SLOVENSKI STANDARD
SIST EN 1332-1:2009

01-september-2009

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Identification card systems - Human-machine interface - Part 1: Design principles for the user interface

Identifikationskartensysteme - Schnittstelle Mensch-Maschine - Teil 1: Gestaltungsgrundsätze für die Benutzerschnittstelle

Systèmes de cartes d'identification - Interface homme-machine - Partie 1: Principes de conception pour l'interface utilisateur

Ta slovenski standard je istoveten z: **EN 1332-1:2009**

ICS:

35.200	Vmesniška in povezovalna oprema	Interface and interconnection equipment
35.240.15	Identifikacijske kartice in sorodne naprave	Identification cards and related devices

SIST EN 1332-1:2009 **en,fr,de**

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 1332-1

July 2009

ICS 35.240.15

Supersedes EN 1332-1:1999

English Version

Identification card systems - Human-machine interface - Part 1: Design principles for the user interface

Systèmes de cartes d'identification - Interface homme-machine - Partie 1: Principes de conception pour l'interface utilisateur

Identifikationskartensysteme - Mensch-Maschine-Schnittstelle - Teil 1: Gestaltungsgrundsätze für die Benutzerschnittstelle

This European Standard was approved by CEN on 20 June 2009.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN Management Centre has the same status as the official versions.

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Management Centre: Avenue Marnix 17, B-1000 Brussels

Ref. No. EN 1332-1:2009: E

EN 1332-1:2009 (E)

Contents

Page

2

Foreword

This document (EN 1332-1:2009) has been prepared by Technical Committee CEN/TC 224 "Personal identification, electronic signature and cards and their related systems and operations", the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by January 2010, and conflicting national standards shall be withdrawn at the latest by January 2010.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 1332-1:1999.

This European Standard is one of a series of standards, under the general title "Identification card systems – Human-machine interface" and the different parts are the following:

— *Part 1: Design principles for the user interface*

— *Part 2: Dimensions and location of a tactile identifier for ID-1 cards*

— *Part 3: Keypads*

— *Part 4: Coding of user requirements for people with special needs*

— *Part 5: Raised tactile symbols for differenciation of application on ID-1 cards.*

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

Introduction

Machine readable cards facilitate the provision of a growing variety of services across Europe. The purpose of this standard is to increase the accessibility of these services for the benefit of all users of the system. This will be achieved by facilitating the inter-sector and cross-border interoperability of machine-readable cards and to do so with the maximum possible degree of user-friendliness.

EN 1332 addresses the needs of all users, including elderly, people with disabilities, first time users, minors, those not conversant with the local language and/or culture.

EN 1332 specifies:

a) the design principles for the user interface (including symbols) to be incorporated into design of card-operated equipment, but not the machine operations associated with the selection and delivery of goods or services;

b) a tactile identifier to be incorporated into the design of machine-readable cards;

c) a standard layout for the keypads of card-operated equipment;

d) coding of user requirements for people with special needs;

e) tactile markings for differentiating cards by application.

The contents of EN 1332 are generically based, not sector specific, and cover card-operated devices. It is recognised that the equipment may also be operated by other means, such as the insertion of notes and coins, but the scope of this standard has been, as indicated, narrowly defined.

Issues relating to such consumer concerns at the human-machine interface as PIN presentation are not dealt with in EN 1332.

The EN 1332 standard series has been completed with CEN/TS 15291, *Identification card system – Guidance on design for accessible card-activated devices*. This technical specification provides guidance for the design and location of card-activated devices and the immediate environment to facilitate access for the users.

1 Scope

The purpose of this European Standard is to ensure that card-operated devices are accessible and usable by standardising significant components of the user interface.

This European Standard describes principles and guidelines so that people with the widest range of capabilities can use card-based services in any sector. This includes, but is not limited to, purchase of goods and services, leisure, distribution, identification, banking, telecommunications, mass transport, parking, access control. It also provides recommendations for the operational procedures to be followed when users interact with a card-operated device:

— in order to enter a system;

— whilst using a system;

— leaving a system.

In particular, this European Standard will:

— aid the user's interaction with the system through a consistent user interface when entering, using and leaving card-operated devices;

— promote user confidence in card-based systems in general;

— promote efficient use, security and privacy of card-based systems;

— reduce the occurrence and consequences of error when the user enters, uses or leaves the system;

— enable people with different levels of ability and comprehension (e.g. minors, elderly, visually impaired, foreign language, motor impaired, hearing, etc) and different levels of experience (e.g. first-time users) to use card-based systems;

— improve the learnability of new card-based systems through consistency.

2 Normative references

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

EN 1332-4, *Identification card systems – Man-machine interface – Part 4: Coding of user requirements for people with special needs*

3 Terms, definitions and abbreviations

3.1 Terms and definitions

For the purposes of this standard, the following terms and definitions apply:

3.1.1
automated teller machine
ATM
customer operated device that dispenses and/or accepts cash and/or other services

EN 1332-1:2009 (E)

3.1.2
card-operated device
device operated by a card which is designed to offer some service or goods

3.1.3
cardholder verification method
CVM
method of automatically identifying the cardholder e.g. Personal Identification Number, finger print, voice print

3.1.4
dialogue
interaction between a user and a system to achieve a particular goal
[EN ISO 9241-10:1996]

3.1.5
feedback
system output which a user recognises as a reaction of the system to the user's input

3.1.6
inter-sector use
use in more than one sector and thus not restricted by particular requirements defined in a sector standard

3.1.7
legibility
visual properties of a character or symbol that determine the ease with which it can be measured
[EN 29241-3:1993]

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3.1.8
machine readable card
card incorporating a technology such as magnetic stripe, integrated circuit etc, that may be read by a machine

3.1.9
navigate (to)
to progress through a transaction using navigation aids such as Page Up, Page Down, Next Page, Return to Menu, etc.

3.1.10
Personal Identification Number
PIN
code or password the customer possesses for verification of identity
[EN 29564-1:1993]

3.1.11
symbol
either pictogram or icon

3.2 Abbreviations

For the purposes of this standard, the following abbreviations apply:

ATM   automated teller machine

CVM   cardholder verification method

PIN   personal identification number

4 Approach to user interface design

The approach to user interface design is divided into four main components – Goals, Principles, Guidelines and Conformance Testing (which is a separate standard). These components correspond to Sections 5, 6, 7 and 8 respectively. Figure 1 illustrates the relationship between these components. The contents of the Conformance Testing are derived from the user interface Guidelines, which are in turn driven by the Principles and Goals.
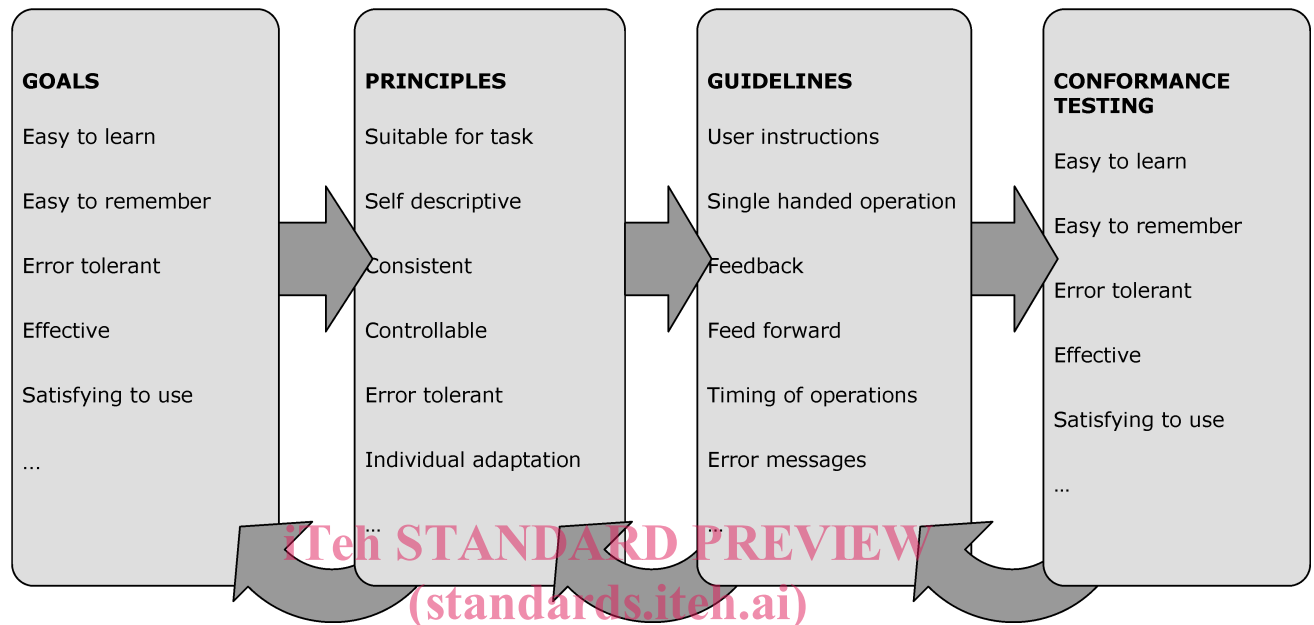
Figure 1 — Relationship between Goals, Principles, Guidelines and Conformance Testing

Note that there is not a 1:1 mapping between Goals and Principles, and Principles and Guidelines. For example, the principle "Consistency" can support most of the Goals. Several Principles can support the same Goal. There can also be a conflict between some Principles – e.g. flexibility versus stability and ease of use.

5 Goals of the user interface

The card-based system's user interface should be designed so that it is:

− **Easy to learn:** Ensure that users can be quickly acquainted with the system in order to be able to use it from initial contact.

− **Easy to use:** The system shall be transparent and therefore easy to explore and efficient to use.

− **Easy to remember:** The use of the interface shall be easy to remember such that the user is able to return to the system after a period of not using it, without having to re-learn its interface.

− **Error tolerant:** The system shall minimise the potential for errors being made, while reducing the severity of errors if they do occur. Fatal errors shall not be possible.

− **Effective:** The system shall ensure that the desired result can be achieved with a minimum of effort, and that the user never questions the purpose of any part of the user interface.

− **Satisfying to use:** Satisfaction measures the extent to which users are free from discomfort, and their attitudes towards the use of the card operated device.

EN 1332-1:2009 (E)

Goals for the design of a card-based system can be illustrated using the model shown in Figure 2. The model shows the interaction between a human and the machine being used. The process is described below:

Environment
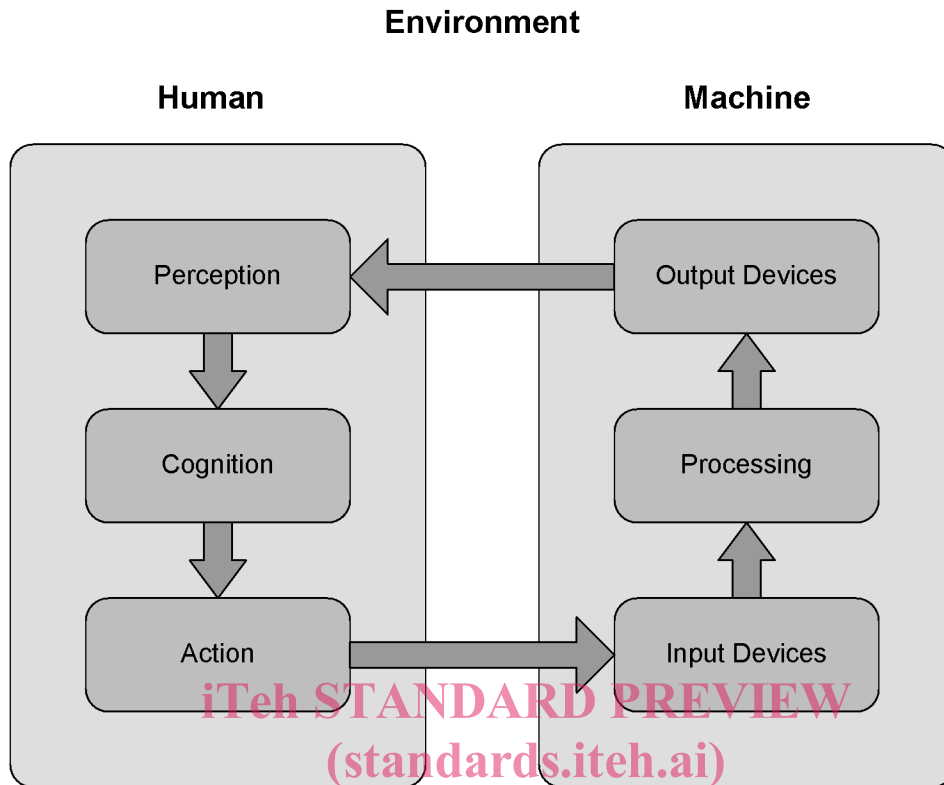
Human   **Machine**

Figure 2 — A simple model for human-machine interaction

1) The user perceives information via one or more of the machine's output devices. For example, the user hears an audible tone representing progress in the transaction.

2) The cognition box represents the user's interpretation of the perceived information. E.g. the user interprets the sound as positive feedback and relates the sound to previous experience – meaning wait.

3) The cognition box is followed by an action, which is detected by one of the machine's input devices. E.g. the user selects a different touch screen button. This input is then processed by the machine and a new output is created.

The model includes the environment as this affects how both the user and machine perform. For example, ambient noise may influence the user's ability to detect audible outputs, and rain may prevent a touch screen correctly detecting user input.

The design of the machine's output devices shall correspond to the user's capabilities and limitations. For example, any audible feedback on a product designed for use by the aged must have the correct audio characteristics for it to be heard by someone with reduced hearing ability. Likewise, the input devices must also be appropriately selected. E.g. a user with reduced motor skills must not be made to use a device like a mouse; a touch screen is probably better.

The user's cognition box relates to the machine's processing box; the user's mental model of how the machine reacts to inputs depends on both the machine's actual behaviour and the user's expectations. The user interface shall therefore aim to present the machine's behaviour as being simple and understandable, as well as congruent with the user's expectations.

6 Principles for user interface design

6.1 General

The principles below (6.2 - 6.13) have been identified to be important for the design of user interfaces that are accessible to all users.

The principles should be applied taking into account user characteristics such as:

− Attention span;

− Limits of short-term memory;

− Sensory abilities (e.g. visually impaired);

− Learning;

− Experience;

− The users' mental model of how the system works.

It is important to see all the principles listed below in relation to each other as they are closely interlinked. Adopting just one or two of the principles will not ensure good user interface design. Implementing the principles must also take into account possible conflicts, such as between security and ease of use. For example, providing speech output can improve ease of use, but it may create problems with regards to security, and may result in a different dialogue.

6.2 Suitable for the task

A user interface is suitable for a task to the extent that it supports the user in the effective and efficient completion of the task. For example, a dialogue should only present the user with those concepts and choices that are directly related to the user's activities.

6.3 Self descriptive

A dialogue system is self-descriptive to the extent that each dialogue step is immediately comprehensible through a workflow map, feedback and prompts from the system. For example: "Now type in your security code" is presented on the screen and acoustically, whilst the back lighting on the keyboard flashes to indicate where one should key in the security code. Another example are page navigation buttons that describe the pages' tasks: "Back to destination selection", "Proceed to checkout".

6.4 Consistent

A user interface should be consistent with user expectations and intuition, both within and between the way a system operates, allowing the users to improve their skills and predict the effects of their actions. It also allows the user to seek advice from others (e.g. helpdesk). For example, control actions should have the same outcomes throughout the system; control sequences have the same syntax; terms and labels remain the same and display items have a designated location. (E.g. "Cancel" should be consistent throughout.)

6.5 Conforms with user expectations/stereotypes

A user interface conforms with user expectations to the extent that it corresponds to the user's task knowledge, education, experience and commonly accepted conventions. It is recommended that within each sector similar applications should have the same mode/sequence of operation. For example, the colour green is used to indicate "go ahead"/proceed, the colour red is associated with danger/stop.