

TECHNICAL  
REPORT

ISO/IEC  
TR  
11580

First edition  
2007-03-15

---

---

**Information technology — Framework for  
describing user interface objects, actions  
and attributes**

iTeh STANDARD PREVIEW  
(standards.iteh.ai)

*Technologies de l'information — Modèle pour décrire des objets, des  
actions et des attributs pour l'interface utilisateur*

ISO/IEC TR 11580:2007

<https://standards.iteh.ai/catalog/standards/sist/b5c0b6c1-3009-4baf-b64a-9d602f40db39/iso-iec-tr-11580-2007>

---

---

Reference number  
ISO/IEC TR 11580:2007(E)



© ISO/IEC 2007

**PDF disclaimer**

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

[ISO/IEC TR 11580:2007](https://standards.iteh.ai/catalog/standards/sist/b5c0b6c1-3009-4baf-b64a-9d602f40db39/iso-iec-tr-11580-2007)

<https://standards.iteh.ai/catalog/standards/sist/b5c0b6c1-3009-4baf-b64a-9d602f40db39/iso-iec-tr-11580-2007>

© ISO/IEC 2007

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office  
Case postale 56 • CH-1211 Geneva 20  
Tel. + 41 22 749 01 11  
Fax + 41 22 749 09 47  
E-mail [copyright@iso.org](mailto:copyright@iso.org)  
Web [www.iso.org](http://www.iso.org)

Published in Switzerland

# Contents

Page

Foreword .....	v
Introduction.....	vi
1 Scope .....	1
2 Terms and definitions .....	1
3 Modelling objects, actions, and attributes.....	3
4 Common properties of objects, actions, and attributes.....	5
4.1 Software identification of objects, actions, and attributes .....	5
4.1.1 Internal properties of objects, actions, and attributes .....	5
4.1.2 Internal properties of implemented objects, actions, and attributes .....	5
4.1.3 Standard internal identifiers.....	5
4.1.4 Standard of internal states of objects, actions, and attributes .....	5
4.1.5 Specification of internal identifiers .....	6
4.1.6 Implementation of internal identifier .....	6
4.2 Information properties of objects, actions, and attributes .....	6
4.2.1 Labels .....	6
4.2.2 Uniqueness of labels.....	6
4.2.3 Understandability of labels .....	6
4.2.4 Descriptions .....	6
4.2.5 States .....	7
4.2.6 Standard information properties of objects, actions, and attributes.....	7
4.2.7 Clear and unambiguous purpose .....	7
4.2.8 Standardized English version of labels, descriptions, and state information .....	7
4.2.9 Use of information properties of objects, actions, and attributes .....	7
4.2.10 Result of selection of a label.....	7
4.2.11 User control of labels.....	7
4.2.12 User control of descriptions .....	7
4.2.13 Standardized translations of labels and descriptions.....	8
4.2.14 Language of labels, descriptions, and state information.....	8
4.2.15 Developer based translations of labels and descriptions.....	8
4.2.16 Implementation of alternate languages.....	8
4.3 Representation properties of objects, actions, and attributes .....	8
4.3.1 Use of representation properties of objects, actions, and attributes .....	8
4.3.2 Textual properties .....	8
4.3.3 Iconic representation .....	8
4.3.4 Tonal representation .....	8
4.3.5 Tactile and Haptic representation.....	9
4.3.6 Standard representation properties of objects, actions, and attributes .....	9
4.3.7 Variations of representations.....	9
4.3.8 Cultural and linguistic sensitivity of representations .....	9
4.4 Operational properties of objects, actions, and attributes .....	9
4.4.1 Separation of operations .....	9
4.4.2 Selection of an object, action, or attribute.....	9
4.4.3 Obtaining information.....	10
4.4.4 Modifying values .....	10
4.4.5 Removing and restoring items.....	10
4.4.6 Activation of function.....	10
4.5 Technical specifications.....	10
5 Optional properties .....	10
5.1 Attribute specific optional properties .....	10

5.1.1	Inclusion of attribute specific optional properties .....	10
5.1.2	Values .....	11
5.1.3	Constraints .....	11
5.1.4	Permitted values .....	11
5.1.5	Default values.....	11
5.1.6	Higher structure.....	11
5.1.7	Peer structure.....	11
5.1.8	Lower structure.....	11
5.1.9	Physical structure.....	11
5.2	Operation specific optional properties.....	11
5.2.1	Inclusion of operational specific optional properties.....	11
5.2.2	Pre-conditions.....	12
5.2.3	Post-conditions.....	12
5.2.4	Error conditions .....	12
Annex A (informative) Developers of this Technical Report.....		13

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

[ISO/IEC TR 11580:2007](https://standards.iteh.ai/catalog/standards/sist/b5c0b6c1-3009-4baf-b64a-9d602f40db39/iso-iec-tr-11580-2007)  
<https://standards.iteh.ai/catalog/standards/sist/b5c0b6c1-3009-4baf-b64a-9d602f40db39/iso-iec-tr-11580-2007>

## 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. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of the joint technical committee is to prepare International Standards. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

In exceptional circumstances, the joint technical committee may propose the publication of a Technical Report of one of the following types:

- type 1, when the required support cannot be obtained for the publication of an International Standard, despite repeated efforts;
- type 2, when the subject is still under technical development or where for any other reason there is the future but not immediate possibility of an agreement on an International Standard;
- type 3, when the joint 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).

Technical Reports of types 1 and 2 are subject to review within three years of publication, to decide whether they can be transformed into International Standards. Technical Reports of type 3 do not necessarily have to be reviewed until the data they provide are considered to be no longer valid or useful.

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

ISO/IEC TR 11580, which is a Technical Report of type 2, was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 35, *User interfaces*.

## Introduction

As end users are involved with more and more different applications, they use similar or equivalent objects, actions and attributes that have been implemented in very different ways from one another. This leads to an increasing need for developing usable standards for user interface objects, actions and attributes. However, as each new standard is proposed, it can choose which aspects to emphasize and which to omit regarding the user interface objects, actions and attributes that it describes.

- a) The lack of a format for describing user interface objects, actions and attributes has led to a number of different standards being developed that only partially describe their names and/or properties. This provides developers with incomplete guidance and leads to the development of similar but incompatible user interface objects, actions and attributes.
- b) There is an increasing need to provide consistent standards for user interface objects, actions and attributes. This Technical Report will support this activity.

This Technical Report provides a format and guidance for describing and implementing user interface objects, actions and attributes.

## iTeh STANDARD PREVIEW (standards.iteh.ai)

[ISO/IEC TR 11580:2007](https://standards.iteh.ai/catalog/standards/sist/b5c0b6c1-3009-4baf-b64a-9d602f40db39/iso-iec-tr-11580-2007)

<https://standards.iteh.ai/catalog/standards/sist/b5c0b6c1-3009-4baf-b64a-9d602f40db39/iso-iec-tr-11580-2007>

# Information technology — Framework for describing user interface objects, actions and attributes

## 1 Scope

This Technical Report defines a format for describing user interface objects, actions and attributes. It provides a basis for standardizing the names and properties of user interface objects, actions and attributes across multiple applications and platforms.

**NOTE** User interface objects as defined and discussed in this Technical Report are not necessarily equivalent to objects in the software engineering sense. All elements of the user interface which are separately identifiable by the user can be considered to be user interface objects, regardless of how they are technically implemented. This Technical Report focuses on their functionalities without specifying a particular method of implementation.

This Technical Report contains guidance both on the standardization of user interface objects, actions and attributes and on the implementation of these objects, actions and attributes in any or all modalities. This Technical Report is primarily intended for developers of standards, style guides, and architectures involving user interface objects, actions and attributes.

**EXAMPLE** It is used as the basis for icon-specific accessibility guidance in ISO/IEC 19766.

This Technical Report also provides software developers with a range of functionalities to be considered in the design of objects, actions and attributes within user interfaces.

## 2 Terms and definitions

### 2.1

#### **object**

#### **user interface object**

entity of the user interface that is presented to the user by the software

**NOTE 1** Object, as defined in this Technical Report refers to a user interface object (also known as a “user interface element” in ISO 9241-171:2006. These user interface objects may be implemented via any programming method and need not be implemented via object-oriented programming.

**NOTE 2** User interface objects may or may not be interactive.

**NOTE 3** User interface objects may be containers that serve to group one or more other objects.

**NOTE 4** Examples of user interface objects in a graphical user interface include window title bars, menu items, push buttons, image maps, editable text fields and various types of containers (such as windows, grouping boxes, menu bars, menus, groups of mutually-exclusive option buttons, and compound images that are made up of several smaller images). Examples of user interface objects in an audio user interface include such things as menus, menu items, messages and action prompts. Examples of user interface objects in a tactile user interface include such things as tactile controls, Braille pads, tactile maps, soft balls and virtual wells.

### 2.2

#### **attribute**

data item that modifies or describes some aspect of an action or an object

**NOTE** An attribute can be treated as an object.

**2.3  
action**

user behaviour that a system accepts as a request for a particular operation

EXAMPLES Pressing a key, clicking a mouse button, moving the pointer over an object, speaking a command.

**2.4  
operation**

predefined system behaviour that a user initiates

EXAMPLES Sending mail, printing, modifying the data or properties of an object.

NOTE A user performs an action or a set of actions to initiate an operation.

**2.5  
function**

task-specific operation of an object

NOTE Objects can have zero, one or many functions.

**2.6  
internal identifier**

language-independent information intended to ensure system-based recognition of a particular user interface object, action or attribute

**2.7  
state**

status of an object, action or attribute which is related to the currently permitted interactions with the object, action or attribute

**2.8  
label**

language-dependent information used to name an object, action or attribute

NOTE This can include information in various languages, e.g. English, Japanese, Blissymbols.

**2.9  
description**

language-dependent set of words used to clarify the meaning of a particular user interface object, action or attribute for the user

**2.10  
selection**

explicitly identifying an object, attribute or operation that is intended as the target for subsequent action

NOTE When a mouse is used, selection is performed by clicking once on a mouse button; then, a second click is used to initiate the default function of the selected item.

**2.11  
selection indication**

cue that indicates the selected object, attribute or operation to which the user may apply a subsequent action

NOTE An object is visually highlighted when selected.

**2.12  
activation**

initiation of a selected function of an object

NOTE When a mouse is used, the activation function is performed by double clicking on a mouse button.

iTeh STANDARD PREVIEW  
(standards.iteh.ai)

[ISO/IEC TR 11580:2007](https://standards.iteh.ai/catalog/standards/sist/b5c0b6c1-3009-4baf-b64a-300200000000/iso-iec-tr-11580-2007)

[https://standards.iteh.ai/catalog/standards/sist/b5c0b6c1-3009-4baf-b64a-](https://standards.iteh.ai/catalog/standards/sist/b5c0b6c1-3009-4baf-b64a-300200000000/iso-iec-tr-11580-2007)

[300200000000/iso-iec-tr-11580-2007](https://standards.iteh.ai/catalog/standards/sist/b5c0b6c1-3009-4baf-b64a-300200000000/iso-iec-tr-11580-2007)



### 3 Modelling objects, actions, and attributes

This clause provides a framework for modelling and structuring groups of objects, actions, and/or attributes. This framework is presented both at a high level and at a detailed level. This framework identifies a logical set of components that can be used for analyzing, designing, evaluating, and standardizing objects, actions, and/or attributes.

- All components of an interface, which are produced by the system, including attributes of components, can be considered to be user interface objects.
- All methods of interacting with user interface objects, which are produced by the user and recognized by the system, can be considered to be actions.
- Attributes contain data that can be used to modify objects or actions. Attributes with which users interact can be treated by the user interface as objects.

Figure 1 presents a high level framework that shows that there are five major interacting aspects that need to be considered: the internal properties of the object, action, or attribute; information properties; representation properties; operational properties; and additional optional properties.

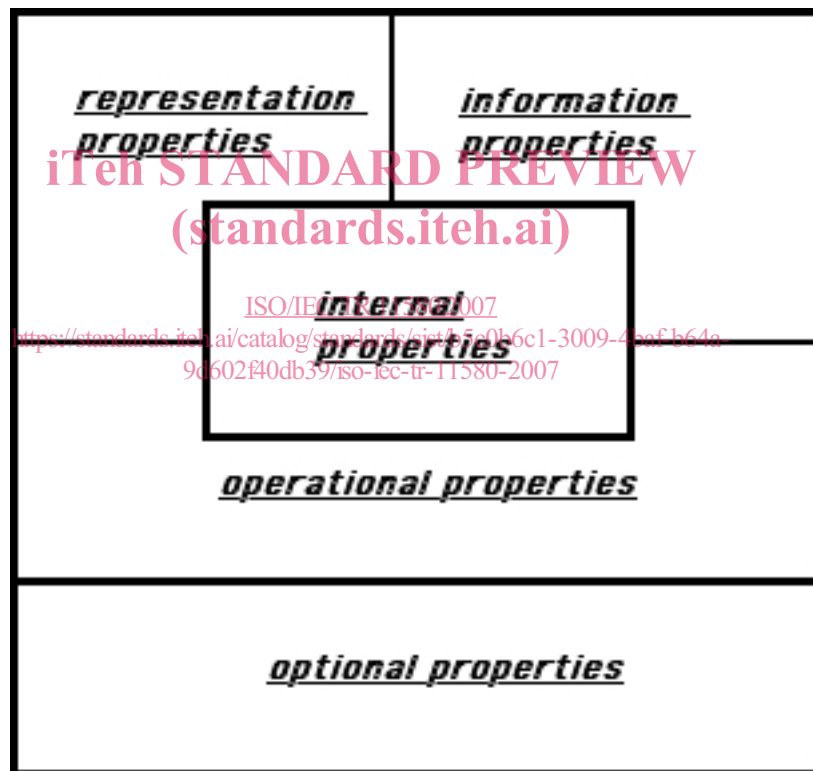


Figure 1 — A high-level framework for objects, actions, and attributes

- Internal properties provide a basis for standards defining objects, actions, and/or attributes and for software implementing standard objects, actions, and attributes. Internal properties are used to distinguish between the different types and instances of objects, actions, and attributes.
- Information properties provide a basis for providing media-independent user-oriented information about the purpose and use of the object, action, or attribute.

- Representation properties provide information on media dependent rendering information for the object, action, or attribute that can be used by developers and/or systems. The representation properties specify how objects are rendered, how actions are input, and how attributes are rendered and input.
- Operational properties describe the functionalities of the object, action, or attribute that are intended to be implemented by the system.
- There are also a variety of optional properties that might apply to and/or be included in a standard defining an object, attribute, or action.

Figure 2 provides a detailed framework for objects, actions, and attributes that expands each aspect (internal properties, information properties, representation properties, operational properties, and optional properties) into a number of specific components. Each of the components, considered in this framework can contribute to the usability and accessibility of an object, action, or attribute and are the subject of guidance within this Technical Report.

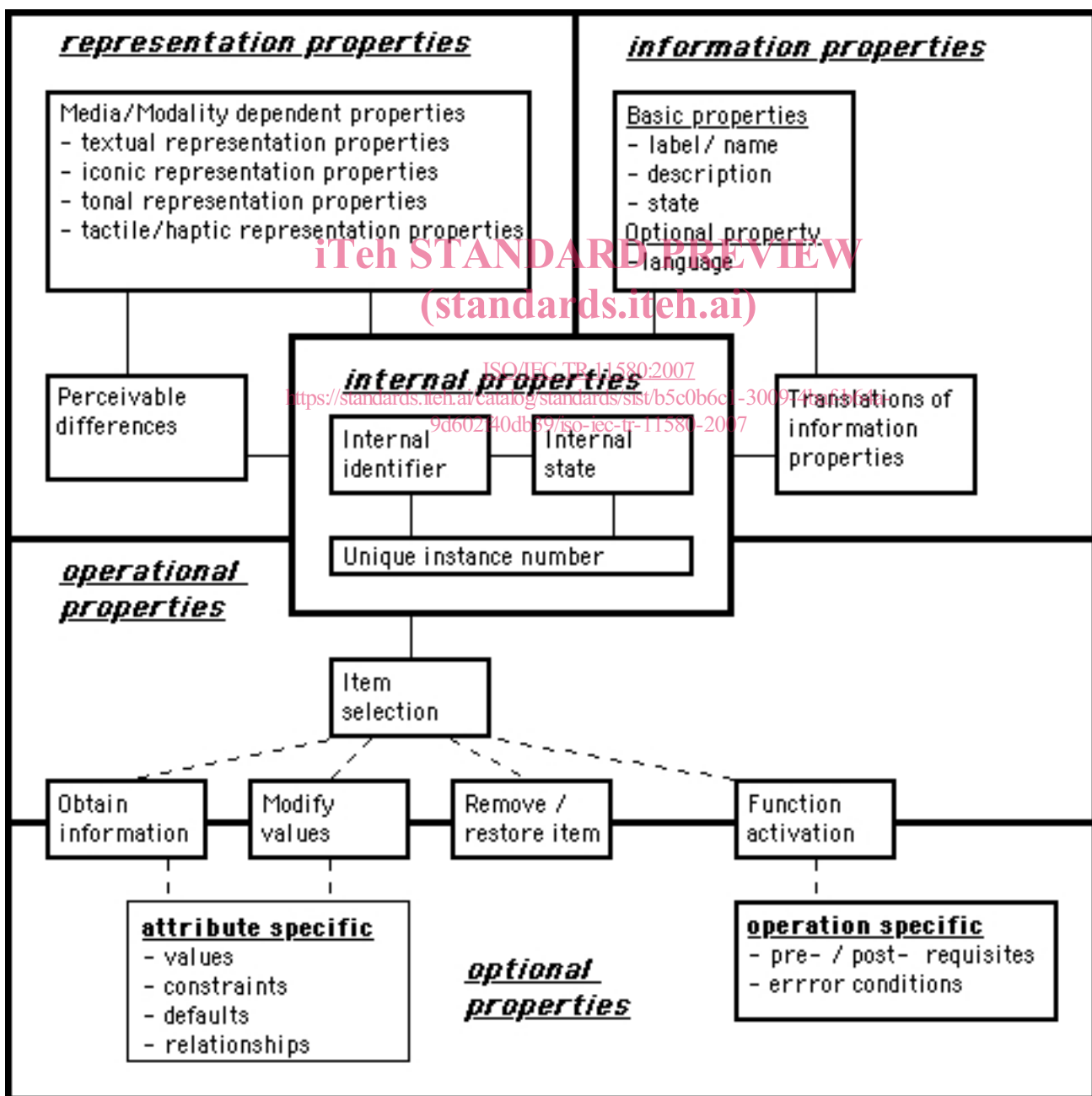


Figure 2 — A detailed framework for objects, actions, and attributes

In this detailed model, most operational properties are optional, with the exception of the need to be able to specify how an object, action, or attribute is selected.

- Obtaining information and modifying values can apply to attribute specific properties, information properties, and representation properties.
- Remove / restore controls the presence or absence of an object, action, or attribute in the current configuration of the user interface.
- Function activation applies to the activation of a selected operation of an object.

## 4 Common properties of objects, actions, and attributes

### 4.1 Software identification of objects, actions, and attributes

#### 4.1.1 Internal properties of objects, actions, and attributes

All user interface objects, actions, and attributes should have the following attributes:

- a) an internal identifier;
- b) an internal state attribute.

#### 4.1.2 Internal properties of implemented objects, actions, and attributes

When an application involves multiple instances of a user interface object, action, and/or attribute, each instance should have third internal property: a unique instance number that can be used internally to distinguish it from other instances within the application.

<https://standards.iteh.ai/catalog/standards/sist/b5c0b6c1-3009-4baf-b64a-9d602f40db39/iso-iec-tr-11580-2007>

#### 4.1.3 Standard internal identifiers

Where user interface objects, actions, or attributes are standardized, they should be provided with a unique internal identifier.

**NOTE** It is expected that an ISO registry of user interface objects, actions, and attributes will maintain a record the internal identifiers of all standardized user interface objects, actions, and attributes.

#### 4.1.4 Standard of internal states of objects, actions, and attributes

Where user interface objects, actions, or attributes are standardized, the standard should specify the permitted states and internal state attributes to identify each state of each standardized user interface object, action, or attribute.

**NOTE 1** It is expected that the ISO registry of user interface objects, actions, and attributes will maintain a record the permitted states identifiers of all standardized user interface objects, actions, and attributes.

**NOTE 2** The states of objects can include but are not limited to: fixed, movable but not otherwise modifiable, or modifiable.

**NOTE 3** The states of actions can include but are not limited to: available, selected, executing, or unavailable.

**NOTE 4** The states of attributes can include but are not limited to: system provided read only value; system stored value not available for input; system stored value available for new input; or user entered value not yet stored by system.

**NOTE 5** It is not intended that internal states be presented directly to the user. See 4.2.5 for guidance on presenting state information to users.