

**Programvaruergonomi för multimediala
användargränssnitt –
Del 2: Navigering och styrning
(ISO 14915-2:2003)**

**Software ergonomics for multimedia user
interfaces –
Part 2: Multimedia navigation and control
(ISO 14915-2:2003)**

Europastandarden EN ISO 14915-2:2003 gäller som svensk standard. Detta dokument innehåller den officiella engelska versionen av EN ISO 14915-2:2003.

The European Standard EN ISO 14915-2:2003 has the status of a Swedish Standard. This document contains the official English version of EN ISO 14915-2:2003.

Dokumentet består av 42 sidor.

Upplysningar om **sakinnehållet** i standarden lämnas av SIS, Swedish Standards Institute, tel 08 - 555 520 00.

Standarder kan beställas hos SIS Förlag AB som även lämnar **allmänna upplysningar** om svensk och utländsk standard.

Postadress: SIS Förlag AB, 118 80 STOCKHOLM
Telefon: 08 - 555 523 10. *Telefax:* 08 - 555 523 11
E-post: sis.sales@sis.se. *Internet:* www.sis.se

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN ISO 14915-2

July 2003

ICS 13.180; 35.200

English version

**Software ergonomics for multimedia user interfaces - Part 2:
Multimedia navigation and control (ISO 14915-2:2003)**

Ergonomie des logiciels pour les interfaces utilisateur
multimédias - Partie 2: Navigation et contrôle multimédias
(ISO 14915-2:2003)

Software-Ergonomie für Multimedia-Benutzerschnittstellen
- Teil 2: Multimedia-Navigation und Steuerung (ISO/FDIS
14915-2:2003)

This European Standard was approved by CEN on 10 July 2003.

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 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 Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: rue de Stassart, 36 B-1050 Brussels

Contents

	Page
Foreword	5
Introduction	6
1 Scope	7
2 Normative references	7
3 Terms and definitions	8
4 Application of this part of ISO 14915	12
4.1 Purpose and intended users of this part of ISO 14915	12
4.2 Reporting conformance to this part of ISO 14915	12
5 Framework for multimedia navigation and control	12
5.1 General	12
5.2 Analysis of content structures	12
5.2.1 Basic analysis	12
5.2.2 Structuring multimedia applications	14
5.3 Navigation-structure design	14
5.3.1 General	14
5.3.2 High-level navigation structure	14
5.3.3 Navigation within presentation segments and media objects	16
6 Navigation design	17
6.1 Introduction to navigation	17
6.1.1 Application structure	17
6.1.2 Navigation structures	17
6.1.3 Content structure	17
6.1.4 Content granularity	18
6.1.5 Exploration	18
6.1.6 Complexity	18
6.1.7 Understanding	18
6.1.8 User assistance	18
6.1.9 Determining navigation techniques	18
6.1.10 Metaphors	19
6.2 Structures for navigation	19
6.2.1 Use of appropriate navigation structures	19
6.2.2 Linear structures	19
6.2.3 Tree structures	20
6.2.4 Network structures	21
7 Common guidance on controls	22
7.1 Compatibility of media controls	22
7.2 User accessibility of controls	22
7.3 Ease of individualization	22
7.4 Appropriateness of media controls	22
7.5 Task-dependent sets of controls	22
7.6 Minimum set of media controls	23
7.7 Grouping media controls	23
7.8 Controllability of media objects	23
7.9 Distinguishable controls	23
7.10 Presence of hidden controls	23
7.11 Status of media	23
7.12 Status of controls	24
7.13 Inactive controls	24

7.14	Consistent controls.....	24
7.15	Ease of access.....	24
7.16	Feedback on use of controls.....	24
7.17	Relation of controls.....	24
7.18	Design of particular controls	25
8	Links	25
8.1	User accessibility of links	25
8.2	Use of links	25
8.2.1	General use of links	25
8.2.2	Use of system-activated links	25
8.2.3	Use of user-activated links.....	25
8.2.4	Use of fixed links	26
8.2.5	Use of temporal links	26
8.2.6	Duration of temporal links.....	26
8.2.7	Avoiding temporal-link errors	26
8.2.8	Use of computed links	26
8.2.9	Recognizing computed links.....	26
8.2.10	Saving computed links	27
8.2.11	Creating user-defined links	27
8.2.12	Multi-user sets of user-defined links.....	27
8.3	Discriminability of links.....	27
8.4	Information about links.....	28
8.4.1	Link-destination content information.....	28
8.4.2	Link-destination location information	28
8.4.3	Link-duration information.....	28
8.4.4	Linked-to-media-type information	28
8.4.5	Link-load-time information	29
8.4.6	Link-history cues.....	29
8.4.7	Multiple sets of link-history cues.....	29
8.4.8	Time dependence of link-history	29
8.4.9	Default link-history cue.....	29
8.4.10	Resetting link-history cues	29
8.4.11	Resetting single link-history cues	29
9	Navigation functions	29
9.1	Scope of navigation actions.....	29
9.1.1	Providing users with navigation information	29
9.1.2	Effect of navigation actions	30
9.1.3	Navigation between and within presentation segments	30
9.1.4	Methods of navigation between presentation segments	30
9.1.5	Navigation involving content chunks within a presentation segment	30
9.1.6	Navigation involving media objects or composite media objects	31
9.2	“Go to beginning”	31
9.3	“Go to previous”.....	31
9.3.1	Go to previously visited presentation segment	31
9.3.2	Go to previous media object	31
9.3.3	Save current state	32
9.3.4	Go to previous state.....	32
9.4	“Go to next”	32
9.4.1	Go to next presentation segment within the application	32
9.4.2	Go-to-next-media object within the composite-media object.....	32
9.5	“Go to end”	32
9.5.1	Exit	32
9.5.2	Go to end of composite-media object	33
9.6	Determine current location.....	33
9.6.1	Location information.....	33
9.6.2	Identifying possible navigation pathways	33
9.6.3	Providing context for details	33
9.7	Move	33
9.8	Search.....	33

9.8.1	Search for other locations	33
9.8.2	Helping formulate searches for items	34
9.8.3	Accessing the results of a search	34
9.9	Tour	34
10	Controls for coordination of multiple media	34
10.1	Synchronization of media	34
10.2	Coordination of media	34
10.3	Controlling layered media	34
10.4	Separation of media	34
10.5	Obscuring media	35
10.6	Navigating between media	35
11	Dynamic media	35
11.1	Dynamic-media controls	35
11.1.1	Basic dynamic-media controls	35
11.1.2	Access to dynamic-media controls	35
11.1.3	“Play”	35
11.1.4	“Stop”	36
11.1.5	“Pause”	36
11.1.6	“Replay”	36
11.1.7	“Play backward”	36
11.1.8	“Scan forward”	37
11.1.9	“Scan backward”	37
11.1.10	“Fast forward”	37
11.1.11	“Rewind”	37
11.1.12	“Record”	37
11.2	Attributes of controls for dynamic media	37
11.2.1	Implementing attributes	37
11.2.2	Direction of play	37
11.2.3	“Loop”	38
11.2.4	Controlling the speed of playing	38
11.2.5	Availability of audio controls	38
11.2.6	Set volume	38
11.2.7	Mute	38
	Bibliography	39
	Annex ZA (normative)	40

Foreword

This document (EN ISO 14915-2:2003) has been prepared by Technical Committee ISO/TC 159 "Ergonomics" in collaboration with Technical Committee CEN/TC 122 "Ergonomics", the secretariat of which is held by DIN.

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 2004, and conflicting national standards shall be withdrawn at the latest by January 2004.

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

Endorsement notice

The text of ISO 14915-2:2003 has been approved by CEN as EN ISO 14915-2:2003 without any modifications.

NOTE Normative references to International Standards are listed in Annex ZA (normative).

Introduction

This part of ISO 14915 applies to both the presentation of content and interaction techniques for user control of computer-based multimedia applications in general, including stand-alone and networked-delivered applications. These applications can vary in size and complexity (e.g. a single web page, a catalogue or an interactive simulation).

This part of ISO 14915 provides specific guidance related to multimedia navigation and control that relates to the three aspects inherent in designing multimedia user interfaces identified in ISO 14915-1:

- content design;
- interaction design;
- media design.

Content design is based on the cognitive needs of the various different users and the different tasks involved in an application. Content design also takes into account various approaches to organize the content to provide support for different methods of exploring the content.

Interaction design focuses on the presentation of this content to users and the methods that will be provided to users for them to interact with this content.

Media design focuses on making use of particular media objects to implement the content and interaction designs.

This part of ISO 14915 is concerned with the navigation between, and control of, various media objects, presentation segments, and content chunks. Specific guidance on media design is provided in ISO 14915-3.

Software ergonomics for multimedia user interfaces —

Part 2: Multimedia navigation and control

1 Scope

This part of ISO 14915 provides recommendations and requirements for the design of multimedia user interfaces with respect to the following aspects: design of the organization of the content, navigation and media-control issues. This part of ISO 14915 is limited to the design of the organization of the content and does not deal with the design of the content in general. Design issues within a single medium (e.g. the lighting of a film sequence) are only addressed with respect to the ergonomic issues related to user controls.

This part of ISO 14915 provides

- a framework for the structuring of multimedia applications,
- information and recommendations on the design of navigation structures and navigation mechanisms for use within multimedia applications, and
- information and recommendations on the design of controls for use within multimedia applications.

It does not specifically address entertainment applications, although some recommendations can also be applicable to that domain.

ISO 14915 does not address implementation issues. The ergonomic requirements can be realised through very different mechanisms, e.g. the delivery system, a scripting language or the application.

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.

ISO 9241-12:1998, *Ergonomic requirements for office work with visual display terminals (VDTs) — Part 12: Presentation of information*

ISO 9241-13, *Ergonomic requirements for office work with visual display terminals (VDTs) — Part 13: User guidance*

ISO 9241-16:1999, *Ergonomic requirements for office work with visual display terminals (VDTs) — Part 16: Direct manipulation dialogues*

ISO 14915-1, *Software ergonomics for multimedia user interfaces — Part 1: Design principles and framework*

ISO/TS 16071, *Ergonomics of human-system interaction — Guidance on accessibility for human-computer interfaces*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 14915-1 and the following apply.

3.1 content chunk

unit of content that satisfies a requirement of a specific task for a specific user

NOTE 1 A content chunk can also meet other requirements of one or more tasks for one or more users, either by itself or in combination with other content chunks.

NOTE 2 A content chunk defines a subtopic that justifies separate consideration by the user. However, designers may decide whether or not to present one or more content chunks together within a single presentation segment.

EXAMPLE A research report is divided into five content chunks that deal with: background information, methodology, results, conclusions, and recommendations.

3.2 presentation segment

unit of design which consists of one or more content chunks which together present part of an application

EXAMPLE A Web page is used to present information about some topic.

3.3 media object

component of a multimedia application that is implemented by a single media type

EXAMPLE 1 A text object presenting a discussion about some topic.

EXAMPLE 2 An image object presenting a picture of some person.

EXAMPLE 3 A sound object presenting a song.

3.3.1 composite media object

either a single media object that is used on its own or a combination of media objects which are used together and presented synchronized with one another and/or automatically linked to one another

NOTE Some objects, such as movies, may naturally contain multiple media.

EXAMPLE 1 A moving image object and a sound object are to be played in synchronization with each other and with a single set of play, pause, and stop controls to effect the playing of both.

EXAMPLE 2 A series of songs are played one after another with a single set of play, pause, and stop controls to effect the playing of the entire series.

3.4 navigation techniques

different techniques of implementing navigation which can include: automatic, predetermined, user determined or adaptive determined

NOTE A combination of these navigation techniques can be used in different parts of a multimedia system.

3.4.1 automatic navigation

navigation where content is presented by the system without user's input

EXAMPLE Audio is presented automatically along with video.

3.4.2

predetermined navigation

navigation where the user has only one choice of where to go next, but where the user has control over when to go to this next content

EXAMPLE Upon answering question 2 in a quiz, the user is sent to question 3.

3.4.3

user-determined navigation

navigation where the user can choose which content to go to next from a number of options

EXAMPLE The user selects between going into further details in a topic and going on to the next topic.

3.4.4

adaptive determined navigation

navigation where the choices available are determined by the system based on the content and some combination of: an individual's history, an individual's personal characteristics, a group's social history, and/or a group's characteristics

EXAMPLE The system limits the choices presented based on a profile of the user's interests.

3.5

content structure

⟨multimedia applications⟩ composed of a number of content chunks that are related together in one or more logical manners

3.6

navigation structure

⟨multimedia application⟩ composed of a number of media objects, presentation segments, and navigation techniques that allow a user to move between related media objects and presentation segments

3.7

basic structures

structures used as the basis for creating all other structures

NOTE The three basic structures are linear structures, tree structures, and network structures.

3.7.1

linear structures

structures that organize their elements in a sequence

NOTE 1 Linear structures may include sequences where media objects are presented in parallel.

NOTE 2 An example of a linear structure of content chunks or presentation segments is illustrated in Figure 1.

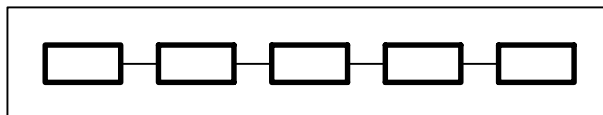


Figure 1 — Example of a linear structure

3.7.2

tree structures

structures that organize their elements in a hierarchical manner, where each component is associated with only one higher-level component and may be associated with multiple lower-level components

NOTE An example of a tree structure of content chunks or presentation segments is illustrated in Figure 2.