who have a hearing and/or speech impairment, with access to a standard telephone service on terms, and in circumstances, that are comparable to those on which other Australians have access to a standard telephone service; and
- (b) is provided by a person under a contract with the Commonwealth.

Note: There have been previous versions of a National Relay Service conducted for similar purposes.

(2) For paragraph 142 (2) (a) of the Act, the following customer equipment, that allows a person with a disability to have access to the National Relay Service, to communicate in spite of the disability, is specified:

- (a) equipment which facilitates text to text communication through the telephone network (for example, a teletypewriter (TTY));
- (b) equipment which facilitates data transmission over the telecommunications network (for example, a modem);
- (c) equipment which facilitates the transmission of data over the telecommunications network and its transfer into braille (for example, a telebraille).

(3) However, the kinds of equipment are specified only for circumstances where it is possible to supply an item of the equipment without imposing unjustifiable hardship on the person that would otherwise be required to supply the item.

Regulation 8 (Other Customer Equipment) states:

(1) For paragraph 142 (2) (a) of the Act, the following customer equipment, that allows a person with a disability to have access to a standard telephone service, to communicate effectively with a person without a disability, and in spite of the disability, is specified:

- (a) a standard rental telephone handset which includes one-touch dial memory, a lightweight handset and a built-in hearing aid coupler (for example, the Touchfone 400);
- (b) a telephone which amplifies the incoming caller's voice to suit the listener (for example, the Touchfone 400 volume control);
- (c) a telephone which amplifies the speaker's voice, allowing the speaker to adjust the speech level to suit the listener (for example, the Touchfone 200 voice aid);
- (d) a handsfree telephone for a person who cannot hold a telephone handset (for example, the Access 35 Handsfree Telephone or the T200 Executive);
- (e) an ancillary telecommunications product which has adjustable volume, tone and pitch controls to assist the user to hear the telephone ringing (for example, an extension ringer or general purpose alarm);
- (f) an ancillary telecommunications product which is a visual alert that there is an incoming call (for example, a visual signal alert);
- (g) an ancillary telecommunications product which allows the connection of a second piece of equipment (for example, a visual signal alert) in parallel with the existing telephone (for example, a double adaptor);
- (h) an ancillary telecommunications product in which the telephone handset is cradled, providing handsfree operation (for example, a Holdaphone);

- (i) a telephone adapting device which allows a person with a cochlear implant to have access to the standard telephone service (for example, a TLP-102T, or a TRP-100T).
- (2) However, the kinds of equipment are specified only for circumstances where it is possible to supply an item of the equipment without imposing unjustifiable hardship on the person that would otherwise be required to supply the item.

National legislation/ Public policy/Action plans

The Disability Discrimination Act 1992 (the "DDA") aims as far as possible to remove barriers preventing people with disabilities participating equally in all areas of life. Section 31 of the DDA allows the Federal Attorney-General to make disability standards about employment. The Attorney-General makes these Standards under that power and may review them within 5 years of being approved or given effect by the Federal Parliament.

These Standards are about removing discrimination from employment and do not deal with other aspects of discrimination such as providing goods and services to the public in a nondiscriminatory way.

Employers who do not comply with these Standards will be acting unlawfully under the DDA. Employers who do comply, may use their compliance as a defence if an employee makes a complaint of disability discrimination against them.

On the (Australian) Human Rights and Equal Opportunity Commission (HREOC) Web site the World Wide Web Access: Disability Discrimination Act Advisory Notes, Version 3.2, August 2002, are available which state:

- **Purpose and Status of These Notes.** These advisory notes are issued by the Australian Human Rights and Equal Opportunity Commission ("HREOC") under section 67(1)(k) of the Disability Discrimination Act 1992 ("the DDA"), which authorizes HREOC to issue guidelines for the purpose of avoiding discrimination. Note that "Notes" are advisory guidelines/recommendations for employment..."These advisory notes are intended to assist people and organizations involved in developing or modifying Worldwide Web pages, by making clearer what the requirements of the DDA are in this area, and how compliance with them can be achieved. These notes do not have direct legal force, nor do they substitute for the provisions of the DDA itself".
- **(2.2) Equal Access is Required by Law.** The provision of information and online services through the Worldwide Web is a service covered by the DDA. Equal access for people with a disability in this area is required by the DDA where it can reasonably be provided. This requirement applies to any individual or organization developing a Worldwide Web page in Australia, or placing or maintaining a Web page on an Australian server. This includes pages developed or maintained for purposes relating to employment; education; provision of services including professional services, banking, insurance or financial services, entertainment or recreation, telecommunications services, public transport services, or government services; sale or rental of real estate; sport; activities of voluntary associations; or administration of Commonwealth laws or programs. All these are areas specifically covered by the DDA. In addition to these specific areas, provision of any other information or other goods, services or facilities through the Internet is in itself a service, and as such, discrimination in the provision of this service is covered by the DDA. The DDA applies to services whether provided for payment or not.
- **(3.3) Web Content Accessibility Guidelines.** The WCAG is rapidly gaining acceptance around the world as the standard for Web site accessibility. In June 2000, the Online Council, representing the Commonwealth and all State and Territory governments, agreed that the Worldwide Web Consortium's Web Content Accessibility Guidelines 1.0 will be the common best practice standard for all Australian government Web sites.

National standards

The **Revised draft DDA Disability Standards: Employment** are not "technical" standards for ICT, but provide guidance for employment. They were prepared by the (Australian) **Human Rights and Equal Opportunity Commission** in a process involving representatives of industry, people with disabilities and government from 1994 to 1998. These draft standards are not currently in force or proceeding towards authorization, as consensus for adoption of regulatory standards in this area is lacking.

The purpose of these Standards is to assist employers in complying with the DDA. Their purpose is to:

- explain rights and responsibilities;
- clarify key concepts for making decisions under the DDA, such as discrimination, harassment, inherent requirements of the job, appropriate adjustments and unjustifiable hardship;

- provide greater certainty for resolving workplace disputes;
- explain factors that courts and tribunals will take into account in deciding a complaint about disability discrimination in employment; and
- explain how the DDA relates to other laws regulating employment.

D.2.2 Canada

Canada was the first country to mandate 100 % captioning of the broadcast day as well as the first one to adopt the WAI Web Content Accessibility Guidelines as governmental policy through the Government of Canada's "Common Look and Feel Policy". However, Canada does not have a specific federal legislation regulating accessible procurement but discrimination on grounds of disability is prohibited both by the Canadian Charter of Rights and Freedoms (available at: www.laws.justice.gc.ca/en/charter/index.html) and by the Human Rights Act 1985 (available at: www.lois.justice.gc.ca/en/H-6/243963.html).

Ontario has however, a more specific legislation on accessible procurement. Article 5 of the Ontarians with Disabilities Act 2001 (available at: www.e-laws.gov.on.ca/DBLaws/Statutes/English/01o32_e.htm) states: "In deciding to purchase goods or services through the procurement process for the use of itself, its employees or the public, the Government of Ontario "shall" (see Foreword) have regard to the accessibility for persons with disabilities to the goods or services." The requirement to "have regard to" accessibility is significantly weaker than the United States requirement for accessible procurement. However, in general, the attention given to accessibility in Canada is high. This is also reflected in the national legislation above and the development of the Accessible Product Toolkit (APT) which does fit in the overall atmosphere related to accessibility and its accessibility recommendations are based on Section 508 of U.S. provisions.

Some Federal departments require purchasers or procurement officers to use the APT Toolkit (<http://www.apr.gc.ca>). Even for those who are under no obligation to use this Web site, it is recommended as a way to ensure supplier contracts for accessible products and services contain accurate and appropriate guidelines. This will help Federal Government of Canada purchasers meet their obligations under the Treasury Board of Canada Secretariat's "Policy on the Duty to Accommodate Persons with Disabilities in the Federal Public Service". However, any policy issued by the Canadian Government has no legal binding requirements on government and/or business.

The Canadian Standards Association has developed voluntary industry driven standards on:

- Accessible Design for the Built Environment.
- Design for Ageing.
- Accessible Banking Machines.
- Accessible Design for Self Service Interactive Devices.
- Adopted ISO Guides 50 and 71.

However, the information under the "requirements" links in the APT will often include standards that are from U.S. or international sources. The standards to which most of the products requirements lead are:

- Section 508 Information, Documentation, Support Standards.
- Section 508 Functional Standards.
- Section 508 Technical Standards.

Detailed information on these standards exists at:

<http://www.section508.gov/index.cfm?FuseAction=Content&ID=11#web>.

D.2.3 Japan

In 1995, the Japanese government announced guidelines for the criteria to be used in the general evaluation of contracts and tenders for the supply of computers and services to the government as an agreement among agencies and bureaus. A statement in the announcement reads: *"Items to be evaluated shall" (see Foreword) be established in conformity with international and national standards.*" Therefore, products and services supplied to the government "must" (see Foreword) have been designed with consideration for ICT accessibility determined in the series of existing standards. One example is the Ministry of Economy, Trade and Industry's public procurement announcement of its information system. The announcement requests that tenders explain how the national accessibility standards are met.

Public procurement

Article 10 of the Persons with Disabilities Fundamental Law has the title the "Realization of barrier free information". The Article requests that: "States and local authorities shall" (see Foreword) undertake necessary measures to spread electronic computers and their related devices and other information and communications equipment which are easy to use for people with disabilities, to promote convenience for people with disabilities in their use of telecommunications and broadcasting services, and to equip facilities which provide information for people with disabilities, in order that they can make use of information in an efficient manner and express their own will".

Procurement support

Web site development for central and local governments is usually contracted to system integrators. In order to get contracts, system integrators develop and publish, free of charge, Web accessibility checking tools. In addition, system integrators develop helper tools, e.g. voice synthesizer software and/or software to change colour to negative polarity colour scheme, installed in governmental Web sites.

Public Web sites

In Japan, there is a public procurement system for accessible Web sites in the central government. Two laws, the Basic Law on the Formation of an Advanced Information and Telecommunications Network Society enacted in 2000 and the Persons with Disabilities Fundamental Law amended in 2004 mention the necessity of accessibility in governmental Web sites (see Article 10, above). Under the two basic laws, the government has developed Basic Plans and annual implementation plans in which target dates are determined.

One example is an e-Government system which is under-development will increase information provisioning in accessible format in the fiscal year 2006.

The Persons with Disabilities Fundamental Law also requests local governments to develop local basic plans. Many local basic plans include a schedule to develop accessible Web sites.

One interesting point is that the laws do not impose punishment. The "greying" of Japanese society has triggered many of these movements.

National legislation/Public policy/Action plans

Japan's central ministries, government offices and local governments are leading the way in considering Web accessibility.

The Government Action Plan for Persons with Disabilities in Japan was formulated by the Headquarters for Promoting the Welfare of Disabled Persons in December 1995. The Action Plan was a seven-year strategy from fiscal years 1996 to 2002 and included not only health and welfare measures, but also measures for people with disabilities as a whole, covering housing, education, employment, communications and broadcasting. There is specific reference to promoting on a priority basis a barrier-free society.

The Government is active in defining technical standards for infrastructure, but financing programs between business organizations and various levels of government and representative consumers are myriad and complex. Essentially the government has encouraged much more flexibility and private initiative in this area to develop an active and competitive market.

An example for one of these services is that equipment used on a daily basis, such as personal computers, printers, and AV equipment, is being equipped with a digital communication interface. A study being carried out on a home network system that would link not only these devices but also home appliances.

D.2.4 United States

In the USA, the requirements for accessibility are set out on the Code of Federal Regulations (in CFR 36, Part 1194). These are currently being reviewed and updated.

Annex E:

Standards with accessibility requirements

E.1 International standards

E.1.1 Published standards

ATAG 1.0: Authoring Tool Accessibility Guidelines 1.0 - W3C Recommendation 3 February 2000

This specification provides guidelines for Web authoring tool developers. Its purpose is two-fold: to assist developers in designing authoring tools that produce accessible Web content and to assist developers in creating an accessible authoring interface

ISO/IEC Guide 71:2001: Guidelines for standards developers to address the needs of older persons and persons with disabilities

This document sets out a useful checklist for standards developers of those factors that should be considered to ensure that standards take into account the needs of elderly and disabled users. Some simple recommendations are provided.

ISO/FDIS 9241-20: Accessibility guidelines for information communication equipment and services

This standard will address general guidelines for planning, designing and developing ICT products and services to ensure their accessibility for people with the widest possible range of abilities including older persons and persons with permanent or temporary disabilities (referred to as "people with special requirements"). This Standard is also intended to provide general guidelines for evaluating and purchasing ICT products and services. Information communication equipment and services include hardware and software aspects of information processing equipment, electrical communication facilities, office machines, the Internet, and others. It does not include buildings, offices or transportation.

ISO EN 9241-151:2008: Ergonomic design of World Wide Web interfaces

This International Standard will provide recommendations and guidelines for the user-centred design of World Wide Web user interfaces (in short: Web user interfaces) to increase usability. Web user interfaces address either all Internet users or closed user groups such as the members of an organization (intranet), customers and/or suppliers of a company (extranet) or other specific communities of users.

ISO EN 9241-171:2008: Guidance on software accessibility

This part of ISO 9241 will provide requirements and recommendations for the design of accessible software for use at work, in the home, in education and in public places. It covers issues associated with designing accessible software for people with the widest range of physical, sensory and cognitive abilities, including those who are temporarily disabled, and the elderly. This part of ISO 9241 will address software considerations for accessibility that complement general design for usability covered by ISO 9241 part 110, ISO 9241 parts 11 to 17, ISO 14915 parts 1 to 3 and ISO 13407.

This part of ISO 9241 will be applicable to the accessibility of interactive systems. It addresses a wide range of software (e.g. office applications, Web sites, learning support systems and library systems). It does not provide recommendations for the design of hardware. When published it will replace ISO TS 16071: 2003.

ISO 9241-400: Ergonomics of human-system interaction -Part 400: Principles and requirements for physical input devices

This part of ISO 9241 gives guidelines for physical input devices for interactive systems. It provides guidance based on ergonomic factors for the following input devices: keyboards, mice, pucks, joysticks, trackballs, trackpads, tablets and overlays, touch sensitive screens, styli, light pens, voice controlled devices, and gesture controlled devices. This part of ISO 9241 defines and formulates ergonomic principles valid for the design and use of input devices.

This part of ISO 9241 provides useful definitions of relevant terms for the entire 400 series of ISO 9241.

Since this document defines generic ergonomic principles only, there are no performance criteria given.

ISO TS 16071:2003 - Ergonomics of human-system interaction - Guidance on accessibility for human-computer interfaces

This Technical Specification (TS) provides guidance on the design of accessible (work, home, education) software. It covers issues associated with designing accessible software for people with the widest range of visual, hearing, motor and cognitive abilities, including those who are elderly and temporarily disabled. This TS addresses software considerations for accessibility that complement general design for usability covered by ISO 9241-10 [i.82] to ISO 9241-17 and ISO 13407 [i.97]. It will be replaced by ISO EN 9241-171 [i.88] when that document is published in late 2008.

This TS addresses the accessibility of interactive systems. It addresses a wide range of solutions, including office applications, Web pages and multimedia. It does not provide recommendations for the design of hardware.

This TS promotes increased usability of systems in combination with assistive technologies, when they are required. It does not cover the behaviour or requirements of assistive technologies themselves (including assistive software).

ISO/IEC TR 19765:2007: Information Technology - Survey of icons and symbols that provide access to functions and facilities to improve the use of IT products by the elderly and persons with disabilities

ISO/IEC TR 19765:2007 presents icons and symbols currently used to provide access to facilities and tools to support the needs of elderly and disabled users of Information Technology (IT) products, and could form the basis of a future International Standard which would provide a recommended collection of icons and symbols.

These icons and symbols have been collected from a variety of sources including other standards, contemporary software products, Web sites and hardware devices. These sources are cross-referenced and listed in a bibliography.

The icons and symbols presented in ISO/IEC TR 19765:2007 are categorized by modality and method of use.

ISO/IEC TR 19766:2007: Information Technology - Guidelines for the design of icons and symbols accessible to all users, including the elderly and persons with disabilities

ISO/IEC TR 19766:2007 provides recommendations relating to the design of icons to support accessibility by the elderly and people with disabilities. These recommendations assist accessible implementation of all icons for users. While these recommendations were developed to meet the needs of the elderly and people with disabilities, they can also provide greater accessibility to a wider range of users in a variety of different contexts.

This TR introduces a set of attributes and operations that can be implemented as features of graphic icons to make the functionality of these icons accessible to the widest possible range of users. Textual attributes are emphasized because they can be rendered in various alternate modalities. ISO/IEC 11581-1 provides guidance on the graphic aspects of icons. Specific renderings of these attributes (or of icons in general) are not dealt with as part of ISO/IEC TR 19766:2007

ISO/IEC 24752:2008: Universal Remote Console

This multi-part standard will facilitate operation of information and electronic products through remote and alternative interfaces and intelligent agents.

Part 1: Framework: The purpose of part 1 is to provide a framework of components that combine to enable remote User Interfaces and remote control of network-accessible electronic devices and services through a Universal Remote Console (URC). Part 1 provides an overview of the URC framework and its components.

Part 2: User Interface Socket Description: A User Interface Socket is an abstract concept that describes the functionality and state of a device or service (target) in a machine interpretable manner. The purpose of part 2 is to define an extensible Markup Language (XML) based language for describing a User Interface Socket. The purpose of the User Interface Socket is to expose the relevant information about a Target so that a user can perceive its state and operate it. This includes data presented to the user, variables that can be manipulated by the user, commands that the user can activate, and exceptions that the user is notified about. The User Interface Socket Specification is applicable to the construction or customization of user interfaces.

Part 3: Presentation Template: The purpose of part 3 is to define a language (Presentation Template Markup Language) for describing modality-independent user interface specifications, or *Presentation Templates* associated with a User Interface Socket Description, as defined by ISO/IEC 24752-2. The purpose of a Presentation Template is to provide the URC with hints as to how to build a usable and consistent user interface for a Target device or service that is described in a User Interface Socket Description as referenced above. The hints are of an abstract nature, and are intended to apply to any delivery context. These hints primarily provide information on structuring, grouping and linearization of the Socket elements. Elements within a Presentation Template may be referenced by Atomic Resources whose format is given by ISO/IEC 24752-5. Taken together, a Presentation Template, Socket Description, and appropriate Atomic Resources can be used to construct a user interface in any modality (e.g. visual, auditory, tactile, multimodal), through which a user can access and control a Target.

Part 4: Target Description: The purpose of part 4 is to define an extensible Markup Language (XML) based language for the description of Targets and their Sockets, as used within the URC framework for discovery purposes. A document conforming to this language is a *Target Description*.

Part 5: Resource Description: The purpose of part 5 is to define a syntax for describing Atomic Resources, Resource Sheets, User Interface Implementation Descriptions, Resource Services, and Resource Directories relevant to the user interface of a device or service ("Target").

ISO/IEC 26514:2008: Software and systems engineering - Requirements for designers and developers of user documentation

This standard will support the interests of software users in consistent, complete, accurate, and usable documentation. It includes both approaches to standardization:

- a) process standards, which specify the way in which documentation products are to be developed; and
- b) documentation product standards, which specify the characteristics and functional requirements of the documentation. It is addressed to designers and developers of software user documentation.

ITU-T Recommendation E.134 (03/1993): Human factors aspects of public terminals: generic operating procedures

A brief document setting out a basic sequence of user actions for operating a public terminal. It defines when payment should occur and recommends a "next" call facility.

ITU-T Recommendation E.135 (10/1995): Human factors aspects of public telecommunications terminals for people with disabilities

Provides advice for the design of public terminals to assist disabled users to carry out the steps described in E.134.

ITU-T Recommendation E.136 (05/1997): Specification for tactile identifier for use with telecommunication cards

A document recommending the tactile identifier specified in ETS 300 767.

ITU-T Recommendation E.137 (05/1997): User instructions for payphones

Gives advice for the design of user instructions intended to be placed on or near payphones. It is based on and extends the advice given in ETR 167.

ITU-T Recommendation E.138 (06/2002+Erratum 02/2003): Human factors aspects of public telephones to improve their usability for older people

Describes characteristics of older people and their likely handicaps and gives a number of recommendations covering all aspects of the Man/Machine interface.

ITU-T Recommendation F.902 (02/1995): Interactive services design guidelines

Provides broad guidance in general terms for the design of the basic features of interactive services using DTMF input and voice response.

ITU-T Recommendation P.11 (03/1993): Effect of transmission impairments

Provides a brief tutorial on the effect of various impairments on the customer opinion of transmission quality.

ITU-T Recommendation P.79 (09/1999+Erratum 05/2000+Corr 10/2000+Corr 02/2001+Corr 01/2005): Measurements related to speech loudness; Calculation of loudness ratings for telephone sets

Gives details of an algorithm for calculating loudness ratings which takes into account the various effects present in human speaking and hearing. These algorithms provide the basis for modern objective testing.

ITU-T Recommendation P.85 (06/1994): A method for the subjective performance assessment of the quality of speech voice output devices

Provides a method for the evaluation of the speech output of stored voice systems. Experimental design is treated and recommendations are given for the analysis and reporting of the results.

ITU-T Recommendation P.370 (08/1996): Coupling hearing aids to telephone sets

Gives figures for the sensitivity and frequency characteristics of coupling coils intended to couple to hearing aids equipped with induction pick-up coils. An annex describes measurement methods.

The provision of additional receive amplification and electrical coupling are also dealt with.

ITU-T Recommendation P.910 (09/1999): Subjective video quality assessment methods for multimedia applications

Describes subjective assessment methods for evaluating the on-way overall video quality for multimedia applications such as videoconferencing, storage and retrieval applications, tele-medical applications, etc.

ITU-T Recommendation P.911 (12/1998+Corr 09/1999): Subjective audiovisual quality assessment methods for multimedia applications

Describes subjective assessment methods for evaluating the on-way overall audiovisual quality for multimedia applications such as videoconferencing, storage and retrieval applications, tele-medical applications, etc.

ITU-T Recommendation P.930 (08/1996): Principles of a reference impairment system for video

Describes an adjustable video reference system that can be used to generate the reference systems necessary to characterize the subjective picture quality of video produced by compressed digital video systems. Various picture degradations are described.

ITU-T Recommendation V.21: 300 Bits Per Second Duplex Modem standardized for use in the general switched telephone network

ITU-T Recommendation V.18: Operational and interworking requirements for DCEs operating in the text telephone mode

ITU-T Series H: Supplement 1: Application profile - Sign language and lip-reading real-time conversation using low bit-rate video communication.

UAAG 1.0: User Agent Accessibility Guidelines 1.0 - W3C Recommendation 17 December 2002

This document provides guidelines for designing user agents that lower barriers to Web accessibility for people with disabilities (visual, hearing, physical, cognitive, and neurological). User agents include HTML browsers and other types of software that retrieve and render Web content.

WCAG 1.0: Web Content Accessibility Guidelines 1.0 - W3C Recommendation 5-May-1999

These guidelines explain how to make Web content accessible to people with disabilities. The guidelines are intended for all *Web content developers* (page authors and site designers) and for developers of *authoring tools*.

E.1.2 Standards under development

ATAG 2.0: Authoring Tool Accessibility Guidelines 2.0 W3C Working Draft 10 March 2008

This specification provides guidelines for designing Web content authoring tools that are more accessible for people with disabilities. An authoring tool that conforms to these guidelines will promote accessibility by providing an accessible user interface to authors with disabilities as well as enabling, supporting, and promoting the production of accessible Web content by all authors.

IEC 60118-1 ED. 3.1 B:1999: Hearing aids - Part 1: Hearing aids with induction pick-up coil input

This document specifies a method of determining the electroacoustic performance of hearing aids fitted with an induction pick-up coil and used in an audio-frequency magnetic field. The induction pick-up performance is measured in a loop simulating conditions of use in room applications.

ISO 9241-129: Guidance on software individualization

This International standard will address ergonomic requirements and recommendations for individualization of human-computer interactions and will provide support for the development, evaluation, and procurement of user interfaces that incorporate individualization

ISO 9241-910: Framework for tactile and haptic interactions

This standard will provide a framework for specifying, designing and evaluating various aspects of. It will also contain general information about tactile and haptic interactions.

ISO 9241-920: Guidance on tactile and haptic interactions

This standard will address ergonomic requirements and recommendations for haptic and tactile hardware and software interactions. It will provide guidance related to the design and evaluation of hardware, software and combinations of hardware and software interactions.

ISO/TR 22411: Ergonomic data and ergonomic guidelines for the application of ISO/IEC Guide 71 to products and services to address the needs of older persons and persons with disabilities

The TR aims will provide human ability data and design considerations that are useful for standards developers to implement the principles of ISO/IEC Guide 71 [i.104] into individual standards. The areas covered by the TR are three human abilities - sensory, physical, and cognitive abilities - and allergy, all of which are addressed in Guide 71. This Technical Report will provide standards developers with ergonomic data and design techniques on how to take into account the needs of older persons and persons with disabilities, in accordance with the factors described in ISO/IEC Guide 71 [i.104].

ISO WD 24500: Ergonomics - Auditory signals for consumer products - Guidelines for all people including elderly persons and persons with disabilities

This standard aims at presenting general guidelines on the use of auditory signals and at the formulation of sound patterns that will make easy to distinguish for all people, including elderly persons and persons with disabilities, the sounds used in various consumer products as operation feedback to inform users (auditory signals conveying information on the state of a product) - specifically:

- 1) auditory signals confirming that a particular operation has been performed on the product;
- 2) auditory signals signifying completion of a process; and
- 3) warning signals.

However, signals prescribed by law or regulation, such as those for fire alarms, gas leak warnings, and disaster prevention, and signals distinctive to electronic communication equipment such as telephones, including electronic ringing and voice guidance systems, are not to be covered by this standard.

ISO WD 24501: Ergonomics - Auditory signals for consumer products - Guidelines on sound pressure levels of signals for all people including older persons

Scope: This standard presents guidelines concerning the setting of ranges of auditory signal sound pressure levels appropriate for users of consumer products, including elderly persons with impaired eyesight or hearing, taking into account the needs of persons in whom and situations in which auditory signal recognition is impaired. However, signals prescribed by law or regulation, such as those for fire alarms, gas leak warnings, and disaster prevention, and signals distinctive to electronic communication equipment such as telephones, including electronic ringing and voice guidance systems, are not to be covered by this standard.

ISO WD 24502: Guidelines for the elderly and people with disabilities - Visual signs and displays - Specification of age-related relative luminance and its use in assessment of light

Scope: This standard provides a means, using relative luminance differing by age group, of assessing visual efficiency of light and visibility affected thereby attained when viewers of different ages view a light source or an object.

ISO 24503: Guidelines for all people, including elderly persons and persons with disabilities - Marking tactile dots on consumer products

This standard will specify the guidelines for marking tactile dots to be put on the operating parts of various consumer products that have electrically-operated switches. The purpose is to enhance usability for all people including visually handicapped people and elderly people with declining of visual acuity.

ISO/IEC 10779: Office equipment accessibility guidelines for elderly persons and persons with disabilities

This guideline is intended to improve information accessibility required when primarily elderly persons, persons with disabilities and persons with temporary disabilities use office equipment. This guideline will specify a guideline to be considered for planning, developing and designing office equipment.

This guideline is intended to improve information accessibility required when primarily elderly persons, persons with disabilities and persons with temporary disabilities use office equipment. This guideline will specify a guideline to be considered for planning, developing and designing office equipment.

ISO/IEC 24756: Framework for specifying a Common Access Profile (CAP) of needs and capabilities of users, systems and their environments

This standard will define a framework for selecting and supporting computer related accessibility including accessibility supported by assistive technologies. It will provide a basis for identifying and dealing with accessibility issues in a standardized manner across multiple platforms. It can be used to evaluate accessibility of existing systems in particular environments for particular users.

ISO/IEC 24786: Accessible user interface for accessibility setting on information devices

This standard will describe requirements to make the user interface of the accessibility setting accessible. It mentions about the accesses to open the accessibility setting mode where the user set up the various accessibility functions, and also describes about the accesses to enable the accessibility functions directly without open the accessibility setting mode. It also mentions about items to set up the accessibility functions in the accessibility setting mode.

ISO/IEC 26511: Software and systems engineering - Requirements for managers of user documentation

This standard will support the interests of software users in consistent, complete, accurate, and usable documentation. It is addressed at managers responsible for the development and production of user documentation.

ISO/IEC 26512: Software and systems engineering - Requirements for acquirers and suppliers of user documentation

This standard will support the interests of software users in consistent, complete, accurate, and usable documentation. It is addressed to acquirers and suppliers of software user documentation.

ISO/IEC 26513: Software and systems engineering - Requirements for testers and assessors of user documentation

This standard will support the interests of software users in consistent, complete, accurate, and usable documentation. It is addressed to testers and assessors of software user documentation.

UAAG 2.0: User Agent Accessibility Guidelines 2.0 W3C Working Draft 12 March 2008

This document provides guidelines for designing **user agents** that lower barriers to Web accessibility for people with disabilities. User agents include browsers and other types of software that retrieve and render Web content. A user agent that conforms to these guidelines will promote accessibility through its own user interface and through other internal facilities, including its ability to communicate with other technologies (especially assistive technologies).

WCAG 2.0: Web Content Accessibility Guidelines 2.0 W3C Working Draft 11 December 2007

Web Content Accessibility Guidelines 2.0 (WCAG 2.0) covers a wide range of recommendations for making Web content more accessible. Following these guidelines will make content accessible to a wider range of people with disabilities, including blindness and low vision, deafness and hearing loss, learning disabilities, cognitive limitations, limited movement, speech difficulties, photosensitivity and combinations of these.

E.2 European standards

E.2.1 Published European standards

CEN/CENELEC Guide 6 (January 2002): Guidelines for standards developers to address the needs of older persons and persons with disabilities

This document is a copy of a late draft of ISO/IEC Guide 71 [i.104] and so is almost identical (apart from one or two insignificant words).

CEN CWA 14661 (February 2003): Guidelines to Standardisers of ICT products and services in the CEN ICT domain

This document reports an EU funded project to provide design for all information and to describe the political background. It directs users to the Tiresias Web site and also provides a checklist of guidelines related to disabilities.

CEN CWA 14835 (September 2003): Guidelines for making information accessible through sign language on the web

This document is aimed at Web masters and gives guidance on how to add sign language on the Web. It gives useful information on frame rate, resolution and coding.

CEN CWA 15778 (February 2008): Document processing for accessibility

This document describes the outcomes from a CEN workshop on the accessibility of documents and stresses the need to consider accessibility from the start of a publishing project. It provides a useful source of background information and deals with user requirements in a number of use cases and scenarios.

ETSI SR 001 996 (October 2003): Human Factors (HF); An annotated bibliography of documents dealing with Human Factors and disability

This is a document which gives a listing of ETSI, ISO/IEC and ITU-T documents dealing with Human Factors and disability together with some comment on their content. The following are extracts from this document.

ETSI EG 202 116 (September 2002): Human Factors (HF); Guidelines for ICT products and services; "Design for All"

EG 202 116 [i.32] is a revised and updated version of ETR 116 which takes on board the concept of Design for All. It provides a one-stop shop for advice on the Human Factors aspects of ICT devices and is aimed at the practical designer rather than the Human Factors expert.

ETSI EG 202 132 (August 2004): Human Factors (HF); User interfaces; Guidelines for generic user interface elements for mobile terminals and services

EG 202 132 [i.33] reports on the consensus building within the mobile telephone industry to achieve generic user interfaces without restricting the ability of market players to further improve and develop their terminals and services. It aims to provide simplified access to basic and selected advanced functions of mobile communications. It provides detailed advice on the harmonization of many aspects of terminals and services.

It lists 10 user meta-requirements for mobile communication. These are applicable to a large extent on the higher level, with regard to users' communication goals.

ETSI EG 202 320 (October 2005): Human Factors (HF); Duplex Universal Speech and Text (DUST) communications

This document sets out the requirements for those users who need or prefer to communicate by text. It provides stage 1 and stage 2 descriptions of a service that could satisfy those needs and provides scenarios of practical solutions. Standards capable of providing these solutions are identified as are a number of outstanding issues that need to be addressed.

ETSI EG 202 416 (December 2006): Human Factors (HF); User Interfaces; Setup procedure design guidelines for mobile terminals and services

The growing complexity of modern mobile terminals often provides barriers to new users who need guidance on the access and use of these terminals. This document sets out extensive user interface guidelines for set up procedures for terminals and services. The guide provides a design for all approach taking into account the needs of children and the elderly as well as disabled users.

The extensive guidelines are illustrated through a number of scenarios and use cases.

ETSI EG 202 487 (February 2008): Human Factors: User experience guidelines for telecare solutions (e-Health)

This ETSI Guide provides detailed user experience and user interface guidelines, applicable to a wide range of telecare solution elements, addressing key characteristics and the interactions between them and the primary (client) and secondary (carer) users. Consumers (clients) of telecare services and devices expect these to be easy to install, learn and use; reliable and consistent in quality, durability, safety, security and ease of use and ensure the integrity of personal data. It will be based on the recommendations developed by STF264, provided in TR 102 415.

ETSI EN 301 462 (Mar 2000): Symbols to identify telecommunications facilities for deaf and hard of hearing people

This standard specifies a range of symbols to identify telecommunications facilities for deaf and hard of hearing people. The symbols derive from the work described in TR 101 767. The document does not provide any indication of preferred colours.

ETSI ES 201 381 (December 1998): Human Factors (HF); Telecommunications keypads and keyboards; Tactile identifiers

ES 201 381 specifies 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 (November 2002): Human Factors (HF); User Interfaces; Generic spoken command vocabulary for ICT devices and services

ES 202 076 specifies a set of spoken commands in five European languages that can be used to control the functions of ICT devices equipped with speech recognition. All languages for the commands were user tested in their respective countries.

The commands are applicable to the functions of navigation, information retrieval, basic call handling and the configuration of preferences and they address the most common telecommunications services.

ETSI ES 202 432 (November 2006): HF Human Factors (HF); Access symbols for use with video content and ICT devices

ES 202 432 is a simple document which defines the symbols to be used to identify the availability of subtitling, audio description, signing, speech output and spoken command on a range of ICT devices and services. The work of development and evaluation of these symbols is described in TR 102 520.

ETSI ETS 300 381 (December 1994): Telephony for hearing impaired people; Inductive coupling of telephone earphones to hearing aids

This standard specifies the requirements for the magnetic field to be produced at the earphone to permit satisfactory coupling to a hearing aid.

ETSI ETS 300 488 (January 1996): Telephony for hearing impaired people; Characteristics of telephone sets that provide additional receiving amplification for the benefit of the hearing impaired

This standard specifies the electro-acoustic performance characteristics of telephones with receive amplification greater than that normally provided.

ETSI ETS 300 679 (September 1996): Telephony for the hearing impaired; Electrical coupling of telephone sets to hearing aids

This standard specifies the electrical and mechanical requirements for the direct electrical connection of a telephone set to a hearing aid.

ETSI ETS 300 767 (July 1997): Telephone Prepayment Cards; Tactile Identifier

This simple standard specifies the form, dimensions and position of the shape cut out of the short edge of a machine readable card as a tactile identifier.

ETSI TR 101 806 (June 2000): Guidelines for Telecommunications relay services for text telephones

This report provides guidelines for the provision of relay services, especially those which enable a text telephone user to converse with a telephone user or with another text telephone user. It also deals with spoken to spoken relays and relays using videotelephones.

ETSI TR 102 068 (November 2002): Human Factors (HF); Requirements for assistive technology devices in ICT

TR 102 068 reviews the requirements of those users in need of assistive technology and classifies the signal information exchanged between assistive devices and ICT equipment. Interface technologies are reviewed and recommendations made for protocols and interfaces appropriate to differing types of information.

Proposals are made for an AT command to identify specific commands from assistive devices.

ETSI TR 102 202 (May 2003): Human Factors (HF); Human Factors of work in call centres

TR 102 202 deals with the human factors aspects of work in call centres and gives some recommendations of best practice. It is based on reviews of existing studies of call centre operation in the UK and other countries, supported by some practical research. The document identifies jobs and tasks in call centres and the attributes and skills of call handlers and related training issues. The practical issues of disability are considered.

It is aimed at managers of call centres, their customers, call centre equipment and software designers and manufacturers, occupational health and human resources management. The focus is on call handlers, but the advice is also pertinent to employees with other roles in call centres.

ETSI TR 102 415 (August 2005): Telecare services; Issues and recommendations for user aspects

This report provides an initial study into the delivery of health and social care to individuals within the home or their wider community with the support of ICT enabled systems. It identifies key stakeholders that are active in the provision of telecare services and discusses aspects such as service provision elements, stakeholders' concerns and ethical, privacy and security issues. It is basically a document that sets the scene for telecare, discussing the presently available and possible future means its provision.

ETSI TR 103 073 (October 2003): Universal Communications Identifier (UCI); Improving communications for disabled, young and elderly people

This document reports the results of questionnaires answered in interviews with elderly people, disabled people and young children in ICT environments. The results which are reported identified a number of communications issues relevant to the target groups.

E.2.2 European standards under development

ETSI TS 102 577: Human Factors; Public Internet Access Points (PIAPs)

This ETSI Technical Specification will establish and set out guidance for providers and operators of Public Internet Access Points (PIAPs). A "Design for All" approach will be followed to ensure that PIAPs will be more readily accessible to all people, including elderly or disabled users and users from a wide range of cultural backgrounds.

ETSI TS 102 511: Human Factors; AT Commands for assistive mobile device interfaces

This ETSI Technical Specification sets out the requirements for a number of AT command protocol stacks that can be used to enable assistive devices to interwork satisfactorily with mobile terminals over a range of suitable interfaces. The work specifies those amendments of existing AT commands and new AT commands that are needed for effective communication between mobile terminals and the widest possible range of assistive devices

ETSI ES 202 076: Human Factors; Generic spoken command vocabulary for ICT devices and services

This ETSI Standard will specify a minimum set of spoken commands required to control the generic and most common functions of ICT devices and services that use speaker independent speech recognition, developed in a Design for All approach. It will specify the necessary and most common vocabularies to be supported by ICT devices and services for voice input, including command, control and editing and will be applicable to the functions required for navigation, information retrieval, basic call handling and configuration of preferences.

ETSI ES 202 975: Human Factors; Harmonized relay services

The standard will set out the requirements for the provision of all kinds of relay services in all networks. It will identify those new types of text phone services that are IP based and make recommendations on how they should be handled. The provisions in this standard will directly assist users who are unable to hear and/or speak. This work will convert and update ETSI TR 101 806 (Guidelines for relay services) into an ETSI Standard.

This document deals with requirements such as service requirements, call handling, system requirements charging, complaints handling, user information and details of which types of terminal with which the service "must" (see Foreword) be compatible. The information that it provides is suitable for use when procuring a relay service.

ETSI EG 202 972: Human Factors; User Interfaces; Guidelines for generic user interface elements for 3G/UMTS mobile devices, services and applications

This ETSI Guide will provides generic design, development, deployment and evaluation guidelines applicable to the user interfaces of 3G-enabled devices, services and applications, addressed from the end users' perspective. It will be applicable all 3G-enabled mobile telecommunication networks, devices, services and applications.

The applicability of the document will expand beyond EG 202 132 [i.33] by taking into consideration 3G-specific characteristics such as seamless connectivity between different kinds of networks, quality and continuity of service and provisioning and presentation of data-intensive services and applications. However, the guidelines provided in EG 202 132 [i.33] remain applicable to the systems and services addressed in the current document as the technologies covered by EG 202 132 [i.33] remain an integral part of 3G communication networks. The EG will address 3G-enabled accessibility applications.

E.3 National standards in Europe

E.3.1 Spain

National Accessibility Standards

In Spain there are four AENOR accessibility standards:

- UNE 139801:2003: Computer applications for people with disabilities. Requirements for accessibility to a computer. Hardware;
- UNE 139802:2003: Computer applications for people with disabilities. Requirements for accessibility to a computer. Software;
- UNE 139803:2004: Computer applications for people with disabilities. Requirements for content accessibility on the Web; and
- UNE 139804:2007: Guidance on the use of the Spanish Sign Language on computer networks.

These formal standards exist in Spain and are based on what is claimed to be the first worldwide standards for computer accessibility (UNE 139801:1988 EX and UNE 139802:1998 EX). It is acknowledged that for Web content accessibility the European Union has agreed to use the WAI Guidelines as a de facto standard, and thus the Spanish UNE 139803:2004 is compatible with WCAG 1.0. In fact it includes an annex with cross-references between both documents.

It is also understood that these standards will be withdrawn/replaced as International (ISO) and European (EN) standards are published; e.g. UNE 139802:2003 should be replaced by ISO EN 9241-171: 2008 (Guidance on software accessibility) when it is published in 2008.

There are also Spanish standards for media-related accessibility services that are partially applicable to the ICT field:

- UNE 153010:2003: Subtitling for deaf and hard-of-hearing people. Subtitling by teletext.
- UNE 153020:2005: Audio description for visually impaired people. Guidelines for audio description procedures and for the preparation of audio guides.

E.3.2 United Kingdom

In the UK, BSI have produced two documents dealing with accessibility.

BS 7000-6: 2005: Design management systems - Part 6: Managing inclusive design - Guide.

Its Scope states: Though the inclusive approach ultimately encompasses the whole of business and management, this part of BS 7000 provides guidance on managing inclusive design at both organization and project levels. It seeks to link design thinking with the core concerns of organizations in other established business disciplines. This standard is aimed at:

- top executives of all organizations offering products and services. It helps them to lead the introduction of an inclusive approach and evolve an appropriate corporate culture that nurtures inclusive success.
- middle executives who set up and administer product and service development projects. It helps them formulate better-focused and more enlightened briefs. It also assists in motivating project teams as well as the evaluation of solutions generated.
- junior executives and specialists who are assigned to project teams that create and develop products and services. It helps them adopt more appropriate perspectives and approaches to inclusive design.
 - Executives responsible for procuring outsourced product design services and supplies, and for adhering to agreed specifications. It helps them to sustain the inclusive approach throughout the supply chain.

PAS 78 Guide to good practice in commissioning accessible Web sites.

Its Scope states: This Publicly Available Specification outlines good practice in commissioning Web sites that are accessible to and usable by disabled people.

It gives recommendations for the management of the process and guidance on upholding existing W3C guidelines and specifications, involving disabled people in the development process and using the current software-based compliance testing tools that can assist with this.

It is applicable to all public and private organizations that wish to observe good practice under the existing voluntary guidelines and the relevant legislation on this subject, and is intended for use by those responsible for commissioning public-facing Web sites and Web-based services.

BSI has started work on PAS 124 - Guidance on Web Standards.

E.4 Other national standards

E.4.1 Australia

Within Australia there is State guidance on accessibility.

Clause 4 of The Government of Western Australia, Department of the Premier and Cabinet, Guidelines for State Government Web sites (Version 2.1, 14 June 2006) addresses Accessibility (recommendations).

NOTE: These guidelines appear to apply only to Western Australia. Guidelines prepared by the state of Victoria and the Australian Capital Territory (ACT) are referenced within the document.

The WCAG 1.0 [i.174] from the WAI of W3C are recommended, with references to the Australian Human Rights and Equal Opportunity Commission and Disability Discrimination Act 1992.

The three priority levels of WGAG are explained and for Western Australia Web sites the "W3C accessibility guidelines "must" (see Foreword) be applied when developing a new Web site".

- It is recommended that Western Australia government Web sites are at the very least Priority 1 accessible.
- It is recommended that Western Australia government Web sites should meet Priority 2.
- Priority 3 improves access to Web documents for all user groups and is the optimum strategy for Western Australia government Web sites.

"If utilizing commercial developers, it is advisable to ensure Priority 3 or Priority 2 are included as well as Priority 1 as a requirement in any tenders or contracts.

However, for existing Web sites, a business case should be undertaken to evaluate the cost of repair versus the cost of rebuilding to reach compliance.

When correcting existing Web sites for compliance, it is more efficient to fix all issues to ensure compliance with either: Priority 1, Priority 2 or Priority 3, within a particular page/section, than working through the issues in W3C priority order."

Validation of accessibility (user feedback and testing) is recommended plus a clause on FAQs. A simple checklist is also provided, with the following questions:

- Ensure the Web site complies with W3C Web Content Accessibility Guidelines.
- Does the Web site adhere to Priority 1 of the Guidelines, which "must" (see Foreword) be addressed as a basic requirement of Web accessibility?
- Does the Web site adhere to Priority 2 of the Guidelines, which should be addressed as a basic requirement of Web accessibility?
- Does the Web site adhere to Priority 3 of the Guidelines, which may be addressed as a discretionary requirement of Web accessibility?
- Are automated tools and a human review used to periodically validate the Web site's accessibility?

E.4.2 Japan

JIS X 8341-1: 2004: Guidelines for older persons and persons with disabilities - Information and communications equipment, software and services Part 1: Common guidelines.

JIS X 8341-2: 2004: Guidelines for older persons and persons with disabilities - Information and communications equipment, software and services - Part 2: Information processing equipment.

JIS X 8341-3: 2004: Guidelines for older persons and persons with disabilities - Information and communications equipment, software and services - Part 3: Web contents.

JIS X 8341-4: 2005: Guidelines for older persons and persons with disabilities - Information and communications equipment, software and services - Part 4: Office equipment.

JIS X 8341-5: 2006: Guidelines for older persons and persons with disabilities - Information and communications equipment, software and services - Part 5: Telecommunications equipment.

Some of these standards may not be ICT-related:

JIS Z 8071: 2003: Guidelines for standards developers to address the needs of older persons and persons with disabilities (Japanese version of ISO/IEC Guide 71).

JIS S 0011: 2003: Guidelines for all people including elderly and people with disabilities - marking tactile dots on consumer products.

JIS S 0013: 2002: Guidelines for the elderly and people with disabilities - Auditory signals on consumer products.

JIS S 0014: 2003: Guidelines for the elderly and people with disabilities - Auditory signals on consumer products - Sound pressure levels of signals for the elderly and in noisy conditions.

JIS S 0022-3: 2007: Guidelines for older persons and persons with disabilities - Packaging and receptacles - Tactile indication for identification.

JIS S 0022-4: 2007: Guidelines for older persons and persons with disabilities - Packaging and receptacles - Evaluation method by user.

JIS S 0026: 2007: Guidelines for older persons and persons with disabilities - Shape, colour, and arrangement of toilet operation equipment and appliance in public rest room.

JIS S 0031:2004: Guidelines for the elderly and people with disabilities - Visual signs and displays - Specification of age - related relative luminance and its use in assessment of light.

JIS S 0032: 2003: Guidelines for the elderly and people with disabilities - Visual signs and displays - Estimation of minimum legible size for a Japanese single character.

JIS S 0033: 2006: Guidelines for the elderly and people with disabilities -- Visual signs and displays -- A method for colour combinations based on categories of fundamental colours as a function of age.

JIS T 0103: 2005: Design principles of pictorial symbols for communication support.

JIS T 090: 2005: Guidelines of electronic guide system using audible signage for visually impaired persons.

JIS T 0921: 2006: Guidelines for all people including older persons and persons with disabilities - Methods of display Braille sign - Public facility.

JIS T 0922: 2007: Guidelines for older persons and persons with disabilities - Information content, shapes and display methods of tactile guide maps.

JIS X 6310: 1996: Prepaid cards - General specifications.

TR S 0001: 2002: A guideline for determining the acoustic properties of auditory signals used in consumer products - A database of domestic sounds.

E.4.3 Republic of Korea

E.4.3.1 Published standards

Guidelines to Improve Accessibility for the Disabled and the Elderly to the IT services/IT products Korea (2002) (Published by the Korean Ministry of Information and Communication).

KICS.OT-10.0003 - Internet Web Contents Accessibility Guideline (2005) (Published by the Korean Ministry of Information and Communication).

KICS.KO-09.0040 - Automatic Teller Machine's Accessibility Guidelines 1.0 (2007) (Published by the Korean Ministry of Information and Communication).

TTAS.KO-10.0213 - Software Accessibility Guidelines 1.0 (2006) (Published by the Korean Telecommunications Technology Association).

The purpose of this standard is to provide programmers of application programs or operating systems with accessibility specification for the software and remove physical barriers from the software for the elderly and the disabled.

TTAS.OT-10.0073 Korean User Agent Accessibility Guidelines 1.0 (2006) (Published by the Korean Telecommunications Technology Association).

This standard provides guidelines for designing user agents that all the people including disabled and elderly people can access. User Agents include HTML browsers and other types of software that retrieve and render web contents.

TTAS.OT-09.0001 - Digital Talking Book Guidelines 1.0 (2006) (Published by the Korean Telecommunications Technology Association).

This standard establishes specifications for digital talking books (DTBs) for blind, visually impaired, physically handicapped, learning-disabled, or otherwise print-disabled readers. Its purpose is to ensure interoperability across service organizations and vendors providing content and playback systems to the target population.

TTAS.KO-07.0050 - Standard for DTV Closed Caption System (2007) (Published by the Korean Telecommunications Technology Association).

This standard promotes the welfare of the hearing-impaired persons and foreigners watching terrestrial DTV (Digital Television) and to supply useful educational caption information. This standard provides DTV closed caption for the widescreen 16:9 size. It defines the data format (e.g. the caption windows positions, font sizes, number of letters, processing whole-size and half-size characters, etc.), display method of Korean and foreign characters, etc. The essential items from EIA-708-B quoted in this standard are also defined.

TTAS.OT-10.0122 - Electronic Document Accessibility Guidelines 1.0 (2007) (Published by the Korean Telecommunications Technology Association).

This guideline summarizes the design principles for making accessible electronic files. If people make some electronic files without this guideline, the disable will be hard to use and change the files. On the other hands, making electronic files with this guideline, the disable using assistive devices would be convenient for approach the files.

TTAS.KO-06.0152 - Mobile Phone Keypad Accessibility Guidelines 1.0 (2007) (Published by the Korean Telecommunications Technology Association).

This standard provides mobile phone manufacturers and service vendors with accessibility specifications for the mobile phone keypad interface and to remove physical barriers from mobile 'phones for the disabled and the elderly.

E.4.3.2 Draft standards

TTAK.KO-06.0180 - AD (Automatic Identification and Data Capture) 2D Bar Code for Visually Impaired Persons.

This specification will define the requirements for the AD 2D barcode symbology. It specifies AD 2D barcode symbology characteristics like as location and size, data character encoding, symbol formats, dimensions and print quality requirements, error correction rules, decoding algorithm and user-selectable application parameters for the blind to access information on printed materials.

TTAK.KO-06.0181 - 2D Barcode for Printed Material Accessibility with Text to Speech for Visually Impaired Persons.

This specification will define the requirements for the 2D Barcode symbology. It specifies 2D Barcode symbology characteristics like as location and size, data character encoding, symbol formats, dimensions and print quality requirements, error correction rules, decoding algorithm and user-selectable application parameters for the blind to access information on printed materials.

Annex F: Bibliography

- IMS Guidelines for Developing Accessible Learning Applications.

History

Document history		
V1.1.1	March 2009	Publication