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Information technology — Individualized adaptability and accessibility in e-learning, education and training —

Part 2: "Access for all" personal needs and preferences for digital delivery

Technologies de l'information — Adaptabilité et accessibilité individualisées en e-apprentissage, en éducation et en formation —

Partie 2: Besoins personnels en matière d'«accès pour tous» et préférences de prestation numérique

Reference number
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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.

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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.

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 24751-2 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 36, *Information technology for learning, education, and training*.

ISO/IEC 24751 consists of the following parts, under the general title *Information technology — Individualized adaptability and accessibility in e-learning, education and training*:

— *Part 1: Framework and reference model*

— *Part 2: "Access for all" personal needs and preferences for digital delivery*

— *Part 3: "Access for all" digital resource description*

Future parts will address non-digital resource description, personal needs and preferences for non-digital resources, personal needs and preferences for description of events and places, digital description of events and places, and language accessibility and human interface equivalencies (HIEs) in e-learning applications.

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Information technology — Individualized adaptability and accessibility in e-learning, education and training —

Part 2: "Access for all" personal needs and preferences for digital delivery

1 Scope

This part of ISO/IEC 24751 provides a common information model for describing the learner or user needs and preferences when accessing digitally delivered resources or services. This description is one side of a pair of descriptions used in matching user needs and preferences with digital delivery (as described in ISO/IEC 24751-1). This model divides the personal needs and preferences of the learner or user into three categories:

a. Display: how resources are to be presented and structured;

b. Control: how resources are to be controlled and operated; and,

c. Content: what supplementary or alternative resources are to be supplied.

This part of ISO/IEC 24751 is intended to meet the needs of learners with disabilities (as defined in ISO/IEC 24751-1) and of anyone in a disabling context.

The purpose of this part of ISO/IEC 24751 is to provide a machine-readable method of stating user needs and preferences with respect to digitally based education or learning. This part of ISO/IEC 24751 can be used independently, for example to deliver the required or desired user interface to the learner/user, or in combination with ISO/IEC 24751-3 to deliver digital resources that meet a user's needs and preferences.

2 Normative references

The following referenced documents are indispensable for the application 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.

2.1 ISO/IEC

ISO 639-2:1998 (E/F), *Codes for the representation of names of languages — Part 2: Alpha-3 code/Codes pour la représentation des noms de langue — Partie 2: Code alpha-3*

2.2 Referenced specifications

IETF RFC 3986 Uniform Resource Identifier (URI): Generic Syntax [RFC 3986], {http://www.ietf.org/rfc/rfc3986.txt}

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3 Terms and definitions

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

3.01
access for all
AfA
approach to providing **accessibility** in a computer-mediated environment in which the **digital resources** and their method of delivery are matched to the needs and preferences of the user

[IMS *AccessForAll Meta-data Specification Version 1*] [1)]

3.02
accessibility
usability of a product, service, environment or facility by **individuals** with the widest range of capabilities

NOTE 1 Although "accessibility" typically addresses users who have a disability, the concept is not limited to disability issues.

NOTE 2 Adapted from ISO/TS 16071:2003 (3.2).[2)]

3.03
access mode
human sense perceptual system or cognitive faculty through which a user may process or perceive the content of a **digital resource**

[ISO/IEC 24751-1:2008 (2.3)]

3.04
adaptation
⟨e-learning⟩ **digital resource** that presents the **intellectual content** of all or part of another **digital resource**

NOTE Adaptations can also include the adjustment of the presentation, control methods, access mode, structure and user supports.

[ISO/IEC 24751-1:2008 (2.5)]

3.05
AfA context
particular situation or environment in which a set of **AfA accessibility** needs and preferences might be used

3.06
AfA contextual description
name or description of a context in which a set of **AfA accessibility** needs and preferences might be used

EXAMPLE A label for a particular location such as home, work or school, or a particular time of day such as evening.

NOTE See 5.4 for more information.

3.07
AfA hazard
characteristic of a **digital resource** that can be specified as being dangerous to a user

EXAMPLE Flashing animations can trigger seizures in people with photosensitive epilepsy.

NOTE See the coded domain in B.17.

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1) The source for this adapted IMS definition is now ISO/IEC 24751-1:2008 (2.1).

2) The source for this adapted ISO/TS 16071:2003 definition is now ISO/IEC 24751-1:2008 (2.2).

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3.08
AfA preference
specific preference of an **individual** who requires **AfA accessibility**

NOTE See 5.5.

3.09
AfA preference set
defined combination of two or more **AfA preferences**

3.10
application parameter
set of **application specific** values for a particular **assistive technology**

3.11
application specific
configuration of an **assistive technology** that involves **application parameters** unique to a particular **assistive technology** product

NOTE See 5.6 for more information.

3.12
assistive technology
alternative access system
specialized software and/or hardware used in place of or in addition to commonly used software or hardware for control, **display** or processing

EXAMPLES Screen reader, alternative keyboard, refreshable Braille device, screen magnifier.

[ISO/IEC 24751-1:2008 (2.8)]

3.13
digital resource
DR
any type of resource that can be transmitted over and/or accessed via an **information technology system**

NOTE A digital resource can be referenced via an unambiguous and stable identifier in a recognized identification system (e.g. ISBN, ISAN, UPC/EAN, URI).

[ISO/IEC 24751-1:2008 (2.11)]

3.14
disability
⟨digital resource delivery⟩ any obstacle to the use of a **digital resource** experienced because of a mismatch between the needs of a user and the **digital resource** delivered

NOTE 1 Disability in an AfA context is not a personal trait but a consequence of the relationship between the user and their resource system.

NOTE 2 In an e-learning context, disability refers to a mismatch between the needs of a learner and both the educational resource and/or the method of delivery.

[ISO/IEC 24751-1:2008 (2.13)]

3.15
disability
⟨medical perspective⟩ any restriction or lack (resulting from an **impairment**) of ability to perform an activity in the manner or within the range considered normal for a human being

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NOTE 1 This definition of “disability” is included to ensure that users who may have “legal rights” to assistive technologies are served.

NOTE 2 Adapted from World Health Organization Document A29/INFDOCI/1, Geneva, Switzerland, 1976. [3)]

3.16
display
rendering or presentation of a user interface and/or **digital resource** in a range of **access modes**

NOTE Access modes include, but are not limited to, visual, auditory, olfactory, textual and tactile.

[ISO/IEC 24751-1:2008 (2.15)]

3.17
display transformability
characteristic of a **digital resource** that supports changes to specific aspects of its **display**

NOTE See the coded domain in ISO/IEC 24751-3:2008, B.3.

[ISO/IEC 24751-1:2008 (2.16)]

3.18
display transformation
DT
restyling or reconfiguration of the rendering or presentation of a user interface and/or **digital resource**

[ISO/IEC 24751-1:2008 (2.17)]

3.19
generic assistive technology configuration
configuration of an **assistive technology** that involves application parameters common among similar technologies, and not exclusive to a particular product

NOTE See 5.6.

3.20
impairment
〈medical perspective〉 any loss or abnormality of psychological, physiological or anatomical structure or function

NOTE Adapted from World Health Organization. Document A29/INFDOCI/1, Geneva, Switzerland, 1976. [4)]

3.21
individual
human being, i.e. a natural person, who acts as a distinct indivisible entity or is considered as such

NOTE Adapted from ISO/IEC 15944-1:2002 (3.28).

3.22
individualized accessibility
〈e-learning〉 facility of an **IT system** based learning environment to address the needs of an **individual** as learner (through **adaptation**, re-aggregation and substitution)

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3) The source of this definition adapted from World Health Organization Document A29/INFDOCI/1, Geneva, Switzerland, 1976 is now ISO/IEC 24751-1:2008 (2.14).

4) The source of this definition adapted from World Health Organization Document A29/INFDOCI/1, Geneva, Switzerland, 1976 is now ISO/IEC 24751-1:2008 (2.19).

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NOTE Accessibility is determined by the flexibility of the education environment (with respect to presentation, control methods, structure, access mode, and learner supports) and the availability of equivalent content deemed to be adequate alternatives.

[ISO/IEC 24751-1:2008 (2.21)]

3.23
information technology system
IT system
set of one or more computers, associated software, peripherals, terminals, human operations, physical processes, information transfer means, that form an autonomous whole, capable of performing information processing and/or information transfer

[ISO/IEC 14662:2004 (3.1.8)]

3.24
language
system of signs for communication, usually consisting of a vocabulary and rules

NOTE In this part of ISO/IEC 24751, language refers to “natural languages” or “special languages” but not “programming languages” or “artificial languages”.

[ISO 5127:2001 (1.1.2.01)]

4 Symbols and abbreviations

AfA	access for all
DR	digital resource
DRD	access for all digital resource description
DT	display transformation
IEEE	Institute of Electronic & Electrical Engineering
IMS	IMS Global Learning Consortium
IT system	information technology system
MIME	multipurpose internet mail extensions
PNP	access for all personal needs and preferences
W3C	World Wide Web Consortium
W3C/WAI WCAG	World Wide Web Consortium/Web Accessibility Initiative Web Content Accessibility Guidelines

5 Basic Principles

A number of concepts are encapsulated in the information model for this part of ISO/IEC 24751. These concepts are explained below.

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5.1 Functional Approach

The information collected as an Access For All Personal Needs and Preferences (PNP) description is associated with the user's functional abilities and the assistive technology or other non-standard technology in use as well as other user needs and preferences (a functional approach), rather than with the name and other details of a human impairment (a medical approach). If the structure were based on information about users' impairments, it would still need to address their functional abilities at some stage, as it is this information that is needed by learning systems to adapt content and navigation. A medical approach would exclude many of the details that the system would require. One example would be a user with a learning disability: because learning disabilities are so varied that classification does not capture the range of options that can be offered in a functional description. Another example would be the needs and preferences of a blind user: knowing that a user is blind (the medical terminology of the impairment) does not indicate whether or not they can read Braille or whether they need output to a Braille display or to a screen reader with speech; only a functional approach can do this. Many users with disabilities and users with alternate needs and preferences will require the user interface to be compatible with the assistive or non-standard technology that they use, so for them Access For All Needs and Preferences (PNP) are specific to the hardware and software used.

5.2 Creating a Personal Needs and Preferences Statement

The Access For All Personal Needs and Preferences (PNP) description can be created in a variety of ways. The most likely way is through an interactive form ('wizard') that presents a number of questions to the user and, given responses to the questions, generates the description. This application may be integrated into a content management system or offered as a stand-alone application. Once a person has a PNP, they should be able to change, expand, replace, or completely remove their user needs and preferences statement as needed. They should also be able to create multiple PNPs in order to have a convenient way to switch between several sets of needs and preferences for different situations - e.g., at home, school, or in a quiet or noisy place. They should also be able to move their PNPs to new systems or new situations for reuse.

5.3 Display, Control and Content

Needs and preferences are grouped into display, control, and content elements. Display needs and preferences describe how the user prefers to have information displayed or presented. Control needs and preferences describe how a user prefers to control the device. Finally, content needs and preferences describe what supplementary, enhanced, adapted, or alternative content the learner requires.

5.4 Multiple Contexts

A learner may have one or more defined sets of needs and preferences. Multiple sets are necessary because a learner's needs and preferences may vary according to the learning context. Changing requirements may be caused by changes to their environment (for example, a home system may have different technologies installed from one at school) and/or other factors (for example, needs may vary later in the day as fatigue increases, or with specific disciplines such as science versus literature).

5.5 Needs and Preferences

This standard includes both needs and preferences because it is crucial to provide for and distinguish between them. As described in the Framework document, the interoperability requirements of learners with disabilities necessitate strong adherence, whenever possible, to the stated needs of each learner. However, to avoid having users over-specify by marking their preferred settings as needs, the standard incorporates a priority rating for each configuration or technology setting requested. This allows users to state, for example, that they prefer to use a keyboard (perhaps due to repetitive strain injury from "mouse" use) but that they can use a "mouse"-driven application when no adaptation is available. The ratings are:

- *required*: The learner cannot use content or tools that do not provide this feature or allow this transformation.
- *preferred*: The learner prefers content or tools that provide this feature or allow this transformation.

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- *optionally use*: The learner would use this setting if the content or tool they have selected for other reasons provides or allows it.
- *prohibited*: The learner cannot use content or tools that include this feature or require this transformation; this feature should be turned off if possible, and content that includes this feature should not be offered.

5.6 Generic versus Application Specific

In general, any application within a particular class of alternative access systems will share some subset of functionality. For example, screen readers, in general, allow the users to set the rate at which text is read. In addition to this subset of common or generic functionality, many vendors add features that are unique to their application.

Access For All Personal Needs and Preferences (PNP) statements identify and separate these generic settings for different classes of alternative access systems, and provide a vendor-neutral way for users to state their needs and preferences for these settings. These generic settings are applicable to any application within the class. As well, the PNP provides a mechanism for vendors to define their own application-specific settings, (which may not be applicable to other vendors' applications) and for the user to request them.

6 Information Model

The attributes in this information model are described in Clause 7.

6.1 General

6.1.1 Access For All User

Attribute	Allowed Occurrences	Datatype
language	Zero or one per *Access For All User*	ISO 639-2/T
display	Zero or one per *Access For All User*	Display
control	Zero or one per *Access For All User*	Control
content	Zero or one per *Access For All User*	Content

6.1.2 Application

Attribute	Allowed Occurrences	Datatype
name	One per *Application*	characterstring
application version	Zero or one per *Application*	characterstring
application priority	One per *Application*	integer range (0 .. *)
application parameter	Zero or more per *Application*	Application_Parameter

6.1.3 Application Parameter

Attribute	Allowed Occurrences	Datatype
name	One per *Application Parameter*	characterstring
parameter value	Zero or one per *Application Parameter*	characterstring

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6.2 Display

Attribute	Allowed Occurrences	Datatype
screen reader	Zero or one per *Display*	Screen_Reader
screen enhancement	Zero or one per *Display*	Screen_Enhancement
text reading highlight	Zero or one per *Display*	Text_Reading_Highlight
braille	Zero or one per *Display*	Braille
tactile	Zero or one per *Display*	Tactile
visual alert	Zero or one per *Display*	Visual_Alert
structural presentation	Zero or one per *Display*	Structural_Presentation

6.2.1 Screen Reader

Attribute	Allowed Occurrences	Datatype
usage	Zero or one per *Screen Reader*	usage_vocabulary)
link indication	Zero or more per *Screen Reader*	link_indication_vocabulary
speech rate	Zero or one per *Screen Reader*	integer range (1 .. *)
pitch	Zero or one per *Screen Reader*	real(10,4) range (0.0 ..1.0)
volume	Zero or one per *Screen Reader*	real(10,4) range (0.0 ..1.0)
application	Zero or more per *Screen Reader*	Application

6.2.2 Screen Enhancement

Attribute	Allowed Occurrences	Datatype
usage	Zero or one per *Screen Enhancement*	usage_vocabulary
font face	Zero or one per *Screen Enhancement*	Font_Face
font size	Zero or one per *Screen Enhancement*	real(10,4) range (0.0 .. *) excluding (0.0)
foreground colour	Zero or one per *Screen Enhancement*	Colour
background colour	Zero or one per *Screen Enhancement*	Colour
highlight colour	Zero or one per *Screen Enhancement*	Colour
link colour	Zero or one per *Screen Enhancement*	Colour
cursor size	Zero or one per *Screen Enhancement*	real(10,4) range (0.0 ..1.0)
cursor colour	Zero or one per *Screen Enhancement*	Colour
cursor trails	Zero or one per *Screen Enhancement*	real(10,4) range (0.0 ..1.0)
invert colour choice	Zero or one per *Screen Enhancement*	Boolean
invert images	Zero or one per *Screen Enhancement*	Boolean
tracking	Zero or more per *Screen Enhancement*	tracking_vocabulary
magnification	Zero or one per *Screen Enhancement*	real(10,4) range (1.0 .. *)
personal stylesheet	Zero or one per *Screen Enhancement*	URI
application	Zero or more per *Screen Enhancement*	Application

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6.2.3 Text Reading Highlight

Attribute	Allowed Occurrences	Datatype
usage	Zero or one per *Text Reading Highlight*	usage_vocabulary
speech rate	Zero or one per *Text Reading Highlight*	integer range (1 .. *)
pitch	Zero or more per *Text Reading Highlight*	real(10,4) range (0.0 ..1.0)
volume	Zero or more per *Text Reading Highlight*	real(10,4) range (0.0 ..1.0)
highlight	Zero or one per *Text Reading Highlight*	reading_unit_vocabulary
speech component	Zero or one per *Text Reading Highlight*	speech_component_vocabulary
reading unit	Zero or one per *Text Reading Highlight*	reading_unit_vocabulary
application	Zero or more per *Text Reading Highlight*	Application

6.2.4 Braille

Attribute	Allowed Occurrences	Datatype
usage	Zero or one per *Braille*	usage_vocabulary
braille grade	Zero or one per *Braille*	braille_grade_vocabulary
number of braille dots	Zero or one per *Braille*	braille_dot_number_vocabulary
number of braille cells	Zero or one per *Braille*	integer range (1 .. *)
braille mark	Zero or one per *Braille*	braille_mark_vocabulary
braille dot pressure	Zero or one per *Braille*	real(10,4) range (0.0 ..1.0)
braille status cell	One per *Braille*	braille_status_cell_vocabulary
application	Zero or more per *Braille*	Application

6.2.5 Tactile

Attribute	Allowed Occurrences	Datatype
usage	Zero or one per *Tactile*	usage_vocabulary
application	Zero or more per *Tactile*	Application

6.2.6 Visual Alert

Attribute	Allowed Occurrences	Datatype
usage	Zero or one per *Visual Alert*	usage_vocabulary
system sounds	Zero or one per *Visual Alert*	system_sounds_vocabulary
system sounds caption	Zero or one per *Visual Alert*	boolean
application	Zero or more per *Visual Alert*	Application

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6.2.7 Structural Presentation

Attribute	Allowed Occurrences	Datatype
usage	Zero or one per *Structural Presentation*	usage_vocabulary
content density	Zero or one per *Structural Presentation*	content_density_vocabulary
components shown	Zero or more per *Structural Presentation*	components_shown_vocabulary
window layout	Zero or one per *Structural Presentation*	window_layout_vocabulary
application	Zero or more per *Structural Presentation*	Application

6.2.8 Font Face

Attribute	Allowed Occurrences	Datatype
font name	Zero or more per *Font Face*	characterstring
generic font face	One per *Font Face*	generic_font_face_vocabulary

6.3 Control

Attribute	Allowed Occurrences	Datatype
input requirements	Zero or one per *Control*	control_flexibility_vocabulary
keyboard enhancement	Zero or one per *Control*	Keyboard_Enhancement
onscreen keyboard	Zero or one per *Control*	Onscreen_Keyboard
alternative keyboard	Zero or one per *Control*	Alternative_Keyboard
mouse emulation	Zero or one per *Control*	Mouse_Emulation
alternative pointing	Zero or one per *Control*	Alternative_Pointing
voice recognition	Zero or one per *Control*	Voice_Recognition
coded input	Zero or one per *Control*	Coded_Input
prediction	Zero or one per *Control*	Prediction
structural navigation	Zero or one per *Control*	Structural_Navigation

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6.3.1 Keyboard enhancement

Attribute	Allowed Occurrences	Datatype
usage	Zero or one per *Keyboard enhancement*	usage_vocabulary
alphanumeric keyboard layout	Zero or one per *Keyboard enhancement*	alphanumeric_layout_vocabulary
alphanumeric keyboard layout custom	Zero or one per *Keyboard enhancement*	URI
sticky keys	Zero or one per *Keyboard enhancement*	Sticky_Keys
repeat keys	Zero or one per *Keyboard enhancement*	Repeat_Keys
slow keys	Zero or one per *Keyboard enhancement*	Slow_Keys
debounce keys	Zero or one per *Keyboard enhancement*	Debounce
application	Zero or more per *Keyboard Enhancement*	Application

6.3.2 Onscreen Keyboard

Attribute	Allowed Occurrences	Datatype
usage	Zero or one per *Preference Keyboard*	usage_vocabulary
alphanumeric keyboard layout	Zero or one per *Onscreen Keyboard*	alphanumeric_layout_vocabulary
alphanumeric keyboard layout custom	Zero or one per *Onscreen Keyboard*	URI
key height relative	One per *Onscreen Keyboard*	integer range (0 .. 100)
key width relative	One per *Onscreen Keyboard*	integer range (0 .. 100)
key spacing relative	One per *Onscreen Keyboard*	integer range (0 .. 100)
key selection sound feedback	Zero or one per *Onscreen Keyboard*	boolean
point-and-click selection	Zero or one per *Onscreen Keyboard*	Point_and_Click_Selection
point-and-dwell selection	Zero or one per *Onscreen Keyboard*	Point_and_Dwell_Selection
automatic scanning	Zero or one per *Onscreen Keyboard*	Automatic_Scanning
inverse scanning	Zero or one per *Onscreen Keyboard*	Inverse_Scanning
directed scanning	Zero or one per *Onscreen Keyboard*	Directed_Scanning
code selection	Zero or one per *Onscreen Keyboard*	Code_Selection
application	Zero or more per *Onscreen Keyboard*	Application

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6.3.3 Alternative Keyboard

Attribute	Allowed Occurrences	Datatype
usage	Zero or one per *Alternative Keyboard*	usage_vocabulary
alphanumeric keyboard layout	Zero or one per *Alternative Keyboard*	alphanumeric_layout_vocabulary
alphanumeric keyboard layout custom	Zero or one per *Alternative Keyboard*	URI
sticky keys	Zero or one per *Alternative Keyboard*	Sticky_Keys
repeat keys	Zero or one per *Alternative Keyboard*	Repeat_Keys
slow keys	Zero or one per *Alternative Keyboard*	Slow_Keys
debounce keys	Zero or one per *Alternative Keyboard*	Debounce
resizable keys	Zero or one per *Alternative Keyboard*	Resizable_Keys
key selection sound feedback	Zero or one per *Alternative Keyboard*	Boolean
application	Zero or more per *Alternative Keyboard*	Application

6.3.4 Mouse Emulation

Attribute	Allowed Occurrences	Datatype
usage	Zero or one per *Mouse Emulation*	usage_vocabulary
cursor speed	Zero or one per *Mouse Emulation*	real(10,4) range (0.0 .. 1.0)
cursor acceleration	Zero or one per *Mouse Emulation*	real(10,4) range (0.0 .. 1.0)
mouse emulation device	Zero or one per *Mouse Emulation*	mouse_emulation_device_vocabulary
application	Zero or more per *Mouse Emulation*	Application

6.3.5 Alternative Pointing

Attribute	Allowed Occurrences	Datatype
usage	Zero or one per *Alternative Pointing*	usage_vocabulary
relative pointing	Zero or one per *Alternative Pointing*	Relative_Pointing
absolute pointing	Zero or one per *Alternative Pointing*	Boolean
device handedness	Zero or one per *Alternative Pointing*	handedness_vocabulary
double-click speed	Zero or one per *Alternative Pointing*	real(10,4) range (0.0 .. *) excluding (0.0)
switch select	Zero or one per *Alternative Pointing*	Boolean
dwell select	Zero or one per *Alternative Pointing*	Dwell_Select
application	Zero or more per *Alternative Pointing*	Application

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6.3.6 Voice Recognition

Attribute	Allowed Occurrences	Datatype
usage	Zero or one per *Voice Recognition*	usage_vocabulary
voice profile identity	Zero or one per *Voice Recognition*	URI
microphone gain	Zero or one per *Voice Recognition*	real(10,4) range (0.0 ..1.0)
controller window	Zero or one per *Voice Recognition*	controller_window_vocabu-lary
dictation	Zero or one per *Voice Recognition*	boolean
command and control	Zero or one per *Voice Recognition*	Command_And_Control
application	Zero or more per *Voice Recognition*	Application

6.3.7 Coded Input

Attribute	Allowed Occurrences	Datatype
usage	*Zero or one per Coded Input*	usage_vocabulary
code	One per *Coded Input*	code_vocabulary
number of inputs	One per *Coded Input*	integer range (1 .. *)
code termination	Zero or one per *Coded Input*	Code_Termination
switch port	One per *Coded Input*	switch_port_vocabulary
custom code	Zero or one per *Coded Input*	URI
application	Zero or more per *Coded Input Set*	Application

6.3.8 Prediction

Attribute	Allowed Occurrences	Datatype
usage	Zero or one per *Prediction*	usage_vocabulary
prediction type	One or more per *Prediction*	prediction_type_vocabulary
number of prediction choices displayed	Zero or one per *Prediction*	integer range (1 .. *)
lexicon	Zero or one per *Prediction*	URI
application	Zero or more per *Coded Input Set*	Application

6.3.9 Structural Navigation

Attribute	Allowed Occurrences	Datatype
usage	Zero or one per *Structural Navigation*	usage_vocabulary
navigation strategy	Zero or one per *Structural Navigation*	navigation_strategy_vocabu-lary
table of contents	*Zero or one per Structural Navigation*	Boolean
application	Zero or more per *Coded Input Set*	Application

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6.3.10 Sticky Keys

Attribute	Allowed Occurrences	Datatype
modifier indication	Zero or one per *Sticky_Keys*	boolean

6.3.11 Repeat Keys

Attribute	Allowed Occurrences	Datatype
automatic delay	Zero or one per *Repeat Keys*	boolean
automatic repeat rate	Zero or one per *Repeat Keys*	real(10,4) range (0.0 .. 1.0)

6.3.12 Slow Keys

Attribute	Allowed Occurrences	Datatype
slow keys interval	Zero or one per *Slow Keys*	real(10,4) range (0.0 ..1.0)

6.3.13 Debounce

Attribute	Allowed Occurrences	Datatype
debounce interval	Zero or one per *Debounce*	real(10,4) range (0.0 .. *) excluding (0.0)

6.3.14 Point and Click Selection

Attribute	Allowed Occurrences	Datatype
switch delay	Zero or one per *Point and Click Selection*	real(10,4) range (0.0 .. *)

6.3.15 Point and Dwell Selection

Attribute	Allowed Occurrences	Datatype
dwell time	Zero or one per *Point and Dwell Selection*	real(10,4) range (0.0 .. *) excluding (0.0)

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6.3.16 Automatic Scanning

Attribute	Allowed Occurrences	Datatype
scan speed	Zero or one per *Automatic Scanning*	real(10,4) range (0.0 .. *) excluding (0.0)
scan switch delay	Zero or more per *Automatic Scanning*	real(10,4) range (0.0 .. *)
switch port	Zero or one per *Automatic Scanning*	switch_port_vocabulary
automatic scan initial delay	Zero or one per *Automatic Scanning*	real(10,4) range (0.0 .. *)
automatic scan repeat	Zero or one per *Automatic Scanning*	auto_scan_repeat_vocabu-lary
switch assignment	One or more per *Automatic Scanning*	Switch_Assignment

6.3.17 Inverse Scanning

Attribute	Allowed Occurrences	Datatype
scan speed	Zero or one per *Inverse Scanning*	real(10,4) range (0.0 .. *)
scan switch delay	Zero or more per *Inverse Scanning*	real(10,4) range (0.0 .. *)
switch port	Zero or one per *Inverse Scanning*	switch_port_vocabulary
dwell time	Zero or one per *Inverse Scanning*	real(10,4) range (0.0 .. *) excluding (0.0)
switch assignment	One or more per *Inverse Scanning*	Switch_Assignment

6.3.18 Directed Scanning

Attribute	Allowed Occurrences	Datatype
scan speed	Zero or one per *Directed Scanning*	real(10,4) range (0.0 .. *)
switch port	Zero or one per *Directed Scanning*	switch_port_vocabulary
dwell time	Zero or one per *Directed Scanning*	real(10,4) range (0.0 .. *) excluding (0.0)
switch assignment	One or more per *Directed Scanning*	Switch_Assignment

6.3.19 Code Selection

Attribute	Allowed Occurrences	Datatype
code	Zero or one per *Code Selection*	code_vocabulary
number of inputs	Zero or one per *Code Selection*	integer range (1 .. *)
code termination	Zero or one per *Code Selection*	Code_Termination
selection method	Zero or one per *Code Selection*	selection_method_vocabu-lary
switch port	Zero or one per *Code Selection*	switch_port_vocabulary
custom code	Zero or one per *Code Selection*	URI

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6.3.20 Resizable Keys

Attribute	Allowed Occurrences	Datatype
key height absolute	Zero or one per *Resizable Keys*	integer range (1 .. *)
key width absolute	Zero or one per *Resizable Keys*	integer range (1 .. *)
key spacing absolute	Zero or one per *Resizable Keys*	integer range (0 .. *)

6.3.21 Relative Pointing

Attribute	Allowed Occurrences	Datatype
cursor speed	Zero or one per *Relative Pointing*	real(10,4) range (0.0 ..1.0)
cursor acceleration	Zero or one per *Relative Pointing*	real(10,4) range (0.0 ..1.0)

6.3.22 Dwell Select

Attribute	Allowed Occurrences	Datatype
use dwell select	Zero or one per *Dwell Select*	boolean
dwell time	Zero or one per *Dwell Select*	real(10,4) range (0.0 .. *) excluding (0.0)

6.3.23 Command And Control

Attribute	Allowed Occurrences	Datatype
vocabulary	Zero or one per *Command And Control*	vocabulary_vocabulary
confirmation feedback	Zero or one per *Command And Control*	boolean
mouse control	Zero or one per *Command And Control*	boolean

6.3.24 Code Termination

Attribute	Allowed Occurrences	Datatype
code termination signal	One per *Code Termination*	code_termination_signal_vocabulary
code rate	Zero or one per *Code Termination*	real(10,4) range (0.5 .. 20.0)

6.3.25 Switch Assignment

Attribute	Allowed Occurrences	Datatype
switch function	One per *Switch Assignment*	switch_function_vocabulary
switch number	One per *Switch Assignment*	integer range (1 .. *)

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6.4 Content

Attribute	Allowed Occurrences	Datatype
adaptation preference	Zero or more per *Content*	Adaptation_Preference
colour coding avoidance	Zero or one per *Content*	boolean
hazard	Zero or more per *Content*	hazard_vocabulary
support tool	Zero or more per *Content*	support_tool_vocabulary

6.4.1 Adaptation Preference

Attribute	Allowed Occurrences	Datatype
usage	*Zero or one per* A*daptation Preference*	usage_vocabulary
adaptation type	Zero or one per A*daptation Preference*	adaptation_type_vocabulary
original access mode	One per A*daptation Preference*	access_mode_vocabulary
representation form	Zero or more per A*daptation Preference*	representation_form_vocabulary
language	Zero or more per A*daptation Preference*	ISO 639-2/T
reading rate	Zero or one per A*daptation Preference*	integer range (1 .. 300)
education level	Zero or more per A*daptation Preference*	characterstring

7 Attribute Descriptions and Recommended Use

This clause describes how the terms in the information model in Clause 6 should be used. In this clause, bolded terms are defined in Clause 3.

7.1 Access for All user preference set

collection of AfA needs and preferences for control flexibility, display transformability and content with respect to the accessibility of a resource

Value Space: container

7.1.1 language

a preference for the **language** of the user interface

Value Space: [ISO 639-2/T]

7.1.2 display

collection of AfA needs and preferences for how a user interface and content should be presented

Value Space: container

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7.1.2.1 screen reader

collection of AfA needs and preferences for how to configure a *screen reader* [5)]

Value Space: container

7.1.2.1.1 usage

rating for the collection of AfA needs and preferences

Value Space: required, preferred, optionally use, prohibited

7.1.2.1.2 link indication

the characteristics of presentation for a hyperlink when using a *screen reader*

Value Space: speak link, different voice, sound effect, none

7.1.2.1.3 speech rate

rate of speech of a *speech synthesizer*

NOTE 1 A *speech synthesizer* may be used by or with a number of technologies, including a *screen reader*, *text reader/highlighter* or *Braille display*, among others.

NOTE 2 This value is in words per minute.

Value Space: integer range (1 .. *)

7.1.2.1.4 pitch

pitch of a *speech synthesizer*

NOTE 1 A *speech synthesizer* may be used by a number of technologies, including a *screen reader*, *text reader/highlighter* or *Braille display*, among others.

NOTE 2 Use 0.0 = "low," 0.5 = "medium," 1.0 = "high".

Value Space: real(10,4) range (0.0 .. 1.0)

7.1.2.1.5 volume

volume of a *speech synthesizer*

NOTE 1 A *speech synthesizer* may be used by or with a number of technologies, including a *screen reader*, *text reader/highlighter* or *Braille display*, among others.

NOTE 2 Use 0.0 = "low," 0.5 = "medium," 1.0 = "high".

Value Space: real(10,4) range (0.0 .. 1.0)

7.1.2.1.6 application

collection of needs and preferences for how to configure vendor-specific parameters of an **assistive technology**

Value Space: container

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5) Italicized terms are explained in Annex B of ISO/IEC 24751-1:2008.

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7.1.2.1.6.1 name

name of an application

Value Space: characterstring

7.1.2.1.6.2 application version

version of an application

Value Space: characterstring

7.1.2.1.6.3 application priority

priority of usage of an application with respect to other applications listed

NOTE The value 0 denotes the highest priority. Successive integers serve to rank additional applications.

Value Space: integer range (0 .. *)

7.1.2.1.6.4 application parameter

collection of data elements that states an AfA preference for the value for an application-specific parameter

NOTE This parameter is to be passed into the application at run-time.

Value Space: container

7.1.2.1.6.4.1 name

name of a parameter

Value Space: characterstring

7.1.2.1.6.4.2 parameter value

value of a parameter

Value Space: characterstring

7.1.2.2 screen enhancement

collection of AfA needs and preferences for how to configure enhancements to a screen **display**

Value Space: container

7.1.2.2.1 usage

rating for the collection of AfA needs and preferences

Value Space: required, preferred, optionally use, prohibited

7.1.2.2.2 font face

collection of data elements that states an AfA preference for a font

Value Space: container

7.1.2.2.2.1 font name

font by name

Value Space: characterstring

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7.1.2.2.2 generic font name

name of a generic font

Value Space: serif, sans serif, monospaced, cursive, fantasy

7.1.2.2.3 font size

size of a font

NOTE This value is in points.

Value Space: real(10,4) range (0.0 .. *) excluding (0.0)

7.1.2.2.4 foreground colour

foreground colour in an interface that is displaying text

Value Space: RGB plus Alpha

7.1.2.2.5 background colour

background colour in an interface that is displaying text

Value Space: RGB plus Alpha

7.1.2.2.6 highlight colour

the highlight colour in an interface that is displaying text

Value Space: RGB plus Alpha

7.1.2.2.7 link colour

link colour in an interface that is displaying text with hyperlinks

Value Space: RGB plus Alpha

7.1.2.2.8 cursor size

size of a cursor

NOTE Use 0.0 = "standard," 0.5 = "large," 1.0 = "extra large".

Value Space: real(10,4) range (0.0 .. 1.0)

7.1.2.2.9 cursor colour

colour of a cursor

Value Space: RGB plus Alpha

7.1.2.2.10 cursor trail

length of curso*r trail*

NOTE Use 0.0 = "no trail," 0.5 = "medium," 1.0 = "longest".

Value Space: real(10,4) range (0.0 .. 1.0)

7.1.2.2.11 invert colour choice

AfA preference to invert the foreground and background colours

Value Space: true, false

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7.1.2.2.12 invert images

AfA preference to invert the colours of images

Value Space: true, false

7.1.2.2.13 tracking

user interface elements to track

NOTE 1 When using screen magnification, the entire screen is not visible. This preference will direct the magnifier to an area of the screen to display (e.g. the area around the “mouse”, the cursor, or the point of focus).

NOTE 2 As it is common for users to alter this setting as they work, this preference is intended to be a default.

Value Space: mouse, caret, focus

7.1.2.2.14 magnification

preferred magnification of the screen as a factor of a screen's original size

NOTE A value of 1.0 means the original magnification size.

Value Space: real(10,4) range (1.0 .. *)

7.1.2.2.15 personal stylesheet

a data element identifying a style sheet

Value Space: URI

7.1.2.2.16 application

collection of AfA needs and preferences for how to configure vendor-specific **application parameters** of **assistive technology**

Value Space: container

7.1.2.2.16.1 name

name of an application

Value Space: characterstring

7.1.2.2.16.2 application version

version of an application

Value Space: characterstring

7.1.2.2.16.3 application priority

priority of usage of an application with respect to other applications listed

NOTE The value 0 denotes the highest priority. Successive integers serve to rank additional applications.

Value Space: integer range (0 .. *)

7.1.2.2.16.4 application parameter

collection of data elements that states a preference for the value for an application-specific parameter

NOTE This parameter is to be passed into the application at run-time.

Value Space: container

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7.1.2.2.16.4.1 name

name of a parameter

Value Space: characterstring

7.1.2.2.16.4.2 parameter value

value of a parameter

Value Space: characterstring

7.1.2.3 text reading highlight

collection of AfA needs and preferences for how to configure a *text reading and highlighting* system

Value Space: container

7.1.2.3.1 usage

rating for the collection of AfA needs and preferences

Value Space: required, preferred, optionally use, prohibited

7.1.2.3.2 speech rate

rate of speech of a *speech synthesizer*

NOTE 1 A *speech synthesizer* may be used by or with a number of technologies, including a *screen reader*, *text reader/highlighter* or *Braille display*, among others.

NOTE 2 This value is in words per minute.

Value Space: integer range (1 .. *)

7.1.2.3.3 pitch

pitch of a *speech synthesizer*

NOTE 1 A *speech synthesizer* may be used by or with a number of technologies, including a *screen reader*, *text reader/highlighter* or *Braille display*, among others.

NOTE 2 Use 0.0 = "low," 0.5 = "medium," 1.0 = "high.

Value Space: real(10,4) range (0.0 .. 1.0)

7.1.2.3.4 volume

volume of a *speech synthesizer*

NOTE 1 A *speech synthesizer* may be used by or with a number of technologies, including a *screen reader*, *text reader/highlighter* or *Braille display*, among others.

NOTE 2 Use 0.0 = "low," 0.5 = "medium," 1.0 = "high.

Value Space: real(10,4) range (0.0 .. 1.0)

7.1.2.3.5 highlight

what a *text reader/highlighter* should highlight

Value Space: word, line, sentence, paragraph

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7.1.2.3.6 speech component

what components of the user interface should be spoken

NOTE *Text readers/highlighters* can speak user interface components (in addition to the text of a document) such as alternate text describing an image, or user interface controls.

Value Space: alternative text, controls when tabbing

7.1.2.3.7 reading unit

unit of reading to be spoken

Value Space: word, line, sentence, paragraph

7.1.2.3.8 application

collection of needs and preferences for how to configure vendor-specific parameters of assistive technology

Value Space: container

7.1.2.3.8.1 name

name of an application

Value Space: characterstring

7.1.2.3.8.2 application version

version of an application

Value Space: characterstring

7.1.2.3.8.3 application priority

priority of usage of an application with respect to other applications listed

NOTE The value 0 denotes the highest priority. Successive integers serve to rank additional applications.

Value Space: integer range (0 .. *)

7.1.2.3.8.4 application parameter

collection of **data elements** that states a preference for the value for an **application**-specific parameter

NOTE This parameter is to be passed into the application at run-time.

Value Space: container

7.1.2.3.8.4.1 name

name of a parameter

Value Space: characterstring

7.1.2.3.8.4.2 parameter value

value of a parameter

Value Space: characterstring

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7.1.2.4 braille

collection of needs and preferences for how to configure a *Braille display*

Value Space: container

7.1.2.4.1 usage

rating for the collection of needs and preferences

Value Space: required, preferred, optionally use, prohibited

7.1.2.4.2 braille grade

grade of Braille to use when using a *Braille display*

NOTE Grade 1 corresponds to “uncontracted” Braille, and Grade 2 corresponds to “contracted” Braille. Grade 2 supports contractions and other possible extensions.

Value Space: uncontracted, contracted

7.1.2.4.3 number of Braille dots

number of dots in a *Braille cell*

Value Space: 6, 8

7.1.2.4.4 number of Braille cells

number of active *Braille cell*s in a *Braille display*

Value Space: integer range (1 .. *)

7.1.2.4.5 braille mark

what textual properties to mark when using a *Braille display*

Value Space: highlight, bold, underline, italic, strikeout, colour

7.1.2.4.6 braille dot pressure

resistance pressure of *Braille display* pins

NOTE Use 0.0 = "low," 0.5 = "medium," 1.0 = "high"
Value Space: real(10,4) range (0.0 .. 1.0)

7.1.2.4.7 braille status cell

the presence or location of a *Braille display* status cell

Value Space: off, left, right

7.1.2.4.8 application

collection of needs and preferences for how to configure vendor-specific parameters of assistive technology

Value Space: container

7.1.2.4.8.1 name

name of an application

Value Space: characterstring

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7.1.2.4.8.2 application version

version of an application

Value Space: characterstring

7.1.2.4.8.3 application priority

priority of usage of an application with respect to other applications listed

NOTE The value 0 denotes the highest priority. Successive integers serve to rank additional applications.

Value Space: integer range (0 .. *)

7.1.2.4.8.4 application parameter

collection of data elements that states a preference for the value for an application-specific parameter

NOTE This parameter is to be passed into the application at run-time.

Value Space: container

7.1.2.4.8.4.1 name

name of a parameter

Value Space: characterstring

7.1.2.4.8.4.2 parameter value

value of a parameter

Value Space: characterstring

7.1.2.5 tactile display

collection of needs and preferences for how to configure a *tactile display.*

NOTE Intended for future use.

Value Space: container

7.1.2.5.1 usage

rating for the collection of needs and preferences

Value Space: required, preferred, optionally use, prohibited

7.1.2.5.2 application

collection of needs and preferences for how to configure vendor-specific parameters of assistive technology

Value Space: container

7.1.2.5.2.1 name

name of an application

Value Space: characterstring

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7.1.2.5.2.2 application version

version of an application

Value Space: characterstring

7.1.2.5.2.3 application priority

priority of usage of an application with respect to other applications listed

NOTE The value 0 denotes the highest priority. Successive integers serve to rank additional applications.

Value Space: integer range (0 .. *)

7.1.2.5.2.4 application parameter

collection of **data elements** that states a preference for the value for an **application**-specific parameter

NOTE This parameter is to be passed into the application at run-time.

Value Space: container

7.1.2.5.2.4.1 name

name of a parameter

Value Space: characterstring

7.1.2.5.2.4.2 parameter value

value of a parameter

Value Space: characterstring

7.1.2.6 visual alert

collection of needs and preferences for how to configure *visual alerts*

Value Space: container

7.1.2.6.1 usage

rating for the collection of needs and preferences

Value Space: required, preferred, optionally use, prohibited

7.1.2.6.2 system sounds

what to use as a visual alternative to system alert sounds

NOTE This is usually achieved by flashing the desktop, the active window, or the caption bar.

Value Space: desktop, window, caption bar

7.1.2.6.3 system sound caption

preference to use a textual message for any system-generated audio

Value Space: true, false

7.1.2.6.4 application

collection of needs and preferences for how to configure vendor-specific parameters of assistive technology

Value Space: container

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7.1.2.6.4.1 name

name of an application

Value Space: characterstring

7.1.2.6.4.2 application version

version of an application

Value Space: characterstring

7.1.2.6.4.3 application priority

priority of usage of an application with respect to other applications listed

NOTE The value 0 denotes the highest priority. Successive integers serve to rank additional applications.

Value Space: integer range (0 .. *)

7.1.2.6.4.4 application parameter

collection of data elements that states a preference for the value for an application-specific parameter

NOTE This parameter is to be passed into the application at run-time.

Value Space: container

7.1.2.6.4.4.1 name

name of a parameter

Value Space: characterstring

7.1.2.6.4.4.2 parameter value

value of a parameter

Value Space: characterstring

7.1.2.7 structural presentation

collection of needs and preferences for how the structure of content should be displayed

Value Space: container

7.1.2.7.1 usage

rating for the collection of needs and preferences

Value Space: required, preferred, optionally use, prohibited

7.1.2.7.2 content density

amount of detail to provide at any given time

NOTE This is intended to support automatic transformation by a system or application.

Value Space: overview, detailed

7.1.2.7.3 components shown

which components of a user interface to display

Value Space: list of links, annotations

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7.1.2.7.4 window layout

spatial arrangement of application windows displayed on a screen

Value Space: tiled, overlap

7.1.2.7.5 application

collection of needs and preferences for how to configure vendor-specific parameters of assistive technology

Value Space: container

7.1.2.7.5.1 name

name of an application

Value Space: characterstring

7.1.2.7.5.2 application version

version of an application

Value Space: characterstring

7.1.2.7.5.3 application priority

priority of usage of an application with respect to other applications listed

NOTE The value 0 denotes the highest priority. Successive integers serve to rank additional applications.

Value Space: integer range (0 .. *)

7.1.2.7.5.4 application parameter

collection of data elements that states a preference for the value for an application-specific parameter

NOTE This parameter is to be passed into the application at run-time.

Value Space: container

7.1.2.7.5.4.1 name

name of a parameter

Value Space: characterstring

7.1.2.7.5.4.2 parameter value

value of a parameter

Value Space: characterstring

7.1.3 control

collection of needs and preferences for how to configure **alternative access systems** for controlling a device

Value Space: container

7.1.3.1 input requirements

single input system that is sufficient to control a **resource**

Value Space: full keyboard control, full “mouse” control

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7.1.3.2 keyboard enhancement

collection of needs and preferences for how to configure accessibility enhancements for a standard keyboard

Value Space: container

7.1.3.2.1 usage

rating for the collection of needs and preferences

Value Space: required, preferred, optionally use, prohibited

7.1.3.2.2 alphanumeric keyboard layout

spatial arrangement of the keys of an alphanumeric keyboard

Value Space: standard, sequential, frequency

7.1.3.2.3 alphanumeric keyboard layout custom

data element identifying a document containing a specification of a custom spatial arrangement of keys of an alphanumeric keyboard

NOTE A custom layout is one that differs from any commonly used arrangements, and is arranged for ease of use by a particular user.

Value Space: URI

7.1.3.2.4 sticky keys

collection of needs and preferences for the use of *sticky keys*

Value Space: container

7.1.3.2.4.1 modifier indication

preference to play a sound when a modifier key is pressed

Value Space: true, false

7.1.3.2.5 repeat keys

collection of needs and preferences for the use of *repeat keys*

Value Space: container

7.1.3.2.5.1 automatic delay

how long a system using *repeat keys* should wait before *auto-repeat* engages

NOTE Use 0.0 = "short", 0.5 = "medium", 1.0 = "long".

Value Space: real (10,4) range (0.0 .. 1.0)

7.1.3.2.5.2 automatic repeat rate

rate at which keys should be repeated when *repeat keys* is being used

NOTE Use 0.0 = "slow", 0.5 = "medium", 1.0 = "fast".

Value Space: real(10,4) range (0.0 .. 1.0)

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7.1.3.2.6 slow keys

collection of needs and preferences for the use of *slow keys*

Value Space: container

7.1.3.2.6.1 slow keys interval

interval before a key press is detected when *slow keys* is being used

NOTE Use 0.0 = "slow", 0.5 = "medium", 1.0 = "fast".

Value Space: real(10,4) range (0.0 .. 1.0)

7.1.3.2.7 debounce keys

collection of needs and preferences for the use of *debounce*

Value Space: container

7.1.3.2.7.1 debounce interval

interval, in seconds, when repeated keystrokes presses of the same character key are ignored when *debounce* is being used

NOTE This value is in seconds.

Value Space: real(10,4) range (0.0 .. *) excluding (0.0)

7.1.3.2.8 application

collection of needs and preferences for how to configure vendor-specific parameters of assistive technology

Value Space: container

7.1.3.2.8.1 name

name of an application

Value Space: characterstring

7.1.3.2.8.2 application version

version of an application

Value Space: characterstring

7.1.3.2.8.3 application priority

priority of usage of an application with respect to other applications listed

NOTE The value 0 denotes the highest priority. Successive integers serve to rank additional applications.

Value Space: integer range (0 .. *)

7.1.3.2.8.4 application parameter

collection of data elements that states a preference for the value for an application-specific parameter

NOTE This parameter is to be passed into the application at run-time.

Value Space: container

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7.1.3.2.8.4.1 name

name of a parameter

Value Space: characterstring

7.1.3.2.8.4.2 parameter value

value of a parameter

Value Space: characterstring

7.1.3.3 onscreen keyboard

collection of needs and preferences for how to configure an *onscreen keyboard*

Value Space: container

7.1.3.3.1 usage

rating for the collection of needs and preferences

Value Space: required, preferred, optionally use, prohibited

7.1.3.3.2 alphanumeric keyboard layout

spatial arrangement of the keys of an alphanumeric keyboard

Value Space: standard, sequential, frequency

7.1.3.3.3 alphanumeric keyboard layout custom

data element identifying a document containing the specification of a custom spatial arrangement of keys of an alphanumeric keyboard

NOTE A custom layout is one that differs from any commonly used arrangements, and is arranged for ease of use by a particular user.

Value Space: URI

7.1.3.3.4 key height relative

height of a key in an *onscreen keyboard* as a percentage of the screen height

Value Space: integer [0 to 100]

7.1.3.3.5 key width relative

width of a key in an *onscreen keyboard* as a percentage of the screen width

Value Space: integer [0 to 100]

7.1.3.3.6 key spacing relative

spacing between keys in an *onscreen keyboard* as a percentage of the screen width

Value Space: integer [0 to 100]

7.1.3.3.7 key selection sound feedback

preference for sound feedback when a key is selected

Value Space: true, false

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7.1.3.3.8 point-and-click selection

collection of needs and preferences for the use of a *point-and-click* interface

Value Space: container

7.1.3.3.8.1 switch delay

delay in seconds before recognizing a *switch* press

NOTE This value is in seconds.

Value Space: real(10,4) range (0.0 .. *)

7.1.3.3.9 point-and-dwell selection

collection of needs and preferences for the use of a *point-and-dwell* interface

Value Space: container

7.1.3.3.9.1 dwell time

time in seconds to dwell in order to deem that a selection has been made when *point-and-dwell* is being used

NOTE This value is in seconds.

Value Space: real(10,4) range (0.0 .. *) excluding (0.0)

7.1.3.3.10 automatic scanning

collection of needs and preferences for the use of an *automatic scanning interface*

Value Space: container

7.1.3.3.10.1 scan speed

scanning speed, in seconds, before a system moves on to the next item or row

NOTE 1 The scan speed may not be less than scan switch delay.

NOTE 2 This value is in seconds.

Value Space: real(10,4) range (0.0 .. *) excluding (0.0)

7.1.3.3.10.2 scan switch delay

delay, in seconds, before a *switch* activation is recognized

NOTE This value is in seconds.

Value Space: real(10,4) range (0.0 .. *)

7.1.3.3.10.3 switch port

port used by a switch input

Value Space: ps/2, game, serial, usb, firewire, infrared, bluetooth

7.1.3.3.10.4 automatic scan initial delay

delay, in seconds, after a *switch* activation is recognized before a *scan* is initiated

NOTE This value is in seconds.

Value Space: real(10,4) range (0.0 .. *)

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7.1.3.3.10.5 automatic scan repeat

number of times an *automatic scanning interface* should repeat a row before escaping to a higher level and continuing a *scan*

Value Space: 1, 2, 3, 4, 5, infinity

7.1.3.3.10.6 switch assignment

collection of data elements that states a preference for an assigned function of a numbered *switch*

Value Space: container

7.1.3.3.10.6.1 switch function

function to assign to a particular *switch* number

Value Space: select, cancel, scan

7.1.3.3.10.6.2 switch number

switch number bound to the switch function

Value Space: integer range (1 .. *)

7.1.3.3.11 inverse scanning

collection of needs and preferences for the use of an *inverse scanning interface*

Value Space: container

7.1.3.3.11.1 scan speed

scanning speed, in seconds, before the system moves on to the next item or row

NOTE 1 The scan speed may not be less than scan switch delay.

NOTE 2 This value is in seconds.

Value Space: real(10,4) range (0.0 .. *) excluding (0.0)

7.1.3.3.11.2 scan switch delay

delay, in seconds, before a *switch* activation is recognized

NOTE This value is in seconds.

Value Space: real(10,4) range (0.0 .. *)

7.1.3.3.11.3 switch port

port used by a *switch* input

Value Space: ps/2, game, serial, usb, firewire, infrared, bluetooth

7.1.3.3.11.4 dwell time

time in seconds to dwell in order to deem that a selection has been made when *point-and-dwell* is being used

NOTE This value is in seconds.

Value Space: real(10,4) range (0.0 .. *) excluding (0.0)

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7.1.3.3.11.5 switch assignment

collection of data elements that states a preference for an assigned function of a numbered *switch*

Value Space: container

7.1.3.3.11.5.1 switch function

function to assign to a particular *switch* number

Value Space: select, cancel, scan

7.1.3.3.11.5.2 switch number

number of *switches* to be used

Value Space: integer range (1 .. *)

7.1.3.3.12 directed scanning

collection of needs and preferences for the use of a *directed scanning interface*

Value Space: container

7.1.3.3.12.1 scan speed

scanning speed, in seconds, before a system moves on to the next item or row

NOTE This value is in seconds.

Value Space: real(10,4) range (0.0 .. *)

7.1.3.3.12.2 switch port

port used by a *switch* input

Value Space: ps/2, game, serial, usb, firewire, infrared, bluetooth

7.1.3.3.12.3 dwell time

time in seconds to dwell in order to deem that a selection has been made when *point-and-dwell* is being used

NOTE This value is in seconds.

Value Space: real(10,4) range (0.0 .. *) excluding (0.0)

7.1.3.3.12.4 switch assignment

collection of data elements that states a preference for an assigned function of a numbered *switch*

Value Space: container

7.1.3.3.12.4.1 switch function

function to assign to a particular *switch* number

Value Space: select, cancel, scan

7.1.3.3.12.4.2 switch number

number of *switches* to be used

Value Space: integer range (1 .. *)

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7.1.3.3.13 code selection

collection of needs and preferences for the use of *code selection*

Value Space: container

7.1.3.3.13.1 code

what *code* to use to represent possible inputs

Value Space: morse, quartering, eight cell, chordic

7.1.3.3.13.2 number of inputs

number of *switches*, keys or cells available to enter a *code*

Value Space: integer range (1 .. *)

7.1.3.3.13.3 code termination

collection of data elements that states a preference for a method to use at the end of a *code* for variable-length *codes*

Value Space: container

7.1.3.3.13.3.1 code termination signal

signal to use at the end of a *code* for variable-length *codes*

Value Space: switch, timed

7.1.3.3.13.3.2 code rate

time, in seconds, available to enter a *code*

NOTE 1 This is only applicable when the code termination is "timed."

NOTE 2 This value is in seconds.

Value Space: real(10,4) range (0.5 .. 20.0)

7.1.3.3.13.4 selection method

selection method to use to activate a key

Value Space: point-and-dwell, point-and-click

7.1.3.3.13.5 switch port

port to be used by a *switch* input

Value Space: ps/2, game, serial, usb, firewire, infrared, bluetooth

7.1.3.3.13.6 custom code

data element identifying an external document containing a specification of a custom *code* scheme

Value Space: URI

7.1.3.3.14 application

collection of needs and preferences for how to configure vendor-specific parameters of assistive technology

Value Space: container

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7.1.3.3.14.1 name

name of an application

Value Space: characterstring

7.1.3.3.14.2 application version

version of an application

Value Space: characterstring

7.1.3.3.14.3 application priority

priority of usage of an application with respect to other applications listed

NOTE The value 0 denotes the highest priority. Successive integers serve to rank additional applications.

Value Space: integer range (0 .. *)

7.1.3.3.14.4 application parameter

collection of data elements that states a preference for the value for an application-specific parameter

NOTE This parameter is to be passed into the application at run-time.

Value Space: container

7.1.3.3.14.4.1 name

name of a parameter

Value Space: characterstring

7.1.3.3.14.4.2 parameter value

value of a parameter

Value Space: characterstring

7.1.3.4 alternative keyboard

collection of needs and preferences for how to configure an *alternative keyboard*

Value Space: container

7.1.3.4.1 usage

rating for the collection of needs and preferences

Value Space: required, preferred, optionally use, prohibited

7.1.3.4.2 alphanumeric keyboard layout

spatial arrangement of the keys of an alphanumeric keyboard

Value Space: standard, sequential, frequency

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7.1.3.4.3 alphanumeric keyboard layout custom

data element identifying a document containing the specification of a custom spatial arrangement of keys of an alphanumeric keyboard

NOTE A custom layout is one that differs from any commonly used arrangements, and is arranged for ease of use by a particular user.

Value Space: URI

7.1.3.4.4 sticky keys

collection of needs and preferences for the use of *sticky keys*

Value Space: container

7.1.3.4.4.1 modifier indication

preference to play a sound when a modifier key is pressed

Value Space: true, false

7.1.3.4.5 repeat keys

collection of needs and preferences for the use of *repeat keys*

Value Space: container

7.1.3.4.5.1 automatic delay

time that a system using *repeat keys* should wait before *auto-repeat* engages

NOTE Use 0.0 = "short", 0.5 = "medium", 1.0 = "long".

Value Space: real(10,4) range (0.0 .. 1.0)

7.1.3.4.5.2 automatic repeat rate

rate at which keys should be repeated when *repeat keys* is being used

NOTE Use 0.0 = "slow", 0.5 = "medium", 1.0 = "fast".

Value Space: real(10,4) range (0.0 .. 1.0)

7.1.3.4.6 slow keys

collection of needs and preferences for the use of *slow keys*

Value Space: container

7.1.3.4.6.1 slow keys interval

interval before a key press is detected when *slow keys* is being used

NOTE Use 0.0 = "slow", 0.5 = "medium", 1.0 = "fast".

Value Space: real(10,4) range (0.0 .. 1.0)

7.1.3.4.7 debounce keys

collection of needs and preferences for the use of *debounce*

Value Space: container

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7.1.3.4.7.1 debounce interval

interval, in seconds, repeated keystrokes presses of the same character key are ignored when *debounce* is being used

NOTE This value is in seconds.

Value Space: real (10,4) range (0.0 to 5.0)

7.1.3.4.8 resizable keys

collection of data elements that states a preference for how to configure keys when an *alternative keyboard* allows key sizes to be adjusted

Value Space: container

7.1.3.4.8.1 key height absolute

height, in millimetres, of a key in an *alternative keyboard*

NOTE This value is in millimeters.

Value Space: integer range (1 .. *)

7.1.3.4.8.2 key width absolute

width, in millimetres, of a key in an *alternative keyboard*

NOTE This value is in millimeters.

Value Space: integer range (1 .. *)

7.1.3.4.8.3 key spacing absolute

spacing, in millimetres, between keys in an *alternative keyboard*

NOTE This value is in millimeters.

Value Space: integer range (0 .. *)

7.1.3.4.9 key selection sound feedback

preference for sound feedback when a key is selected

Value Space: true, false

7.1.3.4.10 application

collection of needs and preferences for how to configure vendor-specific parameters of assistive technology

Value Space: container

7.1.3.4.10.1 name

name of an application

Value Space: characterstring

7.1.3.4.10.2 application version

version of an application

Value Space: characterstring

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7.1.3.4.10.3 application priority

priority of usage of an application with respect to other applications listed

NOTE The value 0 denotes the highest priority. Successive integers serve to rank additional applications.

Value Space: integer range (0 .. *)

7.1.3.4.10.4 application parameter

collection of data elements that states a preference for the value for an application-specific parameter

NOTE This parameter is to be passed into the application at run-time.

Value Space: container

7.1.3.4.10.4.1 name

name of a parameter

Value Space: characterstring

7.1.3.4.10.4.2 parameter value

value of a parameter

Value Space: characterstring

7.1.3.5 mouse emulation

collection of needs and preferences for how to configure a replacement for a standard mouse

EXAMPLES A keyboard, voice recognition, a switch, or another non-pointing device.

Value Space: container

7.1.3.5.1 usage

rating for the collection of needs and preferences

Value Space: required, preferred, optionally use, prohibited

7.1.3.5.2 cursor speed

speed at which a *"mouse" cursor* or *relative pointing device* moves across the screen

NOTE Use 0.0 = "slow," 0.5 = "medium," 1.0 = "fast".

Value Space: real(10,4) range (0.0 .. 1.0)

7.1.3.5.3 cursor acceleration

initial value for the acceleration of a *"mouse" cursor* or *relative pointing device* from rest to its closing speed

NOTE Use 0.0 = "slow," 0.5 = "medium," 1.0 = "fast".

Value Space: real(10,4) range (0.0 .. 1.0)

7.1.3.5.4 mouse emulation device

device to use to emulate a mouse

NOTE Single switches can be used to iteratively *scan* and select a point on the display.

Value Space: keypad, keyboard, switch, voice

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7.1.3.5.5 application

collection of needs and preferences for how to configure vendor-specific parameters of assistive technology

Value Space: container

7.1.3.5.5.1 name

name of an application

Value Space: characterstring

7.1.3.5.5.2 application version

version of an application

Value Space: characterstring

7.1.3.5.5.3 application priority

priority of usage of an application with respect to other applications listed

NOTE The value 0 denotes the highest priority. Successive integers serve to rank additional applications.

Value Space: integer range (0 .. *)

7.1.3.5.5.4 application parameter

collection of data elements that states a preference for the value for an application-specific parameter

NOTE This parameter is to be passed into the application at run-time.

Value Space: container

7.1.3.5.5.4.1 name

name of a parameter

Value Space: characterstring

7.1.3.5.5.4.2 parameter value

value of a parameter

Value Space: characterstring

7.1.3.6 alternative pointing

collection of needs and preferences for how to configure an *alternative pointing device*

Value Space: container

7.1.3.6.1 usage

rating for the collection of needs and preferences

Value Space: required, preferred, optionally use, prohibited

7.1.3.6.2 relative pointing

collection of needs and preferences for how to configure a *relative pointing device*

NOTE Mutually exclusive with absolute pointing.

Value Space: container

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7.1.3.6.2.1 cursor speed

speed at which a *"mouse" cursor* or *relative pointing device* moves across the screen

NOTE Use 0.0 = "slow," 0.5 = "medium," 1.0 = "fast".

Value Space: real(10,4) range (0.0 .. 1.0)

7.1.3.6.2.2 cursor acceleration

initial value for the acceleration of a *"mouse" cursor* or *relative* pointing *device* from rest to its closing speed

NOTE Use 0.0 = "slow," 0.5 = "medium," 1.0 = "fast".

Value Space: real(10,4) range (0.0 .. 1.0)

7.1.3.6.3 absolute pointing

preference to use an *absolute pointing device* instead of a *relative pointing device*

NOTE Mutually exclusive with relative pointing.

Value Space: true, false

7.1.3.6.4 device handedness

either a left-handed or right-handed pointing device

Value Space: left, right

7.1.3.6.5 double-click speed

time, in seconds, in which two successive clicks must occur in order to be registered as a double-click

NOTE This value is in seconds.

Value Space: real(10,4) range (0.0 .. *) excluding (0.0)

7.1.3.6.6 switch select

preference to use a click for selection when using an *alternative pointing device*

NOTE Mutually exclusive with dwell select.

Value Space: true, false

7.1.3.6.7 dwell select

preference to use dwell for selection when using an *alternative pointing device*

NOTE Mutually exclusive with switch select.

Value Space: container

7.1.3.6.8 application

collection of needs and preferences for how to configure vendor-specific parameters of assistive technology

Value Space: container

7.1.3.6.8.1 name

name of an application

Value Space: characterstring

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7.1.3.6.8.2 application version

version of an application

Value Space: characterstring

7.1.3.6.8.3 application priority

priority of usage of an application with respect to other applications listed

NOTE The value 0 denotes the highest priority. Successive integers serve to rank additional applications.

Value Space: integer range (0 .. *)

7.1.3.6.8.4 application parameter

collection of data elements that states a preference for the value for an application-specific parameter

NOTE This parameter is to be passed into the application at run-time.

Value Space: container

7.1.3.6.8.4.1 name

name of a parameter

Value Space: characterstring

7.1.3.6.8.4.2 parameter value

value of a parameter

Value Space: characterstring

7.1.3.7 voice recognition

collection of needs and preferences for how to configure a *voice recognition system*

Value Space: container

7.1.3.7.1 usage

rating for the collection of needs and preferences

Value Space: required, preferred, optionally use, prohibited

7.1.3.7.2 voice profile

data element identifying an external file containing a *voice recognition system voice profile*

Value Space: URI

7.1.3.7.3 microphone gain

sensitivity of a microphone

NOTE Use 0.0 = "low," 0.5 = "medium," 1.0 = "high".

Value Space: real(10,4) range (0.0 .. 1.0)

7.1.3.7.4 controller window

display of a *voice recognition system controller window*

Value Space: hide, show

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7.1.3.7.5 dictation

preference to use dictation with a *voice recognition system*

Value Space: true, false

7.1.3.7.6 command and control

collection of needs and preferences for a *voice recognition system's* command and control settings

Value Space: container

7.1.3.7.6.1 vocabulary

type of *voice recognition system* vocabulary to use

Value Space: contextual, vocabulary

7.1.3.7.6.2 confirmation feedback

preference for a *voice recognition system* to provide auditory confirmation feedback for recognized commands

Value Space: true, false

7.1.3.7.6.3 mouse control

preference to use voice commands to control "mouse" movements

Value Space: true, false

7.1.3.7.7 application

collection of needs and preferences for how to configure vendor-specific parameters of assistive technology

Value Space: container

7.1.3.7.7.1 name

name of an application

Value Space: characterstring

7.1.3.7.7.2 application version

version of an application

Value Space: characterstring

7.1.3.7.7.3 application priority

priority of usage of an application with respect to other applications listed

NOTE The value 0 denotes the highest priority. Successive integers serve to rank additional applications.

Value Space: integer range (0 .. *)

7.1.3.7.7.4 application parameter

collection of **data elements** that states a preference for the value for an **application**-specific parameter

NOTE This parameter is to be passed into the application at run-time.

Value Space: container

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7.1.3.7.7.4.1 name

name of a parameter

Value Space: characterstring

7.1.3.7.7.4.2 parameter value

value of a parameter

Value Space: characterstring

7.1.3.8 coded input

collection of data element that state needs and preferences for how to configure a *coded input* system

Value Space: container

7.1.3.8.1 usage

rating for the collection of needs and preferences

Value Space: required, preferred, optionally use, prohibited

7.1.3.8.1.1 code

code to use to represent possible inputs

Value Space: morse, quartering, eight cell, chordic

7.1.3.8.1.2 number of inputs

number of switches, keys or cells available to enter a code

Value Space: integer range (1 .. *)

7.1.3.8.1.3 code termination

collection of needs and preferences for a method to use at the end of a *code* for variable-length codes

Value Space: container

7.1.3.8.1.3.1 code termination signal

signal to use at the end of a *code* for variable-length *codes*

Value Space: switch, timed

7.1.3.8.1.3.2 code rate

time, in seconds, available to enter a *code*

NOTE 1 This is only applicable when the code termination is "timed".

NOTE 2 This value is in seconds.

Value Space: real(10,4) range (0.5 to 20.0)

7.1.3.8.1.4 switch port

port to be used by a *switch* input

Value Space: ps/2, game, serial, usb, firewire, infrared, bluetooth

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7.1.3.8.1.5 custom code

data element identifying an external document containing a specification of a custom *code* scheme

Value Space: URI

7.1.3.8.2 application

collection of needs and preferences for how to configure vendor-specific parameters of assistive technology

Value Space: container

7.1.3.8.2.1 name

name of an application

Value Space: characterstring

7.1.3.8.2.2 application version

version of an application

Value Space: characterstring

7.1.3.8.2.3 application priority

priority of usage of an application with respect to other applications listed

NOTE The value 0 denotes the highest priority. Successive integers serve to rank additional applications.

Value Space: integer range (0 .. *)

7.1.3.8.2.4 application parameter

collection of data elements that states a preference for the value for an application-specific parameter

NOTE This parameter is to be passed into the application at run-time.

Value Space: container

7.1.3.8.2.4.1 name

name of a parameter

Value Space: characterstring

7.1.3.8.2.4.2 parameter value

value of a parameter

Value Space: characterstring

7.1.3.9 prediction

collection of data element that state needs and preferences for how to configure a *prediction system*

Value Space: container

7.1.3.9.1 usage

rating for the collection of needs and preferences

Value Space: required, preferred, optionally use, prohibited

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7.1.3.9.2 prediction type

type of prediction to use

Value Space: letter, word, word completion, command

7.1.3.9.3 number of prediction choices displayed

number of predicted elements to display

Value Space: integer range (1 .. *)

7.1.3.9.4 lexicon

a data element identifying an external user defined *lexicon* file

Value Space: URI

7.1.3.9.5 application

collection of needs and preferences for how to configure vendor-specific parameters of an assistive technology

Value Space: container

7.1.3.9.5.1 name

name of an application

Value Space: characterstring

7.1.3.9.5.2 application version

version of an application

Value Space: characterstring

7.1.3.9.5.3 application priority

priority of usage of an application with respect to other applications listed

NOTE The value 0 denotes the highest priority. Successive integers serve to rank additional applications.

Value Space: integer range (0 .. *)

7.1.3.9.5.4 application parameter

collection of data elements that states a preference for the value for an application-specific parameter

NOTE This parameter is to be passed into the application at run-time.

Value Space: container

7.1.3.9.5.4.1 name

name of a parameter

Value Space: characterstring

7.1.3.9.5.4.2 parameter value

value of a parameter

Value Space: characterstring

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7.1.3.10 structural navigation

collection of needs and preferences for how to move through content using the structure of the content

Value Space: container

7.1.3.10.1 usage

rating for the collection of needs and preferences

Value Space: required, preferred, optionally use, prohibited

7.1.3.10.2 navigation strategy

how focus should move through a navigation structure

Value Space: breadth first, depth first

7.1.3.10.3 table of contents

preference to use a table of contents for navigation

Value Space: true, false

7.1.3.10.4 application

collection of needs and preferences for how to configure vendor-specific parameters of assistive technology

Value Space: container

7.1.3.10.4.1 name

name of an application

Value Space: characterstring

7.1.3.10.4.2 application version

version of an application

Value Space: characterstring

7.1.3.10.4.3 application priority

priority of usage of an application with respect to other applications listed

NOTE The value 0 denotes the highest priority. Successive integers serve to rank additional applications.

Value Space: integer range (0 .. *)

7.1.3.10.4.4 application parameter

collection of data elements that states a preference for the value for an application-specific parameter

NOTE This parameter is to be passed into the application at run-time.

Value Space: container

####### 7.1.3.10.4.4.1 name

name of a parameter

Value Space: characterstring

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7.1.3.10.4.4.2 parameter value

value of a parameter

Value Space: characterstring

7.1.4 content

collection of needs and preferences for content, specifying any desired transformations or enhancements

Value Space: container

7.1.4.1 adaptation preference

collection of information that gives detailed information about an adaptation

Value Space: container

7.1.4.1.1 usage

rating for the collection of needs and preferences

Value Space: required, preferred, optionally use, prohibited

7.1.4.1.2 adaptation type

nature or genre of the adaptation

[ISO 15836:2003]

Value Space: audio representation, tactile representation, text representation, visual representation, audio description, caption, e-book, sign language

7.1.4.1.3 original access mode

original **access mode** of a **resource** which should be matched or adapted

Value Space: auditory, tactile, textual, visual, olfactory

7.1.4.1.4 representation form

additional details about the adaptation type

Value Space: enhanced, verbatim, reduced, real-time, transcript, alternative text, long description, talking book, Daisy, image-based, symbolic, recorded, synthesized, braille, haptic

7.1.4.1.5 language

language of the **adaptation**

Value Space: [ISO 639-2/T]

7.1.4.1.6 reading rate

rate of presentation of text that is automatically scrolled, as in captions for a film

NOTE This value is in words per minutes.

Value Space: integer range (1 .. 300)

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7.1.4.1.7 education level

audience education level

[DCMI MT]

NOTE Implementations should choose a vocabulary that is appropriate to their context.

Value Space: characterstring

7.1.4.2 colour coding avoidance

preference for avoiding the communication of information by use of colour alone

Value Space: true, false

7.1.4.3 hazard

a characteristic of a digital resource that may be specified as being dangerous to a user

EXAMPLE Flashing animations can trigger seizures in people with photosensitive epilepsy. See further the coded domain in Annex B.17.

Value Space: flashing, sound, olfactory, motion simulation

7.1.4.4 support tool

electronic tool associated with a resource

Value Space: dictionary, calculator, note taking, peer interaction, thesaurus, abacus, spell checker, homophone checker, mind mapping software, outline tool

8 Conformance

The requirements for conformance to this part of ISO/IEC 24751 are dependent on the function or role played by the conformant technology or application.

Education delivery applications, agents or systems are conformant to this part of ISO/IEC 24751 when they gather and/or process Personal Needs and Preferences statements.

Alternative access systems are conformant to this part of ISO/IEC 24751 when they respond to the generic elements of this standard that apply to the specific class of alternative access systems to which the system belongs (e.g., screen readers would respond to screen reader elements).

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Annex A
(normative)

Consolidated List of Terms and Definitions with Cultural Adaptability: ISO French Language Equivalency

A.1 Introduction

The purpose of this Annex A is three-fold, namely,

- to present a consolidated list of all the terms in Clause 3, sorted in French alphabetical order (See A.4 below),
- to present the ISO French language equivalents of all the terms and definitions found in Clause 3 of this standard (see A.5 and A.6 below), and
- to provide the codes representing the gender of the ISO French terms.

This standard maximizes the use of existing standards where and whenever possible including relevant and applicable existing terms and definitions. This Annex A contains the consolidated list of the ISO English and ISO French language paired terms and definitions used in this standard including those terms and definitions introduced in this standard. The source is Clause 3 of this part of ISO/IEC 24751.

A.2 ISO English and ISO French

This standard recognizes that the use of English and French as natural languages is not uniform or harmonized globally in the jurisdictional domains in which they are used, i.e. ass an official or de facto language(s). (Other examples include use of Arabic, German, Portuguese, Russian, Spanish, etc., as natural languages in various jurisdictional domains).

Consequently, the terms "ISO English" and "ISO French" are utilized here to indicate the ISO's specialized use of English and French as languages in the specific context of international standardization, i.e., as a "special language".

A.3 Cultural adaptability and quality control

ISO/IEC JTC 1 has added "cultural adaptability" as the third strategic direction which all standards development work should support. The two other existing strategic directions are "portability" and "interoperability". Not all ISO/IEC JTC 1 standards are being provided in more than one language, i.e., in addition to "ISO/IEC English," in part due to resource constraints.

Terms and definitions are an essential part of a standard.

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This Annex serves to support the "cultural adaptability" aspects of standards as required by ISO/IEC JTC 1. The purpose of this Annex is to ensure that if, for whatever reason, an ISO/IEC JTC 1 standard is developed in one ISO/IEC "official" language only, at the minimum the terms and definitions are made available in more than one language[6)]. A key benefit of translation of terms and definitions is that such work at providing bilingual/multilingual equivalency:

- should be considered a "quality control check" in that establishing an equivalency in another language ferrets out "hidden" ambiguities in the source language. Often it is only in the translation that ambiguities in the meaning, i.e., semantics, of the term/definition are discovered. Ensuring bilingual/multilingual equivalency of terms/definition should thus be considered akin to a minimum "ISO 9000-like" quality control check; and

- is considered a key element in the widespread adoption and use of standards world-wide (especially by users of this standard who include those in various industry sectors, within a legal perspective, policy makers and consumer representatives, other standards developers, IT hardware and service providers, etc.).

A.4 List of Terms in French Alphabetical Order

Generally, within a standard, the Clause 3 terms and definitions are presented in alphabetical order and assigned Clause 3.nn ID numbers accordingly. In order to facilitate the identification of the terms in the French language the following list presents them in French alphabetical order along with their English language equivalents in a table of three column where

- Column 1 = the ID number assigned to the term/definition pair in Clause 3,
- Column 2 = the Term – ISO French,
- Column 3 = the Term – ISO English.

6) The official languages of ISO and IEC are English, French and Russian. Other ISO/IEC member bodies are encouraged to provide bilingual/multilingual equivalencies of terms/definitions for the official language(s) in use in their countries (e.g. through the development of an “Annex A” for this part of ISO/IEC 24751.

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Term ID	Term – ISO French	Term – ISO English
(1)	(2)	(3)
3.01	accès pour tous	access for all
3.02	accessibilité	accessibility
3.22	accessibilité individualisée ⟨e-apprentissage⟩	individualized accessibility ⟨e-learning⟩
3.04	adaptation ⟨e-apprentissage⟩	adaptation ⟨e-learning⟩
3.16	affichage	display
3.19	configuration de technologie d'assistance générique	generic assistive technology configuration
3.05	contexte APT	AfA context
3.20	déficience ⟨perspective médicale⟩	impairment ⟨medical perspective⟩
3.07	danger de l'APT	AfA hazard
3.06	description contextuelle APT	AfA contextual description
3.09	ensemble de préférences APT	AfA preference set
3.14	incapacité ⟨prestation de ressource numérique⟩	disability ⟨digital resource delivery⟩
3.15	incapacité ⟨perspective médicale⟩	disability ⟨medical perspective⟩
3.21	individu	individual
3.25	langue	language
3.03	mode d'accès	access mode
3.10	paramètre d'application	application parameter
3.09	préférence APT	AfA preference
3.11	propre à une application	application specific
3.13	ressource numérique	digital resource
3.23	système d'information	information technology system
3.12	technologie d'assistance	assistive technology
3.17	transformabilité de l'affichage	display transformability
3.18	transformation de l'affichage	display transformation

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A.5 Organization of Annex A.6 "Consolidated matrix of terms and definitions – ISO French equivalents"[7)]

The terms/definitions for this part of ISO/IEC 24751 are organized in matrix form based on their order in Clause 3, i.e. the ID numbers of the sub-clauses of Clause 3. The assignment of the columns in this matrix are as follows:

Col. No.	Use
1	ID as per this part of ISO/IEC 24751 as stated in its Clause 3, i.e. as the "nnn" in Clause 3.nnn
2	Source. International standard referenced or this part of ISO/IEC 24751
3	ISO French Language — Term *
4	Gender of the French Language Term+
5	ISO French Language — Definition *
6	ISO English Language — Term

* Use of an asterisk (*) in Column 3 indicates that the ISO standard referenced (other than this part of ISO/IEC 24751) in Column (5) does not have an ISO French language version. For these terms and definitions, this part of ISO/IEC 24751 is providing the ISO French language equivalent.

\+ The codes representing gender of terms in natural languages are those based on ISO/IEC 15944-5:2008, Clause 6.2.6 titled "*Gender and Official Languages*". The codes used in Columns 4 are those based on the coded domain "15944-5:2008-01", titled "Codes representing Gender in Natural Languages".[8)]

For ISO French, in Column 4, the possible gender codes are either,

- "01" = masculine/masculine;
- "02" = feminine/féminine; or,
- "03" = neuter/neutre.

The first two columns form part of the "IT Interface", i.e. are components of a unique identifier for a concept as registered in the Clause 3 with its sub-clause ID number of the standard, in this case ISO/IEC 24751-2. The other columns under "Human Interface Equivalent" provide the equivalent information from a human understandable and use perspective.

The primary reason for organizing the columns in this order is to facilitate the addition of sets of columns containing equivalent terms, gender codes, definitions, etc. in other languages, (e.g., Chinese, Spanish, Japanese, German, Russian, etc.).

---

7) Annex A is

1) a matrix-based approach to the ISO English and ISO French language equivalents as found in any ISO or IEC standard which is issued as an English/French side-by-side document (e.g. as per example of the multipart standard ISO/IEC 2382, *Information technology — Vocabulary/Technologies de l'information — Vocabulaire*");

2) an approach which is expandable for multilingual equivalency and human interface equivalency purposes in any language; and,

3) a necessary component in being able to reference any standard cited.

8) This coded domain for "Codes representing Gender in Natural Languages" will also be utilized in the normative text for the future International Standard ISO/IEC 24751-8.

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A.6 Consolidated Matrix of ISO/IEC 24751-2 Terms and Definitions in ISO French

IT Interface		Human Interface Equivalents (HIEs)			
Code ID	Source	ISO French			ISO English - Term
		Term	G	Definition	
(1)	(2)	(3)	(4)	(5)	(6)
3.01	ISO/IEC 24751-1:2008 (3.1)	accès pour tous	01	approche fournissant l'**accessibilité** à un environnement contrôlé par ordinateur dans laquelle les **ressources numériques** et leur méthode de prestation correspondent aux besoins et préférences de l'utilisateur	access for all
3.02	ISO/TS 16071:2003 (3.2)	accessibilité	02	utilisabilité d'un produit, d'un service, d'un environnement ou d'une installation par des **individus** ayant le plus grand nombre d'aptitude possibles NOTE Bien que l'«accessibilité» s'adresse surtout aux utilisateurs ayant une incapacité, le concept n'est pas limité aux questions d'incapacité.	accessibility
3.03	ISO/IEC 24751-1:2008 (3.3)	mode d'accès	01	sens humain, système perceptuel ou faculté cognitive à travers lesquels un utilisateur peut traiter ou percevoir le contenu d'une **ressource numérique**	access mode
3.04	ISO/IEC 24751-1:2008 (3.5)	adaptation ⟨e-apprentissage⟩	02	**ressource numérique** qui présente le contenu de l'apprentissage de la totalité ou d'une partie d'une autre **ressource numérique** NOTE Les adaptations peuvent aussi inclure l'adjustment de la présentation, les méthodes de contrôle, la mode d'accès, la structure et les soutiens de l'utilisateur.	adaptation ⟨e-learning⟩
3.05	ISO/IEC 24751-2:2008	contexte APT	01	situation ou environnement particulier dans lesquels un ensemble de besoins et de préférences d'**accessibilité APT** peut exister	AfA context
3.06	ISO/IEC 24751-2:2008	description contextuelle APT	02	nom ou description d'un contexte dans lequel un ensemble de besoins et de préférences d'**accessibilité APT** peut exister EXEMPLE Un label pour un emplacement particulier tel qu'un domicile, un lieu de travail ou une école, ou un moment particulier de la journée tel que tard dans la soirée. NOTE Voir plus loin la Clause 5.4 de l'ISO/IEC 24751-2.	AfA contextual description
3.07	ISO/IEC 24751-2:2008	danger de l'APT	01	caractéristique d'une **ressource numérique** que l'on peut spécifier comme étant dangereuse pour un utilisateur EXEMPLE Les animations flash peuvent déclencher des crises épileptiques chez les personnes atteintes d'épilepsie photosensible NOTE Voir plus loin le domaine codé dans l' ISO/IEC 24751-2 (Annexe B.17).	AfA hazard

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IT Interface		Human Interface Equivalents (HIEs)			
Code ID	Source	ISO French			ISO English - Term
		Term	G	Definition	
(1)	(2)	(3)	(4)	(5)	(6)
3.08	ISO/IEC 24751-2:2008	préférence APT	02	préférences spécifiques d'utilisateurs qui exigent une **accessibilité APT** NOTE Voir plus loin la Clause 5.6 de l'ISO/IEC 24751-2.	AfA preference
3.09	ISO/IEC 24751-2:2008	ensemble de préférences APT	01	combinaison définie de **préférences APT**	AfA preference set
3.10	ISO/IEC 24751-2:2008	paramètre d'application	01	ensemble de valeurs **propres à une application** d'un **technologie d'assistance particulière**	application parameter
3.11	ISO/IEC 24751-2:2008	propre à une application	03	configuration d'une **technologie d'assistance** qui implique des **paramètres d'application** propres d'un produit de **technologie d'assistance** NOTE Voir plus loin la Clause 5.6 de l'ISO/IEC 24751-2 pour de plus amples renseignements.	application specific
3.12	ISO/IEC 24751-1:2008 (3.8)	technologie d'assistance	02	logiciel et/ou matériel spécialisé et utilisé à la place (ou en plus) d'un logiciel ou d'un matériel communément utilisé pour le contrôle, l'**affichage** ou le traitement EXEMPLES Lecteur d'écran, clavier de remplacement, afficheur Braille dynamique, agrandisseur d'écran. NOTE La technologie d'assistance a pour synonymes la technologie d'aide et la technologie fonctionnelle.	assistive technology
3.13	ISO/IEC 24751-1:2008 (3.11)	ressource numérique	02	tout type de ressource qui peut être transmis par (ou auquel on peut accéder au moyen d') un **système de technologie de l'information (système IT)** NOTE On devrait pouvoir faire référence à une ressource numérique grâce à un identificateur stable et non ambigu dans un système d'identification reconnu (par ex. l'ISBN, l'ISAN, le CUP/NEA, etc.)	digital resource
3.14	ISO/IEC 24751-1:2008 (3.12)	incapacité ⟨prestation de ressource numérique⟩	02	tout obstacle à l'utilisation d'une **ressource numérique** rencontré pour cause de décalage entre les besoins d'un utilisateur et la **ressource numérique** faisant l'objet de la prestation NOTE 1 L'incapacité dans ce contexte n'est pas un caractère personnel mais une conséquence du rapport entre l'utilisateur et son système de ressource. NOTE 2 Dans un contexte d'e-apprentissage, l'incapacité fait référence à un décalage entre les besoins d'un apprenant, la ressource didactique, et la méthode de prestation.	disability ⟨digital resource delivery⟩

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IT Interface		Human Interface Equivalents (HIEs)			
Code ID	Source	ISO French			ISO English - Term
		Term	G	Definition	
(1)	(2)	(3)	(4)	(5)	(6)
3.15	[Adapted from WHO Document A29/INFDOCI/1, Geneva, Switzerland:1976]	incapacité ⟨perspective médicale⟩	02	toute restriction ou manque (résultant d'une **déficience**) de capacité à exercer une activité de manière ou d'amplitude considérées comme normales pour un être humain NOTE Cette définition d' « incapacité (perspective médicale) » est inclue pour assurer que les utilisateurs qui peuvent avoir des « droits légaux » d'accès aux technologies d'assistance sont pris en considération.	disability ⟨medical perspective⟩
3.16	ISO/IEC 24751-1:2008 (3.15)	affichage	01	rendu ou présentation d'une interface-utilisateur et/ou d'une **ressource numérique** dans une gamme de **mode d'accès** NOTE Les modes d'accès comprennent (mais ne sont pas limités à ceux-ci) les modes visuel, auditif, textuel et tactile.	display
3.17	ISO/IEC 24751-1:2008 (3.16)	transformabilité de l'affichage	02	caractéristique d'une **ressource numérique** qui soutient des changements d'aspects spécifiques de son **affichage** NOTE Voir plus le domaine codé dans la Clause 5.4 de ISO/IEC 24751-3 (Annexe B.2).	display transformability
3.18	ISO/IEC 24751-1:2008 (3.17)	transformation de l'affichage	02	remodelage ou reconfiguration du rendu ou de la présentation d'une interface-utilisateur et/ou d'une **ressource numérique**	display transformation
3.19	ISO/IEC 24751-2:2008	configuration de technologie d'assistance générique	02	configuration d'une **technologie d'assistance** qui implique des **paramètres d'application** communs dans des technologies semblables, et qui ne dépend pas d'un fournisseur en particulier NOTE Voir plus loin la Clause 5.6 de l'ISO/IEC 24751-2.	generic assistive technology configuration
3.20	[Adapted from WHO Document A29/INFDOCI/1, Geneva, Switzerland:1976]	déficience ⟨perspective médicale⟩	02	toute perte ou anomalie de structure ou fonction psychologique, physiologique ou anatomique	impairment ⟨medical perspective⟩
3.21	[Adapted from ISO/IEC 15944-1:2002 (3.28)]	individu	01	personne qui est un être humain, c-à-d. une personne physique, qui agit à titre d'entité indivisible distincte ou qui est considérée comme telle	individual

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IT Interface		Human Interface Equivalents (HIEs)			
Code ID	Source	ISO French			ISO English - Term
		Term	G	Definition	
(1)	(2)	(3)	(4)	(5)	(6)
3.22	ISO/IEC 24751-1:2008	accessibilité individualisée 〈e-apprentissage〉	02	facilité qu'a un environnement d'apprentissage, basé sur un **système IT**, de répondre aux besoins d'un **individu** à titre d'apprenant grâce à l'**adaptation**, la réagrégation et la substitution NOTE L'accessibilité est déterminée par la souplesse de l'environnement didactique (en ce qui concerne la présentation, les méthodes de contrôle, la structure, le mode d'accès et les soutiens de l'apprenant) et la disponibilité du contenu équivalent jugés comme étant des substituts adéquats.	individualized accessibility 〈e-learning〉
3.23	ISO/IEC 14662:2004 (3.13)	système d'information	01	ensemble constitué d'un ou de plusieurs ordinateurs, avec leurs logiciels associés, de périphériques, de terminaux, d'opérateurs humains, de processus physiques et de moyens de transfert d'information, formant un tout autonome capable de traiter l'information et/ou de la transmettre	information technology system
3.24	ISO 5127:2001 (1.1.2.01)	langue	02	système de signes de communication compose habituellement d'un vocabulaire et de règles NOTE Dans la présente norme, la langue se réfère aux langues naturelles ou aux langues de spécialité, mais pas aux «langages de programmation» ou «langages artificiels».	language

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Annex B
(normative)

Vocabulary Codes

B.1 Access Mode Vocabulary Codes

The 5 basic "access mode" values are:

- visual
- textual
- auditory
- tactile
- olfactory

The coding convention for the "access mode" vocabulary is presented in Table 01.

Table 01: Codes Representing "access mode" Values [9)]

IT Interface		Human Interface / Equivalent Linguistic Expressions			
		ISO English (eng)		ISO French (fra)	
Table ID (1)	Code (2)	Mnemonic (3)	Expression (4)	Mnemonic (5)	Expression (6)
24751-2:01	1	V	Visual		
24751-2:01	2	X	Textual		
24751-2:01	3	A	Auditory		
24751-2:01	4	T	Tactile		
24751-2:01	5	O	Olfactory		

Rule B.1-01:
If Code = 1 (Visual) is used, the access mode described uses the human sense of visual perception.

Rule B.1-02:
If Code = 2 (Textual) is used, the access mode described uses the human capability to understand text.

Rule B.1-03:
If Code = 3 (Auditory) is used, the access mode described uses the human sense of auditory perception.

Rule B.1-04:
If Code = 4 (Tactile) is used, the access mode described uses the human sense of tactile perception.

Rule B.1-05:
If Code = 5 (Olfactory) is used, the access mode described uses the human sense of smell.

9) The structure of this and other tables in Annex B supports a bilingual, multilingual expandable approach.

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B.2 Adaptation Type Vocabulary Codes

The 9 basic "adaptation type" values are:

- audio representation
- visual representation
- text representation
- tactile representation
- caption
- audio description
- Braille
- digital talking book
- electronic book

The coding convention for the "adaptability report type" vocabulary is presented in Table 02.

Table 02: Codes Representing "adaptation type" Values

IT Interface		Human Interface / Equivalent Linguistic Expressions			
		ISO English (eng)		ISO French (fra)	
Table ID (1)	Code (2)	Mnemonic (3)	Expression (4)	Mnemonic (5)	Expression (6)
24751-2:02	1	AU	Audio representation		
24751-2:02	2	VI	Visual representation		
24751-2:02	3	TE	Text representation		
24751-2:02	4	TA	Tactile representation		
24751-2:02	5	CA	Caption		
24751-2:02	6	AD	Audio description		
24751-2:02	7	BR	Braille		
24751-2:02	8	DI	Digital talking book		
24751-2:02	9	EL	Electronic book		

Rule B.2-01:
Code = 1 (Audio representation) indicates that the resource contains an audio representation of the original access mode.

Rule B.2-02:
Code = 2 (Visual representation) indicates that the resource contains a visual representation of the original access mode.

Rule B.2-03:
Code = 3 (Text representation) indicates that the resource contains a text representation of the original access mode.

Rule B.2-04:
Code = 4 (Tactile representation) indicates that the resource contains a tactile representation of the original access mode.

Rule B.2-05:
Code = 5 (Caption) indicates that the resource contains a text caption of the original audio content.

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Rule B.2-06:
Code = 6 (Audio description) indicates that the resource contains an audio description of the original visual content.

Rule B.2-07:
Code = 7 (Braille) indicates that the resource contains a Braille representation of the original access mode.

Rule B.2-08:
Code = 8 (Digital talking book) indicates that the resource is a digital talking book containing the intellectual content of the original access mode.

Rule B.2-09:
Code = 9 (Electronic book) indicates that the resource is an electronic book containing the intellectual content of the original access mode.

B.3 Alphanumeric Layout Vocabulary Codes

The 3 basic "alphanumeric layout" values are:

- standard
- sequential
- frequency

The coding convention for the "alphanumeric layout" vocabulary is presented in Table 03.

Table 03: Codes Representing "alphanumeric layout" Values

IT Interface		Human Interface / Equivalent Linguistic Expressions			
		ISO English (eng)		ISO French (fra)	
Table ID (1)	Code (2)	Mnemonic (3)	Expression (4)	Mnemonic (5)	Expression (6)
24751-2:03	1	ST	Standard		
24751-2:03	2	SE	Sequential		
24751-2:03	3	FR	Frequency		

Rule B.3-01:
Code = 1 (Standard) implies use of a keyboard that is standard for the cultural context of the system (e.g., in the U.S., this would be a QWERTY keyboard).

Rule B.3-02:
Code = 2 (Sequential) implies use of a sequential keyboard, which arranges letters alphabetically and numbers in ascending order

Rule B.3-03:
Code = 3 (Frequency) implies use of a frequency weighted keyboard, in which frequently used keys are grouped at the centre for pointing device users or at the place where scanning begins for switch users.

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B.4 Auto Scan Repeat Vocabulary Codes

The 6 basic "auto scan repeat" values are:

- 1
- 2
- 3
- 4
- 5
- infinity

The coding convention for the "auto scan repeat" vocabulary is presented in Table 04.

Table 04: Codes Representing "auto scan repeat" Values

IT Interface		Human Interface / Equivalent Linguistic Expressions			
		ISO English (eng)		ISO French (fra)	
Table ID (1)	Code (2)	Mnemonic (3)	Expression (4)	Mnemonic (5)	Expression (6)
24751-2:04	1	1	1		
24751-2:04	2	2	2		
24751-2:04	3	3	3		
24751-2:04	4	4	4		
24751-2:04	5	5	5		
24751-2:04	9	I	Infinity		

Rule B.4-01:
Code = 1 (1) through Code = 5 (5) indicate that the onscreen keyboard should automatically repeat its scan cycle the indicated number of times if a selection has not been made.

Rule B.4-02:
Code = 9 (Infinity) indicates that the onscreen keyboard should repeat its scan cycle indefinitely until a selection is made.

B.5 Braille Dot Number Vocabulary Codes

The 2 basic "braille dot number" values are:

- 6
- 8

The coding convention for the "braille dot number" vocabulary is presented in Table 05.

Table 05: Codes Representing "braille dot number" Values

IT Interface		Human Interface / Equivalent Linguistic Expressions			
		ISO English (eng)		ISO French (fra)	
Table ID (1)	Code (2)	Mnemonic (3)	Expression (4)	Mnemonic (5)	Expression (6)
24751-2:05	1	6	6		
24751-2:05	2	8	8		

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Rule B.5-01:
Code = 1 (6) implies a Braille cell that uses six (6) dots arranged in two columns of three dots each.

Rule B.5-02:
Code = 2 (8) implies a Braille cell that uses eight (8) dots arranged in two columns of four dots each.

B.6 Braille Grade Vocabulary Codes

The 2 basic "braille grade" values are:

- uncontracted
- contracted

The coding convention for the "braille grade" vocabulary is presented in Table 06.

Table 06: Codes Representing "braille grade" Values

IT Interface		Human Interface / Equivalent Linguistic Expressions			
		ISO English (eng)		ISO French (fra)	
Table ID (1)	Code (2)	Mnemonic (3)	Expression (4)	Mnemonic (5)	Expression (6)
24751-2:06	1	U	Uncontracted		
24751-2:06	2	C	Contracted		

Rule B.6-01:
Code = 1 (Uncontracted) refers to a set of Braille symbols that does not include any abbreviations or contractions in addition to a standard alphabet.

Rule B.6-02:
Code = 2 (Contracted) refers to a set of Braille symbols that includes abbreviations and contractions in addition to a standard alphabet.

B.7 Braille Mark Vocabulary Codes

The 6 basic "braille mark" values are:

- highlight
- bold
- underline
- italic
- strikeout
- colour

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The coding convention for the "braille mark" vocabulary is presented in Table 07.

Table 07: Codes Representing "braille mark" Values

IT Interface		Human Interface / Equivalent Linguistic Expressions			
		ISO English (eng)		ISO French (fra)	
Table ID (1)	Code (2)	Mnemonic (3)	Expression (4)	Mnemonic (5)	Expression (6)
24751-2:07	1	H	Highlight		
24751-2:07	2	B	Bold		
24751-2:07	3	U	Underline		
24751-2:07	4	I	Italic		
24751-2:07	5	S	Strikeout		
24751-2:07	6	C	Colour		

Rule B.7-01:
If Code = 1 (Highlight) is used, a Braille display will place an extra symbol along side any characters that are highlighted.

Rule B.7-02:
If Code = 2 (Bold) is used, a Braille display will place an extra symbol along side any characters that are bolded.

Rule B.7-03:
If Code = 3 (Underline) is used, a Braille display will place an extra symbol along side any characters that are underlined.

Rule B.7-04:
If Code = 4 (Italic) is used, a Braille display will place an extra symbol along side any characters that are italicized.

Rule B.7-05:
If Code = 5 (Strikeout) is used, a Braille display will place an extra symbol along side any characters that are struck out.

Rule B.7-06:
If Code = 6 (Colour) is used, a Braille display will place an extra symbol along side any characters that use colour.

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B.8 Braille Status Cell Vocabulary Codes

The 3 basic "braille status cell" values are:

- off
- left
- right

The coding convention for the "braille status cell" vocabulary is presented in Table 08.

Table 08: Codes Representing "braille status cell" Values

IT Interface		Human Interface / Equivalent Linguistic Expressions			
		ISO English (eng)		ISO French (fra)	
Table ID (1)	Code (2)	Mnemonic (3)	Expression (4)	Mnemonic (5)	Expression (6)
24751-2:08	1	O	Off		
24751-2:08	2	L	Left		
24751-2:08	3	R	Right		

Rule B.8-01:
If Code = 1 (Off) is used, a Braille display will not use any form of status cell.

Rule B.8-02:
If Code = 2 (Left) is used, a Braille display will place a status cell to the left of the main display.

Rule B.8-03:
If Code = 3 (Right) is used, a Braille display will place a status cell to the right of the main display

B.9 Code Termination Signal Vocabulary Codes

The 2 basic "code termination" values are:

- switch
- timed

The coding convention for the "code termination" vocabulary is presented in Table 09.

Table 09: Codes Representing "code termination" Values

IT Interface		Human Interface / Equivalent Linguistic Expressions			
		ISO English (eng)		ISO French (fra)	
Table ID (1)	Code (2)	Mnemonic (3)	Expression (4)	Mnemonic (5)	Expression (6)
24751-2:09	1	S	Switch		
24751-2:09	2	T	Timed		

Rule B.9-01:
If Code = 1 (Switch) is used, a coded input system will wait until the user activates a switch before considering a variable-length code to be complete.

Rule B.9-02:
If Code = 2 (Timed) is used, a coded input system will wait a fixed length of time before considering a variable-length code to be complete.

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B.10 Code Vocabulary Codes

The 4 basic "code" values are:

- morse
- quartering
- eight cell
- chordic

The coding convention for the "code" vocabulary is presented in Table 10.

Table 10: Codes Representing "code" Values

IT Interface		Human Interface / Equivalent Linguistic Expressions			
		ISO English (eng)		ISO French (fra)	
Table ID (1)	Code (2)	Mnemonic (3)	Expression (4)	Mnemonic (5)	Expression (6)
24751-2:10	1	M	Morse		
24751-2:10	2	Q	Quartering		
24751-2:10	3	E	Eight Cell		
24751-2:10	4	C	Chordic		

Rule B.10-01:
Code = 1 (Morse) indicates that Morse code will be used for input.

Rule B.10-02:
Code = 2 (Quartering) indicates that a quartering code will be used for input.

Rule B.10-03:
Code = 3 (Eight Cell) that an eight cell code will be used for input.

Rule B.10-04:
Code = 4 (Chordic) that a chordic kyboard will be used for input.

B.11 Components Shown Vocabulary Codes

The 2 basic "components shown" values are:

- list of links
- annotations

The coding convention for the "components shown" vocabulary is presented in Table 11.

Table 11: Codes Representing "components shown" Values

IT Interface		Human Interface / Equivalent Linguistic Expressions			
		ISO English (eng)		ISO French (fra)	
Table ID (1)	Code (2)	Mnemonic (3)	Expression (4)	Mnemonic (5)	Expression (6)
24751-2:11	1	L	List of Links		
24751-2:11	2	A	Annotations		

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Rule B.11-01:
Code = 1 (List of Links) refers to the display of a list of all hyperlinks present in a document.

Rule B.11-02:
Code = 2 (Annotations) refers to the display of any annotations associated with a document.

B.12 Content Density Vocabulary Codes

The 2 basic "content density" values are:

- overview
- detailed

The coding convention for the "content density" vocabulary is presented in Table 12.

Table 12: Codes Representing "content density" Values

IT Interface		Human Interface / Equivalent Linguistic Expressions			
		ISO English (eng)		ISO French (fra)	
Table ID (1)	Code (2)	Mnemonic (3)	Expression (4)	Mnemonic (5)	Expression (6)
24751-2:12	1	O	Overview		
24751-2:12	2	D	Detailed		

Rule B.12-01:
Code = 1 (Overview) indicates a summarized presentation of the information contained in a document.

Rule B.12-02:
Code = 2 (Detailed) indicates a full presentation of all information contained in a document.

B.13 Control Flexibility Vocabulary Codes

The 2 basic "control flexibility" values are:

- full keyboard control
- full mouse control

The coding convention for the "control flexibility" vocabulary is presented in Table 13.

Table 13: Codes Representing "control flexibility" Values

IT Interface		Human Interface / Equivalent Linguistic Expressions			
		ISO English (eng)		ISO French (fra)	
Table ID (1)	Code (2)	Mnemonic (3)	Expression (4)	Mnemonic (5)	Expression (6)
24751-2:13	1	K	Full keyboard control		
24751-2:13	2	M	Full mouse control		

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Rule B.13-01:
Code = 1 (Full keyboard control) indicates that a resource can be controlled or interacted with using only a keyboard.

Rule B.130-02:
Code = 2 (Full mouse control) indicates that a resource can be controlled or interacted with using only a mouse or other pointing device.

B.14 Controller Window Vocabulary Codes

The 2 basic "controller window" values are:

- hide
- show

The coding convention for the "controller window" vocabulary is presented in Table 14.

Table 14: Codes Representing "controller window" Values

IT Interface		Human Interface / Equivalent Linguistic Expressions			
		ISO English (eng)		ISO French (fra)	
Table ID (1)	Code (2)	Mnemonic (3)	Expression (4)	Mnemonic (5)	Expression (6)
24751-2:14	1	H	Hide		
24751-2:14	2	S	Show		

Rule B.14-01:
If Code = 1 (Hide) is used, a voice recognition system should not display a window containing the voice recognition system controls.

Rule B.14-02:
If Code = 2 (Show) is used, a voice recognition system should display a window containing the voice recognition system controls.

B.15 Generic Font Face Vocabulary Codes

The 5 basic "generic font face" values are:

- serif
- sans serif
- monospaced
- cursive
- fantasy

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The coding convention for the "generic font face" vocabulary is presented in Table 15.

Table 15: Codes Representing "generic font face" Values

IT Interface		Human Interface / Equivalent Linguistic Expressions			
		ISO English (eng)		ISO French (fra)	
Table ID (1)	Code (2)	Mnemonic (3)	Expression (4)	Mnemonic (5)	Expression (6)
24751-2:15	1	SE	Serif		
24751-2:15	2	SA	Sans Serif		
24751-2:15	3	MO	Monospaced		
24751-2:15	4	CU	Cursive		
24751-2:15	5	FA	Fantasy		

Rule B.15-01:
Code = 1 (Serif) refers to a serif font family.

Rule B.15-02:
Code = 2 (sans Serif) refers to a sans serif font family.

Rule B.15-03:
Code = 3 (Monospaced) refers to a monospaced font family.

Rule B.15-04:
Code = 4 (Cursive) refers to a cursive font family.

Rule B.15-05:
Code = 5 (Fantasy) refers to a fantasy font family.

B.16 Handedness Vocabulary Codes

The 2 basic "handedness" values are:

- left
- right

The coding convention for the "handedness" vocabulary is presented in Table 16.

Table 16: Codes Representing "handedness" Values

IT Interface		Human Interface / Equivalent Linguistic Expressions			
		ISO English (eng)		ISO French (fra)	
Table ID (1)	Code (2)	Mnemonic (3)	Expression (4)	Mnemonic (5)	Expression (6)
24751-2:16	1	L	Left		
24751-2:16	2	R	Right		

Rule B.16-01:
Code = 1 (Left) indicates an input device that is explicitly configured for a left-handed person.

Rule B.16-02:
Code = 2 (Right) indicates an input device that is explicitly configured for a right-handed person.

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B.17 Hazard Vocabulary Codes

The 4 basic "hazard" values are:

- flashing
- sound
- olfactory
- motion simulation

The coding convention for the "hazard" vocabulary is presented in Table 17.

Table 17: Codes Representing "hazard" Values

IT Interface		Human Interface / Equivalent Linguistic Expressions			
		ISO English (eng)		ISO French (fra)	
Table ID (1)	Code (2)	Mnemonic (3)	Expression (4)	Mnemonic (5)	Expression (6)
24751-2:17	1	F	Flashing		
24751-2:17	2	S	Sound		
24751-2:17	3	O	Olfactory		
24751-2:17	4	M	Motion simulation		

Rule B.17-01:
If Code = 1 (Flashing) is used, the user should not be presented with any images that flash or blink.

Flashing or blinking lights are known to cause epileptic seizures in some people.

Rule B.17-02:
If Code = 2 (Sound) is used, the user should not be presented with any content containing sound.

Rule B.17-03:
If Code = 3 (Olfactory) is used, the user should not be presented with any content containing smell.

Rule B.17-04:
If Code = 4 (Motion simulation) is used, the user should not be presented with any content that simulates motion.

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B.18 Link Indication Vocabulary Codes

The 4 basic "link indication" values are:

- speak link
- different voice
- sound effect
- none

The coding convention for the " link indication " vocabulary is presented in Table 18.

Table 18: Codes Representing "link indication" Values

IT Interface		Human Interface / Equivalent Linguistic Expressions			
		ISO English (eng)		ISO French (fra)	
Table ID (1)	Code (2)	Mnemonic (3)	Expression (4)	Mnemonic (5)	Expression (6)
24751-2:18	1	S	Speak Link		
24751-2:18	2	D	Different Voice		
24751-2:18	3	E	Sound Effect		
24751-2:18	4	N	None		

Rule B.18-01:
If Code = 1 (Speak Link) is used, the system should speak the word “link” before speaking the link text.

Rule B.18-02:
If Code = 2 (Different Voice) is used, the system should use a different voice from the default voice to speak the link text.

Rule B.18-03:
If Code = 3 (Sound Effect) is used, the system should play a sound effect to indicate that the text is a link.

Rule B.18-04:
If Code = 4 (None) is used, no particular action should be taken to indicate the link.

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B.19 Mouse Emulation Device Vocabulary Codes

The 4 basic "mouse emulation device" values are:

- keypad
- keyboard
- switch
- voice

The coding convention for the "mouse emulation device" vocabulary is presented in Table 19.

Table 19: Codes Representing "mouse emulation device" Values

IT Interface		Human Interface / Equivalent Linguistic Expressions			
		ISO English (eng)		ISO French (fra)	
Table ID (1)	Code (2)	Mnemonic (3)	Expression (4)	Mnemonic (5)	Expression (6)
24751-2:19	1	P	Keypad		
24751-2:19	2	K	Keyboard		
24751-2:19	3	S	Switch		
24751-2:19	4	V	Voice		

Rule B.19-01:
If Code = 1 (Keypad) is used, a keypad is used to emulate mouse movements.

Rule B.19-02:
If Code = 2 (Keyboard) is used, a keyboard is used to emulate mouse movements.

Rule B.19-03:
If Code = 3 (Switch) is used, a switch is used to emulate mouse movements.

Rule B.19-04:
If Code = 4 (Voice) is used, voice input is used to emulate mouse movements.

B.20 Navigation Strategy Vocabulary Codes

The 2 basic "navigation strategy" values are:

- breadth first
- depth first

The coding convention for the "navigation strategy" vocabulary is presented in Table 20.

Table 20: Codes Representing "navigation strategy" Values

IT Interface		Human Interface / Equivalent Linguistic Expressions			
		ISO English (eng)		ISO French (fra)	
Table ID (1)	Code (2)	Mnemonic (3)	Expression (4)	Mnemonic (5)	Expression (6)
24751-2:20	1	B	Breadth First		
24751-2:20	2	D	Depth First		

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Rule B.20-01:
If Code = 1 (Breadth First) is used, focus should move through content in a breadth-first manner, e.g. through higher-level topics/entries first.

Rule B.20-02:
If Code = 2 (Depth First) is used, focus should move through content in a depth-first manner, e.g. descending down a hierarchy before moving on to the next higher-level item.

B.21 Prediction Type Vocabulary Codes

The 4 basic "prediction type" values are:

- letter
- word
- word completion
- command

The coding convention for the "prediction type" vocabulary is presented in Table 21.

Table 21: Codes Representing "prediction type" Values

IT Interface		Human Interface / Equivalent Linguistic Expressions			
		ISO English (eng)		ISO French (fra)	
Table ID (1)	Code (2)	Mnemonic (3)	Expression (4)	Mnemonic (5)	Expression (6)
24751-2:21	1	L	Letter		
24751-2:21	2	W	Word		
24751-2:21	3	C	Word Completion		
24751-2:21	4	M	Command		

Rule B.21-01:
If Code = 1 (Letter) is used, the software should predict which letter a user is likely to type next.

Rule B.21-02:
If Code = 2 (Word) is used, the software should predict which word a user is likely to type next.

Rule B.21-03:
If Code = 3 (word Completion) is used, the software should predict what word the user may be typing, based on the letters typed so far, while a user is typing a word.

Rule B.21-04:
If Code = 4 (Command) is used, the software should predict which command a user is likely to be entering.

B.22 Reading Unit Vocabulary Codes

The 4 basic "reading unit" values are:

- word
- line
- sentence
- paragraph

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The coding convention for the "reading unit" vocabulary is presented in Table 22.

Table 22: Codes Representing "reading unit" Values

IT Interface		Human Interface / Equivalent Linguistic Expressions			
		ISO English (eng)		ISO French (fra)	
Table ID (1)	Code (2)	Mnemonic (3)	Expression (4)	Mnemonic (5)	Expression (6)
24751-2:22	1	W	Word		
24751-2:22	2	L	Line		
24751-2:22	3	S	Sentence		
24751-2:22	4	P	Paragraph		

Rule B.22-01:
If Code = 1 (Word) is used, the system should highlight each word of the text in turn.

Rule B.22-02:
If Code = 2 (Line) is used, the system should highlight each line of the text in turn.

Rule B.22-03:
If Code = 3 (Sentence) is used, the system should highlight each sentence of the text in turn.

Rule B.22-04:
If Code = 4 (Paragraph) is used, the system should highlight each paragraph of the text in turn.

B.23 Representation Form Vocabulary Codes

The 12 basic "representation form" values are:

- enhanced
- verbatim
- real-time
- transcript
- alternative text
- long description
- sign language
- image-based
- symbolic
- recorded
- synthesized
- haptic

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The coding convention for the "representation form" vocabulary is presented in Table 23.

Table 23: Codes Representing "representation form" Values

IT Interface		Human Interface / Equivalent Linguistic Expressions			
		ISO English (eng)		ISO French (fra)	
Table ID (1)	Code (2)	Mnemonic (3)	Expression (4)	Mnemonic (5)	Expression (6)
24751-2:23	01	EN	Enhanced		
24751-2:23	02	VE	Verbatim		
24751-2:23	03	RD	Reduced		
24751-2:23	04	RT	Real-time		
24751-2:23	05	TR	Transcript		
24751-2:23	06	AL	Alternative text		
24751-2:23	07	LO	Long description		
24751-2:23	08	SI	Sign language		
24751-2:23	09	IM	Image-based		
24751-2:23	10	SY	Symbolic		
24751-2:23	11	RE	Recorded		
24751-2:23	12	SZ	Synthesized		
24751-2:23	13	HA	Haptic		

Rule B.23-01:
If Code = 01 (Enhanced) is used, the caption being described is *enhanced*, i.e. it contains extra content such as images, hyperlinks, etc.

Rule B.23-02:
If Code = 02 (Verbatim) is used, the caption being described is a verbatim caption.

Rule B.23-03:
If Code = 03 (Reduced) is used, the caption being described uses language at a reduced reading level.

Rule B.23-04:
If Code = 04 (Real-time) is used, the caption being described is a real-time captions.

Rule B.23-05:
If Code = 05 (Transcript) is used, the text representation being described is a transcript of the original audio.

Rule B.23-06:
If Code = 06 (Alternative text) is used, the text representation being described is an “alt text” description of the original image, as used by the “alt” attribute of an HTML “img” tag.

Rule B.23-07:
If Code = 07 (Long description) is used, the text representation being described is a long textual description of the original image, as used by the “longdesc” attribute of an HTML “img” tag.

Rule B.23-08:
If Code = 08 (Sign language) is used, the visual representation being described is a sign language interpretation of the original access mode.

Rule B.23-09:
If Code = 09 (Image-based) is used, the visual representation being described is an image-based representation of the original access mode.

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Rule B.23-10:
If Code = 10 (Symbolic) is used, the visual representation being described is a symbolic representation of the original access mode.

Rule B.23-11:
If Code = 11 (Recorded) is used, the audio representation being described is a recorded voice.

Rule B.23-12:
If Code = 12 (Synthesized) is used, the audio representation being described is a synthesized voice.

Rule B.23-13:
If Code = 13 (Haptic) is used, the tactile representation being described is a haptic resource.

B.24 Selection Method Vocabulary Codes

The 2 basic "selection method" values are:

- point-and-dwell
- point-and-click

The coding convention for the "selection method" vocabulary is presented in Table 24.

Table 24: Codes Representing "selection method" Values

IT Interface		Human Interface / Equivalent Linguistic Expressions			
		ISO English (eng)		ISO French (fra)	
Table ID (1)	Code (2)	Mnemonic (3)	Expression (4)	Mnemonic (5)	Expression (6)
24751-2:24	1	D	Point-And-Dwell		
24751-2:24	2	C	Point-And-Click		

Rule B.24-01:
Code = 1 (Point-And-Dwell) indicates a selection method in which the user selects an item by pointing at it with a pointing device and continuing to point at it for a particular length of time.

Rule B.24-02:
Code = 2 (Point-And-Click) indicates a selection method in which the user selects an item by pointing at it with a pointing device and activates a button or switch to select the item.

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B.25 Speech Component Vocabulary Codes

The 2 basic "speech component" values are:

- alternative text
- controls when tabbing

The coding convention for the "speech component" vocabulary is presented in Table 25.

Table 25: Codes Representing "speech component" Values

IT Interface		Human Interface / Equivalent Linguistic Expressions			
		ISO English (eng)		ISO French (fra)	
Table ID (1)	Code (2)	Mnemonic (3)	Expression (4)	Mnemonic (5)	Expression (6)
24751-2:25	1	A	Alternative Text		
24751-2:25	2	C	Controls When Tabbing		

Rule B.25-01:
If Code = 1 (Alternative Text) is used, the system should speak any alternative text encountered.

Rule B.25-02:
If Code = 2 (Controls When Tabbing) is used, the system should speak the names of input controls as the user tabs through them.

B.26 Support Tool Vocabulary Codes

The 10 basic "support tool" values are:

- dictionary
- calculator
- note taking
- peer interaction
- abacus
- thesaurus
- spell checker
- homophone checker
- mind mapping software
- outline tool

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The coding convention for the "support tool" vocabulary is presented in Table 26.

Table 26: Codes Representing "support tool" Values

IT Interface		Human Interface / Equivalent Linguistic Expressions			
		ISO English (eng)		ISO French (fra)	
Table ID (1)	Code (2)	Mnemonic (3)	Expression (4)	Mnemonic (5)	Expression (6)
24751-2:26	01	D	Dictionary		
24751-2:26	02	C	Calculator		
24751-2:26	03	N	Note Taking		
24751-2:26	04	P	Peer Interaction		
24751-2:26	05	A	Abacus		
24751-2:26	06	T	Thesaurus		
24751-2:26	07	S	Spell Checker		
24751-2:26	08	H	Homophone Checker		
24751-2:26	09	M	Mind Mapping Software		
24751-2:26	10	O	Outline Tool		

Rule B.26-01:
Code = 01 (Dictionary) indicates the use of a dictionary.

Rule B.26-02:
Code = 02 (Calculator) indicates the use of a calculator.

Rule B.26-03:
Code = 03 (Note Taking) indicates the use of note taking.

Rule B.26-04:
Code = 04 (Peer Interaction) indicates the use of a peer interaction system.

Rule B.26-05:
Code = 05 (Abacus) indicates the use of an abacus.

Rule B.26-06:
Code = 06 (Thesaurus) indicates the use of a thesaurus.

Rule B.26-07:
Code = 07 (Spell checker) indicates the use of a spell-checking tool.

Rule B.26-08:
Code = 08 (Homophone Checker) indicates the use of a homophone-checking tool.

Rule B.26-09:
Code = 09 (Mind Mapping Software) indicates the use of mind mapping software.

Rule B.26-10:
Code = 10 (Outline Tool) indicates the use of an outlining tool.

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B.27 Switch Function Vocabulary Codes

The 3 basic "switch function" values are:

- select
- cancel
- scan

The coding convention for the "switch function" vocabulary is presented in Table 27.

Table 27: Codes Representing "switch function" Values

IT Interface		Human Interface / Equivalent Linguistic Expressions			
		ISO English (eng)		ISO French (fra)	
Table ID (1)	Code (2)	Mnemonic (3)	Expression (4)	Mnemonic (5)	Expression (6)
24751-2:27	1	SE	Select		
24751-2:27	2	CA	Cancel		
24751-2:27	3	SC	Scan		

Rule B.27-01:
If Code = 1 (Select) is used, the selected switch is to be mapped to the ‘select’ function of the user interface.

Rule B.27-02:
If Code = 2 (Cancel) is used, he selected switch is to be mapped to the ‘cancel’ function of the user interface.

Rule B.27-03:
If Code = 1 (scan) is used, he selected switch is to be mapped to the ‘scan’ function of the user interface.

B.28 Switch Port Vocabulary Codes

The 7 basic "switch port" values are:

- ps/2
- game
- serial
- usb
- firewire
- infrared
- bluetooth

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The coding convention for the "switch port" vocabulary is presented in Table 28.

Table 28: Codes Representing "switch port" Values

IT Interface		Human Interface / Equivalent Linguistic Expressions			
		ISO English (eng)		ISO French (fra)	
Table ID (1)	Code (2)	Mnemonic (3)	Expression (4)	Mnemonic (5)	Expression (6)
24751-2:28	1	P	Ps/2		
24751-2:28	2	G	Game		
24751-2:28	3	S	Serial		
24751-2:28	4	U	Usb		
24751-2:28	5	F	Firewire		
24751-2:28	6	I	Infrared		
24751-2:28	7	B	Bluetooth		

Rule B.28-01:
If Code = 1 (Ps/2) is used, the switch is connected to the computer's PS/2 port.

Rule B.28-02:
If Code = 2 (Game) is used, the switch is connected to the computer's game port.

Rule B.28-03:
If Code = 3 (Serial) is used, the switch is connected to the computer's serial port.

Rule B.28-04:
If Code = 4 (Usb) is used, the switch is connected to the computer's USB port.

Rule B.28-05:
If Code = 5 (Firewire) is used, the switch is connected to the computer's Firewire port.

Rule B.28-06:
If Code = 6 (Infrared) is used, the switch is connected to the computer's infrared port.

Rule B.28-07:
If Code = 7 (Bluetooth) is used, the switch is connected to the computer using Bluetooth.

B.29 System Sounds Vocabulary Codes

The 3 basic "system sounds" values are:

- desktop
- window
- caption bar

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The coding convention for the "system sounds" vocabulary is presented in Table 29.

Table 29: Codes Representing "system sounds" Values

IT Interface		Human Interface / Equivalent Linguistic Expressions			
		ISO English (eng)		ISO French (fra)	
Table ID (1)	Code (2)	Mnemonic (3)	Expression (4)	Mnemonic (5)	Expression (6)
24751-2:29	1	D	Desktop		
24751-2:29	2	W	Window		
24751-2:29	3	C	Caption Bar		

Rule B.29-01:
If Code = 1 (Desktop) is used, the desktop should be flashed to indicate the occurrence of any system sounds.

Rule B.29-02:
If Code = 2 (Window) is used, the current window should be flashed to indicate the occurrence of any system sounds.

Rule B.29-03:
If Code = 3 (Caption Bar) is used, the caption bar (if present) should be flashed to indicate the occurrence of any system sounds.

B.30 Tracking Vocabulary Codes

The 3 basic "tracking" values are:

- mouse
- caret
- focus

The coding convention for the "tracking" vocabulary is presented in Table 30.

Table 30: Codes Representing "tracking" Values

IT Interface		Human Interface / Equivalent Linguistic Expressions			
		ISO English (eng)		ISO French (fra)	
Table ID (1)	Code (2)	Mnemonic (3)	Expression (4)	Mnemonic (5)	Expression (6)
24751-2:30	1	M	Mouse		
24751-2:30	2	C	Caret		
24751-2:30	3	F	Focus		

Rule B.30-01:
If Code = 1 (Mouse) is used, the magnification system should track the user's mouse movements.

Rule B.30-02:
If Code = 2 (Caret) is used, the magnification system should track the text caret.

Rule B.30-03:
If Code = 2 (Focus) is used, the magnification system should track the screen component that currently has focus.

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B.31 Usage Vocabulary Codes

The four basic "usage" values are:

- required
- preferred
- optionally use
- prohibited

The coding convention for the "usage" vocabulary is presented in Table 31.

Table 31: Codes Representing "usage" Values

IT Interface		Human Interface / Equivalent Linguistic Expressions			
		ISO English (eng)		ISO French (fra)	
Table ID (1)	Code (2)	Mnemonic (3)	Expression (4)	Mnemonic (5)	Expression (6)
24751-2:31	1	REQ	Required		
24751-2:31	2	PRE	Preferred		
24751-2:31	3	OPT	Optionally Use		
24751-2:31	4	PRO	Prohibited		

Rule B.31-01:
If Code = 1 (Required) is used, the user cannot use content or tools that do not provide this feature or allow this transformation.

Rule B.31-02:
If Code = 2 (Preferred) is used, the user prefers content or tools that provide this feature or allow this transformation.

Rule B.31-03:
If Code = 3 (Optionally Use) is used, the user would use this setting if the content or tool they have selected for other reasons provides or allows it.

Rule B.31-04:
Code = 4 (Prohibited) is used, the user cannot use content or tools that include this feature or require this transformation; this feature should be turned off if possible, or content that includes this feature should not be offered.

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B.32 Vocabulary Vocabulary Codes

The 2 basic "vocabulary" values are:

- contextual
- natural

The coding convention for the "vocabulary" vocabulary is presented in Table 32.

Table 32: Codes Representing "vocabulary" Values

IT Interface		Human Interface / Equivalent Linguistic Expressions			
		ISO English (eng)		ISO French (fra)	
Table ID (1)	Code (2)	Mnemonic (3)	Expression (4)	Mnemonic (5)	Expression (6)
24751-2:32	1	C	Contextual		
24751-2:32	2	N	Natural		

Rule B.32-01:
If Code = 1 (Contextual) is used, the voice recognition vocabulary being described is a contextual vocabulary.

Rule B.32-02:
If Code = 2 (Natural) is used, the voice recognition vocabulary being described is a natural language vocabulary.

B.33 Window Layout Vocabulary Codes

The 2 basic "window layout" values are:

- tiled
- overlap

The coding convention for the "window layout" vocabulary is presented in Table 33.

Table 33: Codes Representing "window layout" Values

IT Interface		Human Interface / Equivalent Linguistic Expressions			
		ISO English (eng)		ISO French (fra)	
Table ID (1)	Code (2)	Mnemonic (3)	Expression (4)	Mnemonic (5)	Expression (6)
24751-2:33	1	T	Tiled		
24751-2:33	2	O	Overlap		

Rule B.33-01:
If Code = 1 (Tiled) is used, the system should arrange new windows so that all windows are showing simultaneously.

Rule B.33-02:
If Code = 2 (Overlap) is used, the system should arrange new windows so that windows are offset but overlapping each other, with only the top window fully visible.

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Annex C
(informative)

Recommended Default Values

The following is a list of recommended default values for the learner needs and preferences settings.

Attribute	Recommended default value
alphanumeric keyboard layout	Standard [24751-2:03 1]
automatic delay	true
automatic repeat rate	0.5
automatic scan initial delay	0.0
automatic scan repeat	1
background colour	(operating system setting)
braille dot pressure	0.5
braille grade	Uncontracted [24751-2:06 1]
braille status cell	Off [24751-2:08 1]
code	Morse [24751-2:10 1]
code rate	3
code termination signal	Switch [24751-2:09 1]
colour coding avoidance	false
components shown	Annotations [24751-2:11 2]
confirmation feedback	true
content density	Overview [24751-2:12 1]
controller window	Show [24751-2:14 2]
cursor acceleration	0.5
cursor colour	(operating system setting)
cursor size	0.5
cursor speed	0.5
cursor trails	0.5
dictation	false
double-click speed	0.4
debounce interval	0.5
device handedness	Right [24751-2:16 2]
dwell time	0.5
enhanced caption	false
font size	12.0
foreground colour	(operating system setting)
generic font face	Sans Serif [24751-2:15 2]
highlight colour	(operating system setting)
highlight	Word [24751-2:22 1]
invert colour choice	false
invert images	false
key height absolute	10
key height relative	3
key width absolute	10

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Attribute	Recommended default value
key width relative	4
key selection sound feedback	true
key spacing absolute	0
key spacing relative	0
language	(operating system setting)
link colour	(operating system setting)
link indication	Speak link [24751-2:18 1]
magnification	1.0
microphone gain	0.5
modifier indication	true
mouse emulation device	Keypad [24751-2:19 1]
mouse control	true
navigation strategy	Depth First [24751-2:20 1]
number of braille cells	80
number of braille dots	6 [24751-2:05 1]
number of inputs	2
number of prediction choices displayed	5
prediction type	Word completion [24751-2:21 3]
pitch	0.5
reading rate	120
reading unit	Word [24751-2:22 1]
reduced reading level	false
scan speed	1.0
scan switch delay	0.0
selection method	Point-and-Click [24751-2:24 2]
slow keys interval	0.2
speech component	Alternative Text [24751-2:25 1] Controls When Tabbing [24751-2:25 2]
speech rate	180
switch function	Select [24751-2:27 1]
switch delay	0.0
switch port	USB [24751-2:28 4]
system sounds caption	false
table of contents	true
tracking	Mouse [24751-2:30 1] Caret [24751-2:30 2] Focus [24751-2:30 3]
usage	Preferred [24751-2:31 2]
vocabulary	Contextual [24751-2:32 1]
volume	0.5
window layout	Tiled [24751-2:33 1]

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Annex D
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Bindings and Implementations

The following bindings are available or in development for the IMS Learner Information Package Accessibility for LIP - Version 1 [ACCLIP] that serves as the reference specification for this standard.

1. IMS Learner Information Package Accessibility for LIPXML bindings, <http://imsglobal.org/accessibility>

Implementations:

1. The Inclusive Learning Exchange (TILE): <http://inclusivelearning.ca/>
2. Web4All: <http://web4all.ca/>

The following project is developing a Java binding for this standard.

3. CulturAll (TransformAble sub-project): http://culturall.atrc.utoronto.ca/

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Annex E
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Scenarios

E.1 Administration Scenario

E.1.1 Background Information

In many situations, it is the responsibility of a system administrator or human resources specialist to create and sometimes modify a user's learning profile. This case describes the creation of a new learner profile focusing on initial accessibility needs. This profile is later modified to reflect additional information.

This scenario is essentially the same one describing how a user would create their own learner profile and modify it to meet their own particular accessibility needs.

E.1.2 Use Case

Beth is a human resources specialist in a large university that delivers much of its education via the Internet. Once a student is enrolled, Beth sets up their initial account information. She uses a copy of a paper form submitted by the student (in this case, "Dan") that contains basic student demographic information and can contain information about any disabilities the student has.

Beth logs into the administration system using her user name and password. Beth is a recognized user with administration privileges and the administration console is displayed (Admin Console). Beth prefers to view larger text than is typical for these applications. She uses a high-resolution display with a finer than normal dot pitch. It allows more information to be displayed on the screen but it can make things hard to read. Beth overcomes this with her own accessibility preference settings.

From the Admin Console, Beth selects the Create New User option. This displays a form prompting for a new user name and other demographic information. Beth enters Dan's information from the paper copy provided for him. The form is submitted and Dan is created as a new user in the Virtual Learning Environment system. A password is automatically created for Dan, which Beth notes.

Using the information provided, Beth observes that Dan is deaf. She invokes the Create Accessibility Preferences function from the Admin Console. This function prompts her for Dan's user name and password, which she supplies. Beth has the choice at this point of creating a detailed set of accessibility needs and preferences for Dan or using one of the default templates that the system provides. Since she doesn't have much information about Dan's preferences, she selects a template that causes alternatives to sound to be presented, should they be available for a particular piece of content. Once he receives his password information, Dan can alter his settings to reflect his needs and preferences anytime he logs into the system.

E.1.3 Transaction Analysis

This analysis is intended to determine what information is collected and provided by services associated with a hypothetical Learner Profile Manager defined under the guidelines established by the IMS Abstract Framework.

E.1.3.1 Admin - Create New User

1 User logs onto the university's administration system.
2 Verify that user is an administrator with appropriate access levels.
3 Admin console requests LIP preferences - user has larger type preferences.
4 Admin configures for larger type.

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5 Admin console is displayed.
6 Access to Create New User function is initiated.
7 Create New User form is adjusted to display in larger type.
8 Create New User form is delivered to user.
9 Information on new student is entered.
10 Form is submitted.
11 New profile is created for student.

E.1.3.2 Admin - Add Accessibility Profile Template

1 Access to Create Accessibility Preferences is initiated.
2 Prompt for student name and password is formatted for larger type.
3 Prompt for student name and password is displayed.
4 Prompt for Create New Accessibility Preference or Use Template is formatted for larger type.
5 Prompt for New or Template is displayed.
6 Select Template.
7 Form to select template type is formatted for larger type.
8 Form to select template type is displayed.
9 Select template type.
10 Default accessibility preferences are added to student profile based on template selected.

E.2 Department of Labor Scenario

E.2.1 Background Information

Three mining engineering students are underground in protective clothing (overalls, gloves and goggles) in a wet, noisy mine. They are learning to manipulate a valve to control water flow in a cooling system. They need to synchronize information from a pressure gauge, from someone who is driving the machinery and from the instructional system. They are using a textual/visual display, and a large joy-stick mouse to access the same instructions they used yesterday in a standard classroom/laboratory on a desktop PC. There is a pressure device attached to the computer.

The instructional system authors have created an application that students can use to record preferences for their interaction with the instructional system. The students can create a profile set with a number of profiles e.g., to account for long-term morning and afternoon differences. It will be available on the system and can be amended by each student, temporarily or permanently, and may exist in multiple versions, e.g., to account for long-term morning and afternoon differences.

In addition, the authors have provided a range of profiles that anticipate students' inability to use sound, vision, colour, or other display attributes. Content is likewise made available in a range of modes (such as video, audio and text).

E.2.2 Scenario

The first step is for the students to set up the system for the day's lesson. One student has special needs with respect to his hearing disability. His profile states that he prefers information presented in sign language instead of audio. Another student is colour-blind. Neither of these students expects to have to inform the system of these things at the time of use, and when they, as a group, are setting up the system for all three of them to use, it is important that this information is invisibly transferred to the system when they notify the system they will be working in a group. Each of these three students has a registered learner profile but they will be working together so the system creates a 'group' accessibility profile that will work for all of them.

Following the group accessibility profile, the system changes the display to large yellow on a black background, alters the controls for gross movement navigation suitable to the joystick, and avoids audio output. The system finds the chosen navigation information and an appropriate textual equivalent for the audio stream. The system renders only the selected content in the selected format.

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The students interact with the system to customize it for the exercise and machinery they are using. They use the joystick and screen sliders to indicate numerical information for data input and a screen keyboard for machinery type and model. In addition, they place the pressure probe into the water stream.

The system instructs them, providing textual instructions, until the pressure builds up to a dangerous level, a condition they do not recognize. They need help. A bright light on the probe alerts them to the problem and they close down the valve and read the instructions again before repeating the exercise. The second time they manage to maintain the correct pressure levels for the required time. The system records their activity.

The students return to the standard classroom the next day, using the system again in 'group' mode to write up their experiences by annotating the activity report. The group accessibility profile is amended because they are now at a standard PC rather than using the joy-stick-controlled mine computer, so the control settings should be returned to normal. Both audio and visual outputs are used to meet the needs of the hearing impaired student as well as the others in his group.

E.3 NETg Scenario: Player Preferences

E.3.1 Background Information

NETg's training software incorporates many accessibility features that a learner can manually set so that they get the appropriate learning environment for their abilities and preferences. This scenario describes how the NETg software could read the appropriate information from an IMS Learner Information Profile, and set the appropriate options automatically.

E.3.2 Scenario

Although he has used various forms of learning technology before, Sam is a new NETg user and has an IMS Learner Profile that catalogs his preferences. Although Sam does not have a hearing disability, he finds computer audio distracting, and so prefers to use on-screen-text instead of audio. Accordingly, his Learner Profile indicates this preference, along with the rest of his display and input preferences.

When Sam opens the NETg player, he enters his username and password. The NETg player communicates the login information to the controlling LMS, and also asks the LMS if Sam has an available learner profile. The LMS locates Sam's profile, and forwards the data to the NETg player (note that whether Sam's profile is local to the LMS or located on a profile server is not relevant to the functioning of this scenario).

When the NETg player receives Sam's profile, it reads the profile, and automatically sets preferences to correspond to the preferences expressed in Sam's profile. Thus, the player automatically turns off the sound, and sets itself to use onscreen text instead, as well as automatically conforming to the rest of Sam's preferences.

E.4 PEARL Scenario

E.4.1 Background Information

The PEARL project (Practical Experimentation by Accessible Remote Learning) is operating at the Open University in the UK. The project has developed a framework by which remote control of laboratories for science and engineering subjects can be offered to students anywhere over the WWW. One of the motivations for doing this was to promote the increased participation of disabled students in these subjects. Hence accessibility has been a priority for the project.

The project has implemented a system with user interfaces that are generated "on the fly" from XML descriptions of all the interface elements and the type of interaction they support. The developers have begun to explore an extension to this in which the "interface generator" is also given an XML description of the learner and the way they prefer to use their computer. This learner description has been based on the draft IMS LIP <accessForAll> element and its sub-elements.

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This makes it possible to optimize the interface for individual users to take into account, as examples, assistive technology requirements or the fact that users are working hands-free or using a PDA. Further research is needed to define the "rule base" that will specify an interface given a generic description of the interface elements and a user profile.

E.4.2 Scenario

Jenny and Michael are both students at a large university. Jenny is blind but fully mobile whereas Michael has severe motor impairments that affect both his dexterity and mobility.

Jenny goes into a central computer facility to check her schedule for the week and pick up her new assignments. She logs onto the university's VLE (virtual learning environment). As she is an established student, the VLE has a store of Jenny's learner information profile (LIP). The system knows that she is a non-visual computer user. Therefore, all graphics are rendered as alternative text. The local PC also accesses her LIP information and activates and configures the pre-installed screen-reader software to her preferences for her.

Michael, because of his mobility problems, prefers to work from home from his specially adapted PC. He is a switch user (uses two switches to select from highlighted symbols on a virtual keyboard instead of using a standard keyboard). He logs into the VLE at the beginning of the week to check his schedule etc. by dial-up connection. Similarly the VLE accesses Michael's LIP and configures the content presentation to suit the way he uses the computer. The VLE is fully accessible and it uses the information in the LIP to determine that Michael requires keyboard shortcuts for all menu options and configures the menus on his virtual keyboards accordingly. It is also cognizant of the fact that Michael can only see the top 2/3 of his screen because his virtual keyboard occupies the lower 1/3.

One of Michael's lessons for the week is a remote lab session. Here he has to work in collaboration with other students working at their computers. This is a PEARL laboratory session and this application has been developed to take the information from the LIP and optimize the user interface for each user. The PEARL application also uses information about the students' hardware (interrogated directly) for the PC to be able to optimize the user interface each time a user accesses the remote lab facility. This information includes available screen size and pixel resolution as well as the bandwidth available across the remote link. Michael is able to participate in the lab sessions for his science course from his own home.

E.4.3 Additional Information

Information about the PEARL project is available from <http://kmi.open.ac.uk/projects/pearl>

E.5 PIVoT Scenario

E.5.1 Background Information

Mary is a physics student at MIT who is blind. Mary is registered for an introductory physics course in Classical Mechanics, which is one of the most challenging core courses required for graduation from MIT.

E.5.2 Scenario

After enrolling in the course, Mary learns that as a supplement to this classroom-based course, all of the professor's lectures and portions of the course textbook are available to students enrolled in the course via the web through PIVoT (Physics Interactive Video Tutor). Using streaming digital video and the Internet, PIVoT gives students access to an online textbook, FAQs, physics simulations, practice problems, and a "Personal Tutor" which is an intelligent agent that provides individualized help based on each user's navigation through the web site.

PIVoT gives students instant access to their professor through a collection of digital video clips in which the professor explains difficult concepts, demonstrates physics principles, steps through problem solutions, and

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answers students' most frequently asked questions (FAQs). PIVoT also offers 35 lectures by the professor via streaming media.

The first time Mary visits the PIVoT website using JAWS, a screen reading software, she logs in via an accessible log-in screen. She is then prompted to set up her user preferences. The preferences she can indicate in PIVoT include audio descriptions for recorded lectures (including equations in MathSpeak, an easy-to-learn language for articulating mathematical concepts), closed captions for recorded lectures, described textbook graphics (utilizing alt-text tags, D-links and longdesc with graphics). The preferences Mary selects will be applied to the delivery of the course material each time she logs into the PIVoT site, regardless of where she is when she logs in.

Planetary Data is the first topic Mary decides she needs additional information about to prepare for her upcoming quiz. There are 3 videos and 2 sections from a chapter in the textbook related to this topic. Since she requires audio descriptions based on her user profile, when she begins to play the first video of the professor's lecture, in addition to hearing his lecture she hears audio descriptions of the complex equations he is drawing.

After listening to the videos, Mary begins to read the textbook sections. She hears the textual portions spoken aloud via her screen reading software. When her screen reading software encounters graphics or equations, she hears the accompanying descriptions of the non-textual visual elements of the textbook.

E.5.3 Additional Information

Information about the PIVoT project is available from <http://web.mit.edu/8.01/www/Fall03/pivot.html>

E.6 Web-4-All Scenario

E.6.1 Background Information

The Web-4-All project is a collaboration between the Adaptive Technology Resource Centre and the Web Accessibility Office of Industry Canada to help meet the public Internet access needs of Canadians with disabilities and literacy issues. Web-4-All combines hardware and software to quickly configure a public access computer to accommodate the special needs of a user and then reverts back to a standard setting for the next user. The needs of users may include: personalized setup of browser, choice of assistive technology and system settings at a multi-user workstation, and a portable preference set.

Challenges faced by Web-4-All included the lack of technical support at the public access centres and the need for a quick way to change the residual settings for one user and then the next, minimizing conflict between different assistive technologies.

E.6.2 Scenario

Mrs. Smith is 70 years old. She is slowly losing her visual acuity to the extent that she requires text to be magnified 4 times. She uses the Industry Canada Community Access Program workstation site to exchange pictures with her grandchildren, to plan her travels and research medical information about her husband's illness. Together with an assistant, Mrs. Smith sets up her preferences by answering a series of functional questions. The resulting preferences are expressed as a LIP specification with accessibility extensions that is saved to a portable storage device (such as a Smart Card). Once this is done, Mrs. Smith can take this portable device to any Community Access Program workstation and cause the browser, system preferences and assistive technologies to adjust to her individual preferences. She can adjust these preferences at any time (i.e., if she forgot her corrective lenses, etc.).

Mrs. Smith takes the same portable preference set to the public access facility at her local college to take a French course offered using a major learning management system (LMS). The LMS responds to the LIP specification instance by adjusting the display of the content according to Mrs. Smith's preferences.

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E.6.3 Additional Information

Information about the Web-4-All project is available from <http://www.web4all.ca/>

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Annex F
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Implementation Example

A user manual for an example of a helper software application that assists users in creating a PNP file can be found at:

<http://web4all.atrc.utoronto.ca/PW_demo/Demo/Web4All_AdminUser_Manual_Final(08,05,03).doc>

The following is an excerpt from that manual.

Display Preferences:

The Display Preferences dialog enables users to modify the presentation of onscreen Web content and make it more accessible to individuals with special needs. The following checkbox options are associated with this dialog:

1) **"Make text and the cursor easier to see."** – The first checkbox option allows users with low vision to make the onscreen display easier to see either through the use of a screen magnifier or by increasing font size, improving colour contrast, etc.

2) **"Highlight text and read it to me."** – Checkbox two enables clients to have text highlighted and then read to them via a speech synthesizer.

3) **"Read the screen to me."** – The third checkbox allows users to set specific preferences for Web-4-All's default screen reader.

4) **"Let me use a Braille display."** – Selecting this checkbox enables users to have online content converted into Braille.

5) **"Show visual alerts."** – This last checkbox allows those with a hearing impairment to have all computer sounds converted into visual signals and/or captions.

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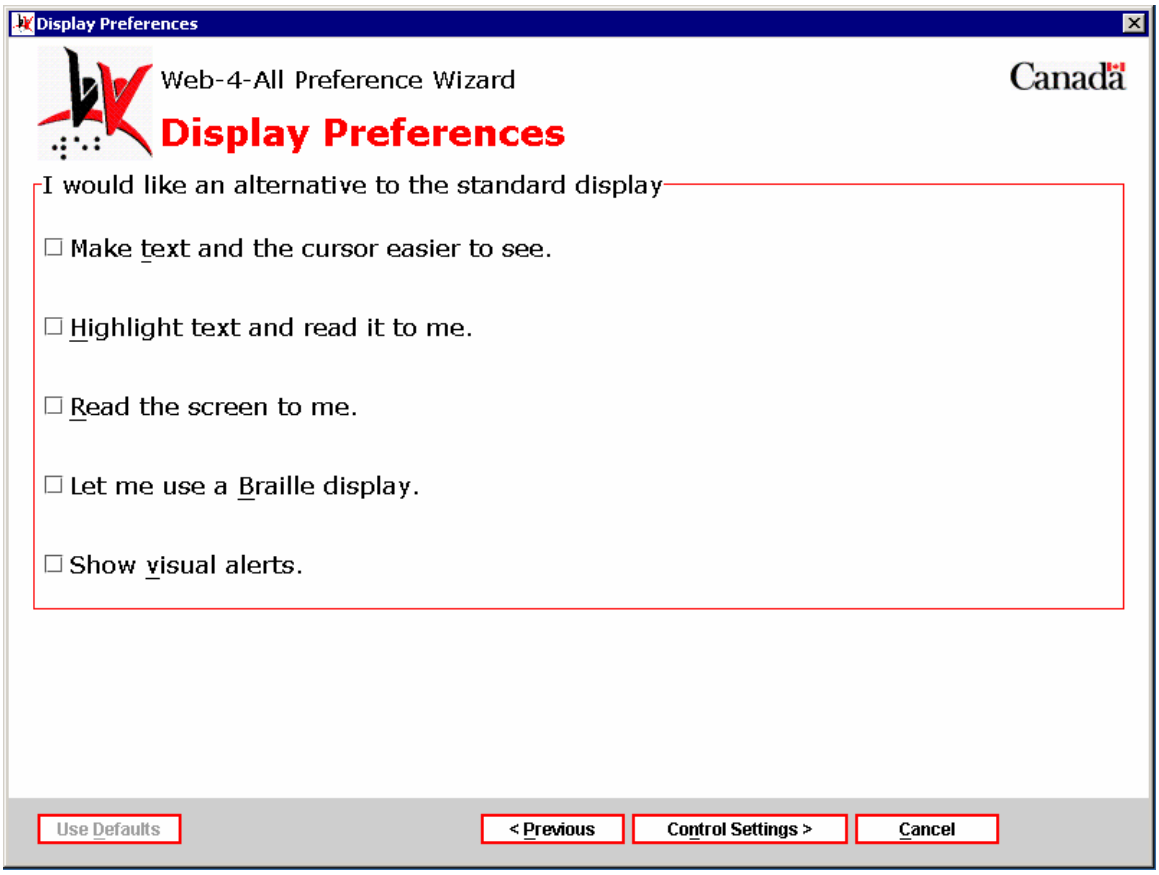

After selecting the appropriate Display Preference checkboxes, choose “Control Settings” to advance to the Control Preferences page. To return to the language preferences dialog, select “Previous”. To exit Web-4-All, select “Cancel”.

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Annex G
(informative)

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