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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*

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.

Software ergonomics for multimedia user interfaces —

Part 1: Design principles and framework

1 Scope

This part of ISO 14915 establishes design principles for multimedia user interfaces and provides a framework for handling the different considerations involved in their design. It addresses user interfaces for applications that incorporate, integrate and synchronize different media. This includes static media such as text, graphics, or images, and dynamic media such as audio, animation, video or media related to other sensory modalities. Detailed design issues within a single medium (e.g. the graphical design of an animation sequence) are only addressed as far as they imply ergonomic consequences for the user.

This part of ISO 14915 gives requirements and recommendations for the ergonomic design of multimedia applications mainly intended for professional and vocational activities such as work or learning. It does not specifically address applications outside this area such as entertainment, although some recommendations can also be applicable in such domains.

This part of ISO 14915 is applicable to software aspects related to multimedia user interfaces and does not address hardware or implementation issues. The ergonomic requirements and recommendations described in this part of ISO 14915 can be realized through very different techniques, e.g. the delivery system, a scripting language, or the application.

The focus of this part of ISO 14915 is on multimedia presentation issues. Multimodal input which uses different media such as speech in combination with pointing for entering information is not considered in the recommendations provided.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO 14915. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO 14915 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 9241-10:1996, *Ergonomic requirements for office work with visual display terminals (VDTs) — Part 10: Dialogue principles*

ISO 9241-11:1998, *Ergonomic requirements for office work with visual display terminals (VDTs) — Part 11: Guidance on usability*

ISO 13407:1999, *Human-centred design processes for interactive systems*

ISO 14915-2:—[1)], *Software ergonomics for multimedia user interfaces — Part 2: Multimedia navigation and control*

ISO 14915-3:—[2)], *Software ergonomics for multimedia user interfaces — Part 3: Media selection and combination*

1) To be published.

2) To be published.

3 Terms and definitions

For the purposes of this part of ISO 14915, the following terms and definitions apply. For additional definitions, see the other parts of ISO 14915. A precise definition of media types is provided in ISO 14915-3.

3.1
content
information to be communicated by means of a multimedia application from the originator to the user according to certain communication goals

3.2
dynamic media
media in which the presentation to the user changes according to time

EXAMPLE These include video, music, animation.

3.3
medium, sing.
media, pl.
different specific forms of presenting information to the human user

EXAMPLE These include text, video, graphics, animation, audio.

3.4
metaphor
concepts already familiar to the user employed by the application to aid the user's understanding and prediction of the application's behaviour

3.5
multimedia
combinations of static and/or dynamic media which can be interactively controlled and simultaneously presented in an application

EXAMPLE These include combinations of text and video, or audio and animation.

3.6
navigation
user's movement in and between media objects or presentation segments (see ISO 14915-2) in order to find an object, a particular topic, or a specific piece of information

3.7
static media
media in which the presentation to the user does not change over time

EXAMPLE These include text and pictures.

4 Application of ISO 14915

4.1 Intended user groups

The following groups are the intended users of ISO 14915:

— user interface and multimedia designers who will apply ISO 14915 during the development process;

— evaluators responsible for quality assurance who will ensure that products meet the recommendations of ISO 14915;

— potential buyers, in selecting appropriately designed multimedia products;

— designers of multimedia development tools to be used by user interface and multimedia developers.

4.2 Applying the recommendations

The design principles provided in ISO 14915 are multimedia-specific extensions of the principles described in ISO 9241-10. Multimedia user interfaces should be designed according to both the principles of ISO 9241-10 and the principles described in ISO 14915. For certain contexts (e.g. certain tasks or user groups), the designer may be forced to follow one principle at the expense of another in order to achieve the optimal design.

4.3 Reporting conformance to parts of ISO 14915

If a claim of product or application conformity with this part of ISO 14915 is made, the procedure used in establishing requirements for developing and/or evaluating the multimedia user interface shall be specified. The level of specification of the procedure is a matter of negotiation between the involved parties. ISO 14915 is a multi-part standard and therefore, claims of conformity are related to the individual parts and not to the International Standard as a whole.

5 Design goals and principles

5.1 Design goals

Ergonomic design enhances the ability of users to operate multimedia applications effectively, efficiently and with satisfaction (ISO 9241-11 gives further information on usability). Multimedia information should not be confusing, tiring or frustrating to use.

This can be achieved by careful design of the multimedia applications with respect to the different tasks (e.g. for work, education, and performance support) and the environment in which the system will be used.

The design of multimedia user interfaces should take into account the elements of human information processing, based successively on

— human sensory physiology,

— human perception and motivation,

— human cognition, and

— human communication.

Additional human information-processing concepts relevant to multimedia control and use are exploration and engagement.

5.2 Multimedia design principles

5.2.1 General

Multimedia applications should be designed according to the general principles for ergonomic dialogue design described in ISO 9241-10. Subclause 5.2.2 gives multimedia-specific examples for the principles described in ISO 9241-10. In addition, 5.2.3 introduces further principles which are relevant to multimedia applications.

The design of multimedia applications often raises specific design issues relating to their purpose and specific characteristics. Multimedia applications can be developed for communicative purposes, e.g. for conveying information to the user, supporting task performance or for education and training. In addition, there can be a wide range of user requirements such as preferences for different media or different perceptual styles.

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. Manipulation of data or information presented in multimedia applications can also be part of the user's activity.

5.2.2 Dialogue principles

For the design and evaluation of multimedia interfaces, the general ergonomic principles described in ISO 9241-10 should be applied. These seven principles are important for the design and evaluation of interactive applications. The principles are as follows:

a) Suitability for the task

EXAMPLE For learning musical instruments, the application shows the hand movements in a video or animation, plays the music and presents the current notes.

b) Self-descriptiveness

EXAMPLE When moving the cursor over a hot spot on a web page, a pop-up is shown that contains a description of the hot spot (e.g. where the link leads to).

c) Controllability

EXAMPLE Audio output can be switched on and off by the user.

d) Conformity with user expectations

EXAMPLE 1 Control elements for playing and stopping a medium work the same way in all videos and animations in a multimedia application.

EXAMPLE 2 Control elements are placed consistently on the screen.

EXAMPLE 3 Control elements operate consistently across different media.

e) Error tolerance

EXAMPLE If a video has been unintentionally stopped by the user, it can be restarted at the current position so that the user does not have to return to the beginning.

f) Suitability for individualization

EXAMPLE Users may set preferences (e.g. preferred output medium, settings for audio parameters) or use bookmarks and annotations.

g) Suitability for learning

EXAMPLE 1 A visual representation of a navigation structure in a multimedia application is provided.

EXAMPLE 2 Media combinations are used to represent a subject matter from different viewpoints.

5.2.3 Multimedia specific design principles

In addition to the general principles of ISO 9241-10, this part of ISO 14915 describes specific design principles for the design of multimedia user interfaces:

— suitability for the communication goal;

— suitability for perception and understanding;

— suitability for exploration;

— suitability for engagement.

These principles specifically focus on multimedia applications but they may also apply to the design of user interfaces in general. As with most design criteria, the actual design can require trade-offs between the different principles, associating different priority or significance with each of them. These trade-offs require deliberate decisions in the design process and appropriate justifications.

In 5.2.4 to 5.2.7, these additional multimedia specific principles are introduced and described. Design recommendations related to these principles are presented. The set of recommendations given for each principle here is not necessarily complete. There might be other recommendations conforming with these principles.

5.2.4 Suitability for the communication goal

A primary purpose of multimedia applications is to convey information from an information provider to a recipient. A multimedia application is suitable for the communication goal if it is designed to match

— the goals of the provider(s) of the information to be conveyed, and at the same time;

— the goal or task of the users or recipients of this information.

In order to achieve this, the provider or designer of the information should define the intended goal of the communication and design the multimedia application accordingly. The application should also be designed with respect to the goals of the recipient, their tasks and information needs.

Overall intended goals on the part of the provider could be to teach, inform or entertain users. Specific goals could be to summarize, explain, present, convince, justify, impress or motivate in a multimedia communication. Users' needs could include learning requirements, information needed for performing tasks, or engaging design features.

EXAMPLE 1 Summarization can be enhanced by using designed images (diagrams).

EXAMPLE 2 Convincing or justifying arguments are shown using redundant or salient media in order to emphasize key items in a message.

5.2.5 Suitability for perception and understanding

5.2.5.1 General

A multimedia application is suitable for perception and understanding if it is designed such that the information to be conveyed can be easily perceived and understood. This is particularly important for multimedia applications as the presentation can be complex and volatile, and several media can be presented simultaneously. To facilitate the intended perception, the following characteristics described in ISO 9241-12 should be observed for each of the media involved

a) Detectability

EXAMPLE A sufficient contrast between the background of a screen and a set of navigation buttons is used so that the user can easily detect them.

b) Discriminability

EXAMPLE In a description of a still image, voice is used over a music background. The voice is loud and clear enough to be discriminated from other sounds.

c) Clarity

EXAMPLE In a graphical animation of an engine, the different parts are shown in different colours in order to facilitate the user's perception of the parts relevant for the current task.

d) Legibility

EXAMPLE An animated text banner moves at a speed which enables the user to read the text easily.

e) Consistency

EXAMPLE The controls for playing or stopping a presentation are designed in the same manner for different media such as audio, video or a graphical animation.

f) Conciseness

EXAMPLE A spoken explanation of a still image showing how to repair a technical device is limited to the essential information to be conveyed in order to facilitate the user's learning.

g) Comprehensibility.

EXAMPLE A complex biological structure can be explored from different perspectives in a 3D simulation in order to enable the user to understand the spatial relations of the different parts.

Due to the specific characteristics of multimedia applications, the guidelines given in 5.2.5.2 to 5.2.5.6 should be observed.

5.2.5.2 Avoiding perceptual overload

The user should not be overloaded by too much information being presented simultaneously, either through a single medium or media combinations.

EXAMPLE It can be difficult to understand the content of several different videos that are presented simultaneously.

NOTE Ergonomic principles related to mental workload that may result from information overload are defined and specified in ISO 10075 and ISO 10075-2.

5.2.5.3 Avoiding information overload caused by time-dependent presentations

Media should be selected and presented so that the user has time to comprehend the necessary information from the media.

EXAMPLE Detailed instructions are given in a self-paced text and image display rather than a video and speech commentary.

NOTE It is difficult for users to assimilate detailed information from dynamic media, so only high-level information will be comprehended. Extracting detailed information from images also requires time so it can be advisable to allow users time to scan images to extract important information. Replay of video or speech sequences is important if sequences are critical and need reviewing. Narration speed can be adjusted according to the complexity of material and audience familiarity.

5.2.5.4 Avoiding overload caused by additional activities

Orientation, navigation or manipulation activities should not hinder the perception of the information pertinent to the user's goals.

EXAMPLE Users can miss important information:

— in a video, if they need to operate controls at the same time; or

— if advice on performing a series of operations is distributed across several media instead of presenting them in a single medium.

5.2.5.5 Taking into account perceptual differences

Differences of human perception of media and the impact of human limitations on the perception of particular media should be taken into account.

For example, users with special needs, like deafness or colour blindness, should have the possibility to use multimedia applications.

5.2.5.6 Supporting the users' understanding

Design, selection and combination of media should support the users' understanding of the information to be conveyed. Guidelines for the selection and combination of media are provided in ISO 14915-3.

EXAMPLE When an audio explains the working of a vehicle engine, the relevant parts are highlighted in an associated diagram.

5.2.6 Suitability for exploration

5.2.6.1 General

A multimedia application is suitable for exploration if it is designed such that the user can find relevant or interesting information with little or no prior knowledge concerning type, extent or structure of the information or the functionality provided by the application.

5.2.6.2 Supporting exploration

If suitable for the task, the application should enable users to explore the multimedia application.

EXAMPLE In a multimedia technical documentation, a hierarchical navigation structure as well as links between related topics are provided, so that users can explore the content of the application by following different navigation paths (for definitions of navigation concepts, see ISO 14915-2).

NOTE Some multimedia applications may not be designed to make them suitable for exploration. For example, a multimedia application showing a safety instruction may not be controllable and explorable by the user.

5.2.6.3 Supporting user's orientation

The application should always enable users to determine their current position within the multimedia application, from where they have arrived at that point, and where to navigate from that point.

NOTE If the navigation is not under user control but automatically performed by the system, the target of a navigation step may not be described in the current presentation segment.

EXAMPLE A diagram or map of a web site is displayed with the user's current location highlighted.

5.2.6.4 Aiding transparent navigation

Navigation in the application should be achieved in a consistent and transparent way.

NOTE Transparent navigation means that the available navigation actions are obvious to the user, and clear feedback on the execution of navigation steps is provided.

5.2.6.5 Providing alternative navigation paths

If appropriate for the task, the user should be provided with different possibilities to reach the desired information and should thus be able to choose between alternative navigation paths. Related information should be accessible through appropriate links.

EXAMPLE 1 Alternative navigation paths are used for supporting both novices and experts.

EXAMPLE 2 Users are allowed to access information either through menu hierarchy or a search function.

5.2.6.6 Structuring information

The content should be organized with respect to the limits of human information processing so that users can easily identify the parts of the content and their relations to each other. If the structure of the domain is known to the user, that structure should be considered for navigation.

EXAMPLE A tree structure is used for organizing the content and for providing easy access to different parts of the information content.

5.2.6.7 Facility for returning to significant points

The application should enable users to return to significant points in the navigation structure previously visited in order to access a different part of that structure.

EXAMPLE When exploring a web site, the user's path leading through different levels of information to the page currently visible, is displayed as a list of links. The list may be indented to show the different levels of the content visited.

5.2.6.8 Providing search and navigation aids

The user should be provided with appropriate search and navigation aids in order to determine quickly whether the application contains the desired information and how it can be accessed.

EXAMPLE 1 A site map for a web site is provided, which shows the different topics available at that site and their structure in a graphical fashion.

EXAMPLE 2 A keyword search function for a web site is provided, which can be activated from all relevant pages.

5.2.6.9 Different media perspectives

If appropriate for the task, the users should be provided with combinations of media presenting the same content and should have the capability to access them alternatively.

EXAMPLE A photograph and a diagram, both demonstrating the circulatory system of the human blood, are used in an anatomy session in order to allow the user to explore different aspects of the content.

NOTE The availability of different media perspectives may also increase the user's engagement.

5.2.7 Suitability for engagement

If appropriate to the task, a multimedia application should be designed to be engaging for the users, i.e. to capture the users' attention and to motivate them to interact with it.

EXAMPLE A high degree of realism in a simulation, in combination with a high degree of interactivity, is likely to make it engaging.

NOTE 1 An interesting or exciting content can also be a means for designing applications that are engaging. Another aspect of engaging multimedia applications is directness of interaction. Direct interaction is often achieved by integrating the user interface controls in the information to be conveyed or the task to be performed (e.g. by using parts of the content presented as hyperlinks).

NOTE 2 The aesthetic quality of media also influences engagement with a multimedia application. For example, a web site that is graphically well designed can motivate users to read more of the contents of that site. Media designers may be consulted for advice on aesthetic and engaging qualities.

6 Design considerations

6.1 General

The concepts in this clause describe different aspects of multimedia user interfaces which are inherent in the development process. These aspects establish a framework for organizing individual design issues. They help the designer to apply a systematic approach to designing multimedia applications. Although these aspects can be used as steps in a design process, they are not intended to represent a complete design process nor do they need to be addressed in a sequential manner. General guidance on user-centred design processes can be found in ISO 13407. Recommendations concerning the design process for multimedia applications are given in clause 7.

The following three aspects are inherent in designing multimedia interfaces:

— content design;

— interaction design;

— media design.

These aspects can also be used for determining what kind of models or representations would be appropriate in the design process.

EXAMPLE Explicitly modelling the content of a multimedia application can be useful for evaluating whether it meets the communication goal.

6.2 Content design

6.2.1 General

An important aspect of a multimedia application is its semantic information content and the structure of this content. This aspect involves conceptual design issues, rather than the concrete appearance (e.g. the visual design of a graphical animation) or the behaviour of the application. In designing a multimedia application, the following content issues should be addressed.

6.2.2 Analysing the communication goal

The content design should take account of the communication goals, in order to guide the development or selection of the content, its structure, type and appropriate representations. Further guidance on information types and the selection of media and media combinations is given in ISO 14915-3.

6.2.3 Structuring content

Designing the structure of the content should involve specifying the different parts of the content (e.g. topics and subtopics) and their relationships, using appropriate techniques such as outlines, storyboards or other forms of information representation.

6.3 Interaction design

6.3.1 General

Interaction design specifies the way users can access the different parts of the content and how they can control or manipulate the different types of content. The aspect of interaction design in multimedia applications involves the design issues given in 6.2.1 to 6.2.3.

6.3.2 Navigation

This design issue comprises the users' route for accessing the information sought or exploring unknown information structures. When designing the available paths to content in a multimedia user interface, the following should be considered.

— The design of navigation structures that are suitable for the structure of the content, the communication goal and the user's task. The navigation structure determines the possible paths by which the user can move through the application.

— The use of appropriate navigation aids to support the user's orientation in a multimedia application, facilitate exploration and make information retrieval effective. Navigation aids include tables of contents, site maps, indices and guided tours.

— The provision of appropriate mechanisms for searching when the user's task entails finding specific information related to known concepts, especially in large volumes of information.

Appropriate navigation aids should be provided for both, novices and experts.

Recommendations are given in ISO 14915-2.

6.3.3 Media control and interaction

Appropriate media controls should be provided, that allow the user to control the presentation of each medium. Recommendations for the design of media controls are given in ISO 14915-2.

EXAMPLE Controls for dynamic media are, for instance, “play”, “stop” and “pause”.

NOTE Many media allow the user to interact with the content presented, for example, a part of a presented medium may be a navigation link. Other examples include checking answers in a computer-based training application or direct manipulation of media content in a simulation.

6.3.4 Dialogue interaction

Multimedia applications usually involve a variety of dialogue interactions such as menu selection or graphical interaction elements. For selecting or designing dialogue interactions, the guidelines given in ISO 9241-10 and ISO 9241-13 to ISO 9241-17 should be observed.

6.4 Media design

Media design involves the design of a single medium as well as the selection and combination of different media. Media design should follow the guidelines described in ISO 14915-3.

NOTE The design of a particular medium (which is not addressed in ISO 14915) can require specific knowledge related to areas such as film, animation, graphics design or music. General user-interface-related recommendations for the presentation of information can be found in ISO 9241-12.

7 Design and development process

7.1 General

The design of multimedia interfaces, as well as the design of interactive systems in general, should follow a human-centred design approach. Guidance on user-centred design processes is given in ISO 13407. Human-centred design is characterized by activities suitable for gaining a clear understanding of user and task requirements and an iterative design process with active user involvement, including the evaluation of suitable design representations such as prototypes at appropriate stages of the process. The design should also take account of the knowledge of experts from areas or disciplines relevant to the design problem.

In addition to these general considerations, the multimedia-specific criteria described in ISO 14915 provide further guidance for the design of multimedia interfaces. The design aspects established in clause 6 provide a structure and potential (not necessarily sequential) design steps which can provide guidance for the design phase of the development process.

The development process for multimedia applications should include the phases described in 7.2 to 7.6. According to the general properties of human-centred design described above, these phases can be executed in a non-sequential and iterative fashion. The process should start, however, with analysis activities. When necessary and appropriate, activities may be omitted or added to the process.

7.2 Analysis

The analysis should determine characteristics of the intended user groups, their tasks and the goals to be achieved by communicating the content of the multimedia application. Environmental factors and the context of use, which could potentially influence the perception and interaction with different, particularly dynamic media should be analyzed. In noisy environments, for example, auditory output should additionally be presented in textual form. A clear understanding of the communication goal, the task support and information requirements is important for further decisions to be taken in the design process. The designer can use different media characteristics to achieve different objectives, such as educating, entertaining, or advertising a product or service.

7.3 Conceptual design

Conceptual design involves selecting a particular strategy or strategies for conveying the information, e.g. by means of a simulation, game, demonstration or through exploration and defining the high-level structure of the multimedia application.

7.4 Content, interaction and media design

The design of content, interaction and media provide a structured approach to specifying and developing the various components of a multimedia application. In general, content design should precede interaction and media design, although in some cases, particular media components that are already available might be used as a starting point for the development.

7.5 Prototyping

In contrast to prototyping conventional interactive systems, multimedia allows for a much wider range of different qualities and degrees of realism of the different components of a system. In early development phases, complex media, such as video or animation, might be replaced by still pictures. Similarly, the quality of components, such as video clips or audio tracks, may be of a lower quality in order to test the interface concepts before moving on to using potentially expensive media production activities.

7.6 Evaluation

The evaluation of a multimedia application should use general criteria for dialogue design as well as the specific criteria described in ISO 14915. An essential aspect of evaluating multimedia applications is to test them with future users applying appropriate evaluation methods (see ISO 9241-11 and ISO 13407). Special attention should be paid to the comments and suggestions of these users. Developing and evaluating prototypes is a particularly useful approach to collecting user feedback.

If, in a prototype, media are substituted for others or the level of quality differs from the final quality level intended, one should be aware that this can influence the outcome of the evaluation.

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