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Second edition
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Usability of consumer products and products for public use —

Part 2: Summative test method

Facilité d'emploi des produits de consommation courante et des produits à usage public —

Partie 2: Méthode d'essai sommative



Reference number
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Contents

	Page
Foreword	iv
Introduction	v
1 Scope	1
2 Conformity	2
3 Normative references	2
4 Terms and definitions	2
5 General principles	6
5.1 Type of usage of the product to be tested.....	6
5.2 Purpose of the test.....	6
5.3 Scope of the goals used in the test.....	7
5.4 Validity and reliability.....	9
5.5 Ethical issues.....	9
6 Test procedure overview	9
7 Test method	10
7.1 Purpose and scope of the test.....	10
7.2 Product(s) to be tested.....	10
7.3 Context of evaluation.....	10
7.4 Check that the product is capable of achieving the intended goals for the intended users.....	15
7.5 Design and perform the test.....	16
8 Results	20
8.1 General.....	20
8.2 Goals.....	20
8.3 Effectiveness.....	20
8.4 Efficiency.....	21
8.5 Satisfaction.....	21
9 Report	21
Annex A (informative) User goals	22
Annex B (informative) Background to the method	25
Annex C (normative) Recruiting a representative sample of users	26
Annex D (normative) Confidence intervals	29
Annex E (normative) Examples of satisfaction scales	33
Annex F (normative) Format for test reports	35
Annex G (normative) Specification of usability requirements	41
Annex H (normative) Usability test procedure specification	44
Annex I (informative) Feedback on the standard	48
Bibliography	49

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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2. www.iso.org/directives

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: [Foreword - Supplementary information](#)

The committee responsible for this document is ISO/TC 159, *Ergonomics*, Subcommittee SC 4, *Ergonomics of human-system interaction*.

This second edition cancels and replaces the first editions of ISO/TS 20282-2:2006, ISO/PAS 20282-3:2007, and ISO/PAS 20282-4:2007, of which it constitutes a technical revision. The main changes are the following:

- clarification that the test method is only intended to be used when there are a limited number of goals to be tested and it is possible to identify typical contexts of use and criteria for successful goal achievement;
- provision for a wider range of methods to test achievement of goals;
- use of ISO 9241-11 terminology: usability, effectiveness, efficiency, and satisfaction;
- wider range of levels of confidence with a sample size as low as 10, using the Adjusted Wald statistic;
- wider range of purposes for use of the test method.

ISO/TS 20282 consists of the following parts, under the general title *Usability of consumer products and products for public use*:

- *Part 1: Design requirements for context of use and user characteristics*
- *Part 2: Summative test method* (Technical Specification)

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Introduction

Many people find some consumer products and walk-up-and-use products, including consumer products provided for public use, difficult to install and use, particularly when using them for the first time or at infrequent intervals. This is clearly undesirable for the producers of such products, for organizations that use the products to provide a service, and for the people who use them. Information about the usability of a product would, therefore, be of great value to producers, as part of development and marketing, to service providers, and to potential purchasers making purchase decisions or comparing alternative products. This would provide an incentive for producing products that are easier to install and use and would enable potential purchasers to pay specific attention to usability when selecting a product to buy and use. It is difficult to judge usability in a purchase situation without available comparable usability test results.

Usability (see ISO 9241-11) is the extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency, and satisfaction in a specified context of use. Effectiveness is fundamental as it is about achieving the intended goal(s). Efficiency is about the resources (such as time or effort) needed by users to achieve their goals so it can be important. In addition, it is important that users are satisfied with their experience, particularly where users have discretion over whether to use a product and can readily choose some alternative means of achieving their goals. In this part of ISO/TS 20282, accessibility is operationalized as the extent to which a product can be used with effectiveness, efficiency, and satisfaction by people from a population with the widest range of characteristics and capabilities to achieve a specified goal in a specified context of use.

Poor usability and/or accessibility can result in errors that can lead to several types of risks, for example, inconvenience resulting from not achieving a goal or achieving the wrong goal, incurring unexpected costs, or physical injury. In many countries, there are legal requirements to provide accessible products, services, and facilities.

EXAMPLE Calling the wrong person by mistake with a mobile phone may have the negative consequence of possible undesirable call charges either for the caller or the person called (who may have to pay for the call).

In addition to the risks of potential adverse consequences for the user as a result of failing to achieve their goal or achieving the wrong goal (poor effectiveness), there are other risks such as being late as a result of poor efficiency or users avoiding the use of a difficult-to-use product as a result of poor satisfaction.

Formative evaluation using expert inspection or user-based testing to provide feedback to improve the usability of the product is an integral part of the iterative human-centred design process recommended in ISO 9241-210. Summative evaluation can be used to validate usability and/or accessibility requirements, to provide a benchmark, or to provide a basis for comparison of different products. Although some types of expert inspection methods based on a checklist or a standard can provide summative data, the aspects of usability and/or accessibility that are measured are limited in comparison with the measures of effectiveness, efficiency, and satisfaction provided by user-based testing.

EXAMPLE One study found that only 50 % of the problems encountered on 16 websites by 32 blind users were covered by Success Criteria in the Web Content Accessibility Guidelines 2.0 (WCAG 2.0).^[23]

Inspection can precede user-based testing to identify (and, if possible, eliminate) easily identifiable problems and to check that the product is capable of achieving the intended goals for the intended users (see [7.4](#)).

To provide reliable data on effectiveness, efficiency, and satisfaction that can be compared, it is desirable to have a standard summative user-based test procedure. This part of ISO/TS 20282 specifies a summative user-based test method that can be used to provide an evaluation of the usability and/or accessibility and ease of unpacking, setting up, and installation of consumer products, and the usability and/or accessibility of products for public use (including walk-up-and-use products). It can be applied to products that are used to achieve goals that have clear success criteria and relate to well-defined types of subject matter.

ISO/TS 20282-1 describes in more detail sources of variance in user characteristics that form part of the context of use that needs to be taken into account when designing for usability. This information is also

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needed to identify the elements of the context of use required for testing in this part of ISO/TS 20282. Further information about the characteristics of older people and people with disabilities can be found in ISO/TR 22411.