



Canada School
of Public Service

École de la fonction
publique du Canada

Technical Guidelines for E-Learning Course Implementation

By CSPA Corporate IT
Version 2.2 (February 7, 2014)



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Canada

Document Change Control

| Revision Number | Date | Author(s) | Brief Description of Change |
|-----------------|------------|---|--|
| 1.1 | 2011-06-09 | Marc Mantha Eric Barrette | First Draft, had incomplete section |
| 1.2 | 2011-07-18 | Marc Mantha | Completed section content. |
| 1.3 | 2011-10-25 | Marc Manta | Made changes to existing sections based on comments. Added more details on SCORM 1.2. Added more details on naming convention Added content package folder structure |
| 1.4 | 2011-11-10 | Elie Touma Christian Labrecque André Bélanger | Modified sections to reflect documents intentions |
| 1.5 | 2011-11-10 | Jean-Luc Céré | Added FQA section |
| 1.6 | 2011-11-23 | Chantal Lebrun | Updated the FQA section on Jean-Luc Céré's request |
| 1.7 | 2011-11-25 | Elie Touma Leslie Fong | Minor updates and corrections |
| 2.0 | 2013-07-25 | Elie Touma` | Changed the context from SABA 5.4.3 to 6.1 Revised the scorm behaviour in SABA 6.1 and outline it in the document Added more indepth recommendations for SCORM 2004 vs 1.2 Infrastructure revision Multimedia file size limits Added a section on recommended formats Updated common look and feel requirements ILMS e-content policies or best practices Added section on reporting |
| 2.1 | 2013-09-26 | Francis Mawn | Removed references to CLF2.0 Added section on server side technologies Removed FQA section Added section on SCORM player templates |
| 2.2 | 2014-02-07 | Jean-Luc Céré | Added a section on WCAG 2.0 Added a section on Integration Testing |

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1 Purpose of the document

The purpose of this document is to provide course developers (including programming and creation of multimedia components) with relevant information about:

- ILMS environments;
- Technical specifications and guidelines that need to be taken into consideration when programming an online course;
- Technical specifications and guidelines that need to be taken into consideration when creating multimedia components such as videos and audio for the online course;
- Technical specifications and guidelines around rapid e-learning and products tested to fit in conformity with ILMS / SABA 6.1;
- Technical specifications and guidelines to get the most out of reporting on e-learning courses

2 About ILMS

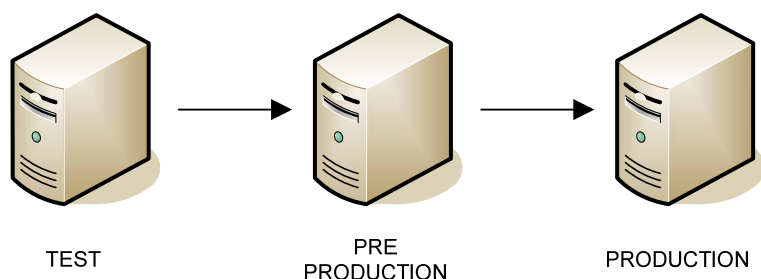
ILMS is the online campus of the Canada School of Public Service (CSPS). This integrated learning management system is aimed at public service employees and other organizations across Canada and internationally who engage in online learning and collaboration. It also allows learners to self-register to instructor-led offerings. Learning is offered in both official languages and can be adapted for accessibility where there is a requirement to do so.

ILMS hosts online content that can vary from documents created in Microsoft Word to customized online tools and e-learning. This content differs from one another in terms of the technologies and authoring software used to create them. To ensure that all content is implemented consistently onto the ILMS platform, minimal requirements are proposed and should be considered when developing content for online use.

2.1 The ILMS environments

There are currently three ILMS environments inside CSPS, which are used for development and testing, the current live application and one for failover and backup.

The environments are TEST, PRE-PRODUCTION and PRODUCTION. The flow of which courses are going through the three environments is illustrated in the diagram below:



The *TEST* environment is used by developers to build and test their courses. Once finished, a content module is then loaded to the *PRE-PRODUCTION* environment where the Integration Quality Assurance team (IQA) will test it

and then confirm the integration conforms to CSPS standards. If the course or a package does not pass IQA, it will have to be reviewed by the developers in *TEST* and then be published again on the *PRE-PRODUCTION* environment until it passes IQA.

Once IQA is completed, the course or the package will then be loaded in the *PRODUCTION* environment. The *PRODUCTION* environment is the live environment is used by our clients to subscribe and take courses.

3 Description of Environment

3.1 Saba

Saba is the Learning Management System (LMS) used at the School. It provides a learning environment for our clients to subscribe to courses, be evaluated, to keep track of every learning activity, interaction, score and certification they may acquire using the LMS during their career as public servants.

As of this day, CSPS is running SABA Enterprise version 6.1 as its ILMS system.

3.2 Content Servers

Content servers are used to store content modules imported in the system. Each environment has its own array of content servers.

3.2.1 ILMS Content Server

This repository is used by the SABA Application (ILMS) to store content modules (such as zip files, PDF, Word document, SCORM Packages and AICC packages) that can be attached to courses offered in the ILMS. This repository only supports client-side programming such as XHTML, HTML5, JavaScript, Flash, etc.

3.2.2 Deployed Content Server

The deployed content server is used when technologies required to develop and execute a courses are not available when using the ILMS content repository. It contains a deployed Saba Content Player which is able to connect to the Saba Application Server to track learner's progress. The current supported technologies on this deployed server are:

- HTML/XHTML/HTML5
- ASP classic, ASP.net 2.0, 3.5 and 4.0 (using IIS 7.5)
- JSP, JAVA (using JBOSS / Tomcat)
- Microsoft SQL Server 2008 R2

3.3 Content Formats

The ILMS supports a wide array of content formats that can be imported in the system. The content type will depend on the nature of the content module and required functionalities (i.e.: reporting, control over the completion status).

All content formats are launched through the Saba Content Player and are displayed through a frame within this content Player. This needs to be taken into consideration when adding JavaScript code (i.e.: window closing actions must reference to the top frame: *top.window.close()* to work).

Note that apart from AICC, SCORM packages and Deployed SCORM content, the LMS will mark the content modules as completed as soon as they are launched by the learner. To manage this, there is an option in the cataloguing administration module (at the course and at the offering levels) that allows the learners to mark the content as completed, rather than the LMS doing it automatically. Using this option will prevent the course from being moved to the transcript after its first launch.

3.3.1 Zip File

Content is considered a website when it consists of web pages only and where no tracking is required. If it is in plain HTML, it has to be imported as a Zip file.

Here are the requirements for a website imported as a zip file:

- The index page (launch page) must be at the root of the zip package.
- All the links must use relative paths.
- Folders and filenames must not contain any spaces or special characters with the exception of dashes (“-”) and underscores (“_”)
- The servers are case sensitive: if there are capital letters in a file name, the links pointing to that file must have the same capitalized letters.
- Since we can only have one start page per zip file, 2 zip packages must be created - one for the French version and one for the English version.



If the website uses server side technologies, such as ASP, the Zip format will not be the solution. The IT operations group will have to install the files on the deployed content server where the content type will become a URL.

3.3.2 URL

A URL is used when the content is on an external web server. This can be used when a course is housed outside of the ILMS infrastructure and doesn't require any tracking inside of the LMS.

3.3.3 File

This content type is used for modules that do not need to communicate with the LMS and that are not considered as a full website. Here are some examples of content objects that can be imported using the file option:

- PDF
- PowerPoint document

- Word document
- Excel document
- Images

3.3.4 SCORM Packages

Saba supports SCORM Packages versions 1.2 and 2004 (2nd Edition), however it is not guaranteed that packages made using the 2004 will be fully supported as there might be issues with sequencing.

3.3.5 Deployed SCORM

Deployed SCORM is used to launch SCORM content that resides outside of the LMS. The IT-ILMS Support group is responsible for setting up the files on the deployed content server. A link to the manifest will be provided to the client by IT once the files are installed. This link will be used to import the content in the proper repository.

Deployed SCORM is mainly used for content that uses the SCORM API to communicate with the LMS but that were not built with reusability with the LCMS in mind. This is a good solution for content that require server-side technologies, a database or for splitting large courses into smaller objects, while still pointing with the same files (with a normal SCORM package, files must be duplicated in every package). No ZIP package is required for this type of content.

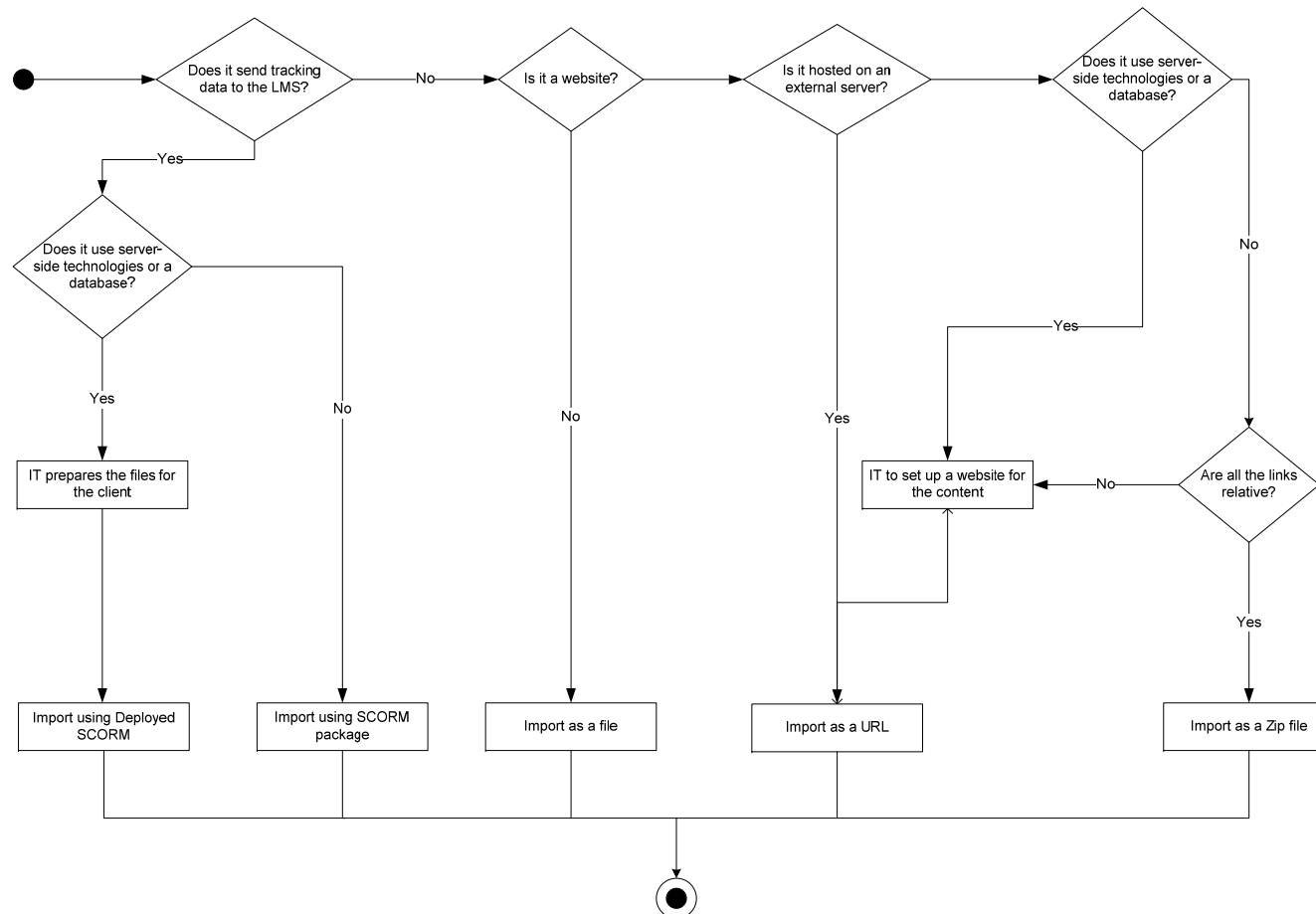
3.3.6 AICC

AICC (Aviation Industry CBT Committee) content can be imported in the Saba Production Repository. It is an old standard on which parts of SCORM were built upon.

3.4 Content Formats Decisional Process

This flow chart represents the decision process for selecting the right content type in the ILMS when importing a content module. There are other types that can be selected in the system, but the ones indicated in this document are the most commonly used content formats. The process described in this flow chart is the same for importing content into the Production Repository and into the Knowledge Repository since they both are very similar.

Choosing a content type for a content module



3.5 Supported Content

The current supported technologies inside of online content modules are

- HTML/XHTML/HTML5
- ASP class, ASP.net 2.0, 3.5 and 4.0
- JSP, Java
- Flash
- Audio content (MP3, SWF, WMA)
- Video content (FLV/MP4/WMV/MOV)

You will find more details in section [4](#) about guidelines and restrictions on using the technologies above.

4 Content Specifications

4.1 Web Toolkit and Accessibility

The Web Experience Toolkit was developed to as an alternative to CLF 2.0. It is compatible with it and includes new guidelines regarding HTML coding and accessibility such as the use of JQUERY, HTML 5, WCAG 2.0 and WAI-ARIA. We highly recommend using the templates available on the Web Experience Toolkit (WET) website at <http://www.tbs-sct.gc.ca/ws-nw/wa-aw/wet-boew/index-eng.asp> as a starting point to develop an online course.

Note that there should only be one version of the content. For legal reasons, we cannot create two different versions: one standard version and one accessible version. This is why we strongly recommend that you develop only one version of the course. An online course must be fully WCAG 2.0 compliant. If a portion of the course cannot be made accessible, an alternative format must be available inside of the course, but not in a separate product. To be considered accessible, a product must meet all the WCAG requirements, priority 1 (A) and 2 (AA).

4.2 Bilingual Products

Given certain reporting purposes, ILMS is required to track the numbers of users that have logged on to the French or the English version of a bilingual product. In this case the developer should provide two course packages for any bilingual product to be hosted on ILMS environment: one source package with the English start page and one for the French start page. This will duplicate all the files on the server. If one version is updated, the other one must be update as well. It is not recommended to have a splash page at the beginning of the course with the language selection since this would add another click to access to content. If the learner registered to the French offering then the start page of the course should be in French.

This will also be reflected at the catalogue level as one offering per language will be added to the content catalogue in the LMS to avoid reporting and tracking issues that can occur if both packages are offered in the same offering.

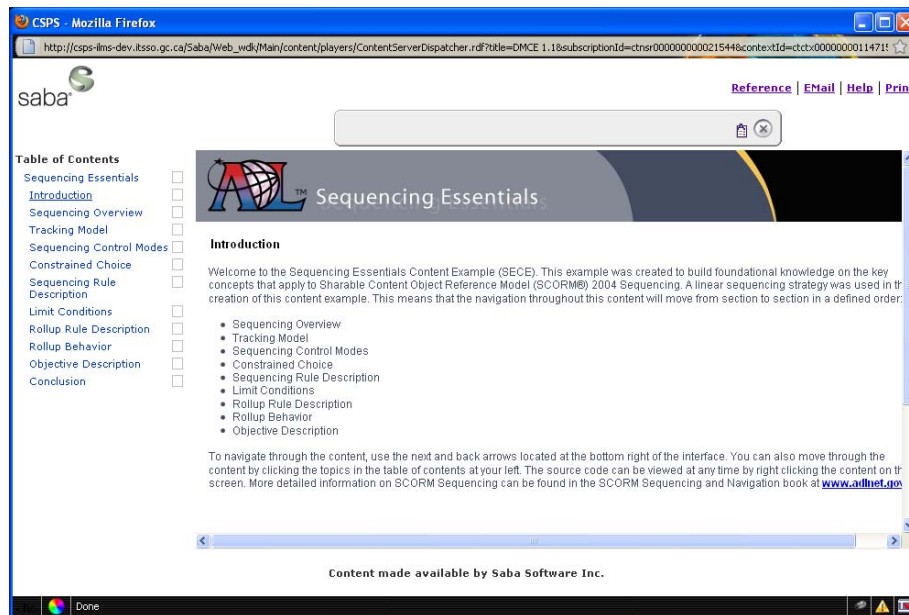
4.3 Window Sizing and Screen Resolution

Courses in ILMS are launched into a content player (a new browser window) with a default size that is controlled by the LMS. The window can be expanded or reduced once it is launched. Courses are to be designed to fit, at minimum, 1024 X 768 pixels screen and must gracefully adapt to screen with higher resolutions.

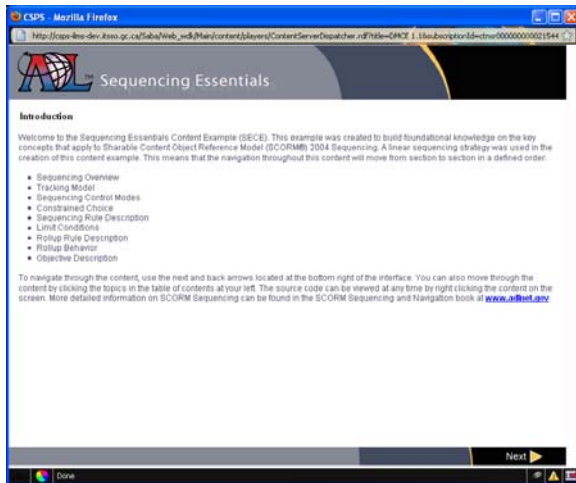
The ILMS manages and tracks courseware using the content player. It is imperative that the entire application session be played out from the original launched window. For this reason, a product will not move out from the window in which it has been launched.

For SCORM courses containing multiple SCOs, the “System Defined” player must be selected when importing the content into the production repository as it will provide a table of contents and various controls, based on the course’s manifest file. For any other content, the “Empty Player” should be used.

System Defined for content with multiple SCOs:



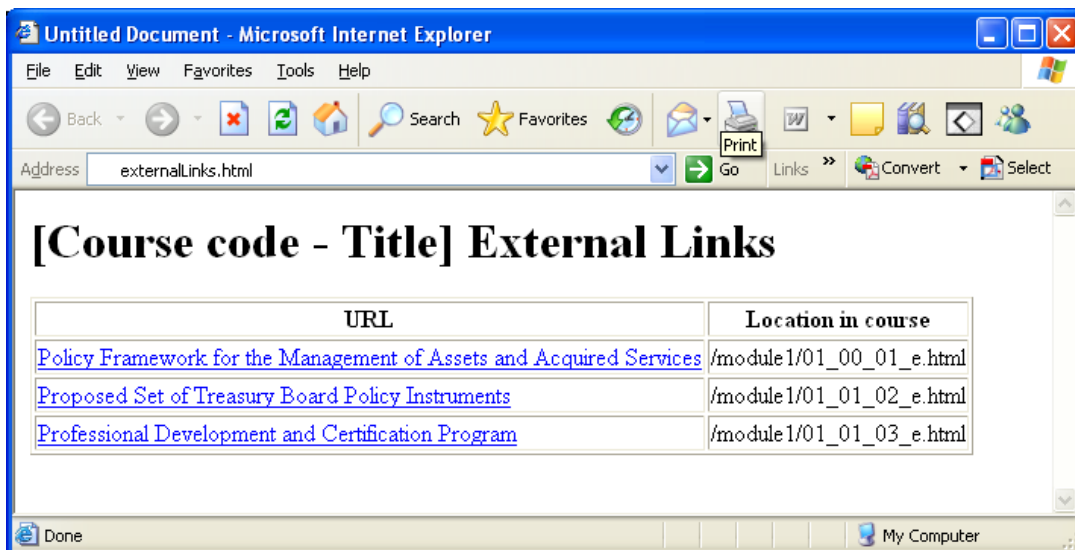
Empty player:



4.4 External Links

The term “external page” refers to any page or resource whose source is not physically contained within the product’s installation directory, with the exception of shared elements or other resource that are mandated or provided by ILMS. Any external link must open in a new browser window.

Since content owners have no controls over the content of these links or their availability, it is recommended that all the external links be copied in a separate HTML file called externalLinks.html. This document can then be used with a link checking software. This will ensure that all the external links will be checked by the software as not all technologies (Flash content, PDF, etc) are compatible with link checkers. Example:



Note: Course evaluations should not be embedded into the products, but rather accessed through a separate content module added at the offering level.

4.5 Quit button

Since the all contents are displayed in Saba using frames in a Content Player, Quit buttons that closes the course using JavaScript should use the following code: `top.window.close()`. Using `window.close` doesn't work if the content is not at the top frame level.

4.6 Multimedia elements

4.6.1 Media optimization and file sizes

All multimedia elements (images, video, flash, audio, etc.) must be optimized for the final online product. To ensure optimal performance of ILMS and its network, CSPS has put in place a file size limit of 100MB for any multimedia file. Should a product require more than 100MB on a multimedia element, it is recommended that it be broken up into smaller pieces.

Furthermore, for efficiency, CSPS requires that when a course uses video elements they must be added into a player to allow streaming instead of direct downloading.

Since every e-learning product has different needs, we do not impose specific dimensions, however it is up to the developer to find a good compromise between quality and file size. The IT-ILMS Support team will reserve the right to reject a certain file if it is not optimized. File optimization is crucial for the following reasons: it reduces the disk usage on the servers and it ensures that the users will be able to stream the content within an acceptable time lapse.

As a general rule of thumb, if a page takes longer than five seconds to load with a high speed internet connection (10 MBPS), the content should be reviewed to ensure it is properly optimized.

Note: if the disk space required to install the product in the content repository is more than 500MB, IT will have to be notified and review the content before it can be installed on the server.

4.6.2 Flash

The use of Flash is allowed, however, we recommend creating Flash content that is compatible with Flash Player 10 or higher. A lot of security issues were found in older versions which are now fixed in Flash Player 10. Also, there are major display issues related to text rendering when using older versions.

Even though there are accessibility features in Flash, the support of adaptive technologies is very limited. An alternative HTML version for Flash must be available.

The proper flash detection methodology must be in place in the course, the latest version can be found on Adobe's web site at http://www.adobe.com/devnet/flashplayer/detection_installation.html. It is up to the content developer to implement to proper detection solution.

4.6.3 Audio

Audio files can be used in various situations for an on-line course (narration, sound effects, music). We recommend using the mp3 file format to deliver audio content. Here are the requirements for audio files:

| Options | Values |
|-----------------|---|
| Rate Sample | 22 050 Hz |
| Channels | Mono |
| Volume (dB) | Between -9 dB and -6dB (narration should be around -6 dB) |
| Bits Per Sample | 6 |
| Bit Rate | 128 kbps |
| Audio Noise | Under -40 dB |

A transcript of the audio file must be present in the page for accessibility reasons. However, if the use of a transcript would affect the learning objective or activity (ex.: a dictation), the exercise should be redesigned for the accessible version. In this case the transcript would not be mandatory.

For every mp3 file, a copy of the original Wave file must be present in the source files of the on-line course for repurposing or QA reasons.

4.6.4 Video

When integrating a video into an e-learning content, the following elements must be present:

- Text captions
- Audio Transcripts
- Alternative video formats

All these features are supported by the Web Experience Toolkit (WET) multimedia player. The files and documentation can be found at the following address: <http://wet-boew.github.io/wet-boew/demos/multimedia/multimedia-eng.html>

We recommend using the WET multimedia player when embedding video, but with these file formats:

- The first format should be a FLV file and has a file size will be smaller than a file compressed using H.264/MP4.
- The second format should be H.264/MP4
- Recommended dimensions are 480x272 (16:9) or 480x320 (4:3) for best quality / size ratio.

As with audio files, transcripts and captions should be made available if they don't affect the learning objective.

All the multimedia elements must be set up for streaming. As such, the developer may also chose to make their own content player for streaming, however it is recommended to use the ones provided by the web experience toolkit (WET).

As mentioned above, to ensure optimal performance of ILMS and its network, CSPS has put in place a file size limit of 100MB for any video file (or multimedia file in general). Should a product require more than 100MB on a multimedia element, it is recommended that it be broken up into smaller pieces.

4.7 Content databases and user progress tracking

To facilitate the maintenance and for performance and portability reasons, we recommend using XML/JSON documents to store data that is loaded dynamically (i.e.: assessment content) instead of using a custom database.

If an online-course has tracking needs, the school recommends using the SCORM 1.2 runtime environment. If, for technical reasons, SCORM cannot be used to achieve the desired goal, a custom database can be created; however, **if a developer chooses the database option, the ILMS Division at CSPS has to approve the decision.**

4.8 Server Side Technologies

While we support some server side technologies using deployed SCORM, we strongly advise you to only use it when necessary. Dynamic includes for headers and footers can be achieved by using Dreamweaver templates and don't necessarily need dynamic pages. Limit your use of server side technology only for things like:

- connecting to an external database
- server side data validation
- advanced functionalities

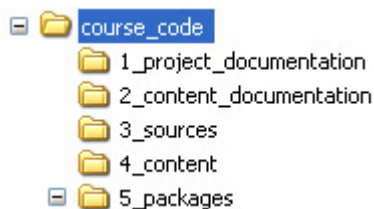
4.9 Naming Convention

All files and folders should follow the standard naming convention which means that they should not contain any spaces or special character with the exceptions of dashes ("-") and underscores ("_").

Please note that some of our servers are case sensitive, therefore it is strongly encouraged to use only lowercase characters when naming files and folders to avoid possible broken links.

4.10 Project Folder Structure

Project folder structure should always be the same across all projects to ensure uniformity and facilitate maintenance and reusability. Here is the proposed folder structure:



5 Root folder (course_code)

This folder contains all the files and folders related to the project. Its name should be the course code.

1_project_documentation

Project related documents (MOU, policies, financial documents, etc.) should be present in this folder.

2_content_documentation

Content related documents (technical documentation, requirements document, database schemas, user manual, etc.) should be present in this folder.

3_sources

This folder has to contain every un-compiled source files used in the content (.fla, .psd, .wav, .doc, .ppt, raw video formats, etc.). The structure of the subfolders should be the same as the one in the folder 4_content.

4_content

This folder contains all the files used for the course. There should be no source file or documentation in this folder. It will be used during the development phase of the project and will also be used to create the packages at the final stage.

5_packages

Final content packages should be present in this folder. These packages will be the gold copies of the course that will be uploaded in the production repository of the ILMS. If the course is bilingual (the course has a language toggle link on each page), there should be one package with the French start page and one package with the English start page. Packages should be .Zip files created from the folder 4_content.

6 Content Players and Player templates

When a course is launched from ILMS, it will be placed within the SABA Content Player. This content player contains a specific frameset required to properly make the course communicate with the ILMS database. The SCORM API used to make the SCORM calls resides in one of those frames.

The content player is customizable to some extent. By default, it will launch at a size of 924x668 and will display a table of content on the left (used to browse between multiple SCOs) as well as a header and footer. All of this can be removed, or customized at will. The header and footer can be used to place the branding of your department for example.

The content player theme manages the default colors used by the template. You can use one of the default ones or create your own player theme and change the colors of your hyperlinks, background, and customize the fonts used by the player template.

Typically, the ability to create a player template is only available to ILMS sub-schools, however, should an exceptional requirement come up, CSPS will accommodate certain requests for custom player templates.

7 Saba and SCORM

The first step in testing SCORM content before uploading it to an LMS is to test it using the ADL Test Suite. This will ensure that the content is working properly, that the manifest file is valid and that valid data is passed through the various CMI calls. However, because each LMS has its own way of implementing the SCORM specifications, the content might behave in a slightly different manner once installed on the target LMS. Also, Saba support SCORM 1.2 and 2004, 2nd edition.

The Saba implementation of SCORM version 1.2 is stable, but there are issues with its 2004 counterpart where not all of its features function as per SCORM 2004 standard specification. CSPS does not recommend the use of SCORM 2004 therefore, if you chose to use it, it as at your own risk.

Before developing SCORM content, it is recommended to build a test package that includes the SCORM features that needs to be implemented by the course before starting the development. This will allow the developer to find alternative means of achieving its goals if the feature is not supported by the LMS.








Here are some important things to know about Saba's implementation of the SCORM 1.2 specifications:

7.1 SCORM 1.2

7.1.1 Lesson Status

In SCORM 1.2, the possible lesson statuses are, "Not Attempted", "Incomplete", "Completed", "Passed" and "Failed". Initially, on the first launch of the first attempt, the value of `cmi.core.lesson_status` is set "Not Attempted" by the LMS. This value needs to be changed to "incomplete" as soon as the content is loaded to avoid issues when closing the course. Also, the LMS will expect different values based on how the content is configured in the content repository. An offering of a course will be marked as Successful (completed) once all of its required modules have been marked as completed with the proper lesson status. The content completion logic changes if a content module has a mastery score or not.

A mastery score can be configure in two different way: in the manifest file of a SCORM package or by checking the "Is Scoring" checkbox in the content module form using a Content Administrator account.

| | |
|--|--|
| Content Format | SCORM Package |
| Content Format Version | SCORM 1.2 |
| Player Template* | Empty Player   |
| Status | Published Edit |
| Version Number | <input type="text"/> |
| Expiration Date | <input type="text"/>  |
| Parent Folder* | Content Dev   |
| Content Provider | |
| Delivery Vendor | Saba |
| External Content ID | |
| Zip File | content.zip <input type="button" value="Browse..."/> |
| Content Server* | Dev Content Server   |
| Use as Survey, Evaluation, or Multi-Rater Assessment | <input type="checkbox"/> |
| Available Offline | <input type="checkbox"/> |
| E-Signature Required | <input type="checkbox"/> |
| Is Scoring | <input type="checkbox"/> |

When the mastery score is present in the manifest file of a package, “Is Scoring” will be checked automatically when importing the file. Once this is checked, it is possible to set a mastery score for the content module at the offering level.

| Content Modules | | | | | | | Change Status | Attach Content | Modify Table |
|-------------------------------|--|-----------------------------------|---------|----------|-----------------------------------|----------------|-------------------------------|--|------------------------------|
| Module | Path 1 | Path 2 | Status | Sign Off | Mastery Score | Content Status | Attempts on Content | Actions | |
| 1.2 Framework | Required <input checked="" type="checkbox"/> | Required <input type="checkbox"/> | Enabled | | <input type="text" value="80.0"/> | Published | Unlimited | Disable Disable and Add Edit Content Delete Content Configure Attempts on Con... | |

Offering completion based on lesson status and scores without a mastery score

| Content Module | | Offering | | |
|----------------|-------|--|-------|---------------------|
| Lesson Status | Score | Overall Completion Status | Score | Moved to transcript |
| Completed | "" | Successful | 0 | Yes |
| Completed | 100 | Successful | 100 | Yes |
| Passed | "" | Successful | 0 | Yes |
| Passed | 100 | Successful | 0 | Yes |
| Failed | "" | Successful (but lesson marked as failed in "View Results By Lesson") | 0 | Yes |
| Failed | 100 | Successful (but lesson marked as failed in "View Results By Lesson") | 100 | Yes |
| Incomplete | "" | Not Evaluated | 0 | No |

Offering completion based on lesson status and scores with a mastery score

| Content Module | | Offering | | |
|----------------|-------|---------------------------|-------|---------------------|
| Lesson Status | Score | Overall Completion Status | Score | Moved to transcript |
| Completed | "" | Note Evaluated | 0 | No |
| Completed | 50 | Unsuccessful | 50 | Yes |
| Completed | 100 | Successful | 100 | Yes |
| Passed | "" | Not Evaluated | 0 | No |
| Passed | 50 | Unsuccessful | 50 | Yes |
| Passed | 100 | Successful | 100 | Yes |
| Failed | "" | Not Evaluated | 0 | No |
| Failed | 50 | Unsuccessful | 50 | Yes |
| Failed | 100 | Successful | 100 | Yes |
| Incomplete | "" | Not Evaluated | 0 | No |
| Incomplete | 100 | Not Evaluated | 0 | No |

7.1.2 Attempts

One attempt on a content object covers any number of launches required for the content to go from a "Not Attempted" or "Incomplete" status to a "completed" or "passed". For each attempt, Saba will keep track of the score (cmi.core.score.raw) and time (cmi.core.total_time) if these values were set by the SCO. However, it doesn't keep objectives data for each attempt. For this reason, once a course is marked as completed or passed, we don't update the values of the objectives.

Only the data for first passed or completed attempt will be displayed to the learner in Saba in the content summary page. To see the results for each attempt, the learner must click on "History" under "View Results by lesson" on that page.

On a technical side, Saba will increment the number of attempts by 1 if the value of "cmi.core.entry" is "" (empty string). To ensure that the number of attempt doesn't go up before the course is completed; the programmer must set the value of "cmi.core.exit" to "suspend" if the course is incomplete. Also, note that the value of

cmi.core.lesson_status will not go back to “Not Attempted” on the first launch of the second attempt. A course that is marked as “completed” or “passed” cannot be marked back as incomplete, which doesn’t really make sense with the logic of the attempt: it is possible to track data specific to an attempt, but we cannot track the completion status of subsequent attempts, which impacts the reporting on scores and objectives. This creates inconsistencies with the data reported in the history section. The only way to have a status back to “Not Attempted” is to re-enrol to the course, if it is allowed.

7.1.3 Manifest Files

Before uploading a SCORM package into Saba, it is recommended to test the manifest file in the ADL Test Suite. It must be saved using the encoding “UTF-8 Whitout BOM”. ANSI can also be used however, any special characters (i.e.: French characters) must converted using their UTF-8 entities.

If the manifest represents a “Single SCO Course”, it is recommended to edit the manifest file in order to have different titles for the 2 required <items > elements. For the School’s content, it was decided to put the title of the course in the first item, and we used “On-line Course” for the second item. By doing so, the learner will not see a duplication of the title in the section “View Results by Lesson”. It is also not necessary to list all of the files used by a resource. If SCO was not made with the intent to be shareable within the LCMS, it is not necessary to list of the files used by that resource.

Here is a working example of a simplified manifest:

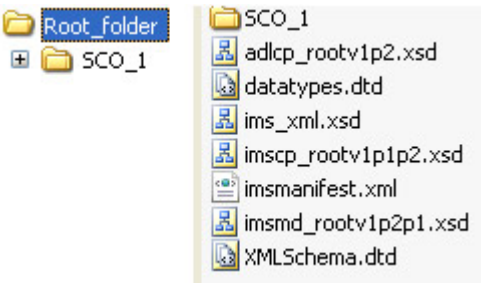
```


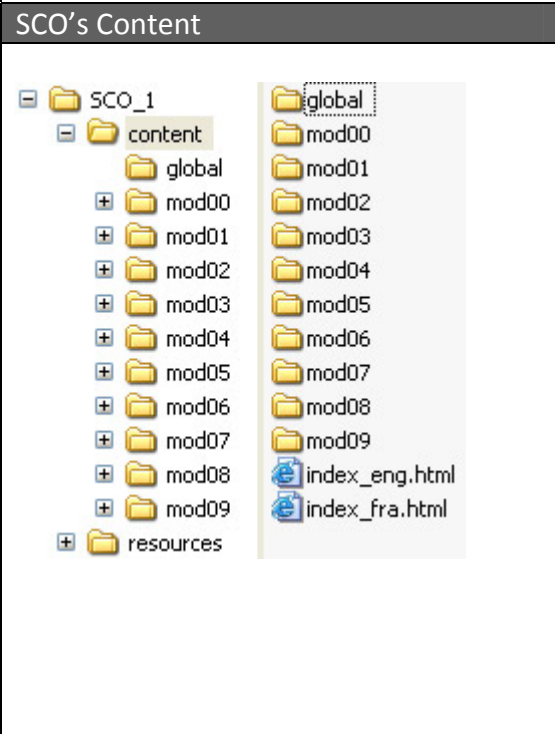
1  <?xml version="1.0"?>
2  <manifest identifier="C215E_Manifest" version="1.1"
3      xmlns="http://www.imspjproject.org/xsd/imscp_rootv1p1p2"
4      xmlns:adlcp="http://www.adlnet.org/xsd/adlcp_rootv1p2"
5      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
6      xsi:schemaLocation="http://www.imspjproject.org/xsd/imscp_rootv1p1p2 imscp_rootv1p1p2.xsd
7                          http://www.imsglobal.org/xsd/imsmd_rootv1p2p1 imsmd_rootv1p2p1.xsd
8                          http://www.adlnet.org/xsd/adlcp_rootv1p2 adlcp_rootv1p2.xsd">
9      <organizations default="ORGC215E">
10         <organization identifier="ORGC215E">
11             <title>Green Procurement</title>
12             <item identifier="C215E_I01" identifierref="RC215E_S01" isvisible="true">
13                 <title>Online Course</title>
14                 <metadata>
15                     <schema>ADL SCORM</schema>
16                     <schemaversion>1.2</schemaversion>
17                 </metadata>
18             </item>
19             <metadata>
20                 <schema>ADL SCORM</schema>
21                 <schemaversion>1.2</schemaversion>
22             </metadata>
23         </organization>
24     </organizations>
25     <resources>
26         <resource identifier="RC215E_S01" type="webcontent" adlcp:scormtype="sco" href="launch_e.html">
27             <metadata>
28                 <schema>ADL SCORM</schema>
29                 <schemaversion>1.2</schemaversion>
30             </metadata>
31             <file href="launch_e.html" />
32         </resource>
33     </resources>
34 </manifest>

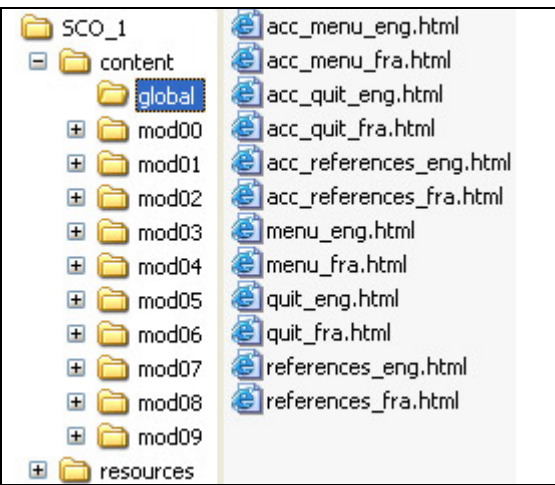
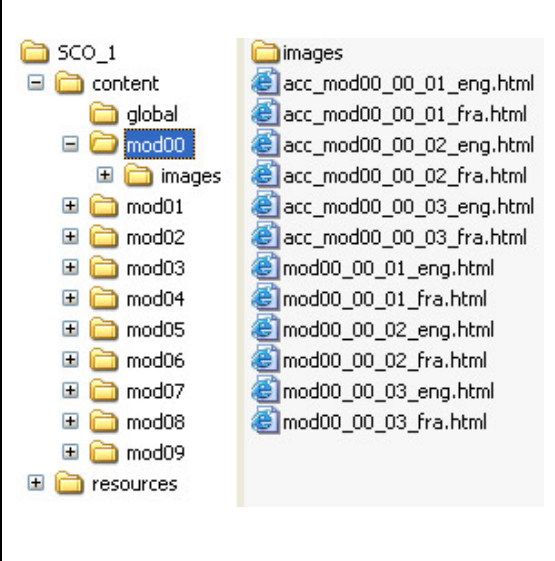
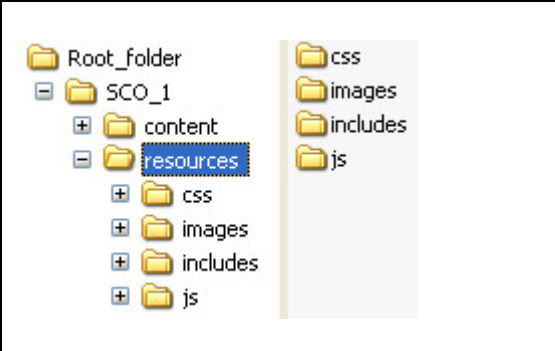
```

7.1.4 Recommended Package Structure

Here is the recommended folder structure of a SCORM 1.2 package:

| Package root folder | |
|--|---|
|  | <p>This is the root folder of the package. It must have one folder for each SCO. Usually courses are packaged has one big single SCO. The naming convention for this folder is SCO_X, where X is the SCO number.</p> <p>The manifest file (imsmanifest.xml) must be present at the root. If it is missing, the content cannot be imported as a SCORM package.</p> <p>The other files (XSD, DTD, XML) are description and definition files that accompany the manifest. These are optional, but recommended files.</p> |
| SCO Folder | |
| | <p>Each SCO must have 2 folders.</p> |

| | |
|---|---|
|  <p>The image shows a folder structure for a SCO. On the left, under 'Root_folder', there is a folder 'SCO_1' which contains 'content' and 'resources' subfolders. On the right, the 'content' folder is expanded, showing 'exec_fra.html', 'extern_fra.html', and 'init_fra.html' files. The 'resources' folder is also visible but empty.</p> | <p>Content: Folder used for the launchable web content of the SCO.</p> <p>Resources: Folder containing regrouping all the common elements (or shared assets) of the SCO.</p> <p>init_fra.html: start file of the SCO. This page opens the connection with the LMS when possible and redirect the learner to the correct first page of the course.</p> <p>exec_fra.html: french start page of the SCORM package. Used when the communication with the LMS is available.</p> <p>Extern_fra.html: french start page be used when the product is launched outside of an LMS. This page should describe which features will be unavailable when the content is executed outside of an LMS.</p> <p>Note: for the english version or for a bilingual version, the files init_eng.html, exec_eng.html and extern_eng.html would also be present in this folder.</p> |
| <p>SCO's Content</p>  <p>The image shows a detailed folder structure for a SCO. On the left, under 'SCO_1', there is a 'content' folder which contains a 'global' folder and 'mod00' through 'mod09' folders. Below these is a 'resources' folder. On the right, the 'global' folder is expanded, showing 'mod00' through 'mod09' folders, and 'index_eng.html' and 'index_fra.html' files.</p> | <p>Global: Folder containing regrouping all the common web pages of a SCO.</p> <p>modXX: folder containing all the files specific to a module.</p> <p>Index_eng.html: (optional) index page of the course, can replace the files “exec_fra.html” or “exec_eng.html” of the parent folder.</p> |
| <p>Global Content of a SCO</p> | <p>This is an example of what could be contained within the “global” folder:</p> <ul style="list-style-type: none"> • Main menu of the course; • Quit page • References |

| | |
|--|---|
|  | <ul style="list-style-type: none"> Glossary <p>Note: the prefix “acc_” is used in the naming convention for accessible versions of web pages.</p> |
| Module Within a SCO | |
|  | <p>This is an example of what could be present in of module’s folder:</p> <ul style="list-style-type: none"> Resource folders specific to the module (images, flash, video, etc.) Modules pages. <p>Note: the naming convention used for the modules is as follow: modAA_BB_CC_lang.html.</p> <p>AA is the module number. BB is the module sub-section number. CC is the page number of the sub-section. LANG is the three-letter ISO 639-2/T code for the representation of languages.</p> |
| Common Resources of a SCO | |
|  | <p>This is an example of what could be present in the resources folder of a SCO:</p> <ul style="list-style-type: none"> Css Common images Include files Javascript files, including the SCORM API wrapper and functions |

8 WCAG 2.0

8.1 WCAG 2.0 Overview

The Web Content Accessibility Guidelines (WCAG) documents explain how to make Web content accessible to people with disabilities. Web "content" generally refers to the information in a Web page or Web application, including text, images, forms, sounds, and such.

WCAG is primarily intended for:

- Web content developers (page authors, site designers, etc.)
- Web authoring tool developers
- Web accessibility evaluation tool developers
- Others who want or need a technical standard for Web accessibility

WCAG 2.0 has 12 guidelines that are organized under 4 principles: perceivable, operable, understandable, and robust. For each guideline, there are testable success criteria, which are at three levels: 25 at A, 13 at AA, and 23 at AAA.

(<http://www.w3.org/WAI/intro/wcag.php>)

8.2 Principles

8.2.1 Perceivable

Information and user interface components must be presentable to users in ways they can perceive.

This means that users must be able to perceive the information being presented (it can't be invisible to all of their senses)

8.2.2 Operable

User interface components and navigation must be operable.

- This means that users must be able to operate the interface (the interface cannot require interaction that a user cannot perform)

8.2.3 Understandable

Information and the operation of user interface must be understandable.

- This means that users must be able to understand the information as well as the operation of the user interface (the content or operation cannot be beyond their understanding)

8.2.4 Robust

Content must be robust enough that it can be interpreted reliably by a wide variety of user agents, including assistive technologies.

- This means that users must be able to access the content as technologies advance (as technologies and user agents evolve, the content should remain accessible)

If any of these are not true, users with disabilities will not be able to use the Web.

8.3 Guidelines

1.1 Text Alternatives: Provide text alternatives for any non-text content so that it can be changed into other forms people need, such as large print, braille, speech, symbols or simpler language.

1.2 Time-based Media: Provide alternatives for time-based media.

1.3 Adaptable: Create content that can be presented in different ways (for example simpler layout) without losing information or structure.

1.4 Distinguishable: Make it easier for users to see and hear content including separating foreground from background.

2.1 Keyboard Accessible: Make all functionality available from a keyboard.

2.2 Enough Time: Provide users enough time to read and use content.

2.3 Seizures: Do not design content in a way that is known to cause seizures.

2.4 Navigable: Provide ways to help users navigate, find content, and determine where they are.

3.1 Readable: Make text content readable and understandable.

3.2 Predictable: Make Web pages appear and operate in predictable ways.

3.3 Input Assistance: Help users avoid and correct mistakes.

4.1 Compatible: Maximize compatibility with current and future user agents, including assistive technologies.



Industry
Canada

Industrie
Canada

Web Content Accessibility Guidelines (WCAG) 2.0

Industry Canada Recommended Sufficient Techniques for Compliance



Title [2.4.2 A]

- Use the title element to provide meaningful and descriptive title to help users orient themselves

Skip navigation [2.4.1 A]

- Provide a link to skip to the content area (included in the template)

Language [3.1.2 AA]

- Use the `language` attribute in the HTML element (included in the template)
- Use `lang` attribute to indicate a change in language (e.g. `Français`)

Lists [1.3.1 A]

- Use `ol` for ordered lists, `ul` for unordered lists and `dl` for definitions

Headings [1.3.1 A]

- Use heading elements in proper sequence

Consistent Navigation [3.2.3 AA]

- Present repeated components in the same relative order each time they appear

Multiple ways to navigate [2.4.5 AA]

- Provide a sitemap, or a search in addition to links (in left navigation menu and content area) to navigate

Text [1.4.4 AA]

- Text must be scalable to 200%, using the browser to zoom, without loss of content or functionality
- Use relative font sizes e.g. `ems` in CSS

Links [2.4.4 A, 2.4.5 AA]

- Use meaningful links - provide link text that describes the purpose of the link [2.4.4 A]

Meaningful Sequence [1.3.2 A]

- Ensure the content would have the same meaning if all formatting was removed (e.g. removing all CSS but ensuring the tab order is the same)

Flashing Content [2.3.1 A]

- Ensure that no component of the content flashes more than three times in any 1-second period

Industry Canada Business Plan 2010-2011

Contents

- About Industry Canada
 - Mandate and Resources
 - People
 - Strategies and Outcomes
- Key Strategies and Business Objectives for 2010-2011
 - Strategy 1: Advancing the Marketplace Through Business Development
 - Strategy 2: Enhancing the Knowledge-Based Economy Through Research, Innovation, Training and Skills
 - Strategy 3: Supporting Businesses Through Policies and Programs that Promote Competitiveness and Productivity

About Industry Canada

Mandate and Resources

Industry Canada's mandate is to help make Canadian industry more productive and competitive in the global economy, thus improving the economic and social well-being of Canadians.

Total Departmental Human Resources for 2010-2011 by Key Strategy
(3279 full-time equivalents)

| Key Strategy | Percentage |
|---|------------|
| Advancing the Marketplace (29%) | 29% |
| Enhancing the Knowledge-Based Economy (51%) | 51% |
| Supporting Businesses (20%) | 20% |
| Strategic Studies (0%) | 0% |

Organization

Industry Canada has 19 offices and branches, each with its own responsibilities and expertise. In addition, the Department works closely with the 11 departments and agencies that make up the Industry Portfolio. Information about each sector and the Industry Portfolio partners can be found on the [Industry](#) website.

Industry Canada has its headquarters in Ottawa and has several other offices in the National Capital Region. The Department also has five regional offices, located in Vancouver, Edmonton, Toronto, Montreal and Halifax, as well as 10 sub-offices and numerous district offices. Regional offices allow the Department to benefit from local contacts and networks, and serve as the point of integration for Industry Canada's business in the regions. In addition, a number of programs have a regional presence, including those delivered by the Competition Bureau, Measurement Canada, the Office of the Superintendent of Bankruptcy, the Spectrum, Information Technologies and Telecommunications Sector and the Federal Economic Development Initiative for Northern Ontario (FedDev).

The map below shows the locations of Industry Canada's regional offices, sub-offices and district offices.

Where Do We Work?
(as of March 31, 2009)¹

| Region | Number of Employees ² | % |
|---------------------------|----------------------------------|-------------|
| British Columbia | 172 | 3.0% |
| Alberta | 116 | 2.0% |
| Saskatchewan | 36 | 0.6% |
| Manitoba | 78 | 1.3% |
| Ontario | 507 | 8.7% |
| Quebec | 260 | 4.4% |
| National Capital Region | 4525 | 77.3% |
| New Brunswick | 13 | 0.2% |
| Northern Territories | 6 | 0.1% |
| New Scotia | 78 | 1.3% |
| Newfoundland and Labrador | 28 | 0.5% |
| Prince Edward Island | 2 | 0.0% |
| Yukon Territory | 1 | 0.0% |
| Total | 5854 | 100% |

Source: Industry Canada, Human Resources Report (Performance Report 2008-09) (PDF, 1.1 MB, 56 pages)

1. Full-time data available.
2. Includes intermediaries, term and casual employees, but not students. Its employees were located in federal at time of reporting.
3. Before rounding = 0.034%
4. Before rounding = 0.017%

Simple Images [1.1.1 A]

- Only use images of text where absolutely necessary e.g. logos

Decorative Images [1.1.1 A]

- Use null alt text `` or apply image with CSS

Sounds [1.4.2 A]

- Sounds that start automatically turn off within 3 seconds or a button is provided to allow the user to stop the sound

Simple Images [1.1.1 A]

- Put `alt` attributes on images

Technologies

- Only technologies with WCAG 2.0 sufficient techniques can be used as a primary format (currently: HTML, CSS, SMIL, Flash and Scripting)
- Until there are sufficient techniques for PDFs available, PDFs require HTML equivalents

Complex Images [1.1.1 A]

- Put `alt` attributes on images
- Provide a link to a long description that is immediately adjacent to the image

Data Tables [1.3.1 A]

- Use proper table mark-up
- Use captions
- Use `headers` and `ids` for complex tables (two or more rows of headings)

Guideline

Only use tables for data, not for layout

Colour Contrast [1.4.3 AA]

- For text that is less than 18 point or 14 point bold
 - Contrast ratio must be 4.5:1 between text and background, including images
- For text that is greater than 18 point or 14 point bold
 - Contrast ratio must be 3:1 between text and background including images

Use of CSS [1.4.5 AA]

- Use CSS to style elements
- Do not include text in images

Image maps [1.1.1 A]

- Use `alt` attributes on area elements

Fieldsets [1.3.1 A]

- Provide a description for groups of form controls using fieldset and legend elements

Labels [2.3.1 A, 2.4.6 AA, 3.3.2 A, 4.1.2 A]

- Use the label element to associate form controls with text labels [3.3.2 A, 4.1.2 A]
- Ensure labels are descriptive [2.4.6 AA]
- Use labels, names and alt tags consistently for content that has the same functionality [2.3.1 A]

Grouping elements [1.3.1 A]

- Use the optgroup element to group option elements inside a select

Secret Question:

Location

Where were you born?

What street did you live on as a child?

What is your favourite vacation spot?

Favourites

What is your favourite sports team?

What is your favourite book?

Who was your favourite teacher?

Submit buttons [3.2.2 AA]

- A change to the page must be initiated by a submit button

Reference by size, shape, location or sound [1.3.3 A]

- If elements are referenced by shape, size, location or sound, ensure they are referenced in a way that they can be found without knowing the shape, size, location or sound

Create an account - Industry Canada Authentication - Windows Internet Explorer

Create an account - Industry Canada Authentication

Create an account

To access some areas of the site you need to have a username and a password. To learn more about registration, consult the [FAQ](#).

Required fields are marked with an asterisk (*)

Contact and Account Information

Please correct the following:

- Enter a valid email address (e.g. abc@company.com)
- Password and Confirm Password must be the same.

Contact Information

Name:

Email:

Account Information

* Username:

* Password:

* Confirm password:

* Secret Question:

* Answer:

Enter the words above:

☐ I have reviewed the above information and confirm that it is correct.

Use of Colour [1.4.1 A]

- Colour is not used as the only means to convey information

Error Suggestion [3.3.1 A, 3.3.2 A, 3.3.3 A]

- Indicate required fields that were not completed [3.3.1 A, 3.3.3 A]
- Provide a text description when the user provides information that is not in the list of allowed values [3.3.2 A]

Focus [2.4.3 A, 2.4.7 A]

- Elements receive focus in a meaningful order [2.4.3 A]
- Use default form elements to ensure focus is provided when users navigate to each element [2.4.7 A]

CAPTCHA [1.1.1 A]

- Provide a text alternative that describes the purpose of the CAPTCHA

Error Prevention [3.3.4 AA]

- If form is a legal transaction e.g. purchase or final submission:
 - Provide the ability for a user to review and correct answers before submitting or provide a checkbox in addition to a submit button
- If form causes information to be deleted:
 - Request confirmation to continue with selected action
- If form is a test:
 - Provide the ability for the user to review and correct answers before submitting

Parsing [4.1.1 A]

- Ensure pages validate to the doctype

```
<!DOCTYPE html>
<html lang="en">
<head>
  <title>Create an Account - Industry Canada Authentication</title>
  <meta charset="utf-8" />
  <link href="/css/external/external.css" rel="stylesheet" />
  <script src="/js/external/external.js" />
</head>
```

```
<!-- CONTENT TITLE -->
<title>Create an account</title>

<!-- CONTENT BODY -->
<div id="main">
  <div id="header">
    <div id="header-content">
      <div id="header-content-left">
        <div id="header-content-left-content">
          <div id="header-content-left-content-content">
            <div id="header-content-left-content-content-content">
              <div id="header-content-left-content-content-content-content">
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</div>
```

Mark-up [1.3.1 A]

- Use mark-up as intended - e.g. use of the strong element for emphasis, not bold

Keyboard Trap [2.1.2 A]

- Ensure users do not get trapped and are able to use the keyboard to navigate all elements on the page

Full Name:

Delivery Date:

Delivery Time:

Address:

Comments:

Calendar: April 2011

| Su | Mo | Tu | We | Th | Fr | Sa |
|----|----|----|----|----|----|----|
| | | | | | | |
| 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| 24 | 25 | 26 | 27 | 28 | 29 | 30 |

8.4 Success Criteria, Common Failures and Sufficient Techniques

8.4.1 Success Criteria

Under each guideline, there are Success Criteria that describe specifically what must be achieved in order to conform to this standard. They are similar to the "checkpoints" in WCAG 1.0. Each Success Criterion is written as a statement that will be either true or false when specific Web content is tested against it. The Success Criteria are written to be technology neutral.

All WCAG 2.0 Success Criteria are written as testable criteria for objectively determining if content satisfies the Success Criteria. While some of the testing can be automated using software evaluation programs, others require human testers for part or all of the test. (<http://www.w3.org/TR/UNDERSTANDING-WCAG20/intro.html#introduction-layers-head>)

8.4.2 Common Failures

Another support category is "Common Failures", which describe authoring practices known to cause Web content not to conform to WCAG 2.0. Although failures provide advisory information about certain authoring practices, authors must avoid those practices in order to meet the WCAG 2.0 Success Criteria. (<http://www.w3.org/TR/UNDERSTANDING-WCAG20/Overview.html>)

Each Failure scenario contains:

- Applicability: (which technology, scenario, and any other notes)
- Description: (rationale why this failure may occur)
- Examples: (case(s) where this failure commonly occurs)
- Resources: (if any)
- Related Techniques: (if any)
- Tests

8.4.3 Sufficient Techniques

Rather than having technology specific techniques in WCAG 2.0, the guidelines and Success Criteria themselves have been written in a technology neutral fashion. In order to provide guidance and examples for meeting the guidelines using specific technologies (for example HTML) the working group has identified sufficient techniques for each Success Criterion that are sufficient to meet that Success Criterion. Sufficient techniques are provided in a numbered list where each list item provides the technique or combination of techniques that can be used to meet the Success Criterion. When there are multiple techniques on a numbered list item connected by "AND" then all of the techniques must be used.

By separating the WCAG 2 normative guidelines document from the techniques used to meet the success criteria in those guidelines it is possible to update the list as new techniques are discovered, and as Web Technologies and Assistive Technologies progress.

Most Success Criteria have multiple sufficient techniques listed. Any of the listed sufficient techniques can be used to meet the Success Criterion.

"Sufficient techniques" are sufficient to meet a particular Success Criterion (either by themselves or in combination with other techniques). As new sufficient techniques are identified they will be added to the listing.

The latest "Editors Draft" of the "Techniques and Failures for Web Content Accessibility Guidelines" is available here:

<http://www.w3.org/WAI/GL/WCAG20-TECHS/>

Use of the techniques provided in this document makes it easier for Web content to demonstrate conformance to WCAG 2.0 success criteria than if these techniques are not used. (<http://www.w3.org/TR/WCAG20-TECHS>)

Each Technique scenario contains:

- Applicability: (which technology, scenario, and any other notes)
- Description: (the objective and rationale for this technique)
- Examples: (case(s) where this techniques occurs)
- Resources: (if any)
- Related Techniques: (if any)
- Tests:

If you are not sure about something, contact the CLF Centre of Expertise (CoE) for your department:

(<http://publiservice.tbs-sct.gc.ca/clf2-nsi2/clfce-censi-eng.asp>)

8.5 WCAG 2.0 Checklist

WCAG 2.0 Success Criteria Checklist (12 Guidelines, 38 Success Criteria)

| PRINCIPLE: PERCEIVABLE | | | |
|---|-------|-------|------|
| Guideline 1.1 Text Alternatives: Provide text alternatives for any non-text content so that it can be changed into other forms people need, such as large print, braille, speech, symbols or simpler language. | | | |
| 1.1.1 Non-text content (Level A) | Pass: | Fail: | N/A: |
| Guideline 1.2 Time-based Media: Provide alternatives for time-based media. | | | |
| 1.2.1 Audio-only and Video-only (Prerecorded) (Level A) | Pass: | Fail: | N/A: |
| 1.2.2 Captions (Prerecorded) (Level A) | Pass: | Fail: | N/A: |
| 1.2.3 Audio Description or Media Alternative (Prerecorded) (Level A) | Pass: | Fail: | N/A: |
| 1.2.4 Captions (Live) (Level AA) | Pass: | Fail: | N/A: |

| | | | |
|--|-------|-------|------|
| 1.2.5 Audio Description (Prerecorded) (Level AA) | Pass: | Fail: | N/A: |
| Guideline 1.3 Adaptable: Create content that can be presented in different ways (for example simpler layout) without losing information or structure. | | | |
| 1.3.1 Info and Relationships (Level A) | Pass: | Fail: | N/A: |
| 1.3.2 Meaningful Sequence (Level A) | Pass: | Fail: | N/A: |
| 1.3.3 Sensory Characteristics (Level A) | Pass: | Fail: | N/A: |

Guideline 1.4 Distinguishable: Make it easier for users to see and hear content including separating foreground from background.

| | | | |
|---|-------|-------|------|
| 1.4.1 Use of Color (Level A) | Pass: | Fail: | N/A: |
| 1.4.2 Audio Control (Level A) | Pass: | Fail: | N/A: |
| 1.4.3 Contrast (Minimum) (Level AA) | Pass: | Fail: | N/A: |
| 1.4.4 Resize text (Level AA) | Pass: | Fail: | N/A: |
| 1.4.5 Images of Text (Level AA) | Pass: | Fail: | N/A: |

PRINCIPLE: OPERABLE

Guideline 2.1 Keyboard Accessible: Make all functionality available from a keyboard.

| | | | |
|--|-------|-------|------|
| 2.1.1 Keyboard (Level A) | Pass: | Fail: | N/A: |
| 2.1.2 No Keyboard Trap (Level A) | Pass: | Fail: | N/A: |

Guideline 2.2 Enough Time: Provide users enough time to read and use content.

| | | | |
|---|-------|-------|------|
| 2.2.1 Timing Adjustable (Level A) | Pass: | Fail: | N/A: |
| 2.2.2 Pause, Stop, Hide (Level A) | Pass: | Fail: | N/A: |

Guideline 2.3 Seizures: Do not design content in a way that is known to cause seizures.

| | | | |
|--|-------|-------|------|
| 2.3.1 Three Flashes or Below Threshold (Level A) | Pass: | Fail: | N/A: |
| Guideline 2.4 Navigable: Provide ways to help users navigate, find content, and determine where they are. | | | |
| 2.4.1 Bypass Blocks (Level A) | Pass: | Fail: | N/A: |
| 2.4.2 Page Titled (Level A) | Pass: | Fail: | N/A: |
| 2.4.3 Focus Order (Level A) | Pass: | Fail: | N/A: |
| 2.4.4 Link Purpose (In Context) (Level A) | Pass: | Fail: | N/A: |
| 2.4.5 Multiple ways (Level AA) | Pass: | Fail: | N/A: |
| 2.4.6 Headings and Labels (Level AA) | Pass: | Fail: | N/A: |
| 2.4.7 Focus Visible (Level AA) | Pass: | Fail: | N/A: |

| | | | |
|---|-------|-------|------|
| PRINCIPLE: UNDERSTANDABLE | | | |
| Guideline 3.1 Readable: Make text content readable and understandable. | | | |
| 3.1.1 Language of Page (Level A) | Pass: | Fail: | N/A: |
| 3.1.2 Language of Parts (Level AA) | Pass: | Fail: | N/A: |

Guideline 3.2 Predictable: Make Web pages appear and operate in predictable ways.

| | | | |
|--|-------|-------|------|
| 3.2.1 On Focus (Level A) | Pass: | Fail: | N/A: |
| 3.2.2 On Input (Level A) | Pass: | Fail: | N/A: |
| 3.2.3 Consistent Navigation (Level AA) | Pass: | Fail: | N/A: |
| 3.2.4 Consistent Identification (Level AA) | Pass: | Fail: | N/A: |

Guideline 3.3 Input Assistance: Help users avoid and correct mistakes.

| | | | |
|--|-------|-------|------|
| 3.3.1 Error Identification (Level A) | Pass: | Fail: | N/A: |
| 3.3.2 Labels or Instructions (Level A) | Pass: | Fail: | N/A: |
| 3.3.3 Error Suggestion (Level AA) | Pass: | Fail: | N/A: |
| 3.3.4 Error Prevention (Legal, Financial, Data) (Level AA) | Pass: | Fail: | N/A: |

PRINCIPLE: ROBUST**Guideline 4.1 Compatible:** Maximize compatibility with current and future user agents, including assistive technologies.

| | | | |
|---|-------|-------|------|
| 4.1.1 Parsing (Level A) | Pass: | Fail: | N/A: |
| 4.1.2 Name, Role, Value (Level A) | Pass: | Fail: | N/A: |

SUMMARY

| | | |
|----------------------------------|-----|---|
| Level A Success Criteria passed | /25 | % |
| Level AA Success Criteria passed | /13 | % |
| Total Success Criteria passed | /38 | % |

9 ILMS Integration Quality Assurance Testing (IQA)

The goal of IQA is make sure anything (online course or any package put in the Knowledge Base) will be put on the ILMS Content server and will not affect the ILMS System Integrity. Below you will find a summary of the IQA done by the IQA group.

| Number | Test | Definition |
|--|---|--|
| M1 | The ability to launch the course through ILMS | This is to verify that the user can register and launch the course. |
| M2 | Multimedia elements | IQA Group reserves the rights to test any pages that contain multimedia elements. |
| M3 | Load Testing | Depending on the number of concurrent users that will attend that course, IQA Group reserves the rights to verify ILMS system performance against the course. |
| M4 | ILMS Tracking | Verify that all functionalities and all Stats under My Learning (My Enrollments, My Curricula, My Certifications and My Transcript) work properly. |
| Only for courses with objectives and SCORM Interactions | | |
| M5 | Objectives and Interactions | IQA Group will check the communication log and the I-LMS database to make sure that all interactions items and objectives are entered correctly in the database. |
| M6 | External Link | Make sure that all external links do not cause any problem with any SCORM tracking objects in ILMS. |
| M7 | Quit course button | Verify that the Quit functionality works properly against the SCORM tracking in ILMS. |