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

Part 3: "Access for all" digital resource description

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

Partie 3: Description des ressources numériques relatives à «accès pour tous»

Reference number
ISO/IEC 24751-3:2008(E)

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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.

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

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

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 24751-3 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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Introduction

In this part of ISO/IEC 24751, the term disability is defined as a mismatch between the needs of the user and the resource offered. It is not a personal trait therefore but an artifact of the relationship between the user and the resource environment or delivery. Accessible systems adjust the user interface of the learning environment, locate needed resources, evaluate the properties of the available resources to match the needs and preferences of the user, and deliver to the learner the most accessible content available.

This part of ISO/IEC 24751 defines accessibility metadata that is able to express a resource's ability to match the needs and preferences of a user, as described by their access for all personal needs and preferences (PNP), already defined in ISO/IEC 24751-2. This part of ISO/IEC 24751 is intended to benefit anyone experiencing a mismatch between needs and preferences and education delivered.

For people with disabilities, whose choice of access modalities is restricted, the process of matching a resource with a user requirement is not a matter of convenience or refinement, but one of utmost importance in ensuring access. As a result, it is necessary for systems to agree upon well-defined interfaces and usage. This closely defined approach is taken by this part of ISO/IEC 24751 to support optimum interoperability.

This part of ISO/IEC 24751 is not judgmental but informative. The purpose is to facilitate the discovery and use of the most appropriate content for each user. Users of alternative access systems need to know whether a resource is compatible with their required access method, e.g. a user who is blind may need audible access to a resource as opposed to visual access.

This part of ISO/IEC 24751 does not describe how to create accessible content; other work has been completed that describes how content and media objects can be made more accessible [see, for example, W3C/WAI Web Content Accessibility Guidelines (W3C/WAI WCAG) for details].

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

Part 3: "Access for all" digital resource description

1 Scope

ISO/IEC 24751 is intended to meet the needs of learners with disabilities and anyone who is disabled by their context.

This part of ISO/IEC 24751 provides a common language to describe digital learning resources to facilitate matching of those resources to learners' accessibility needs and preferences.

Metadata can be used for at least two accessibility-related purposes: to record compliance to an accessibility specification or standard (e.g. for adherence to legislated procurement policies) and to enable the delivery of resources that meet a user's needs and preferences. This part of ISO/IEC 24751 addresses the latter purpose. Metadata to assert compliance to an accessibility specification or standard is not within the scope of this part of ISO/IEC 24751.

This part of ISO/IEC 24751 is intended to be applied in combination with ISO/IEC 24751-2, which provides a means to describe how a user desires to access online learning content and related applications. This part of ISO/IEC 24751 is intended to describe aspects of a computer system (including networked systems) that can be adjusted to improve accessibility. They are not intended to address non-digital systems that can include physical location, other people, external processes, etc.

This part of ISO/IEC 24751 focuses on the description of the characteristics of the resource that affect how it can be perceived, understood or interacted with by users, including

a) what sensory modalities are used in the resource,
b) ways in which the resource is adaptable, i.e. whether text can be transformed automatically,
c) which methods of input the resource accepts, and
d) what adaptations are available.

This part of ISO/IEC 24751 provides an information model for describing learning resources so that individual learner preferences and needs (described according to ISO/IEC 24751-2) can be matched with the appropriate user interfaces, tools and learning resources within a computer-mediated learning environment.

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.

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*

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ISO/IEC 24751-1:2008 (E/F), *Information technology — Individualized adaptability and accessibility in e-learning, education and training — Part 1: Framework and reference model/Technologies de l'information — Adaptabilité et accessibilité individualisées en e-apprentissage, en éducation et en formation — Partie 1: Cadre et modèle de référence*

ISO/IEC 24751-2:2008 (E), *Information technology — Individualized adaptability and accessibility in e-learning, education and training — Part 2: "Access for all" personal needs and preferences for digital delivery*

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

[ISO/IEC 24751-1:2008 (2.1)]

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).[1)]

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
adaptability
〈e-learning〉 ability of a **digital resource** or delivery system to adjust the presentation, control methods, structure, **access mode**, and user supports when delivered

[ISO/IEC 24751-1:2008 (2.4)]

3.05
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 modes, structure and user supports.

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

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

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3.06
adaptation coverage
specification of the nature or genre of the **adaptation**

EXAMPLE Caption, tactile representation, visual representation, etc.

NOTE See the coded domain in ISO/IEC 24751-2:2008, B.2.

3.07
adaptation type
nature or genre of an **adaptation**

EXAMPLE Caption, tactile representation, visual representation, etc.

3.08
AfA control flexibility
characteristic of a **digital resource** that supports control of all functionality using an input device of the user's choosing, i.e. the user is not restricted to any particular input device

NOTE More than one single input type can be supported by a resource. For example, a resource might support use by keyboard only and by “mouse” only.

3.09
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 ISO/IEC 24751-2:2008, B.17.

[ISO/IEC 24751-2:2008 (3.07)

3.10
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)]

3.11
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)]

3.12
digital resource component
digital resource included in another resource either physically or logically

NOTE In using the access for all approach, one digital resource component might be replaced by an adaptation, while other resource components are unchanged.

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3.13
digital resource delivery
presentation of a **digital resource** by a **display**

[ISO/IEC 24751-1:2008 (2.12)]

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

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.

3.16
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 B.2.

[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
e-learning
learning facilitated by information and communications technology

[ISO/IEC 24751-1:2008 (2.18)]

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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.

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
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)]

3.23
intellectual content
recorded information of a **digital resource** independent of its representation and/or **access mode**

[ISO/IEC 24751-1:2008 (2.23)]

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)]

3.25
original access mode
access mode through which the **intellectual content** of the **digital resource** was originally designed to be communicated

4 Symbols and abbreviations

The following abbreviations and acronyms are used in this document.

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

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MIME	multipurpose internet mail extensions
PNP	access for all personal needs and preferences
W3C	World Wide Web Consortium
W3C/WAI WCAG	W3C/Web Accessibility Initiative Web Content Accessibility Guidelines

5 Basic Principles

5.1 Assumptions

For the purposes of the Access For All Digital Resource Description (DPD) it is assumed that content to be presented to a learner is compliant with basic accessibility specifications as defined in the World Wide Web Consortium Web Content Accessibility Guidelines [W3C WAI WCAG]. Compliance with W3C WAI priority 1 and 2 ensure that the presentation and control of text is transformable. This avoids the need to provide multiple static presentations of textual material to accommodate the different needs of individual learners.

This standard assumes that all users, not just individuals with specific impairments, have accessibility preferences and may need or want to optimize learning by configuring education delivery to meet their individual needs and preferences. With the increasing variety of interface choices and environments in which on-line learning occurs, users need to be able to control how they interact. Some of these choices may be considered personal preferences, while others will be essential to access to content in environments such as noisy locations, hands free operation, etc.

It is assumed that users have different preferences in different contexts, such as at different times or locations.

5.2 Original and Adapted Resources

The Access For All Digital Resource Description (DRD) assumes two categories of resources: original and adapted. An original resource is the initial or default resource. An adaptation contains the same intellectual content as an original resource but in a different form such as in a different sensory mode, or with more or less dense semantics. Some resources, especially those compliant with W3C WAI Web Content Accessibility Guidelines, contain several versions of content, such as a video file and text captions as an adaptation of the auditory content of the video. An original resource may be a part of another resource.

The Access For All Digital Resource Description (DRD) enables metadata authors to record the access modes used to communicate the intellectual content of their resources. These are called “original access modes” because generally they were created as the original content of the resource. When an adaptation is created, as a component of the same resource or in a separate resource, its DRD can refer back to the original access modes of the resource being adapted. Similarly, when another existing resource is chosen as an adaptation of the first resource, its DRD can also refer to the original access modes of the resource it provides an adaptation for.

Many authors of resources are unaware of accessibility considerations and are not motivated or skilled to provide extensive accessibility metadata. Such authors can supply useful information by identifying the access modes of the resource, whether the display and method of control of the resource can be transformed, and if there is a known adaptation. Metadata describing the display transformability and control flexibility of the resource can be generated using accessibility evaluation tools.

On the other hand, authors of specialized adaptations are likely to be both informed and motivated about accessibility considerations. Detailed Access For All Resource Descriptions closely match the Access For All Personal Needs and Preferences (PNP) [2].

2) Defined in ISO/IEC 24751-2.

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5.3 Access For All Resource Metadata

Access For All metadata for original resources includes:

- Access Mode: whether the user requires vision, hearing, touch and/or text literacy to access the resource
- Access Mode Usage: whether the content in each access mode is informative or ornamental
- Display: amenability of a resource to transformation of the display
- Control: flexibility of control of a resource
- Adaptations: any known adaptations

and, where appropriate,

- Components: any parts that make up this resource (a sound file, an image, etc.) or a composite resource of which this resource is a part
- Hazards: any dangerous characteristics
- Support tools: electronic tools associated with the resource (calculator, dictionary, etc.)

Access For All metadata for adapted resources (adaptations) includes the same metadata as for original resources but also includes the:

- Identity of the original resource: the resource for which it is an adaptation
- Type: kind of adaptation
- Extent: extent of original resource contained in the adaptation
- Detailed description of adaptation: description of characteristics necessary for matching resource characteristics to a PNP [3)].

The Access for All Digital Resource Description may be used in combination with other Metadata specifications and standards, or independently. Similarly, metadata bindings employed to describe resources may integrate the Access for All Digital Resource Description into the more generic binding or apply it independently.

5.4 Access Mode

The access mode of a resource is not the same as the format of a resource. The format of a resource can be represented as a MIME type but its access mode will depend upon a combination of its format and its genre: an image of a poem in a tapestry will have a visual format but a text genre. A user viewing the image on a screen can read the text of the poem but a screen reader (an assistive technology) cannot access the text as it is locked in the image.

The important information, from the viewpoint of a user with specific access needs and preferences, is which sensory modes are required to access the content of the resource. The possibilities are based on the human computer interface modes of sight, sound, and touch, with an additional special mode, 'textual' to include text literacy. Text literacy is not the same as literacy in everyday parlance. In this context, text literacy may mean accessing the content of text by listening to an aural rendition of the text or viewing a transformation of it into symbolic or sign language, or feeling it as Braille.

If an access mode is not suitable for a user (including after any possible transformations), the content in that access mode should be adapted by another resource.

As many resources contain multiple files (i.e., aggregate resources), adding the necessary metadata in order to deliver accessible resources may involve a dis-aggregation of the composite resource into a set of components. Once such components can be associated with their own access modes (as opposed to being represented in the aggregation of modes of the original resource), they can be individually matched to a PNP

3) As specified in ISO/IEC 24751-2.

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with access mode requirements. Matching individual components to a PNP ensures that a resource that is re-aggregated will also match that PNP.

5.5 Adaptability

5.5.1 Display Transformability

The presentation or display of most resources can be transformed if appropriate formats, mark-up or software development practices are used to create the resources. This requires that the content and content-structure are independent of the presentation of the content. The means to achieve this is to keep presentational and structural mark-up separate (see W3C guidelines [W3C WAI WCAG]). This enables the display or method of presentation to be transformed using styling mechanisms (e.g., Cascading Style Sheets, system based display settings, XSLT or others).

Display transformability specifies how the display or presentation of a resource (e.g., font colour, font size, background colour, layout, image size) is amenable to transformation. It can be determined using a number of available Web content evaluation and repair tools [4)].

5.5.2 Control Flexibility

Some resources can only be controlled using a mouse or mouse equivalent. This means users who do not have a mouse or cannot control a mouse cannot control such resources. If all of the functions controlled by the mouse can also be controlled using keyboard commands, users will have access to the same functionality using a keyboard or any number of other keyboard-emulating devices (e.g., scanning systems, coding systems, enlarged keyboards, etc.).

Some interfaces require many sequential actions to navigate to a desired control, such as a button. This can be difficult for some users. Interfaces that allow reconfiguration of the actions required to access specific controls, buttons, links or input fields enable the optimization of the control method.

Control flexibility describes how the resource supports a choice of methods of controlling the resource functions. It is anticipated that this will be determined using accessibility-checking tools.

5.5.3 Pointer to Adaptation from Original Resource

When the authors of metadata for original resources are aware of the existence of an adaptated resource, they can point in the metadata to a known adaptation for the original resource. A description of the adaptation is recorded in the metadata for the adaptation. Further detail on adaptation metadata is in the next section.

5.5.4 Adaptation Embedded in an Original Resource

When an original resource contains an adaptation (such as a video that contains a text caption), a metadata record for the original resource will have both an original resource description and an adaptation description. Thus, both components of the Access for All Digital Resource Description (DRD) record will be completed for the single resource.

5.5.5 Adaptation Metadata

Adaptations are used two ways: to replace or to augment an original resource. Although in most cases the original and adapted resources will be separate, an original resource may contain a supplementary adaptation. For example, a video could have text captions included. In this case the resource would be classified as original containing an adaptation.

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4) The range of possible display transformations is described in the Access For All Personal Needs and Preferences (PNP) specification in ISO/IEC 24751-2.

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Adaptations are not always complete alternatives (replacements or supplements) to an original resource. For example, an alternative for a video that contains audio and visual modes may be an alternative for the audio (e.g., a caption) or for the visual (e.g. a video description). Each adaptation statement must indicate which access mode the adaptation is for. This detail is required to enable precise matching of resources to a PNP.

Original resources may have any number of adaptations. An adaptation can serve as an alternative to more than one original resource, but a separate DRD is required to describe each such relationship. That is, by definition, and adaptation's DRD must refer to only one original resource. For example, a transcript of Martin Luther King's "I Have a Dream" speech could serve as a text equivalent to both a video of that speech and an audio file of the same speech, as long as two separate DRDs are available.

In a case where an adaptation is derived from another adaptation, such as when there is a French version of an English transcript, both transcripts are defined as Access for All adaptations of the original resource. (The resources may have other metadata that describes the derivation of the French transcript from the English one.)

5.6 The Importance of Interoperability and Consistent Implementation

While interoperability is important for e-learning, the importance is heightened for learners who use assistive technologies or specialized devices such as refreshable Braille displays, enlarged keyboards or voice recognition systems. Many people with a physical, sensory or intellectual impairment are dependent on assistive technologies to use a computer. Because of the diversity of alternative access systems, from an information technology developer's perspective every person using an alternative access system potentially represents a unique external system that needs to interoperate. Additionally, in order to function, each assistive technology needs to interoperate with a large array of interfaces and applications. Although very varied, the user base and development base of assistive technologies is very small and under-resourced. For this reason, it is critical that there is consistency in the implementation and interpretation of these standards to increase the likelihood of interoperability for assistive technologies.

Whether involving an assistive technology or not, user needs and preferences of people with a disability (in the traditional sense) are frequently very particular with little or no room for variance. A slight variation in font size, button size, or background colour, for example, can be the difference between an accessible resource and an unusable one for a specific user. Ensuring access for users whose choice of access modes is restricted by an impairment often requires exact matching of a resource with a user's requirement: in such a case it is not a matter of convenience or optional refinement but one of utmost importance. As a result, it is necessary for systems to agree upon well-defined interfaces and for the standard to deter free, non-conformant extension in its usage. A strictly defined approach is taken in this multi-part standard to support maximum interoperability.

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6 Access For All Digital Resource Description (DRD) Information Model

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

6.1 Access For All Digital Resource Description

Attribute	Allowed Occurrences	Datatype
access mode statement	Zero or more per *Access For All Resource*	Access_Mode_Statement
control flexibility	Zero or more per *Access For All Resource*	control_flexibility_vocabulary
has control flexibility statement	Zero or more per *Access For All Resource*	URI
display transformability	Zero or more per *Access For All Resource*	display_transformability_vocabulary
has display transformability statement	Zero or more per *Access For All Resource*	URI
colour coding	Zero or one per *Access For All Resource*	boolean
hazard	Zero or more per *Access For All Resource*	hazard_vocabulary
has adaptation	Zero or more per *Access For All Resource*	URI
has part	Zero or more per *Access For All Resource*	URI
is adaptation	Zero or one per *Access For All Resource*	Is_Adaptation
is display transformability statement of	Zero or one per *Access For All Resource*	URI
is control flexibility statement of	Zero or one per *Access For All Resource*	URI
is part of	Zero or one per *Access For All Resource*	URI
adaptation statement	Zero or more per *Access For All Resource*	Adaptation_Statement
support tool	Zero or more per *Access For All Resource*	support_tool_vocabulary

6.2 Access Mode Statement

Attribute	Allowed Occurrences	Datatype
original access mode	One per *Access Mode Statement*	access_mode_vocabulary
access mode usage	Zero or one per *Access Mode Statement*	access_mode_usage_vocabulary

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6.3 Is Adaptation

Attribute	Allowed Occurrences	Datatype
is adaptation of	One per *Is Adaptation*	URI
extent	One per *Is Adaptation*	extent_vocabulary

6.4 Adaptation Statement

Attribute	Allowed Occurrences	Datatype
adaptation type	Zero or one per A*daptation Statement*	adaptation_type_vocabulary
original access mode	One per A*daptation Statement*	access_mode_vocabulary
extent	Zero or one per A*daptation Statement*	extent_vocabulary
representation form	Zero or more per A*daptation Statement*	representation_form_vocabulary
language	Zero or more per A*daptation Statement*	[ISO 639-2:1998]
reading rate	Zero or one per A*daptation Statement*	integer range (1 .. 300)
education level	Zero or more per A*daptation Statement*	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, and italicized terms are explained in Annex A of the Framework document (ISO/IEC 24751-1).

7.1 access for all digital resource description

a collection of information that states how a digital learning resource can be perceived, understood or interacted with by users

Value space: container

7.1.1 access mode statement

a collection of information that states a primary **access mode** of a resource and its usage in the resource

Value space: container

7.1.1.1 original access mode

an **access mode** through which the **intellectual content** of the resource is communicated, not including any adaptations

NOTE This does not include the **access mode** of any **adaptations** embedded in the resource.

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

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7.1.1.2 access mode usage

the role of a primary **access mode** with respect to the intellectual content of a resource

Value space: informative, ornamental

7.1.2 control flexibility

a single input method which is sufficient to control a resource

NOTE More than one item from the vocabulary may be chosen. For example, a resource might support full keyboard control and full mouse control.

Value Space: full keyboard control, full mouse control

7.1.3 has control flexibility statement

the referenced resource states the **control flexibility** characteristics of the described resource

NOTE This does not refer to the control flexibility element of the referenced resource's DRD, but rather to the fact that the referenced resource itself describes the control flexibility characteristics of the described resource. This might take the form of a report generated by an automated tool, for example.

Value Space: URI

7.1.4 display transformability

a characteristic of a resource display that can be modified

NOTE This is used to state what display properties are amenable to transformation.

Value Space: font size, font face, foreground colour, background colour, cursor presentation, highlight presentation, layout, structure presentation

7.1.5 has display transformability statement

the referenced resource states the **display transformability** characteristics of the described resource

NOTE This does not refer to the display transformability element of the referenced resource's DRD, but rather to the fact that the referenced resource itself describes the display transformability characteristics of the described resource. This might take the form of a report generated by an automated tool, for example.

Value Space: URI

7.1.5.1 colour coding

the described resource communicates some information by use of colour alone

Value Space: true, false

7.1.6 hazard

a characteristic of the described resource that must not be delivered to some users

NOTE For example, flashing animations can trigger seizures in people with photosensitive epilepsy.

Value Space: flashing, sound, olfactory, motion simulation

7.1.7 has adaptation

the referenced resource presents the intellectual content of all or part of the described resource, often in another access mode

Value Space: URI

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7.1.8 has part

a referenced resource is a **resource component** of the described resource

Adapted from [DCMI MT]

Value Space: URI

7.1.9 adaptation

a collection of information that states what resource the described resource provides an adaptation of, and the extent to which it does so

Value space: container

7.1.9.1 is adaptation of

the described resource presents the **intellectual content** of all or part of the referenced resource, often in another access mode

Value space: URI

7.1.9.2 extent

the scope of the content of the resource

NOTE When used in this context, this term means how much of the **intellectual content** in the original resource is presented in the **adaptation**.

Value Space: part, all

EXAMPLE An **adaptation** might use text to convey the content of the audio track of a video (e.g. a caption or subtitle). In this case, the adaptation only represents a part of the intellectual content original resource, and so the extent is “part.”

7.1.10 is display transformability statement of

the described resource states the **display transformability** characteristics of the referenced resource

NOTE This does not refer to the display transformability element of the described resource, but rather to the fact that the described resource itself in some way describes the display transformability characteristics of the referenced resource. This might take the form of a report generated by an automated tool, for example.

Value Space: URI

7.1.11 is control flexibility statement of

the described resource states the **control flexibility** characteristics of the referenced resource

NOTE This does not refer to the control flexibility element of the described resource, but rather to the fact that the described resource itself in some way describes the control flexibility characteristics of the referenced resource. This might take the form of a report generated by an automated tool, for example.

Value Space: URI

7.1.12 is part of

the described resource is a **resource component** of the referenced resource

Adapted from [DCMI MT]

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7.1.13 adaptation statement

a collection of information that gives detailed information about an **adaptation**

Value Space: container

7.1.13.1 adaptation type

nature or genre of the adaptation

NOTE Adapted from ISO 15836:2003.

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

7.1.13.2 original access mode

an **access mode** through which the **intellectual content** of the resource is communicated, not including any **adaptations**

NOTE When used inside an adaptation statement, this term describes the original access mode of the resource that is being adapted.

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

7.1.13.3 extent

the scope of the content of the resource

NOTE When used inside an adaptation statement, this term means how much of the **intellectual** content in the original **access mode** is presented in this **adaptation type**.

EXAMPLE An **adaptation** might use both auditory and tactile content to replace an image. If the auditory and tactile information must be used together to fully replace the image, each adaptation statement would indicate that the extent is “part.” On the other hand if either the auditory or the tactile information can be used separately to fully replace the image, each would indicate that the extent is “all”.

Value Space: part, all

7.1.13.4 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

7.1.13.5 language

a **language** of the **intellectual content** of the resource [ISO 639-2:1998]

Value Space: characterstring

7.1.13.6 reading rate

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

Value Space: integer range (1 .. 300) (words per minute)

7.1.13.7 education level

audience education level [DCMI MT]

Value Space: characterstring

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7.1.14 support tool

an 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 Extending the Standard

This part of ISO/IEC 24751 can be extended by adding additional parts through the ISO/IEC JTC 1 process. New parts can include additional elements, element qualifiers, and vocabularies.

9 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.

Resources are conformant when the metadata record of the resource includes elements in this part of ISO/IEC 24751, as specified.

Education delivery applications, agents or systems are conformant when they gather and/or process Personal Needs and Preference descriptions as specified in ISO/IEC 24751-2, and identify and process resources having metadata elements specified in this part of ISO/IEC 24751.

Metadata authoring tools are conformant if they assist in authoring metadata that includes all the elements in this part of ISO/IEC 24751, as specified.

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Annex A
(normative)

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

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.

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 [5)]. A key benefit of translation of terms and definitions is that such work at providing bilingual/multilingual equivalency:

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5) 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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- 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 in ISO/IEC 24751-3,
- Column 2 = the Term – ISO French,
- Column 3 = the Term – ISO English.

In A.6 below, the ISO French language equivalents for the definitions are provided

ISO/IEC 24751-3 Clause 3 ID number	Terme – ISO français	Term – ISO English
3.01	accès pour tous	access for all
3.02	accessibilité	accessibility
3.04	adaptabilité ⟨e-apprentissage⟩	adaptability ⟨e-learning⟩
3.05	adaptation ⟨e-apprentissage⟩	adaptation ⟨e-learning⟩
3.06	adaptation de couverture	adaptation couverage
3.16	affichage	display
3.12	componsante de ressource numérique	digital resource component
3.23	contenu intellectuel	intellectual content
3.09	danger de l'APT	AfA hazard
3.20	déficience ⟨perspective médicale⟩	impairment ⟨medical perspective⟩
3.19	e-apprentissage	e-learning
3.14	incapacité ⟨prestation de ressource numérique⟩	disability ⟨digital resource delivery⟩
3.15	incapacité ⟨perspective médicale⟩	disability ⟨medical perspective⟩
3.21	individu	individual
3.24	langue	language
3.03	mode d'accès	access mode
3.25	mode d'accès original	original access mode
3.13	prestation de ressource numérique	digital resource delivery
3.11	ressource numérique	digital resource
3.08	souplesse de commande APT	AfA control flexibility
3.22	système d'information	information technology system
3.10	technologie d'assistance	assistive technology
3.17	transformabilité de l'affichage	display transformability
3.18	transformation de l'affichage	display transformation
3.07	type d'adaptation	adaptation type

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

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 numbers of the sub-clauses of Clause 3. The assignment of the columns in this matrix A.6 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".[7)]

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 24751-3. The other columns under "Human Interface Equivalents (HIEs)" provide the equivalent information from a human understandable and use perspectives.

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.).

6) Annex A is

1) part of 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.

7) 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 24751-3 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 (3.4)	adaptabilité ⟨e-apprentissage⟩	02	capacité d'une **ressource numérique**, ou d'un système de prestation, de s'ajuster ou d'être ajusté conformément à la présentation, aux méthodes de contrôle, à la structure, au **mode d'accès**, et aux soutiens de l'utilisateur lorsqu'elle fait l'objet d'une prestation	adaptability ⟨e-learning⟩
3.05	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'ajustement de la présentation, les méthodes de contrôle, la mode d'accès, la structure et les soutiens de l'utilisateur.	adaptation ⟨e-learning⟩
3.06	ISO/IEC 24751-3:2008 (3.6)	adaptation de couverture	01	mesure dans laquelle une **ressource numérique** a été adaptée à l'appui des exigences en matière d'**accès pour tous (APT)**	adaptation coverage
3.07	ISO/IEC 24751-3:2008 (3.7)	type d'adaptation	02	spécification de la nature ou du genre de l'**adaptation** EXEMPLE sous-titre, représentation tactile, représentation visuelle, etc. NOTE Voir plus loin le domaine codé de l'ISO/IEC 24751-2 (Annexe B.2)	adaptation type

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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 24751-3:2008 (3.8)	souplesse de commande APT	01	caractéristique d'une **ressource numérique** qui soutient son utilisation au moyen de l'unité d'entrée unique choisie par l'utilisateur, c.-à.-d. que l'utilisateur n'est pas limité par une unité d'entrée particulière NOTE Plusieurs unités d'entrée uniques peuvent être supportées par une ressource. Par ex., une ressource peut supporter une utilisation au moyen d'un clavier uniquement et d'une souris uniquement.	AfA control flexibility
3.09	ISO/IEC 24751-2:2008 (3.8)	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
3.10	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
3.11	ISO/IEC 24751-1:2008	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
3.12	ISO/IEC 24571-3:2008 (3.12)	composante de ressource numérique	02	**ressource numérique** comprise soit physiquement soit logiquement dans une autre ressource NOTE Dans une approche d'Accès pour tous, une composante de ressource numérique peut être remplacée par une adaptation, tandis que d'autres composantes de ressource demeurent inchangées.	digital resource component

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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)
3.13	ISO/IEC 24751-1:2008 (3.12)	prestation de ressource numérique	02	présentation d'une **ressource numérique** par un **affichage**	digital resource delivery
3.14	ISO/IEC 24751-1:2008 (3.13)	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⟩
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 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 24751-3:2008 (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.3).	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 24751-1:2008 (3.18)	e-apprentissage	01	apprentissage facilité par l'utilisation des technologies de l'information et de la communication	e-learning

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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)
3.20	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
3.22	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
3.23	ISO/IEC 24751-1:2008 (3.23)	contenu intellectual	01	information enregistrée d'une **ressource numérique** indépendante de sa représentation et/ou de son **mode d'accès**	intellectual content
3.24	ISO 5127:2001 (1.1.2.01)	langue	01	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
3.25	ISO/IEC 24751-3:2008	mode d'accès original	99	**mode d'accès** par lequel le contenu de l'apprentissage de la r**essource numérique** a été originellement conçu pour être communiqué	original access mode

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Annex B
(normative)

Vocabulary Codes

NOTE Refer to 24751-2 for additional vocabulary codes as vocabulary codes are not duplicated in this document.

B.1 Access Mode Usage Vocabulary Codes

The 2 basic "access mode usage" values are:

- informative
- ornamental

The coding convention for the "access mode usage" vocabulary is presented in Table 1.

Table 1: Codes Representing "access mode 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)
24751-3:01	1	I	Informative		
24751-3:01	2	O	Ornamental		

Rule B.1-01:
Code = 1 (Informative) implies that a resource uses the access mode in an informative way.

Rule B.1-02:
Code = 2 (Ornamental) implies that a resource uses the access mode in an ornamental way.

B.2 Display Transformability Vocabulary Codes

The 8 basic "display transformability" values are:

- font size
- font face
- foreground colour
- background colour
- cursor presentation
- highlight presentation
- layout
- structure presentation

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The coding convention for the "display transformability" vocabulary is presented in Table 2.

Table 2: Codes Representing "display transformability" 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)
24751-3:03	1	Z	Font size		
24751-3:03	2	A	Font face		
24751-3:03	3	F	Foreground colour		
24751-3:03	4	B	Background colour		
24751-3:03	5	C	Cursor presentation		
24751-3:03	6	H	Highlight presentation		
24751-3:03	7	L	Layout		
24751-3:03	8	S	Structure presentation		

Rule B.2-01:
Code = 1 (Font size) implies that the font size within the described resource can be transformed.

Rule B.2-02:
Code = 2 (Font face) implies that the font face within the described resource can be transformed.

Rule B.2-01:
Code = 1 (Foreground colour) implies that the foreground colour (i.e. the colour of the text) within the described resource can be transformed.

Rule B.2-02:
Code = 2 (Background colour) implies that the background colour within the described resource can be transformed.

Rule B.2-01:
Code = 1 (Cursor presentation) implies that the cursor presentation within the described resource can be transformed.

Rule B.2-02:
Code = 2 (Highlight presentation) implies that the highlight presentation within the described resource can be transformed.

Rule B.2-01:
Code = 1 (Layout) implies that the layout of the described resource can be transformed.

Rule B.2-02:
Code = 2 (Structure presentation) implies that the structure of the described resource can be transformed.

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B.3 Extent Vocabulary Codes

The 2 basic "extent" values are:

- part
- all

The coding convention for the "extent" vocabulary is presented in Table 3.

Table 3: Codes Representing "extent " 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)
24751-3:02	1	P	Part		
24751-3:02	2	A	All		

Rule B.3-01:
Code = 1 (Part) denotes that the described resource provides an adaptation of a part of the intellectual content in a resource.

Rule B.3-02:
Code = 2 (All) denotes that the described resource provides an adaptation of all of the intellectual content in a resource

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Annex C
(informative)

Recommended Default Values

The following is a list of recommended default values for the digital resource description settings.

Attribute	**Suggested default value**
access mode usage	Informative [24751-3:01-1]
adaptation extent	all [24751-3:02-2]

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Annex D
(informative)

Bindings and Implementations

The following bindings are available or in development for the IMS AccessForAll Meta-data Specification that serves as the reference specification for this standard.

1. IMS AccessForAll Meta-data XML Binding (available), http://imsglobal.org/accessibility
2. Dublin Core Accessibility Working Group application profile (in development), http://dublincore.org/groups/access/
3. IEEE LOM (in development), http://www.cenorm.be/isss/Workshop/lt/

Implementations:

1. The Inclusive Learning Exchange (TILE): http://inclusivelearning.ca/

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

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

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Annex E
(informative)

Scenarios

These scenarios are informal and introductory only, but are provided to help explain the context and use of the standard.

E.1 Scenario 1: Discovery and Retrieval of Alternate Training Content

Sophia is a participant in a distance training program. She is blind and uses a computer equipped with a screen reader that converts on-screen text into both Braille and synthetic speech. At the start of the program, Sophia uses a "preference wizard" which asks her questions regarding her preferred content settings. She records that she would prefer alternatives to visual content, when available. When finished editing her preferences, the preference wizard produces a Personal Needs and Preferences (PNP) file that is saved in the content management system's user database.

For today's assignment, Sophia is required to complete 3 of 5 provided exercises. When she logs in and requests the exercises the system compares her PNP file and the Access For All Digital Resource Description (DRD) on the exercises to determine if the exercises are suitable for her needs. The metadata associated with each exercise indicates that all 5 contain visual content. The system then determines that there are text descriptions available for 4 out of 5 of the resources. Two of the exercises have text descriptions embedded in the primary file, while there are separate text descriptions for the other two exercises. The system informs Sophia that 4 of the 5 exercises should be appropriate for her needs, and she selects the three she wishes to complete, giving a sigh of relief that she is able to skip the least interesting one. As she calls up her chosen exercises, the system automatically transforms each resource by displaying the text description rather than the image, drawing the text either from within the original file or from the associated separate text descriptions, as indicated by the metadata.

E.2 Scenario 2: Customization of Information about a Prescription

A patient at a hospital has been diagnosed with diabetes. The clinical nurse prepares a prescription package for the patient containing information necessary for the patient to manage her condition. To create the package, the nurse prepares the patient's profile, which includes the native language, Tamil, and the print requirements (large text) of the patient. When the patient uses the hospital's information system, the system processes the user's profile along with the diagnosis to retrieve information in Tamil about measuring blood glucose levels and exercising. Before being printed, the documents are automatically enlarged.

E.3 Scenario 3: Extreme Instructional Environments

Airline maintenance staff receive regular training sessions, but there is always the possibility of the need for "ad hoc" instruction. Available airplane resource materials include video instructions on aircraft engine maintenance that detail the methods for repairing various engine problems. Usually the use of such material is in a noisy hangar in which workers are required to wear hearing protection. There may also be multiple information systems connected to their ear-phones for safety reasons. In this environment, workers use portable computers to view the reference materials as they carry out the repair exercises.

When workers log in, they indicate the hangar as the context and PNP file is selected by the system. This profile requires text transcripts or animated diagrams to replace audio content. When viewing the training videos, the system automatically retrieves the available text captions or alternative visual content and supplements the video with them while synchronizing it to the original audio. As a result, the workers are able to reference videos as they work in the hangar.

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E.4 Scenario 4: Creating a Repository for Federated Searching

A lecturer for a course in social history produces an online module that is based around recordings of songs from the American Civil Rights movement. The diction on the recordings is not very clear. One student has a minor cognitive disability and a partial hearing loss and the hearing loss prevents him from hearing the words of some of the songs. He does not wish anyone to know about his disabilities, particularly not the course lecturer. The student is normally provided with services to help him with his studies by the disabled student services office. When he informs his assistant from that office that he cannot hear the words of some of the songs, she writes text transcripts of the songs he cannot hear. She produces a DRD for each transcript she writes, then deposits the transcript and its DRD in the office's repository.

The learning environment the university uses is configured to search the disability office's repository for alternatives for content. When the student accesses the songs online, the learning environment picks up the requirement for alternatives to auditory from the PNP and searches the repository. Where a transcript is available, it is found in the repository and delivered to the student.

This repository is available to all learners using that environment in the university and is also marketed to and used by other universities. For any future use of these online music resources, the transcripts will be automatically provided to any student with an appropriate PNP.

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Annex F
(informative)

Implementation Example

The following examples illustrate the use of this standard by means of generic pseudo-code and are not meant to represent any particular binding. The examples use XML, but implementations are not required to do to.

F.1 TILE Low Vision Example

The following example [8)] is from The Inclusive Learning Exchange system (TILE) developed by the Adaptive Technology Resource Centre, University of Toronto.

A learner is studying a course on Globalization and International Migration containing an illustration of the concepts of restricted migration. A user without a PNP file or with a PNP file, but without expressed needs or preferences concerning visual content, would receive the original image as displayed in Figure F.1.

8) http://inclusivelearning.ca/tile/servlet/view?view=item&cp=urn:uuid:1ec15aa6-40a1-11d8-b01b-0002b3af6db8&item=CHART2.

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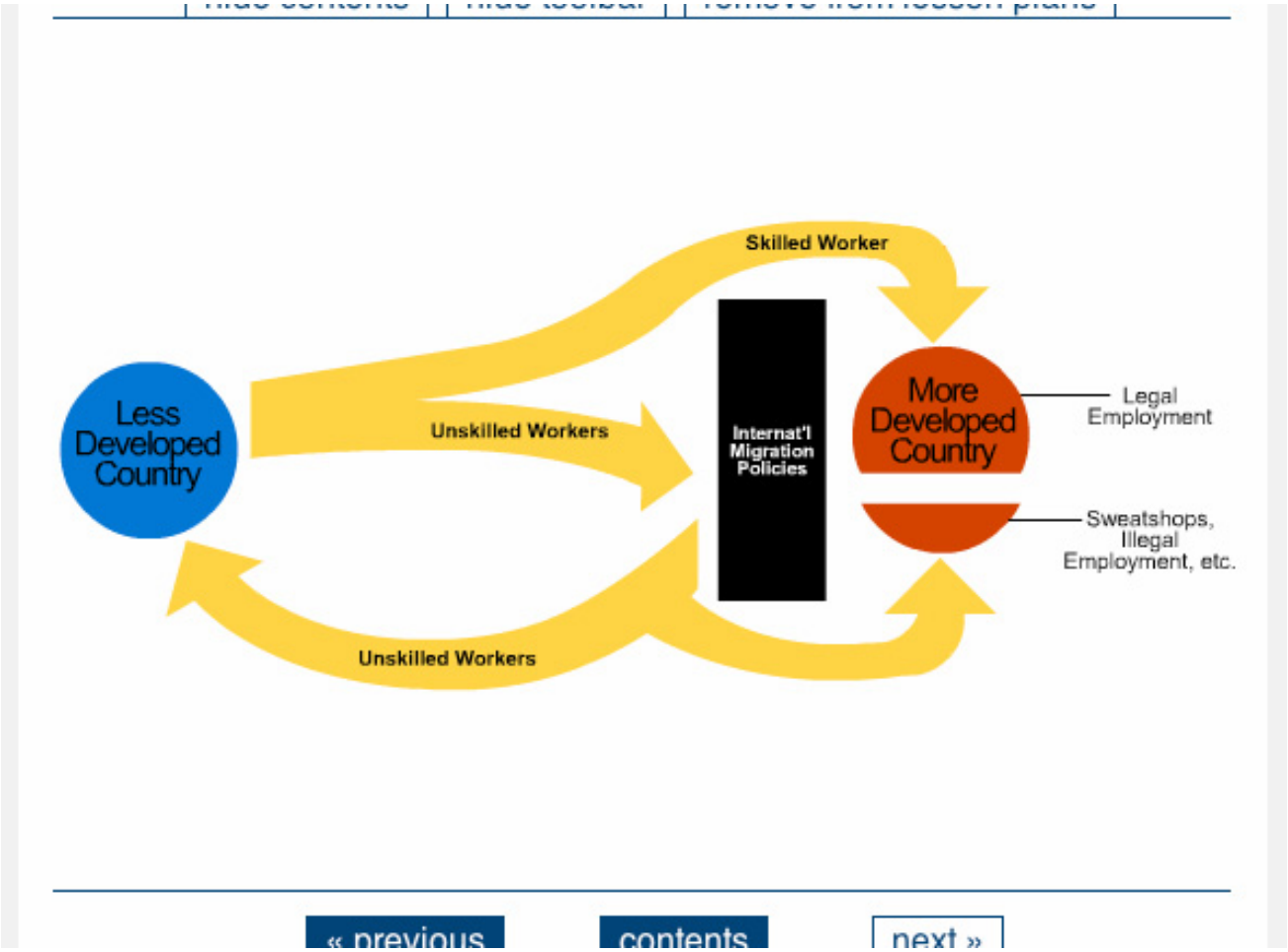

Figure F.1 — TILE screenshot of resource with text and Flash animation

Another user who has a visual impairment and uses a screen reader may require text instead of images. To accommodate this user, it is necessary for the original image to be replaced by an adaptation.

To achieve this, first, the original image would need the following accessibility metadata to communicate its access modes and point to an adaptation:

```
<accessForAllResource>
  <accessModeStatement>
    <originalAccessMode=”textual”/>
    <accessModeUsage=”informative”/>
  </accessModeStatement>
  <accessModeStatement>
    <originalAccessMode=”visual”/>
    <accessModeUsage=”informative”/>
  </accessModeStatement>
  <hasAdaptation=”URIofAdaptation”/>
</accessForAllResource>
```

Additionally, the adaptation would need to have the following accessibility metadata to communicate its adaptation type and point to the original resource:

```
<accessForAllResource>
  <isAdaptation>
    <isAdaptationOf=”URIofOriginal”/>
    <extent=”full”/>
  </isAdaptation>
```

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```
  <adaptationStatement>
    <adaptationType=”textRepresentation”/>
    <originalAccessMode=”visual”/>
    <representationForm=”longDescription”/>
    <language=”eng”/>
</adaptationStatement>
```

The metadata above describes a resource that contains an English language long text description of the original image. The ‘extent’ indicates that this text file is meant to be used as a complete alternative to the original image.

The final requirement is for the user to have a PNP file stating his/her needs or preferences relating to his/her vision requirements. The user edits a PNP file using a preference wizard as shown below in Figure F.2:

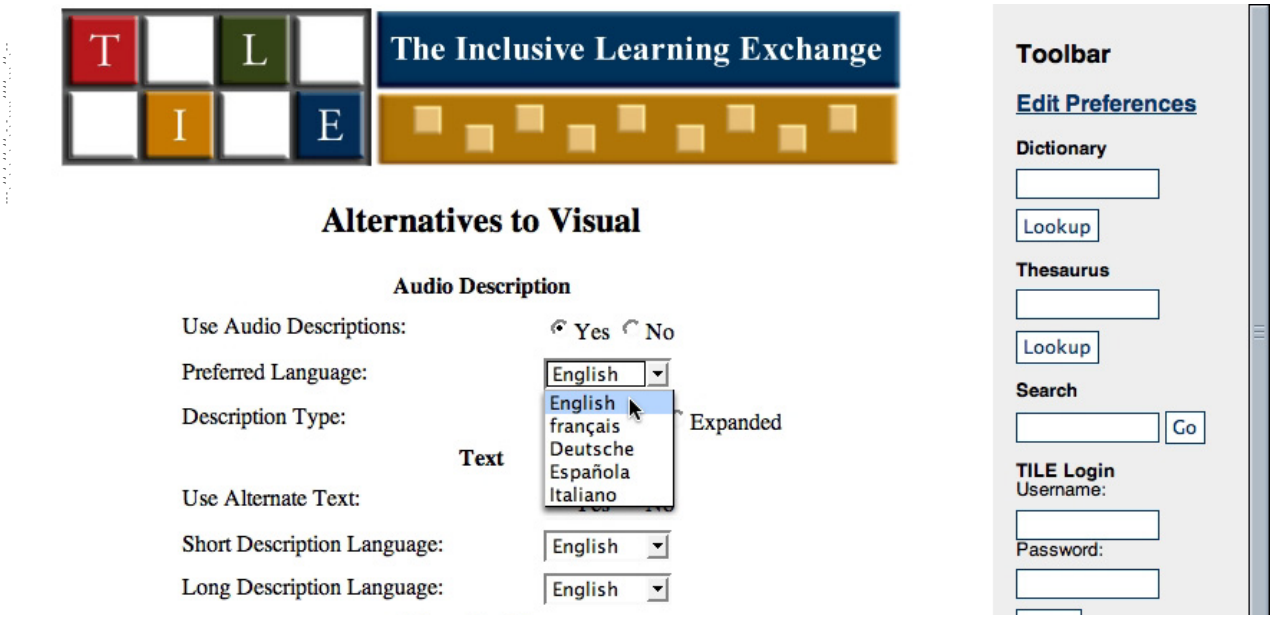

Figure F.2 — TILE screenshot of Alternatives to Visual preference editing

The user specifies a requirement for text alternatives to visual elements. The user's PNP could be the following document:

```
<accessForAllUser>
  <language=”eng”/>
  <content>
    <adaptationPreference>
      <adaptationType=”audioDescription”/>
      <originalAccessMode=”visual”/>
      <representationForm=”standard”/>
      <language=”eng”/>
    </adapationPreference>
    <adaptationPreference>
      <adaptationType=”textRepresentation”/>
      <originalAccessMode=”visual”/>
      <representationForm=”alternativeText”/>
      <language=”eng”/>
    </adapationPreference>
    <adaptationPreference>
      <adaptationType=”textRepresentation”/>
      <originalAccessMode=”visual”/>
      <representationForm=”longDescription”/>
```


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```
    <language=”eng”/>
   </adapationPreference>
  </content>
</accessForAllUser>
```

This document indicates that the user requests English-language standard audio descriptions and English-language “alt-text” and long descriptions.

When the user requests to view the course on Globalization and International Migration containing the image, the system recognizes that the user requires alternatives to any visual content. It checks for adaptations and discovers that one exists with characteristics that match the requirements of the user in the PNP. The system then displays the page with the long description substituted for the image, as shown below in Figure F.3:

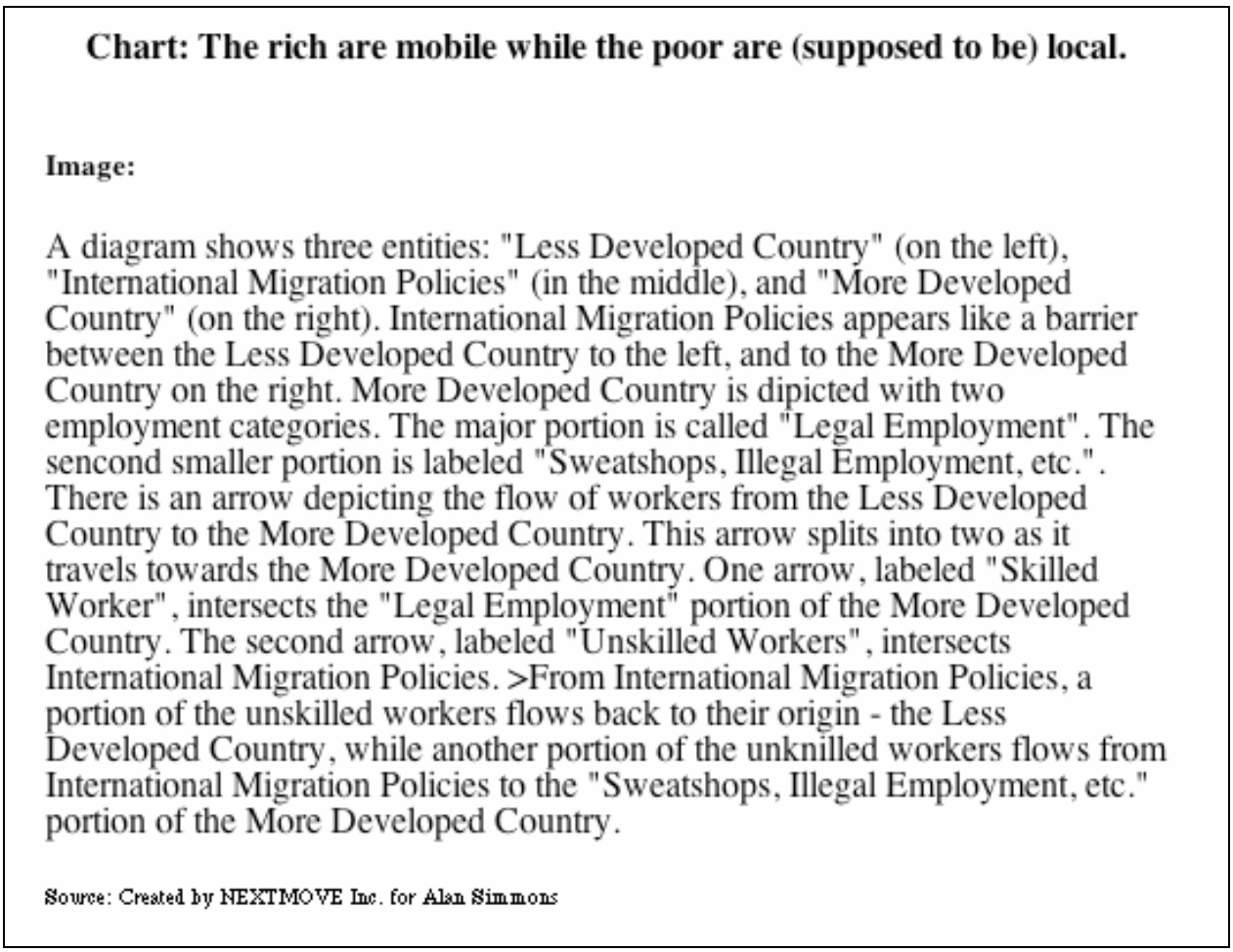

Figure F.3 — TILE screenshot of resource with Flash animation substituted with text alternative

F.2 TILE Caption Example

The following example[9] is from The Inclusive Learning Exchange system (TILE) developed by the Adaptive Technology Resource Centre, University of Toronto.

9) http://inclusivelearning.ca/tile/servlet/view?view=item&cp=urn:uuid:1ec15aa6-40a1-11d8-b01b-0002b3af6db8&item=CHART2.

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A learner is studying a course on Globalization and International Migration containing a video of a lecture by Professor Stephen Castles. Like most videos, it contains visual and audio information. The media type of the video could be Quicktime, Real Media, or one of many other formats. A user without a PNP file or with a PNP file, but without expressed needs or preferences concerning audio or visual content, would receive the original video as shown below in Figure F.4:

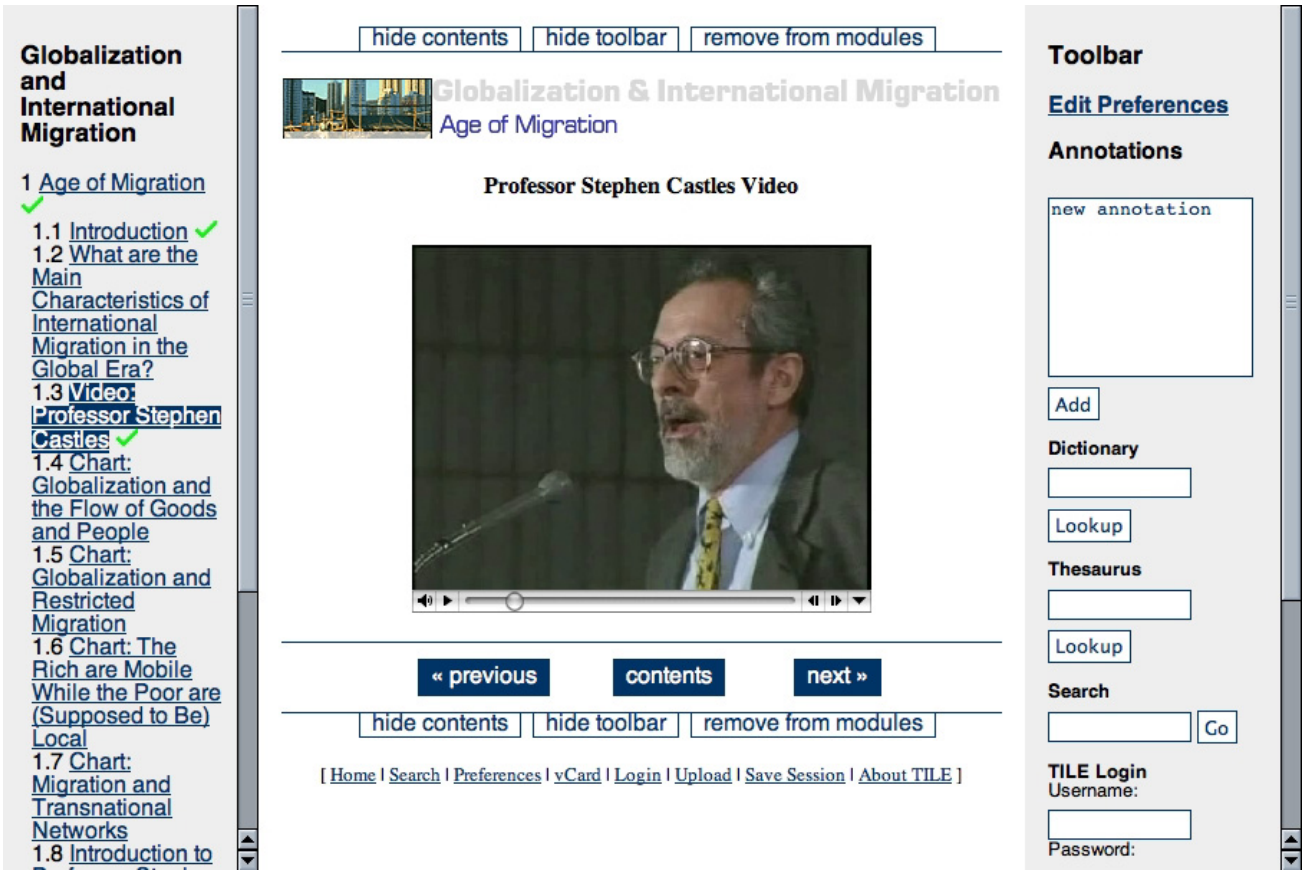

Figure F.4 — TILE screenshot of video with no captions

Another user who has a hearing impairment and difficulty understanding English may require captions. In this case it would be necessary for the original video to be supplemented by an *alternative* resource.

To achieve this, first, the video would need to have the following accessibility metadata which communicates its access mode attributes and expresses a relationship with an alternative resource:

```
<accessForAllResource>
  <accessModeStatement>
    <originalAccessMode=”auditory”/>
    <accessModeUsage=”informative”/>
  </accessModeStatement>
  <accessModeStatement>
    <originalAccessMode=visual/>
    <accessModeUsage=”informative”/>
  </accessModeStatement>
  <hasAdaptation=”URIofAdaptation”/>
</accessForAllResource>
```


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Additionally, the alternative resource needs to have the following accessibility metadata to communicates its adaptation type and a relationship with the original resource:

```
<accessForAllResource>
  <isAdaptation>
    <isAdaptationOf=”URIofOriginal”/>
    <extent=partial/>
  </isAdaptation>
  <adaptationStatement>
    <adaptationType=”caption”/>
    <originalAccessMode=”auditory”/>
    <language=eng/>
  </adaptationStatement>
</accessForAllResource>
```

The metadata above describes a caption file in English.. The extent is partial, indicating that this caption file is meant to be used in conjunction with the original video.

The final requirement is for the user to have a PNP file stating his/her needs or preferences relating to his/her hearing problems and difficulty in understanding English. The user edits a PNP file using a preference wizard as shown below in Figure F.5:

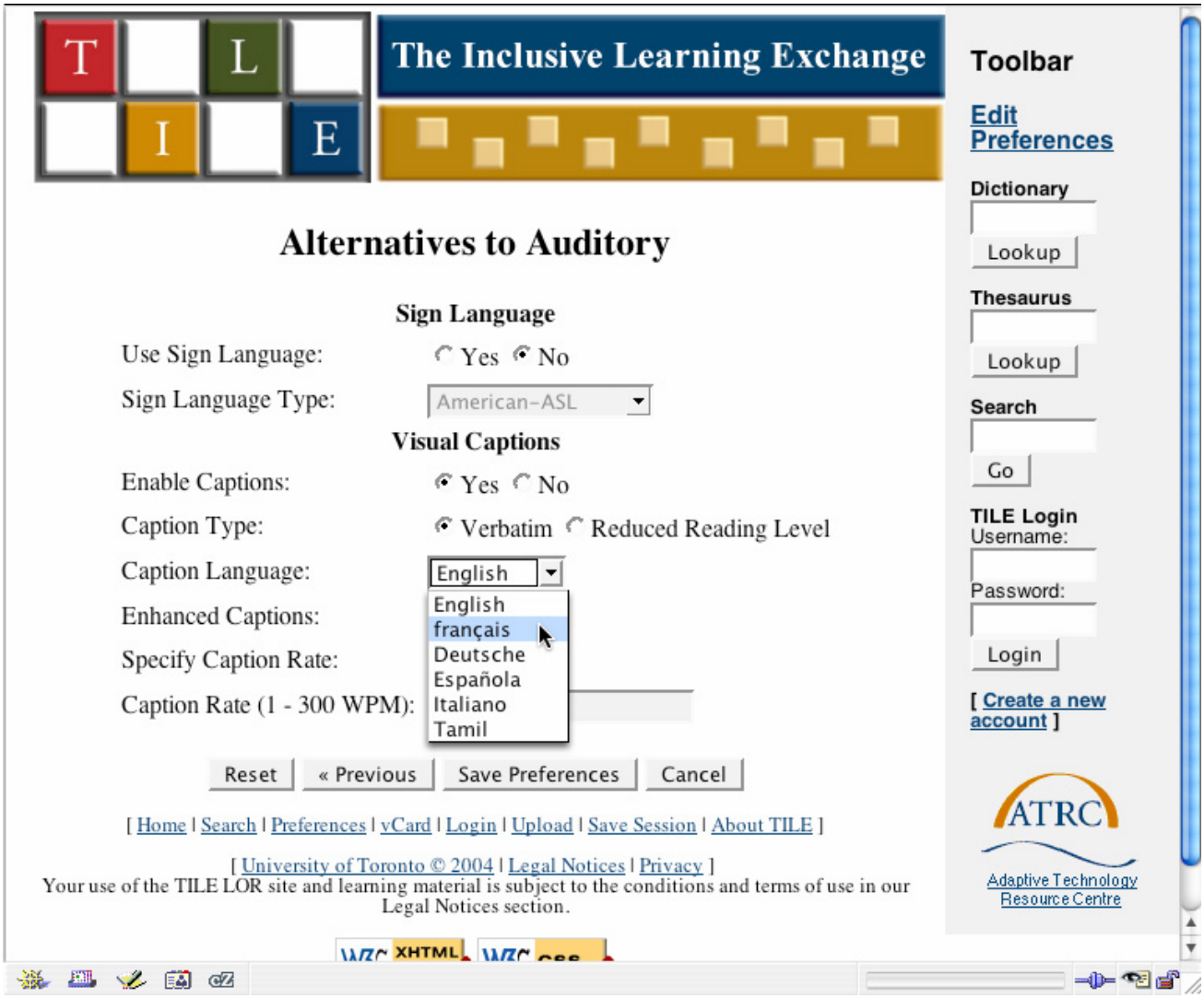

Figure F.5 — TILE screenshot of Alternatives to Auditory preference editing

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The user specifies a requirement for verbatim captions. The user's PNP profile could be the following document:

```
<accessForAllUser>
  <content>
    <adaptationPreference>
      <adaptationType=”caption”/>
      <originalAccessMode=”auditory/”>
      <usage=”required”/>
      <language=”eng”/>
    </adaptationPreference>
  </content>
</accessForAllUser>
```

When the user requests to view the course on Globalization and International Migration containing the video of a lecture by Professor Stephen Castles, the system recognizes that the user requires an alternative to the auditory components. It checks the video's equivalent resources and discovers that an equivalent exists with a caption that matches the requirements of the user. The metadata for the caption file indicates that it is a partial alternative and should be displayed with the video. The system displays the video with its supplementary captions as shown below in Figure F.6:

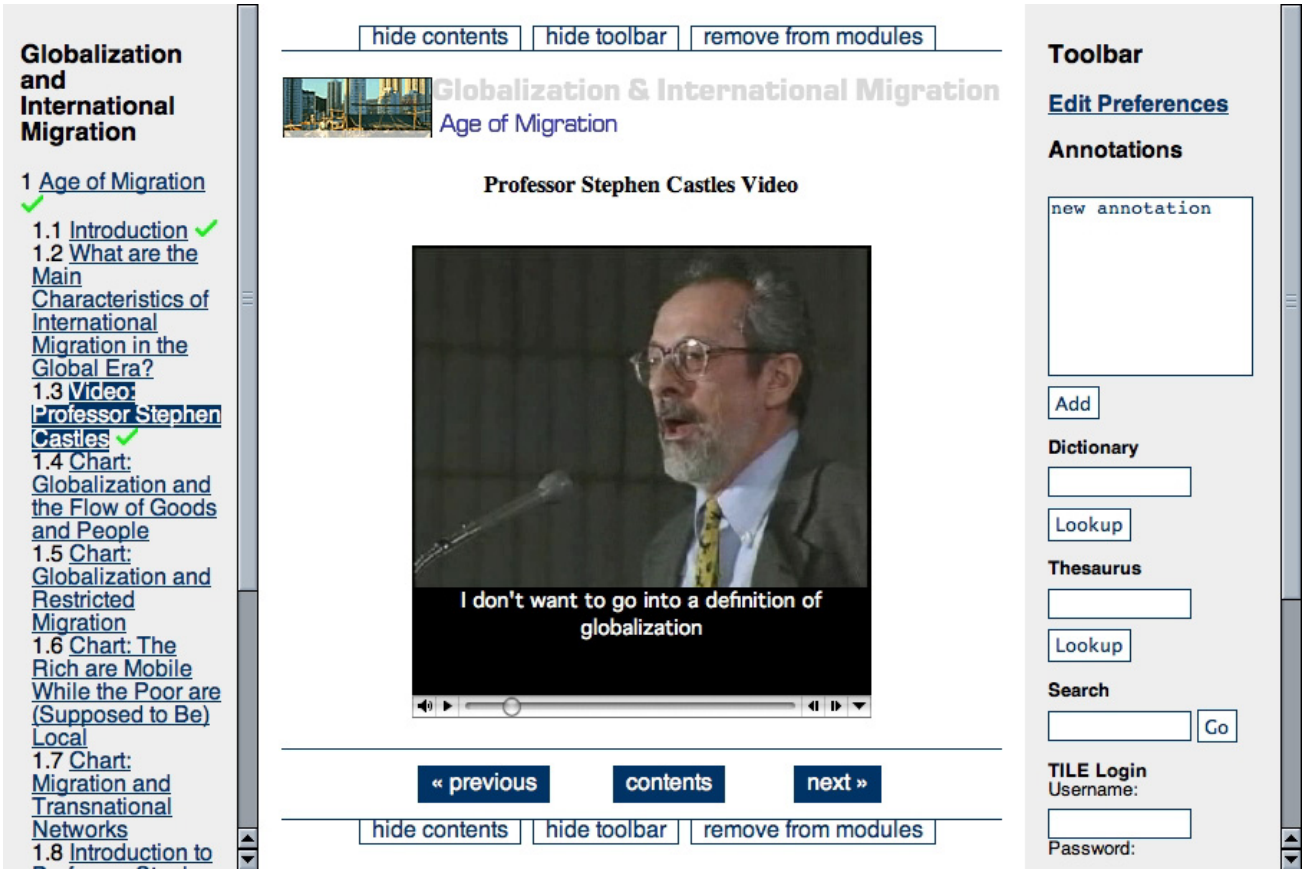

Figure F.6 — TILE screenshot of video with captions

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Annex G
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List of contributors

Contributors to Parts 1, 2, and 3 of this multipart standard include:

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  — Andy Heath, Axelrod Access for All.

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