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## **Software ergonomics for multimedia user interfaces —**

### **Part 1: Design principles and framework**

*Ergonomie des logiciels pour les interfaces utilisateur multimédias —  
Partie 1: Principes et cadre de conception*



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## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this part of ISO 14915 may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 14915-1 was prepared by Technical Committee ISO/TC 159, *Ergonomics*, Subcommittee SC 4, *Ergonomics of human-system interaction*.

ISO 14915 consists of the following parts, under the general title *Software ergonomics for multimedia user interfaces*:

- *Part 1: Design principles and framework*
- *Part 2: Multimedia navigation and control*
- *Part 3: Media selection and combination*

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## Introduction

The design of user interfaces for multimedia applications typically involves a much wider range of design and evaluation issues than that of conventional user interfaces based only in textual and graphical format. Many different techniques and design options are available. Multimedia user interfaces incorporate, integrate and synchronize different media (static media such as text, graphics, images, and dynamic media such as audio, animation, video or other sensory modalities). Within each medium, further distinctions can be made. Graphics, for instance, can be presented either in two- or three-dimensional representation and audio can be further categorized according to the level of sound quality or with respect to mono, stereo or surround sound.

Ergonomic design enhances the ability of users to operate multimedia applications effectively, efficiently and with satisfaction (see ISO 9241-11). This can be achieved by careful design of multimedia applications with respect to user characteristics, the different tasks they are intended to fulfil (e.g. for work, education or performance support) and the environment in which the system will be used. An ergonomic design of multimedia user interfaces can also improve the safety of operating a system (e.g. delivering an alarm both in visual and auditory media).

The range of media available and the interaction of different media have a variety of perceptual, cognitive and other ergonomic implications for the users. Specific characteristics of multimedia are the potentially high perceptual load, the structural and semantic complexity, or the large volume of information to be conveyed through the system. Multimedia applications are often used for communicative purposes. Manipulation of data or information presented in multimedia applications is also often part of the user's activity.

ISO 14915 provides requirements and recommendations on the ergonomic design of multimedia software-user interfaces. ISO 14915 is not intended to provide detailed guidance for the design using only a single medium. It does not, therefore, describe how to design an effective graphical animation or how to cut a particular video sequence. This part of ISO 14915 addresses design issues related to the user interface of multimedia applications, such as the conceptual structure of the interface, the selection and integration of media, user navigation or the controls used for interacting with the different media. The range of applications addressed includes stand-alone and network-delivered applications of various sizes and degrees of complexity (e.g. from a single web page to a complex catalogue or an interactive simulation).

ISO 14915 consists of the following parts.

a) Part 1: Design principles and framework

Part 1 establishes design principles for multimedia user interfaces and provides a framework for multimedia design. The principles are introduced in order to provide the basis for detailed multimedia-specific recommendations described in the other parts of ISO 14915. General recommendations on the process of designing multimedia user interfaces are given.

b) Part 2: Multimedia navigation and control

Part 2 provides recommendations for media control and navigation in multimedia applications. Media control is mainly concerned with functions for controlling dynamic media such as audio or video. Navigation refers to the conceptual structure of the multimedia application and the user's interactions needed in order to move in that structure. It also includes recommendations for searching multimedia material.

c) Part 3: Media selection and combination

Part 3 provides recommendations for the selection of media with respect to the communication goal or the task, as well as with respect to the information's characteristics. It also provides guidance for combining different media. In addition, it includes recommendations for integrating multimedia components in viewing and reading sequences.