Technical Report

# ISO/IEC TR 30150-2

First edition
2024-02

# Information technology — Affective computing user interface (AUI) —

## Part 2: Affective characteristics

*Technologies de l'information — Interface pour la reconnaissance et la simulation des émotions (AUI) —*

*Partie 2: Caractéristiques de reconnaissance et de simulation des émotions*

Reference number
ISO/IEC TR 30150-2:2024(en)

© ISO/IEC 2024



## COPYRIGHT PROTECTED DOCUMENT

© ISO/IEC 2024

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

# Contents

Page

**Foreword** ... **iv**
**Introduction** ... **v**
**1 Scope** ... **1**
**2 Normative reference** ... **1**
**3 Terms and definitions** ... **1**
**4 Organizing affective characteristics** ... **2**
**5 Universal affective characteristics** ... **2**
5.1 General ... 2
5.2 Hierarchy of human needs ... 2
5.3 Human needs and application designs ... 3
5.3.1 General ... 3
5.3.2 Application designs for each level of needs ... 3
5.4 Applying hierarchy of needs ... 3
**6 Cultural affective characteristics** ... **3**
6.1 General ... 3
6.2 Cultures as a source of belief and action ... 4
6.3 Recognizing the effects of cultures ... 4
6.4 Cultures and designs for user interfaces ... 4
6.5 Group characteristics related to cultures ... 5
6.5.1 General ... 5
6.5.2 Characteristics of groups and application designs ... 5
6.5.3 Trade-offs of characteristics ... 5
**7 Individual affective characteristics** ... **6**
7.1 General ... 6
7.2 Personality ... 6
7.3 Attitudes ... 6
7.4 Beliefs ... 6
7.5 Achievement motivation ... 6
7.6 Risk taking/aversion ... 7
**8 Situational affective characteristics** ... **7**
8.1 General ... 7
8.2 Transient nature of emotions ... 7
8.3 Emotions, satisfaction and user experience ... 7
8.4 Emotions and context of use ... 7
**9 Identification of affective characteristics** ... **8**
9.1 General ... 8
9.2 Time frame of identification ... 8
9.3 Methods of identification ... 8
9.3.1 General ... 8
9.3.2 Physiological identification of affect ... 8
9.3.3 Questions to the user ... 8
9.3.4 Inferring from user customizations ... 9
9.3.5 Inferring from user actions ... 9
9.3.6 Inferring from user vocabulary ... 9
9.3.7 Inferring by association ... 9
**Annex A** (informative) **Affective and cognitive domain** ... **10**
**Bibliography** ... **13**

© ISO/IEC 2024 – All rights reserved

# Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work.

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 document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives or www.iec.ch/members_experts/refdocs).

ISO and IEC draw attention to the possibility that the implementation of this document may involve the use of (a) patent(s). ISO and IEC take no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, ISO and IEC had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at www.iso.org/patents and https://patents.iec.ch. ISO and IEC shall not be held responsible for identifying any or all such patent rights.

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html. In the IEC, see www.iec.ch/understanding-standards.

This document was prepared by Joint Technical Committee ISO/IEC JTC1, *Information technology*, Subcommittee SC 35, *User interfaces*.

A list of all parts in the ISO/IEC 30150 series can be found on the ISO and IEC websites.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html and www.iec.ch/national-committees.

© ISO/IEC 2024 – All rights reserved

# Introduction

Affective computing builds a harmonious human-computer environment by enabling computing systems to recognize, interpret, and simulate human affects. Affective applications promise new insights into what people are feeling and can better serve their needs. It is important to consider affective characteristics of humans in the design and presentation of affective computing user interface (AUI).

Limitations on affective computing include diverse affective characteristics currently used and the way to interpret and identify these affective characteristics. A general and systematic technical report is needed to identify and distinguish different affective characteristics in different levels within human-computer interaction regarding usability and accessibility.

This document identifies a range of affective characteristics that are designed for development of affective computing. This can be a general principle for affective computing user interface. It also provides references to the selection of specific characteristics of particular interest, and to the identification of affective characteristics in affective computing user interface (AUI).

© ISO/IEC 2024 – All rights reserved

# Information technology — Affective computing user interface (AUI) —

# Part 2:
# Affective characteristics

## 1 Scope

This document identifies the affective characteristics for affective computing user interface (AUI), including universal, cultural, individual and situational issues relating to the affective needs of users. This document also describes the selection criteria of these affective characteristics, and the methods to identify or apply them.

This document focuses on developers of affective computing user interfaces who want to meet the needs of users.

This document does not specify the implementation of affective computing.

## 2 Normative reference

There are no normative references in this document.

## 3 Terms and definitions

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

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

**3.1**
**affective characteristic**
particular type of affect that is believed to be useful

Note 1 to entry: A complex compound of interests, attitudes, and self-views. Affective characteristics are considered as properties that are used to describe users' affective experience in AUI.

[SOURCE: ISO/IEC 30150-1:2022, 3.3, modified — A note to entry has been added.]

**3.2**
**affective**
relating to moods, feelings, and attitudes

**3.3**
**satisfaction**
extent to which the user's physical, cognitive and emotional responses that result from the use of a system, product or service meet the user's needs and expectations

[SOURCE: ISO 9241-11:2018, 3.1.14, modified — Notes to entry have been omitted.]

© ISO/IEC 2024 – All rights reserved