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Standard**

ISO/IEC 4944

**Information technology — User
interfaces — Evaluating usability of
natural user interfaces**

*Technologie de l'information — Interfaces utilisateur — Cadre
pour l'évaluation de l'utilisabilité d'une interface utilisateur
naturelle*

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Contents

Page

Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
3.1 Terms related to natural user.....	1
3.2 Terms related to usability.....	2
4 Natural user interfaces (NUI)	2
5 Evaluating usability of a natural user interface (NUI)	3
5.1 Framework.....	3
5.2 NUI as a system, product or service being evaluated.....	4
5.3 Evaluating usability for diverse NUI users.....	4
5.4 Evaluating usability for goals, tasks and interactions of NUI.....	5
5.5 Evaluating usability for diverse contexts of use of NUI.....	5
5.6 Components of usability.....	6
5.7 Evaluation based on use.....	6
6 Measuring usability of a NUI	7
6.1 Purposes of and measures for evaluation.....	7
6.2 Measures for evaluating the user interface of NUI.....	8
6.2.1 Evaluating user interface of NUI for accomplishing tasks.....	8
6.2.2 Effectiveness measures.....	8
6.2.3 Efficiency measures.....	9
6.2.4 Satisfaction measures.....	10
6.3 Measures for evaluating naturalness of interactions with NUI.....	10
6.3.1 Evaluating naturalness of interactions with NUI for accomplishing tasks.....	10
6.3.2 Effectiveness measures.....	10
6.3.3 Efficiency measures.....	11
6.3.4 Satisfaction measures.....	12
7 Reporting usability evaluation results	12
7.1 Content elements for reporting usability evaluations.....	12
7.2 Format for reporting usability evaluations.....	12
Bibliography	13

Foreword

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This document was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 35, *User interfaces*.

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Introduction

As smart devices such as smart phones and smart speakers have become popular, new forms of user interfaces have been introduced. One aspect of the new interfaces is mimicking natural ways of interacting with the devices and utilizing speech, gestures, body language, eye gaze and other natural features of human communication through natural user interfaces (NUIs), which allow for faster, smoother, intuitive, and smarter interaction. However, while the concept of NUI is well defined, practical applications of NUI still need to be developed. This is strongly related to the lack of usability of NUI in smart devices.

When specified users of systems, products or services achieve their specified goals with effectiveness, efficiency and satisfaction in a specified context of use (as defined in ISO/IEC 9241-11), usability can be evaluated. Effectiveness is considered as the ability of users to complete tasks with the system (e.g. the NUI). Efficiency measures resources taken by users to complete specified tasks. Satisfaction measures comfort levels of user experience along with acceptance.

It is important that the usability evaluation of NUI concentrates on recognizing the user's intention and focuses on multiple modalities of information flows between the users and the devices.

This document describes a framework for evaluating the usability of NUI. Although the framework can be applied in most general contexts, it is specifically focused on optimizing user experiences in terms of NUI.

Information technology — User interfaces — Evaluating usability of natural user interfaces

1 Scope

This document provides a framework, requirements and recommendations for evaluating the usability of a natural user interface (NUI) for systems, products or services. Measuring and reporting the usability of the NUI are also described. The usability evaluation focuses on the efficiency, effectiveness and satisfaction of the NUI. This document can also be applied to the usability evaluation of other user interfaces (UIs) for emerging technologies.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 9241-11, *Ergonomics of human-system interaction — Part 11: Usability: Definitions and concepts*