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Human Factors (HF);
Guidelines for the design of mobile ICT devices and their related applications for people with cognitive disabilities

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Foreword

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

Modal verbs terminology

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Introduction

Many people with physical or cognitive impairments do not find it easy and efficient to use mobile ICT devices and services manufactured for the mass market or for specific target groups such as young users.

The concept of cognitive impairment is very broad. In general, a person with a cognitive impairment has more difficulties with one or more types of mental tasks than the average person [i.36]. Cognitive impairments can be described as "a substantial limitation in one's capacity to think, including conceptualizing, planning, and sequencing thoughts and actions, remembering, interpreting subtle social cues, and understanding numbers and symbols" [i.1].

Cognitive impairments can include learning impairments (difficulty to learn in conventional ways), language impairments (difficulty to understand or producing language), or some form of ageing-related cognitive impairment (e.g. dementia - including Alzheimer's disease - memory loss, or lack of orientation). Individuals with cognitive impairments can face unique challenges that are often pervasive and changing throughout their lives.

A number of accessibility guidelines for mobile ICT exist (from ETSI and other standards bodies as well as from academic and industrial sources). They provide guidance to device and service developers to raise their awareness of problems frequently encountered by people with disabilities, and suggest ways of increasing the accessibility of their products. However, while there are many guidelines that focus on physical and/or sensory impairments, there is a lack of guidelines that explicitly target the requirements of people with cognitive impairments.

The present document is intended to fill this gap. Based on an analysis reported in ETSI TR 103 349 [i.8], the present document provides guidelines for the design of mobile ICT devices and services. In particular, the design guidelines in the present document are based upon the functional needs of persons with limited cognitive, language and learning abilities described in ETSI TR 103 349 [i.8]. The guidelines extend existing guidelines on usability and accessibility. This means that the cognitive impairment-specific guidelines in the present document apply in addition to guidelines on good user interface design and on design for all.

The guidelines in the present document are based on research studies and scientific papers used as sources for identifying relevant user needs and are complemented by others based on knowledge of best practice. For example, there are several general accessibility requirements in ETSI EN 301 549 [i.6] that support the needs of persons with cognitive impairments, as described in Annex B of ETSI EN 301 549 [i.6]. It is also worth noting that many persons with cognitive impairments also have other (physical and sensory) impairments. The requirements of ETSI EN 301 549 [i.6] support these additional needs.

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1 Scope

The present document contains design guidelines for mobile devices and applications that will enable persons with limited cognitive, language and learning abilities (including people with age-related cognitive impairments) to have an improved user experience when using mobile ICT devices and applications.

The guidelines apply to the design of:

- mobile ICT devices;
- mobile applications (whether they are standalone or whether they provide access to related services).

The guidelines in the present document complement existing usability and accessibility guidelines.

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.

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[i.5] ETSI EG 202 325: "Human Factors (HF); User Profile Management".

[i.6] ETSI EN 301 549: "Accessibility requirements suitable for public procurement of ICT products and services in Europe".

[i.7] ETSI ES 202 746: "Human Factors (HF); Personalization and User Profile Management; User Profile Preferences and Information".

[i.8] ETSI TR 103 349: "Human Factors (HF); Functional needs of people with cognitive disabilities when using mobile ICT devices for an improved user experience in mobile ICT devices".

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3 Definitions and abbreviations

3.1 Definitions

For the purposes of the present document, the terms and definitions given in ETSI EG 201 013 [i.4] and the following apply:

activity limitation: difficulty an individual may have in executing an activity

NOTE: Source: [i.37].

approved platform or device based user authentication: device-based user authentication mechanism that is directly supported by a mobile device operating system or by device firmware

cognitive disability: activity limitations or participation restrictions that occur when factors in the environment constrain barriers for persons with cognitive impairments

cognitive impairment: substantial limitation in a person's capacity to think, including conceptualizing, planning, and sequencing thoughts and actions, remembering, interpreting subtle social cues, and understanding numbers and symbols

NOTE: Source: [i.1].

context: any information that can be used to characterize the state of entities that are considered relevant to the interaction between a user and an application, network function, service or device

NOTE: Source: ETSI TS 102 747 [i.9].

context of use: users, tasks, equipment (hardware, software and materials), and the physical and social environments in which a product is used

NOTE: Source: ISO 9241-110 [i.22].

dark pattern: user interfaces that are designed to trick people

NOTE: Source: [i.56].