TECHNICAL REPORT

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Ergonomics of human-system interaction — Usability methods supporting human-centred design

Ergonomie de l'interaction homme-système — Méthodes d'utilisabilité pour la conception centrée sur l'opérateur humain

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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.

The main task of technical committees is to prepare International Standards. 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.

In exceptional circumstances, when a technical committee has collected data of a different kind from that which is normally published as an International Standard ("state of the art", for example), it may decide by a simple majority vote of its participating members to publish a Technical Report. A Technical Report is entirely informative in nature and does not have to be reviewed until the data it provides are considered to be no longer valid or useful.

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

ISO/TR 16982 was prepared by Technical Committee ISO/TC 159, *Ergonomics*, Subcommittee SC 4, *Ergonomics of human-system interaction*.

Introduction

There is a growing emphasis on “human-centred design” as an essential part of the development of computer based systems. ISO 9241-11 and ISO 13407 provide “guidance on usability” and “on human-centred design processes for interactive systems”. ISO 13407 provides general guidance and four main conditions to make a product (hardware and software) “human-centred” but does not address specific methods.

The purpose of this Technical Report is to help project managers make informed decisions about the choice of usability methods to support human-centred design as described in ISO 13407 (with support from human-factors specialists, as appropriate). It is not its aim to turn the project manager into a human-factors specialist.

This technical Report provides an overview of existing usability methods which can be used on their own or in combination to support design and evaluation. Each method is described with its advantages, disadvantages and other factors relevant to its selection and use. These include the implications of the project's stage in the life cycle for the choice of method.

Since the appropriateness of individual methods is dependent upon the design activities being undertaken, it is necessary to relate them to the design process. ISO/IEC 12207 is used to provide the basic framework against which the suitability of the methods is assessed.

Annex A provides a template for practitioners, annex B gives real life examples when filling in this template and annex C provides detailed additional methods and techniques.

Ergonomics of human-system interaction — Usability methods supporting human-centred design

1 Scope

This Technical Report provides information on human-centred usability methods which can be used for design and evaluation. It details the advantages, disadvantages and other factors relevant to using each usability method.

It explains the implications of the stage of the life cycle and the individual project characteristics for the selection of usability methods and provides examples of usability methods in context.

The main users of this Technical Report will be project managers. This Technical Report therefore addresses technical human-factors and ergonomics issues only to the extent necessary to allow managers to understand their relevance and importance in the design process as a whole.

Such issues are dealt with more fully in ISO 9241 which is complementary to this Technical Report and is aimed at system developers, specifiers and purchasers of systems. Nonetheless, all parties involved in human-centred system development, including the end users of systems, should find the guidance in this Technical Report relevant.

The guidance in this Technical Report can be tailored for specific design situations by using the lists of issues characterizing the context of use of the product to be delivered. Selection of appropriate usability methods should also take account of the relevant life-cycle process.

This Technical Report is restricted to methods that are widely used by usability specialists and project managers.

It does not specify the details of how to implement or carry out the usability methods described.

NOTE Most methods require the involvement of human-factors specialists. It may be inappropriate for them to be used by individuals without adequate skills and knowledge.

2 References

ISO 9241 (all parts), *Ergonomic requirements for office work with visual display terminals (VDTs)*

ISO/IEC 12207, *Information technology — Software life cycle processes*

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

ISO/IEC 14598 (all parts), *Software engineering — Product evaluation*

3 Terms and definitions

For the purposes of this Technical Report, the following terms and definitions apply.

3.1
prototype
representation of all or part of a product or system that, although limited in some way, can be used for evaluation

[ISO 13407:1999]