

**SLOVENSKI STANDARD
SIST-V ETSI/EG 202 116 V1.2.2:2009
01-julij-2009**

člj Yy JXYUj b] f] : Ć! Ga Yfb]WVnU]nXY_Y]b gkf]hj Y? H! CV]_cj UbYnUj gY
fB : 5Ł

Human Factors (HF) - Guidelines for ICT products and services - Design for All

**iTeh STANDARD PREVIEW
(standards.iteh.ai)**

Ta slovenski standard je istoveten z: EG 202 116 Version 1.2.2

[SIST-V ETSI/EG 202 116 V1.2.2:2009](https://standards.iteh.ai/catalog/standards/sist/ecb756fa-ca72-4bb8-aeda-26c64309589e/sist-v-etsi-eg-202-116-v1-2-2-2009)
<https://standards.iteh.ai/catalog/standards/sist/ecb756fa-ca72-4bb8-aeda-26c64309589e/sist-v-etsi-eg-202-116-v1-2-2-2009>

ICS:

35.020	Informacijska tehnika in tehnologija na splošno	Information technology (IT) in general
--------	--	---

SIST-V ETSI/EG 202 116 V1.2.2:2009 en

iTeh STANDARD PREVIEW (standards.iteh.ai)

[SIST-V ETSI/EG 202 116 V1.2.2:2009](#)

<https://standards.iteh.ai/catalog/standards/sist/ecb756fa-ca72-4bb8-aeda-26c64309589e/sist-v-etsi-eg-202-116-v1-2-2-2009>

ETSI EG 202 116 V1.2.2 (2009-03)

ETSI Guide

Human Factors (HF); Guidelines for ICT products and services; "Design for All"

**iTeh STANDARD PREVIEW
(standards.iteh.ai)**

[SIST-V ETSI/EG 202 116 V1.2.2:2009](#)

<https://standards.iteh.ai/catalog/standards/sist/ecb756fa-ca72-4bb8-aeda-26c64309589e/sist-v-etsi-eg-202-116-v1-2-2-2009>



Reference

REG/HF-00124

Keywordsageing, disability, equipment practice, special
needs, terminal***ETSI***

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

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

Siret N° 348 623 562 00017 - NAF 742 C
Association à but non lucratif enregistrée à la
Sous-Préfecture de Grasse 06 N° 7303/88**iTeh STANDARD PREVIEW**
(standards.iteh.ai)[SIST-V ETSI/EG 202 116 V1.2.2:2009](#)<https://standards.iteh.ai/catalog/standards/sist/ecb756fa-ca72-4bb8-aeda-26c64309589> ***Important notice*** [26c64309589](#) [2009-03-26](#) [2009-03-26-v1-2-2-2009](#)Individual copies of the present document can be downloaded from:
<http://www.etsi.org>

The present document may be made available in more than one electronic version or in print. In any case of existing or perceived difference in contents between such versions, the reference version is the Portable Document Format (PDF). In case of dispute, the reference shall be the printing on ETSI printers of the PDF version kept on a specific network drive within ETSI Secretariat.

Users of the present document should be aware that the document may be subject to revision or change of status.

Information on the current status of this and other ETSI documents is available at

<http://portal.etsi.org/tb/status/status.asp>

If you find errors in the present document, please send your comment to one of the following services:

http://portal.etsi.org/chaircor/ETSI_support.asp

Copyright Notification

No part may be reproduced except as authorized by written permission.
The copyright and the foregoing restriction extend to reproduction in all media.

© European Telecommunications Standards Institute 2009.
All rights reserved.

DECT™, PLUGTESTS™, UMTS™, TIPHON™, the TIPHON logo and the ETSI logo are Trade Marks of ETSI registered for the benefit of its Members.

3GPP™ is a Trade Mark of ETSI registered for the benefit of its Members and of the 3GPP Organizational Partners.

LTE™ is a Trade Mark of ETSI currently being registered
for the benefit of its Members and of the 3GPP Organizational Partners.

GSM® and the GSM logo are Trade Marks registered and owned by the GSM Association.

Contents

Intellectual Property Rights	8
Foreword.....	8
Introduction	8
1 Scope	9
2 References	9
2.1 Normative references	9
2.2 Informative references.....	9
3 Definitions and abbreviations.....	17
3.1 Definitions	17
3.2 Abbreviations	17
4 Human Factors and Design for All.....	18
4.1 Introduction	18
4.2 The usability gap	18
4.3 Design For All?	19
4.3.1 Why design for all	19
4.3.2 What does it mean in practice?	19
4.3.3 What are the benefits for business?	20
4.3.4 What are the benefits to the individual and society?.....	22
4.3.5 Legislation, political initiatives and standardization.....	22
4.3.5.1 Legislation and regulation.....	22
4.3.5.2 Political initiatives.....	23
4.3.5.3 Standardization.....	23
5 Users.....	24
5.1 Introduction	24
5.2 User Populations and their characteristics	24
5.2.1 What is the market?	24
5.2.2 User characteristics	25
5.2.3 Distribution of characteristics	25
5.2.3.1 Hand size.....	25
5.2.3.2 Height.....	26
5.2.4 Changes of relevant characteristics with age	27
5.2.5 Disability and ability.....	27
5.2.6 Sensory disabilities	28
5.2.6.1 Sight	28
5.2.6.2 Hearing.....	29
5.2.6.3 Touch	31
5.2.6.4 Taste and smell.....	31
5.2.6.5 Balance.....	31
5.2.7 Physical disabilities.....	32
5.2.7.1 Speech.....	32
5.2.7.2 Dexterity	32
5.2.7.3 Manipulation	33
5.2.7.4 Mobility.....	33
5.2.7.5 Strength and endurance	33
5.2.8 Cognitive disabilities	33
5.2.8.1 Intellect	33
5.2.8.2 Memory	34
5.2.8.3 Language and literacy	34
5.2.9 Allergies.....	34
6 Human Centred Design process	34
6.1 ISO 13407 definition	34
6.2 Why Human-Centred Design?	35

6.3	The Design process	36
6.3.1	Defining the context of use	36
6.3.1.1	Description of users.....	36
6.3.1.2	Description of tasks.....	36
6.3.1.3	Description of equipment.....	37
6.3.1.4	Description of environments	37
6.3.2	Specifying user and organizational requirements	38
6.3.3	Producing prototypes	38
6.3.4	Evaluating the designs	38
6.3.4.1	General	38
6.3.4.2	The Analytical Checklist Approach	39
6.3.4.2.1	The usability components/facilities	39
6.3.4.2.2	Groups of disabled users.....	41
6.3.4.2.3	The subjective assessments	42
6.3.4.2.4	The objective measurements	42
6.3.4.2.5	Analysis of the results	42
6.3.4.2.6	Using the method.....	42
6.3.4.3	The Usability Testing Approach	42
6.4	Human-Centred design - Summary	44
7	General design issues	45
7.1	General principles.....	45
7.1.1	Introduction.....	45
7.1.2	Adaptability	45
7.1.3	Adjustability	46
7.1.4	Colour	47
7.1.5	Consistency and Standardization	49
7.1.6	Error Management.....	50
7.1.7	Feedback.....	51
7.1.8	Flexibility.....	52
7.1.9	Response Times	53
7.2	Dialogue styles	54
7.2.1	General.....	54
7.2.2	Menu Dialogues.....	56
7.2.3	Command Language Style.....	58
7.2.4	Phone based interface	59
7.2.5	Graphical User Interface (GUI)	60
7.2.6	Interface metaphors.....	61
7.2.7	Direct manipulation	62
7.2.8	Control key dialogues	63
7.2.9	Query language dialogues.....	65
7.2.10	Form fill-in Dialogues	65
7.2.11	Natural language dialogues.....	66
7.2.12	Voice dialogues	67
7.2.13	User Prompting	68
7.3	Assistive technology.....	70
7.4	Multimedia presentation and Multimodal interaction	70
7.4.1	Multimedia terminals	70
7.4.2	Multimodality	71
7.4.3	Nonspeech sounds	71
7.5	Labels and abbreviations	72
7.6	National Variations.....	73
7.7	Security	74
7.8	User Support.....	75
7.8.1	General.....	75
7.8.2	Help	76
7.8.2.1	General	76
7.8.2.2	Help Mechanisms - Auditory	77
7.8.2.3	Help Mechanisms - Human.....	78
7.8.2.4	Help Mechanisms - Multimedia	79
7.8.2.5	Help Mechanisms - Built in	80
7.8.2.6	Help Mechanisms - Text	82

7.8.3	Tutorial Systems	83
8	Input components - Design Guidelines	84
8.1	General	84
8.2	Tactile input: Keys and keyboards	85
8.2.1	General.....	85
8.2.2	Keyboards	85
8.2.2.1	General.....	85
8.2.2.2	Alphanumeric Keyboards.....	86
8.2.2.3	Telephone Keypads.....	88
8.2.3	Remote controls	90
8.2.4	Keys	90
8.2.4.1	General.....	90
8.2.4.2	Cursor Keys.....	92
8.2.4.3	Function Keys	93
8.3	Tactile input: Pointing devices	94
8.3.1	General.....	94
8.3.2	Mouse	96
8.3.3	Foot Mouse	97
8.3.4	Stylus/Pen	98
8.3.5	Light Pens	99
8.3.6	Roller Balls	100
8.3.7	Data Glove	102
8.3.8	Graphics Tablet.....	102
8.3.9	Touchpad	104
8.3.10	Touch Screens.....	104
8.4	Tactile input: Switches.....	105
8.4.1	General.....	105
8.4.2	Slider Switches	107
8.4.3	Rocker Switches	107
8.4.4	Rotary Switches	108
8.4.5	Toggle Switches.....	110
8.4.6	Pushbuttons https://standards.iteh.ai/catalog/standards/sist-eg202-116-v1-2-2-2009	111
8.5	Tactile input: Variable controls (continuous controls) https://standards.iteh.ai/catalog/standards/sist-eg202-116-v1-2-2-2009	112
8.5.1	General.....	112
8.5.2	Slider controls.....	114
8.5.3	Rotary Controls.....	114
8.5.4	Thumb/Finger Wheels	116
8.5.5	Joysticks, Hand/Finger.....	117
8.6	Tactile input: Software controls and indications	118
8.7	Acoustic input	120
8.7.1	General.....	120
8.7.2	Microphones	121
8.7.3	Speech Recognition	121
8.8	Visual input	123
8.8.1	General.....	123
8.8.2	Cameras	124
8.8.3	Eye/Head Movement	125
8.8.4	Scanner	125
8.9	Biometric input.....	126
8.9.1	General.....	126
8.9.2	Iris recognition	128
8.9.3	Fingerprint recognition	128
8.10	Electronic input	128
8.10.1	General.....	128
8.10.2	Card Readers.....	129
8.10.3	Machine-readable Cards	130
8.10.4	Contactless Cards.....	130
8.10.5	Bar-code Readers.....	131
9	Output components - Design Guidelines.....	131
9.1	Output Components.....	131

9.2	Visual output	133
9.2.1	Visual displays (General).....	133
9.2.2	Visual displays types/characteristics.....	133
9.2.2.1	Small screens.....	135
9.2.2.2	Television sets (TV sets).....	135
9.2.2.3	Projection displays	139
9.3	Quality requirements for different Visual media contents.....	139
9.3.1	General.....	139
9.3.2	Text content	139
9.3.3	Graphics content	142
9.3.4	Animations.....	142
9.3.5	Screen messages	142
9.3.6	Screen Formatting.....	143
9.4	Visual indicators.....	144
9.4.1	Optical signals	144
9.4.2	Icons, symbols	145
9.5	Acoustic output	146
9.5.1	Auditory displays.....	146
9.5.2	Non-speech audio	147
9.5.2.1	Acoustic Signals.....	147
9.5.2.2	Music.....	149
9.5.3	Void	150
9.5.4	Speech Output.....	150
9.5.5	Auditory Menus	151
9.6	Tactile Output.....	152
9.6.1	Tactile indication	152
9.6.2	Vibro-tactile indication	153
9.6.3	Force feedback.....	154
9.7	Printed Output	154
9.7.1	Paper Handling	155
10	Additional product specific guidelines.....	156
10.1	Cables and Cords.....	156
10.2	Casework	158
10.3	Casework Colour.....	159
10.4	Surface finish.....	160
10.5	Connectors.....	161
10.6	Facsimile Machines	162
10.7	Handset.....	163
10.8	Handset Rest.....	166
10.9	Hookswitch.....	168
10.10	Key Operated Switches	168
10.11	Payment Facilities (coins and paper money)	169
10.12	Portable and Mobile equipment.....	170
10.13	Videophones	172
11	Additional service specific guidelines.....	174
11.1	Addresses	174
11.2	Call Handling	175
11.3	Communication and Transmission	180
11.4	Data Transmission.....	181
11.5	Dialling.....	182
11.6	Phone-based Interfaces	182
11.7	Supplementary Services	183
11.8	Voice transmission	184
A	Annex A (informative): Questionnaires for users.....	186
B	Annex B (informative): Checklists for groups of disabled people	188
B.1	Visually impaired people.....	188
B.2	Blind people	189

B.3	People with reduced movement capability and reduced muscular strength.....	190
B.4	People with unco-ordinated movements	191
B.5	People who are hard of hearing	192
B.6	People with learning difficulties.....	193
B.7	People with low voice output	194
Annex C (informative):	Presentation of the evaluation results	195
C.1	An example of a description of the results of the evaluation	195
C.2	Final survey sheet.....	197
Annex D (informative):	Bibliography.....	198
Index	199	
History	203	

iTeh STANDARD PREVIEW (standards.iteh.ai)

[SIST-V ETSI/EG 202 116 V1.2.2:2009](#)

<https://standards.iteh.ai/catalog/standards/sist/ecb756fa-ca72-4bb8-aeda-26c64309589e/sist-v-etsi-eg-202-116-v1-2-2-2009>

Intellectual Property Rights

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

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

Foreword

This ETSI Guide (EG) has been produced by ETSI Technical Committee Human Factors (HF).

Introduction

ETSI HF produced three very significant deliverables that provided guidance to the designers of communications products and services:

- ETR 029 [i.10]: "Human Factors (HF); Access to telecommunications for people with special needs; Recommendations for improving and adapting telecommunication terminals and services for people with impairments";
**ITel STANDARD REVIEW
(standards.iteh.ai)**
- ETR 116 [i.14]: "Human Factors (HF); Human factors guidelines for ISDN Terminal equipment design";
[SIST-V ETSI/EG 202 116 V1.2.2:2009](#)
- ETR 166 [i.15]: "Human Factors (HF); Evaluation of telephones for people with special needs; An evaluation method".
[26c64309589e/sist-v-etsi-eg-202-116-v1-2-2-2009](#)

These three deliverables were produced in 1991, 1994, and 1995 respectively and since then the technologies to which the guidelines relate have changed significantly. The "Design for All" approach made it imperative that a revised document integrating the best elements of these documents into a coherent whole was produced to replace these separate documents. The advice given in each guideline was incorporated into this new single updated document.

1 Scope

The present document gives guidance to Information and Communication Technology (ICT) product and service designers on Human Factors issues, good Human Factors design practice, and relevant international and national standards. In particular, it aims to help designers to maximize the level of usability of products and services by providing a comprehensive set of Human Factors design guidelines.

The guidelines are intended to encourage a "Design for All" approach so as to make products and services accessible to as many people as possible, including elderly people and persons with disabilities, without the need for adaptation or specialized design.

The present document is applicable to ICT products with a user interface that are connectable to all kinds of fixed and mobile telecommunications networks. This includes products such as telephones, Multimedia terminals, Personal digital Assistants (PDAs) and services such as e-mail, Short Message Services (SMS) and voice messaging. It is applicable to public and private access devices and services.

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 [SIST-V ETSI/EG 202 116 V1.2.2:2009](https://standards.iteh.ai/catalog/standards/sist/ecb756fa-ca72-4bb8-aeda-26c64309589e/sist-v-etsi-eg-202-116-v1-2-2-2009)

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] CEN/CENELEC Guide 6: "Guidelines for standards developers to address the needs of older persons and persons with disability".
- [i.2] CENELEC EN 60950: "Information technology equipment. Safety".
- [i.3] ETSI EG 201 379 (V1.1.1): "Human Factors (HF); Framework for the development, evaluation and selection of graphical symbols".

- [i.4] ETSI EG 201 472 (V1.1.1): "Human Factors (HF); Usability evaluation for the design of telecommunication systems, services and terminals".
- [i.5] ETSI EG 202 048 (V1.1.1): "Human Factors (HF); Guidelines on the multimodality of icons, symbols and pictograms".
- [i.6] ETSI EN 301 462 (V1.1.1): "Human Factors (HF); Symbols to identify telecommunications facilities for the deaf and hard of hearing people".
- [i.7] ETSI ES 202 076 (V1.1.1) "Human Factors (HF); User interfaces; Generic spoken command vocabulary for ICT devices and services".
- [i.8] ETSI ES 200 677 (V1.2.1): "Public Switched Telephone Network (PSTN); Requirements for handset telephony".
- [i.9] ETSI ES 201 381 (V1.1.1): "Human Factors (HF); Telecommunications keypads and keyboards; Tactile identifiers".
- [i.10] ETSI ETR 029 (1991): "Human Factors (HF); Access to telecommunications for people with special needs; Recommendations for improving and adapting telecommunication terminals and services for people with impairments".
- [i.11] ETSI ETR 051 (1992): "Human Factors (HF); Usability checklist for telephones Basic requirements".
- [i.12] ETSI ETR 070 (1993): "Human Factors (HF); The Multiple Index Approach (MIA) for the evaluation of pictograms".
- [i.13] ETSI ETR 096 (1993): "Human Factors (HF); Phone Based Interfaces (PBI); Human factors guidelines for the design of minimum phone based user interface to computer services".
- [i.14] ETSI ETR 116 (1994): "Human Factors (HF); Human factors guidelines for ISDN Terminal equipment design".
- [i.15] ETSI ETR 166 (1995): "Human Factors (HF); Evaluation of telephones for people with special needs; An evaluation method".
[SIST-V ETSI/EG 202 116 V1.2.2:2009
https://standards.iec.ch/arcatalog/standards/sk/cecc/361a-ca/72-4078-acua-26c64309389c/sist-v-etsi-eg-202-116-v1-2-2-2009](https://standards.iec.ch/arcatalog/standards/sk/cecc/361a-ca/72-4078-acua-26c64309389c/sist-v-etsi-eg-202-116-v1-2-2-2009)
- [i.16] ETSI ETR 170 (1995): "Human Factors (HF); Generic user control procedures for telecommunication terminals and services".
- [i.17] ETSI ETR 175 (1995): "Human Factors (HF); User procedures for multipoint videotelephony".
- [i.18] ETSI ETR 198 (1995): "Human Factors (HF); User trials of user control procedures for Integrated Services Digital Network (ISDN) videotelephony".
- [i.19] ETSI ETR 250 (1996): "Transmission and Multiplexing (TM); Speech communication quality from mouth to ear for 3,1 kHz handset telephony across networks".
- [i.20] ETSI ETR 297 (1996): "Human Factors (HF); Human Factors in Videotelephony".
- [i.21] ETSI ETR 329 (1996): "Human Factors (HF); Guidelines for procedures and announcements in Stored Voice Services (SVS) and Universal Personal Telecommunication (UPT)".
- [i.22] ETSI ETR 334 (1996): "Human Factors (HF); The implications of human ageing for the design of telephone terminals".
- [i.23] ETSI ETS 300 143 (1994): "Integrated Services Digital Network (ISDN); Audiovisual services Inband signalling procedures for audiovisual terminals using digital channels up to 2 048 kbit/s".
- [i.24] ETSI ETS 300 145 (1996): "Integrated Services Digital Network (ISDN); Audiovisual services; Videotelephone systems and terminal equipment operating on one or two 64 kbit/s channels".
- [i.25] ETSI ETS 300 264 (1994): "Integrated Services Digital Network (ISDN); Videotelephony teleservice; Service description".

- [i.26] ETSI ETS 300 266 (1994): "Integrated Services Digital Network (ISDN); Videotelephony teleservice; Functional capabilities and information flows".
- [i.27] ETSI ETS 300 267: "Integrated Services Digital Network (ISDN); Telephony 7 kHz and videotelephony teleservices; Digital Subscriber Signalling System No. one (DSS1) protocol; Part 1: Protocol specification".
- [i.28] ETSI I-ETS 300 302 (Part 1 to Part 4): "Integrated Services Digital Network (ISDN); Videotelephony teleservice; Part 1: Electroacoustic characteristics for handset telephony function when using Pulse Code Modulation (PCM) encoding".
- [i.29] ETSI ETS 300 303 (1994): "Integrated Services Digital Network (ISDN); ISDN - Global System for Mobile communications (GSM) Public Land Mobile Network (PLMN) signalling interface".
- [i.30] ETSI ETS 300 375 (1994): "Human Factors (HF); Pictograms for point-to-point videotelephony".
- [i.31] ETSI ETS 300 381: "Telephony for hearing impaired people; Inductive coupling of telephone earphones to hearing aids".
- [i.32] ETSI I-ETS 300 442 (1995): "Integrated Services Digital Network (ISDN); Videotelephony teleservice; Terminal characteristics".
- [i.33] ETSI ETS 300 488 (1996): "Terminal Equipment (TE); Telephony for hearing impaired people; Characteristics of telephone sets that provide additional receiving amplification for the benefit of the hearing impaired".
- [i.34] ETSI I-ETS 300 654 (1996): "Integrated Services Digital Network (ISDN); Videotelephony terminals; Interim D-channel signalling aspects".
- [i.35] **iTeh STANDARD PREVIEW**
ETSI ETS 300 738 (1997): "Human Factors (HF); Minimum Man-Machine Interface (MMI) to public network based supplementary services"
standards.iteh.ai/catalog/standards/sist-v-etsi-eg-202-116-v1-2-2-2009
- [i.36] ETSI I-ETS 300 245-3 (1995): "Integrated Services Digital Network (ISDN); Technical characteristics of ~~telephony terminals Part 35~~ Pulse Code Modulation (PCM) A-law, loudspeaking and ~~handsfree telephony~~ standards.iteh.ai/catalog/standards/sist-v-etsi-eg-202-116-v1-2-2-2009".
- [i.37] ETSI I-ETS 300 245-4 (1995): "Integrated Services Digital Network (ISDN); Technical characteristics of telephony terminals Part 4: Additional equipment interface (AEI)".
- [i.38] ETSI ETS 300 679 (1996): "Terminal Equipment (TE); Telephony for the hearing impaired; Electrical coupling of telephone sets to hearing aids".
- [i.39] ETSI ETS 300 767 (1997): "Human Factors (HF); Telephone prepayment cards; Tactile identifier".
- [i.40] ETSI TR 101 806 (V1.1.1): "Human Factors (HF); Guidelines for Telecommunication Relay Services for Text Telephones".
- [i.41] ETSI TR 102 083 (V1.1.1): "Human Factors (HF); Supplementary service codes for use in public network services".
- [i.42] ETSI TR 102 068 (V1.1.1): "Human Factors (HF); Requirements for assistive technology devices in ICT".
- [i.43] ETSI TBR 008 (1998): "Integrated Services Digital Network (ISDN); Telephony 3,1 kHz teleservice; Attachment requirements for handset terminals".
- [i.44] ETSI TBR 010 (1999): "Digital Enhanced Cordless Telecommunications (DECT); General terminal attachment requirements: Telephony applications".
- [i.45] ETSI TBR 038 (1998): "Public Switched Telephone Network (PSTN); Attachment requirements for a terminal equipment incorporating an analogue handset function capable of supporting the justified case service when connected to the analogue interface of the PSTN in Europe".
- [i.46] IEC 60417: "Graphical symbols for use on equipment".

- [i.47] IEC 60825-1: "Safety of laser products. Part 1: Equipment classification, requirements and user's guide".
- [i.48] IEC 80416-1 (2001): "Basic principles for graphical symbols for use on equipment - Part 1: Creation of symbol originals".
- [i.49] ISO 7000: "Graphical symbols for use on equipment".
- [i.50] ISO 7001: "Public information symbols".
- [i.51] ISO 9186: "Graphical symbols - Test methods for judged comprehensibility and for comprehension".
- [i.52] ISO 9241-1: "Ergonomic requirements for office work with visual display terminals (VDTs) - Part 1: General introduction".
- [i.53] ISO 9241-3 (1992): "Ergonomic requirements for office work with visual display terminals (VDTs) - Part 3: Visual display requirements".
- [i.54] ISO 9241-4 (1998): "Ergonomic requirements for office work with visual display terminals (VDTs) - Part 4: Keyboard requirements".
- [i.55] ISO 9241-5 (1998): "Ergonomic requirements for office work with visual display terminals (VDTs) - Part 5: Workstation layout and postural requirements".
- [i.56] ISO 9241-7 (1998): "Ergonomic requirements for office work with visual display terminals (VDTs) - Part 7: Requirements for display with reflections".
- [i.57] ISO 9241-8 (1997): "Ergonomic requirements for office work with visual display terminals (VDTs) - Part 8: Requirements for displayed colours".
- [i.58] ISO 9241-9 (2000): "Ergonomic requirements for office work with visual display terminals (VDTs) - Part 9: Requirements for non-keyboard input devices".
- [i.59] ISO 9241-10 (1996): "Ergonomic requirements for office work with visual display terminals (VDTs) - Part 10: Dialogue principles".
SIST-V ETSI/EG 202 116 V1.2.2:2009
<https://standards.iteh.ai/catalog/stadards/sist/ccb756fa-ca/2-4bb8-aeda-26c64309589e/sist-v-etsi-eg-202-116-v1-2-2-2009>
- [i.60] ISO 9241-11 (1998): "Ergonomic requirements for office work with visual display terminals (VDTs) - Part 11: Guidance on usability".
- [i.61] ISO 9241-12 (1998): "Ergonomic requirements for office work with visual display terminals (VDTs) - Part 12: Presentation of information".
- [i.62] ISO 9241-14 (1997): "Ergonomic requirements for office work with visual display terminals (VDTs) - Part 14: Menu dialogues".
- [i.63] ISO 9241-15 (1997): "Ergonomic requirements for office work with visual display terminals (VDTs) - Part 15: Command dialogues".
- [i.64] ISO 9241-16 (1999): "Ergonomic requirements for office work with visual display terminals (VDTs) - Part 16: Direct manipulation dialogues".
- [i.65] ISO/IEC Guide 71 (2001): "Guidelines for standards developers to address the need of older persons and persons with disabilities".
- [i.66] ISO/IEC 9995: "Information technology - Keyboard layouts for text and office systems".
- [i.67] ISO/IEC 11581: "Information technology - User system interfaces and symbols - Icon symbols and functions".
- [i.68] ISO/IEC 13407: "Human-centred design processes for interactive systems".
- [i.69] ITU-T Recommendation E.121 (1996): "Pictograms, symbols and icons to assist users of the telephone service".
- [i.70] ITU-T Recommendation E.123 (2001): "Notation for national and international telephone numbers, e-mail addresses and Web addresses".

- [i.71] ITU-T Recommendation E.131 (1988): "Subscriber control procedures for supplementary telephone services".
- [i.72] ITU-T Recommendation E.132 (1988): "Standardization of elements of control procedures for supplementary telephone services".
- [i.73] ITU-T Recommendation E.134 (1993): "Human factors aspects of public terminals: generic operating procedures".
- [i.74] ITU-T Recommendation E.136 (1997): "Specification of a tactile identifier for use with telecommunications cards".
- [i.75] ISO/IEC 13714: "Information technology - Document processing and related communication - User interface to telephone-based services - Voice messaging applications".
- [i.76] ITU-T Recommendation E.161 (2001): "Arrangement of figures, letters and symbols on telephones and other devices that can be used for gaining access to a telephone network".
- [i.77] ITU-T Recommendation E.180 (1998): "Technical characteristics of tones for the telephone service".
- [i.78] ITU-T Recommendation E.181 (1988): "Customer recognition of foreign tones".
- [i.79] ITU-T Recommendation E.182 (1998): "Application of tones and recorded announcements in telephone services".
- [i.80] ITU-T Recommendation E.183 (1998): "Guiding principles for telephone announcements".
- [i.81] ITU-T Recommendation E.184 (1988): "Indications to users of ISDN terminals".
- [i.82] ITU-T Recommendation E.331 (1991): "Minimum user-terminal interface for a human user entering address information into an ISDN terminal".
- [i.83] ITU-T Recommendation F.901: "Usability evaluation of telecommunication services".
- [i.84] ITU-T Recommendation F.902: "Interactive services design guidelines".
<http://standards.itsai.it/tb/gtachuk/sist-v/s1756f0c72-4bb8-9e09-26c64309589e/sist-v-etsi-eg-202-116-v1-2-2-2009>
- [i.85] ITU-T Recommendation G.114 (2000): "One-way transmission time".
- [i.86] ITU-T Recommendation G.121 (1993): "Loudness ratings of national systems".
- [i.87] ITU-T Recommendation I.250 (1988): "Definition of Supplementary Services".
- [i.88] ITU-T Recommendation P.11 (1993): "Effect of transmission impairments".
- [i.89] ITU-T Recommendation P.30 (1988): "Transmission performance of group audio terminals (GATs)".
- [i.90] ITU-T Recommendation P.38 (1993): "Transmission characteristics of operator telephone systems (OTS)".
- [i.91] ITU-T Recommendation P.310 (2000): "Transmission characteristics for telephone-band (300-3 400 Hz) digital telephones".
- [i.92] ITU-T Recommendation P.311 (1998): "Transmission characteristics for wideband (150-7 000 Hz) digital telephones".
- [i.93] ITU-T Recommendation P.313 (1999): "Transmission characteristics for cordless and mobile digital terminals".
- [i.94] ITU-T Recommendation P.340 (2000): "Transmission characteristics and speech quality parameters of hands-free terminals".
- [i.95] ITU-T Recommendation P.341 (1998): "Transmission characteristics for wideband (150-7 000 Hz) digital hands-free terminals".