INTERNATIONAL STANDARD

ISO/IEC 24752-8

First edition
2018-04

Information technology — User interfaces — Universal remote console —

Part 8: User interface resource framework

Technologies de l'information — Interfaces utilisateur — Télécommande universelle —

Partie 8: Cadre de ressources pour les interfaces utilisateur

Reference number
ISO/IEC 24752-8:2018(E)

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Published in Switzerland

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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.

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).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

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

For an explanation on 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 the following URL: www.iso.org/iso/foreword.html.

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

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Introduction

Adaptive user interfaces change their presentation and behaviour according to the specific context of use, including the user's needs and preferences, their devices and environmental parameters. Such changes are to be considered at development time. At runtime, the user interface can take all aspects of the context of use into consideration.

Changes at runtime often require that some custom-tailored user interface resources be prepared in advance. Examples include captions and audio description for videos, alternate text for images, a simplified version of an online banking app, a sign language video explaining how to take HDR photos on an online camera guide, and a help item in easy language for a tax report software. Such user interface resources will often be made available by third parties, for example human factors experts, user groups and individual users. They will upload and describe these resources on resource services from which adaptive user interface implementations can discover and retrieve them at runtime.

To make this process work, two aspects need standardization: First, user interface resources should be clearly and unambiguously described so that they can be discovered at runtime. Second, resource services hosting these user interface resources should be discoverable and have a clearly described interface for querying and retrieving user interface resources.

This document addresses both aspects in a flexible way. It specifies syntax and semantics for a RESTful resource service interface while not restricting the clients in using whatever vocabulary and terms they choose for the description of user interface resources. Since HTTP is used as the most common REST implementation, this document defines a light-weight protocol that can be used on virtually all user interface platforms, including web browsers, mobile apps and software agents.

NOTE Though this document is part of the Universal Remote Console (URC) framework, it can be used independently from the other URC technologies. In particular, a user interface implementation can benefit from a user interface resource service without being connected to a URC target and without employing the user interface socket approach.

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Information technology — User interfaces — Universal remote console —

Part 8: User interface resource framework

1 Scope

This document defines a RESTful protocol for the provision and delivery of resources that are related to user interface adaptation based on context of use.

This document addresses requirements and recommendations for the following services:

— user-context service;

— task-context service;

— equipment-context service;

— environment-context service;

— resource service;

— resource-description service;

— matching service (for finding appropriate resources based on specific contexts and other match criteria).

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/IEC 10646, *Universal Multiple-Octet Coded Character Set (UCS)*

IETF RFC 2046[1)], *Multipurpose Internet Mail Extensions (MIME) Part Two: Media Types*

IETF RFC 3986[2)], *Uniform Resource Identifier (URI): Generic Syntax*

IETF RFC 7159[3)], *The JavaScript Object Notation (JSON) Data Interchange Format*

IETF RFC 7230[4)], *Hypertext Transfer Protocol (HTTP/1.1): Message Syntax and Routing*

IETF RFC 7231[5)], *Hypertext Transfer Protocol (HTTP/1.1): Semantics and Content*

1) November 1996, https://tools.ietf.org/html/rfc2046.

2) January 2005, https://tools.ietf.org/html/rfc3986.

3) March 2014, https://tools.ietf.org/html/rfc7159.

4) June 2014, https://tools.ietf.org/html/rfc7230.

5) June 2014, https://tools.ietf.org/html/rfc7231.

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W3C XML 1.0[6], *Extensible Markup Language (XML) 1.0*, W3C Recommendation

W3C XML Schema Part 1[7], *Structures*, W3C Recommendation

W3C XML Schema Part 2[8], *Datatypes*, W3C Recommendation

3 Terms and definitions

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

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

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

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

3.1 Context of use

3.1.1
context of use
use context
users, tasks, equipment (hardware, software and materials), and the physical and social environments in which a product is used

[SOURCE: ISO 9241-11:1998, 3.5]

3.1.2
user-context
part of the context of use that describes aspects of an individual user interacting with an ICT system

3.1.3
task-context
part of the context of use that describes aspects of the task done by a user in interacting with an ICT system

3.1.4
equipment-context
part of the context of use that describes aspects of the equipment (hardware, software and materials) used by a user to interact with an ICT system

3.1.5
environment-context
part of the context of use that describes aspects of the physical and social environments in which a user interacts with an ICT system

3.2 Resources

3.2.1
resource
user interface resource
object that is used as an entity or to support decision making in the construction of a concrete user interface

[SOURCE: ISO/IEC 24752-1:2014, 3.31, modified — the alternative term 'user interface resource' has been added and an EXAMPLE and Note to entry have been removed]

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6) https://www.w3.org/TR/xml/.

7) https://www.w3.org/TR/xmlschema-1/.

8) https://www.w3.org/TR/xmlschema-2/.

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3.2.2
property
aspect of a context or resource used to describe the context or resource

Note 1 to entry: In this document, properties are represented as key-value pairs.

3.2.3
user-rating
explicit or implicit statement of an individual user about the degree of personal preference for a particular resource or resource description

Note 1 to entry: In this document, user-ratings are represented as float values between –1.0 and 1.0. The value –1.0 represents the highest degree of dislike, 0.0 represents no preference (neutral position), and 1.0 represents the highest degree of like.

3.3 Services

3.3.1
service
server offering RESTful operations for the management of REST resources

3.3.2
matching service
service that manages listings

3.3.3
listing
ordered list of resource descriptions that match specific criteria for user-context, task-context, equipment-context, environment-context and resource description properties

3.4 Representational State Transfer

3.4.1
Representational State Transfer
REST
paradigm for an HTTP-based protocol that is built upon HTTP methods as operations and URIs as resources

Note 1 to entry: Representational State Transfer was first introduced by Fielding (2000).

3.4.2
RESTful
conforming to the constraints of REST

3.4.3
REST resource
data object that is addressable with a URI and that can be manipulated via HTTP verbs

4 Conformance

A *user-context service* conforms to this document if all of the following is true:

— It complies with 7.1 and 7.2.

— It provides appropriate mappings for XML (A.1, A.2) and JSON (B.1, B.2).

A *task-context service* conforms to this document if all of the following is true:

— It complies with 7.1 and 7.3.

— It provides appropriate mappings for XML (A.1, A.3) and JSON (B.1, B.3).

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