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Human Factors (HF); User-centred terminology for existing and upcoming ICT devices, services and applications

Reference

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Foreword

This final draft ETSI Guide (EG) has been produced by ETSI Technical Committee Human Factors (HF), and is now submitted for the ETSI standards Membership Approval Procedure.

The work has been conducted in an open collaboration with industry, user and consumer representatives, and other relevant stakeholders. The present document is based upon desk research (documents and online sources), best practices, expert knowledge, and an industry-wide consultation and consensus process, aimed at consensus building and a quick uptake and the widest possible support in future product implementations.

Intended readers of the present document are (list non-exhaustive):

- device designers, developers, and manufacturers;
- application developers;
- service providers;
- network operators;
- technical writers and developers of marketing materials; and
- national and international standards bodies and regulatory institutions.

Modal verbs terminology

In the present document "**should**", "**should not**", "**may**", "**need not**", "**will**", "**will not**", "**can**" and "**cannot**" are to be interpreted as described in clause 3.2 of the ETSI Drafting Rules (Verbal forms for the expression of provisions).

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Introduction

The terms (words, labels) used in the user interface (UI) of a device, service or application may present an obstacle for users if the users are not familiar with those terms or if the users are unsure as to their meaning. While some terms are introduced by manufacturers to denote a new class of features or to distinguish own features from those offered by competitors, most other terms denoting device or service features are not necessarily intended for differentiation. However, in the absence of a harmonized or recommended terminology, the use of those terms may differ considerably among manufacturers and service providers.

The alternative to a confusing plethora of terms is some degree of harmonization among devices, services, and applications, at least for terms not intended to convey a certain brand feature or image. A harmonized terminology can be employed to help prevent the negative effects of an uncontrolled expansion of terms. Those negative effects include:

- increased user difficulties in understanding complex, ambiguous, and inconsistently-used terms, leading to unnecessary confusion;
- increased efforts in user education (user guides);
- increased costs for user support (hotline calls and call agent training);
- limited feature discovery and unclear user expectations (customers who do not understand certain features may not use them, hence revenue may be missed);
- limited uptake (users may be reluctant to use a feature as they are not sure whether it has the expected effect);
- increase of cognitive complexity and subsequent learning effort; and
- abuse in the use of proprietary terms and lack of consistent use of terms.

The need for a harmonized terminology of device, service, and application features increases as new features and functionalities are being developed. Device software, services, and applications are frequently updated, often without even providing an update of the user documentation to the users.

ETSI EG 202 132 [i.1] claims that in order to aid users' learning procedures and to enable and simplify transfer and re-use of knowledge between devices, applications and services, it is relevant to support harmonized vocabularies for the most common and generic mobile ICT functions.

Consistency across basic interactive elements increases the ease and transfer of learning and raises the overall usability of an enough-complex mobile ICT environment. Such a transfer becomes even more important when older users or people with cognitive functional limitations are addressed and expected to use smartphones, mobile services and Internet applications in most segments of everyday life.

A harmonized terminology can also be fed into terminology management systems used within a company to ensure the consistent use of terms across products and the internal and external documentation (e.g. design documents, user guides and promotional materials), see Clause 4.

ETSI EG 202 132 [i.1] contains harmonized English-language terms for a number of areas including user interfaces for hardware and software, configuration of messaging and data services, call features, and terminal functionality. ETSI TR 102 972 [i.2] extends the work done in ETSI EG 202 132 [i.1] towards 3G devices, mobile services, and applications. This extended list of proposed terms forms the initial basis for the terms considered. However, ETSI EG 202 132 [i.1] and ETSI TR 102 972 [i.2] were published a long time ago and require updating, inter alia to cover the many features and services evolved or not available at that time, and to cover other main European languages in addition to English.

The present document addresses this need on the basic level, covering the five largest official EU/EFTA languages (by the number of their native speakers): German, French English, Italian and Spanish. However, given the speed of change in the mobile ICT landscape, it will naturally require updating to ensure continuing relevance. Furthermore, expansion to cover additional European languages and other languages used in Europe will further increase the usefulness and applicability of the present document.

The selection and validation process of the terms applied throughout their development, performed in collaboration with stakeholders is expected to add a quality dimension to the recommended vocabulary that would be difficult to achieve through an individual effort and is expected to contribute to the use and uptake of this freely available, public resource.

1 Scope

The present document aims at further simplifying end-user access to ICT devices, services, and applications by providing recommended terms for basic and commonly-used ICT-related objects and activities, limited to those terms that end users are commonly exposed to. Recommended terms are provided in five languages: English, French, German, Italian, and Spanish (as spoken in their respective European countries).

The recommended terms apply to mobile ICT devices and mobile applications (whether they are standalone or whether they provide access to related services) commonly found in mobile ICT devices (most of the recommended terms are applicable to both mobile and stationary devices, services, and applications). The recommended terms are applicable to the user interface (UI) design for a product as well as that of any user documentation accompanying it.

User requirements and available results of standardization work have been considered and integrated in the present document, providing implementation-oriented guidance. Wherever possible, a Design-for-All approach has been adopted, taking functional abilities of users, including elderly users and users with cognitive, physical, or sensory limitations into account.

The present document does not provide design guidance, nor does it intend to restrict the ability of market players to further improve and develop their terminals and services. Neither does it intend to limit their options to trademark user interface elements or profile the user experience of brand-specific user interface implementations as a competitive edge.

2 References

2.1 Normative references

Normative references are not applicable in the present document.

2.2 Informative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

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

The following referenced documents are not necessary for the application of the present document but they assist the user with regard to a particular subject area.

[i.1] ETSI EG 202 132: "Human Factors (HF); User Interfaces; Guidelines for generic user interface elements for mobile terminals and services".

[i.2] ETSI TR 102 972: "Human Factors (HF); User Interfaces; Generic user interface elements for 3G/UMTS mobile devices, services and applications".

[i.3] ETSI EG 202 417: "Human Factors (HF); User education guidelines for mobile terminals and services".

[i.4] ETSI ETR 095: "Human Factors (HF); Guide for usability evaluations of telecommunications systems and services".

[i.5] ISO 9241-11:2018: "Ergonomics of human-system interaction - Part 11: Usability: Definitions and concepts".

[i.6] ETSI ETR 116: "Human Factors (HF); Human factors guidelines for ISDN Terminal equipment design".

[i.7] ETSI EN 301 549: "Accessibility requirements suitable for public procurement of ICT products and services in Europe".

[i.8] IEEE 802.11™: "WiFi standards family specifications".

NOTE: Available at https://ieeexplore.ieee.org.

[i.9] Bluetooth™ SIG Core Specifications.

NOTE: Available at www.bluetooth.com/specifications/bluetooth-core-specification.

[i.10] Mobile & Wireless Forum (MWF) - Global Accessibility Reporting Initiative (GARI): GARI Feature Guide.

NOTE: Available at www.gari.info.

[i.11] CORDIS EU Research portal: "Terminology extraction, translation tools and comparable corpora".

NOTE: Available at https://cordis.europa.eu/project/rcn/93820_en.html.

[i.12] ISO 9999:2016: "Assistive products for persons with disability - Classification and terminology".

[i.13] ISO/IEC 29138-1:2018: "Information technology - User interface accessibility - Part 1: User accessibility needs".

3 Definition of terms, symbols and abbreviations

3.1 Terms

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

consensus: general agreement, characterized by the absence of sustained opposition to substantial issues by any of the concerned interests and by a process that involves taking into account the views of all parties concerned and to reconcile any conflicting arguments

design-for-all: design of products to be usable by all people, to the greatest extent possible, without the need for specialized adoption

emergency call: call from a user to an emergency control centre

end user: see **user**

function: abstract concept of a particular piece of functionality in a device or service

generic: generalized set or general purpose set, often in the sense of basic or ordinary

ICT devices and services: devices or services for processing information and/or supporting communication, which has an interface to communicate with a user

impairment: any temporary or permanent; progressive, regressive or static; or intermittent or continuous reduction or loss of psychological, physiological or anatomical function or structure of a user (environmental included)

mobile device: personal communication device, e.g. a smartphone, capable of communicating by using one or several radio technologies, including support for internet access

term: word or a phrase describing a thing or expressing a concept, in a specific language, domain or context

NOTE: Based on the Oxford dictionary.

terminal: physical device which interfaces with a telecommunications network, and hence to a service provider, to enable access to a telecommunications service

NOTE: A terminal also provides an interface to the user to enable the interchange of control actions and information between the user and the terminal, network or service provider.

terminology: vocabulary of technical terms in a particular field, subject, science, or art; nomenclature

usability: effectiveness, efficiency and satisfaction with which specified users can achieve specified goals (tasks) in a specified context and particular environments, see ETSI ETR 095 [i.4] and ISO 9241-11 [i.5]

NOTE: In telecommunications, usability includes the concepts of learnability and flexibility; and reference to the interaction of more than one user (the A and B parties) with each other and with the terminals and the telecommunications system, see ETSI ETR 116 [i.6].

user: person who uses a telecommunications terminal to gain access to and control of a telecommunications service or application

NOTE: The user may or may not be the person who has subscribed to the provision of the service or owns the terminal. Also, the user may or may not be a person with impairments.

User Interface (UI): physical and logical interface through which a user communicates with a telecommunications terminal or via a terminal to a telecommunications service (also called man-machine interface, MMI)

NOTE: The communication is bi-directional in real time and the interface includes control, display, audio, haptic or other elements, in software or hardware.

user requirements: requirements based on user needs and capabilities, on a telecommunication 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

voice (spoken) command: verbal or other auditory dialogue format which enables the user to input commands to control a device, service or application

3.2 Symbols

Void.

3.3 Abbreviations

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

3G	3rd Generation (mobile networks)
APN	Access Point Name
APR	Área de Prioridad Residencial
ATM	Automated Teller Machine
AV	AudioVisual
CCNR	Call Completion on No Reply
CEAM	Carte Européenne d'Assurance Maladie
CLIP	Caller Line Identification Presentation
CLIR	Caller Line Identity Restriction
DAB	Distributeur Automatique de Billets
EDGE	Enhanced Data rates for GSM Evolution
EHIC	European Healthcare Identity Card
FTP	File Transfer Protocol
GARI	Global Accessibility Reporting Initiative
GPRS	General Packet Radio Service
GPS	Global Positioning System
GSM	Global System for Mobile telecommunication
HDR	High Dynamic Range
HF	Human Factors
HSPA	High-Speed Packet Access
HSPA+	evolved High-Speed Packet Access
HTTP	Hypertext Transfer Protocol
HTTPS	Hypertext Transfer Protocol Secure
IBAN	International Bank Account Number
ICE	In Case of Emergency
ICT	Information and Communication Technologies
IM	Instant Messaging

IMEI	International Mobile Equipment Identity
IP	Internet Protocol
IR	Infrared
IRPF	Impuesto sobre la Renta de las Personas Fisicas
ISDN	Integrated Services Digital Network
ISO	International Organization for Standardization
LED	Light Emitting Diode
LTE	Long Term Evolution
MMI	Man-Machine Interface
MMS	Multimedia Message Service
NFC	Near-Field Communication
ÖPNV	Öffentlicher Personennahverkehr
OS	Operating System
PA	Public Address
PC	Personal Computer
PIN	Personal Identity Number
PUK	Personal Unblocking Key
RF	Radio Frequency
RH	Rhesus
RTT	Real-time Text Telephony
SD	Secure Digital
SEPA	Single Euro Payments Area
SIM	Subscriber Identity Module
SMS	Short Message Service
SMTP	Simple Mail Transfer Protocol
SOS	Save Our Souls
TAN	Transaction Number
TTS	Text To Speech
TV	Television
UI	User Interface
UICC	Universal Integrated Circuit Card
UMTS	Universal Mobile Telecommunication System
URI	Uniform Resource Identifier
URL	Uniform Resource Locator
USB	Universal Serial Bus
USB-C	Universal Serial Bus- C type
USIM	Universal Subscriber Identity Module
VPN	Virtual Private Network
WAP	Wireless Application Protocol
Wi-Fi	Wireless-Fidelity

NOTE: Commercial name for the ISO/IEC wireless network standard family 802.11, also known as WLAN (see [i.8]).

WLAN	Wireless Local Area Network
ZTL	Zona a Traffico Limitato

4 User-centred development of terms

Intended *users* of the present document are those designing, developing, implementing, and deploying user interfaces for and interaction with mobile ICT devices, services, and applications.

Intended *end users* mentioned in the present document are people who use mobile ICT devices, services, and applications ranging from first time users to experienced users.

Uniformity in the interactive elements increases the transfer of learning between different devices, services, and applications. Such knowledge transfer becomes even more important in a world of ubiquitous devices and services used by heterogeneous users. In particular, harmonized terms (used across devices, services, and applications from different manufacturers and providers) improve the overall usability of the entire ICT ecosystem. Use of the harmonized vocabulary in the present document for the development of ICT devices, services, and applications will enable end users to reapply knowledge and experience.

Previous work reported, e.g. [i.11], addressing the automatic generation of bilingual terminologies, did not meet expectations. Such harmonization efforts tended to use other (e.g. automated extraction) approaches developing common resources, compiling multilingual terminology banks without interoperability, user-centricity and harmonization in focus.

A consistent, harmonized, and accessible terminology will particularly benefit end users with temporary or permanent functional variations, such as those with literacy difficulties, or people with visual or cognitive impairments. A harmonized terminology should be easy to remember, recognize, and retrieve, and the individual terms should represent their related concepts well. A well-designed user terminology should have a shallow learning curve and cover most common tasks and use cases users are likely to encounter through the most common, every-day use patterns.

Finally, the terminology should also be useful for manufacturers' **terminology management** systems, a process to organize and associate terms with a clear set of rules for their usage (e.g. through a term base), also including and harmonized across user guides and user interfaces. Companies invest in terminology management in order to ensure that the terms used in internal documents, external documents such as user guides, in user interfaces, and for marketing information such as advertisements are used consistently.

Unmanaged terminology will easily become inconsistent, leading to confusion and translations difficult to re-use - that will lead to more time- and resource-intensive processes. It typically also reduces user satisfaction, limits cognitive accessibility and is often a main reason to the under-use of potentially beneficial functionality.

ETSI EG 202 417 [i.3] provides detailed guidelines on how terminology management can help improve the quality of user documentation. Applying these assists the user-centred generation of harmonised terminologies. Furthermore, prioritizing the user-centred view over "technical perfection" helps selecting terms the user will understand.

ISO 9999:2016 [i.12] and ISO/IEC TR 29138-1:2018 [i.13] are useful reference and inspirational sources when developing mobile accessibility solutions and have been consulted, together with other functionality-area specific references (e.g. in the field of banking services or healthcare services, where terminology-related national regulations may exist and apply, and should be respected).

ISO/TC 37 Terminology Principles and coordination (see https://www.iso.org/committee/48104.html) covers the standardization of descriptions, resources, technologies and services related to terminology, translation, and other language-based activities in the multilingual information society – without focusing on ICT in the mobile context of use.

Last but not least, consistently extending the focus of these efforts beyond the written word to include symbols, icons, pictograms and audiograms (often replacing text) will further benefit the user-centric product and service development.

5 Method

5.1 General

This clause describes the method applied for selecting the user-centred terminology presented in Clauses 6 and 7.

The selection of device-related terms (Clause 6) is inter alia based on the analysis of the five device vendors with the largest market shares in Europe. As the landscape of vendors for applications and services is much more diverse and fragmented across European regions, a different approach had to be selected for those functionality areas (Clause 7).

The method employed consists of three phases:

- Phase 1: Identification of objects and activities from a range of functional areas such as telephony and photography;
- Phase 2: Collection of terms used by major stakeholders; and
- Phase 3: Analysis of terms collected and selection of recommended terms.

5.2 Phase 1: Identification of device-related and service- and applications-related objects and activities

In this first phase, functional areas (such as telephony, accessibility and social media) were identified that define the range of functionalities covered by the present document.

Four functional areas cover functionalities frequently used by many users of mobile ICT devices. These **device-related functional areas** are:

1. General;
2. Accessibility;
3. Telephony; and
4. Photography.

Twelve functional areas cover functionalities frequently used by many users of mobile ICT services and applications. These **service- and applications-related functional areas** are:

1. General;
2. Messaging services;
3. Media services;
4. Societal services and communications;
5. Social media;
6. Banking and payment services;
7. eHealth services;
8. Travel services;
9. Navigation and maps;
10. Games;
11. Searching and browsing; and
12. Tools and miscellaneous.

For each functional area, relevant objects and activities (i.e. those that are frequently used and used by many users) were identified and defined, and the following principles were developed and applied:

Objects and activities were **selected** if they help users in:

- Identifying the functionality (i.e. help the user understand what it does);
- Accessing the functionality;
- Understanding the available options related to a functionality; and/or
- Understanding messages displayed in the context of using a functionality (e.g. error feedback).

Objects and activities were **typically not selected** (unless required by the context) if they cover:

- The most common content of an application (e.g. "Photo", "Take the first exit at the roundabout"), or the style of the interaction;
- Common terms easily found in a dictionary (e.g. "hotel") not addressed in further detail;
- The most common verbal expressions indicating an action taken on an object (e.g. "take a photo"); and/or

- Words, acronyms, or abbreviations used in a specific technical sense (e.g. "CCNR").

Objects and activities relevant for **multiple functional areas** are treated as General terms in both categories (see Clauses 6.2 and 7.2 respectively).

5.3 Phase 2: Collection of terms

For each device-related functional area (Generic, Accessibility, Telephony and Photography), relevant device vendors were identified and the terms used by them for the objects and activities of the respective functional area were collected in the five languages covered by the present document. For the analysis, the top-5 vendors Q1, 2018 were selected based on their market share at the time in Europe for the product category "Smartphone".

In most cases, the number of providers had to be limited to five in order to keep the effort for the analysis manageable. The analysis showed that not all functionalities were necessarily offered by all (five) vendors. Functionalities offered by a sole vendor were not included in the analysis, unless there were strong reasons requiring that (e.g. innovative and important, upcoming functionality or a considerable or dominant market share).

The approach described above for the device-related functionalities could not be applied to the applications and service-related functionalities, as the latter are not based in the device itself and are consequently more dynamic, less consistent, and more differentiated. Instead, a use-case-based approach was employed with the aim of capturing the most-frequently-used terms employed by key stakeholders.

5.4 Phase 3: Analysis and selection

In the final phase of the work, the terms collected in Phase 2 were reviewed and the terms to be recommended were selected based on:

- A check for semantics and syntax in relation to the functionality provided;
- An evaluation with regard to understandability, clarity, and jargon-freeness;
- A check for consistency between vendors (i.e. prevalence of certain terms);
- Final selection, reviews, and prioritization with stakeholders (electronically and through workshops and reviews).

5.5 Principles of use

For the present document, the following principles of use in implementations apply:

- Service and interaction design guidelines are not provided - with one exception: a firm recommendation for redundant support of multiple terms used under stress (e.g. in emergencies);
- In some instances, more than one term is recommended (separated by semicolons), presented in an order of anticipated preference;
- Interchangeable elements within a phrase are separated with a slash (e.g. for "interruptor de timbre/silencio" both "interruptor de timbre" and "interruptor de silencio" are acceptable);
- Elements in brackets are optional (e.g. for "(Rufton-) Lautstärke" both "Lautstärke" and "Rufton-Lautstärke" are acceptable);
- Brand names and brand-specific, or brand-associated, commercial terms have been avoided to the possible extent;
- In certain cases, the support of multiple, redundant choices is recommended (even beyond emergency services mentioned above);