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Information technology — User interfaces — Universal remote console —

Part 6: Web service integration

Technologies de l'information — Interfaces utilisateur — Console à distance universelle —

Partie 6: Intégration du service web

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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 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/IEC JTC 1, *Information technology*, SC 35, *User interfaces*.

ISO/IEC 24752 consists of the following parts, under the general title *Information technology — User interfaces — Universal remote console*:

— *Part 1: Framework*

— *Part 2: User interface socket description*

— *Part 4: Target description*

— *Part 5: Resource description*

— *Part 6: Web service integration*

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Introduction

Web services are becoming increasingly ubiquitous in the form of public Internet-wide services and private services in protected environments. Even devices and appliances in the digital home are being made network-accessible by exposing them as Web services.

The universal remote console technology allows for pluggable user interfaces for any kind of devices and services, including web services. For a web service to adopt the URC concepts, it needs to expose a composition of user interface socket elements. This can be achieved in two ways: either the Web service provides one target description (see ISO/IEC 24752-4) or one or multiple separate user interface socket descriptions (see ISO/IEC 24752-2). Alternatively, the Web service can provide the target description and the socket description(s) in an "embedded" approach integrated with its Web service interface description. The web service description language (WSDL) defines suitable extension mechanisms for such integration. With this integrated approach, Web services do not need to provide a separate target description and separate socket descriptions. It is sufficient to integrate this information into their WSDL document. It is expected that this approach will help in the adoption of the URC technology for Web services and thus, make personalized and pluggable user interfaces widely available for Web services.

This part of ISO/IEC 24752 defines the syntax and semantics for embedding target description and socket descriptions in interface specifications of Web services so that there is a clear mapping between special elements in the WSDL document and elements of (implicit) target description and (implicit) socket descriptions.

This part of ISO/IEC 24752 lays the groundwork for an integration of the universal remote console framework within Web service environments. It gives rise to various URC-based architectures and implementations, including a middleware approach in which a user interface server provides access to web services, and Web service centric approach in which a Web service exposes a user interface socket via its WSDL-based interface.

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Information technology — User interfaces — Universal remote console —

Part 6: Web service integration

1 Scope

This part of ISO/IEC 24752 defines the syntax and semantics for embedding target description and socket descriptions in interface specifications of web services so that there is a clear mapping between special elements in the WSDL document and elements of (implicit) target description and (implicit) socket descriptions.

2 Conformance

A WSDL1 document conforms to this International Standard if it complies to the web services description language (WSDL) 1.1 specification and with the requirements and recommendations in Clause 6 and Clause 7.

A WSDL2 document conforms to this International Standard if it complies to the web services description language (WSDL) 2.0 specification and with the requirements and recommendations in Clause 6 and Clause 7.

NOTE Strict language conformance (i.e. no additional elements or attributes allowed) is not required because future versions of this part of ISO/IEC 24752 might add new elements, attributes, and values. Therefore, URC manufacturers are encouraged to implement their URCs so that unrecognized markup is ignored without failing.

A Web service conforms to this International Standard if it fulfils the requirements of a conforming target in ISO/IEC 24752-1, in all of the following ways.

— The Web service shall provide at least one service binding (as specified in the Web service's WSDL document) as Target-URC network link.

— The Web service shall have a target name, given as the target namespace of the Web service, as specified in 7.5.2.

— The Web service shall have exactly one target description which shall be embedded in its WSDL document and shall include references to external files containing the target resources (grouping sheets and resource sheets) conforming to at least one natural language, as specified in 7.5.

— The Web service shall provide a fetch mechanism for its target resources (grouping sheets, resource sheets, UIIDs) to be retrieved by URI, including support for MIME types.

— The Web service shall provide a target instance identifier through the 'getTargetInstanceId' operation in the "_target" partition, as specified in 7.5.11.2.

— The Web service shall support locator functions through a "_target" partition, as specified in 7.5.7.

— The Web service shall expose one or more sockets that, when considered together, cover the full functionality of the Web service as a target. For each of these sockets, a socket description shall be embedded in the Web service's WSDL document (as specified in 7.6).

— For each of the Web service's sockets, the socket shall have variables that include all of the dynamic data on the socket's state a user can perceive and/or manipulate and commands that include all of the socket's functions that can be called explicitly or implicitly by users and notifications that cover all exceptions that the Web service needs to inform the user about.

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— The Web service shall provide one grouping resource for every socket through external grouping sheets.

— The Web service shall provide textual label resources through external resource sheets, in at least one natural language.

— The Web service shall provide dynamic atomic resources at runtime for those socket elements where no (static) atomic resources are available in the target resources, as specified in 7.6.21.5, 7.6.22.5, and 7.6.23.6.

— The Web service, if representing a session-full target, shall support an open session request from a URC, as specified in 7.6.15.

— The Web service, if representing a session-full target, shall support a close session event from a URC, as specified in 7.6.16.

— The Web service, if representing a session-full target, shall support a suspend session event from a URC, as specified in 7.6.17.

— The Web service, if representing a session-full target, shall support a resume session event from a URC, as specified in 7.6.18.

— The Web service, if representing a session-full target, shall send an abort session event in case of user session abortion, as specified in 7.6.14.

— The Web service shall track connection status information from the underlying network its operations are bound to.

— The Web service, if representing a session-full target, shall send a session forward event to the URC in case of session forwarding, as specified in 7.6.14.

— The Web service, if representing a session-full target, shall create and maintain a session between a socket and the URC after a successful open session request.

— The Web service shall indicate to the URC the availability of socket elements at runtime (unavailable socket elements have an undefined value).

— The Web service shall synchronize the socket variables between the socket and the URCs that participate in a joint session with the socket (by means of the get-updates operation and the get operations of the variables).

— The Web service shall support command invocation requests from a URC (including handling of local parameters) and synchronization of command states (by means of the command operations).

— The Web service shall support propagation of notification states and, for custom-type notifications, embedded variables and commands, to the connected URCs, and acceptance of pertinent acknowledgments (by means of the get-updates operation and the check operations).

— The Web service shall synchronize actual indices of socket sets and elements (by means of the get-index operations).

— The Web service shall not rely on the URC doing the interpretation of socket element dependencies.

— Provide the following mechanisms with regard to user response timeouts:

  a) after a timeout extension, return to the state of the task the user had reached prior to the timeout;

  b) support the extend-timeout operation (see 7.6.23.4) for notifications that time out and let the client extend the timeout at least to five times the default timeout;

  c) note time out notifications in less than 10 s.

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3 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/IEC 24752-1, *Information technology — User interfaces — Universal remote console — Part 1: Framework*

ISO/IEC 24752-2:2013, *Information technology — User interfaces — Universal remote console — Part 2: User interface socket description*

ISO/IEC 24752-4:2013, *Information technology — User interfaces — Universal remote console — Part 4: Target description*

4 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC 24752-1, ISO/IEC 24752-2 and ISO/IEC 24752-4 and the following apply:

4.1
fault item
named fault entity of a Web service operation, i.e. in WSDL1 a <message> referenced from a <fault> element of an <operation>, and in WSDL2 an <outfault> element of an <operation> referencing an interface fault

4.2
input item
named entity of input for a Web service operation, i.e. in WSDL1 a <part> of a <message> referenced from an <input> element of an <operation>; and in WSDL2 an <input> element of an <operation>

4.3
item element name
XML element name for an input or output item, i.e. in WSDL1 the value of the 'element' attribute on the pertaining <part> message; and in WSDL2 the value of the 'element' attribute on the <input> message

4.4
partition
Web service partition
named set of a Web service operations ("port type" in WSDL1, "interface" in WSDL2)

4.5
output item
named entity of output from a Web service operation, i.e. in WSDL1 a <part> of a <message> referenced from an <output> element of an <operation>, and in WSDL2 an <output> element of an <operation>

4.6
session-full socket
socket of a session-full target

4.7
session-less socket
socket of a session-less target

4.8
WSDL1 document
document that conforms to the Web Service Description Language (WSDL) 1.1 specification

4.9
WSDL2 document
document that conforms to the Web Service Description Language (WSDL) 2.0 specification

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