

**Technical Specifications for the Development of
Virtual Museum of Canada (VMC) *Virtual Exhibits*
Investment Program Products**

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www.virtualmuseum.ca
vmc.historymuseum.ca

Canada¹³¹

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A) Notes on terminology

MUST: This word indicates an absolute requirement.

MUST NOT: This phrase indicates an absolute prohibition.

NOT: This word indicates an absolute exclusion.

MAY: This word indicates an optional course of action that is neither required nor prohibited.

SHOULD: This word indicates a recommended course of action that may in some circumstances be ignored, the full implications of which must be understood before implementing such a course of action.

SHOULD NOT: This phrase indicates a course of action that is not recommended, but in some circumstances is permitted, the full implications of which must be understood before implementing such a course of action.

B) Accessibility

To ensure that the online products supported by the VMC investment program, including virtual exhibits, are accessible to the widest possible population, they **MUST** conform to the industry standard known as the Web Content Accessibility Guidelines (WCAG) 2.0, as defined by the World Wide Web Consortium (W3C).

These guidelines ensure that web content is accessible not only to those with “traditional” tools (such as a desktop computer and a web browser), but also to people with disabilities who may be accessing content using alternative methods, tools, and technologies.

WCAG 2.0 is based on four principles:

- the product must be **perceivable**
- the product must be **operable**
- the product must be **understandable**
- the product must be **robust**

Each principle has a number of guidelines and success criteria. The following is a general summary of these criteria. Links are provided to full descriptions as found on the official W3C [website](#). Applicant organizations are strongly encouraged to familiarize themselves with these guidelines as they will significantly impact the development of your online product.

1. The product must be PERCEIVABLE

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

- Text alternatives **MUST** be provided for any non-text content so that it can be changed into other needed forms, such as large print, braille, speech, symbols, or simpler language.

- Example: Alternative texts (Alt text/Alt tags) included to act as a textual replacement for their image **MUST** be rich, descriptive and sufficiently detailed to contextualize the image. They **MUST** describe the content of the image and the image's role on the page. Alternative text **MUST** be of a reasonable length; 125 characters or less is recommended.
- Example: Non-text content **MUST** also be available as a text-only mode alternative, and its presentation **MUST** be adapted to the user's device. Some user agents have limited support for non-text objects, and images may be shrunk by some user agents rendering them meaningless.
- Alternatives for time-based multimedia (such as video) **MUST** be provided.
 - Example: Audio-only clips **MUST** have text transcripts, video-only clips **MUST** have text transcripts, and synchronized multimedia (audio-video) clips **MUST** include synchronized captions as well as full text transcripts.
- Content **MUST** be created so that it can be presented in different ways without losing information or structure.
 - Example: Different types of information that are often encoded in the presentation **MUST** also be available so that they can be presented in other modalities. Information in a particular presentation **MUST** be embedded in such a way that the structure and information can be programmatically determined by assistive technologies and can be rendered in other formats, as needed by the user.
 - Example: All content **MUST** respond fluidly and adapt to the user's display size. Content **MUST** be structured and prioritized logically to facilitate access to and user interaction with all information. Content information **SHOULD** be reduced in size or length while preserving the richness of the user's mobile web experience. Essential information and structure **MUST NOT** be lost in the process. The use of tables **SHOULD** be avoided on limited screen sizes because they may force the user to scroll horizontally and vertically.
- Information **MUST NOT** be conveyed only with colour.
- The visual presentation of text and images of text **MUST** meet the minimum requirements for colour contrast as per the [W3C algorithm](#). Many tools are available to facilitate this effort, such as the [Colour Contrast Analyser](#).

Online products **MUST** comply with all success criteria up to and including WCAG 2.0 Level AA, related to the perceivable principle. Full details and success criteria can be found [here](#).

2. The product must be OPERABLE

User interface components and navigation must be operable.

- All functionality **MUST** be keyboard accessible. This requirement includes video and audio controls, navigational aids, and the means to fill in online forms.
- Any keyboard operable user interface **MUST** have a mode of operation where the keyboard focus indicator is visible.
 - Example: Online products **MAY** include navigational elements, such as breadcrumb trails. All levels of a navigational element **MUST** be represented and **MUST** be active, and each link **MUST** make sense on its own.

- Example: For mobile devices, if a breadcrumb trail is included, it **MUST NOT** take precedence over conveying the most important and relevant information first. Users **SHOULD NOT** have to scroll significantly to find the primary content of the page.
- Users **MUST** be provided enough time to read and use the content.
 - Example: Users **MUST** be able to complete tasks initiated within their own individual response times. Users with disabilities (such as blindness, low vision, dexterity impairments, and cognitive limitations) may require more time to read content or perform functions and may be accessing content through assistive technology.
- Content **MUST NOT** be designed in a way that is known to cause seizures.
 - Example: Web pages **MUST NOT** contain anything that flashes more than three times in any one-second period.
- Ways **MUST** be provided to help users navigate, find content, and determine where they are in virtual exhibits.
 - Example: To meet this requirement: apply consistent navigational elements; add links and targets to bypass blocks of content, such as navigation; and create link text that makes sense out of context.
 - Example: A descriptive page title **MUST** be provided to help identify content and **MUST** adjust to fit all screen sizes without being truncated. Navigation through the various fields, objects, and controls on the page **MUST** be presented in a logical order. This order **MUST** remain consistent and usable when keyboard tabulation order is used. Targets of links **MUST** be clearly identified. Links targeting resources **MUST** specify large sizes and non-textual formats so users can make an assessment before following the link.

Online products **MUST** comply with all success criteria up to and including WCAG 2.0 Level AA, related to the operable principle. Full details and success criteria can be found [here](#).

3. The product must be UNDERSTANDABLE

User interface operation and information must be understandable.

- Text **MUST** be readable and understandable. This is achieved by identifying the language the page is in, identifying text displayed in another language, and providing the expanded form or meaning of abbreviation/acronyms.

Note: This is a WCAG 2.0 Level AAA item that the VMC is including.

- Example: Text in other languages **SHOULD NOT** be used in alternative text and title elements.
- Example: Acronyms and abbreviations **MUST** be spelled out or marked up using the HTML <abbr> element.
- Example: For mobile devices, text **SHOULD** be clear and suitable for the screen size.
- Long and complex sentences or jargon are **NOT** appropriate for finding and understanding information.

- Web pages **MUST** appear and operate in predictable ways by providing consistent navigation and identification.
 - Example: On mobile devices, the site **MUST NOT** open multiple windows or pop-ups, create periodically auto-refreshing pages, or redirect pages automatically.
- Web pages **MUST** provide input assistance to help users avoid and correct mistakes.
 - Example: Labels on form controls **MUST** be worded clearly, sized properly for all screen sizes, and associated explicitly in the form control code. Labels **SHOULD** be displayed consistently and positioned close to form controls.
 - Example: For mobile devices, labels on form controls **MUST** be worded clearly, sized properly, and associated explicitly in the form control code. Labels **SHOULD** be displayed consistently and positioned close to form controls.

Online products **MUST** comply with all success criteria up to and including WCAG 2.0 Level AA, related to the understandable principle. Full details and success criteria can be found [here](#).

4. The product must be ROBUST

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

- Online products **MUST** be compatible with current platforms and browsers, including assistive technologies.
 - Example: The core content of a page **MUST** be accessible without images, JavaScript, style sheets, high-speed internet, or mice, and on platforms like text-only browsers and screen-readers.

Online products **MUST** comply with all success criteria up to and including WCAG 2.0 Level AA, related to the robust principle. Full details and success criteria can be found [here](#).

Further details, criteria, and techniques regarding WCAG 2.0 AA can be found on the W3C's [quick reference guide](#).

C) Best practices

The VMC expects all online products to be produced to the highest level of current web development standards and best practices. This includes the choices of technologies, programming languages, platforms, frameworks, coding techniques, and infrastructure and architecture plans.

The following sections detail specific technical best practices that are required for all online products.

1. Baseline principles

The programming techniques applied to online product development must reflect current industry standards and best practices.

1.1 Responsive design

Online products **MUST** be programmed using responsive web design principles, meaning there is a single version of the product with a fluid presentation layer that adapts to any screen size.

A responsive web design approach includes:

- delivering site pages to all devices with the same URL and the same content, but not necessarily the same structure
- a fluid grid design concept
- flexible images
- media queries and breakpoints

Online products can be developed using responsive HTML/CSS frameworks or responsive themes within a content management system (CMS).

1.2 Progressive enhancement

Online products **MUST** follow a web design approach based on progressive enhancement. The product **MUST** be developed for a basic level of user experience that all browsers will be able to provide when rendering the product, with more advanced functionality automatically available to browsers that can use it.

- Example: In certain circumstances, part of an exhibit could be developed using a non-text format that requires users to have a special plug-in or add-on installed in their browser. In this case, the information is likely unavailable to those using assistive technologies as well as some people using traditional platforms.
 - Create a simple HTML text version and include it as the default content in the same HTML page. This guarantees that all users will be able to use this part of the virtual exhibit. By additionally linking this page to an external JavaScript file that checks whether the browser has the appropriate version of the special plug-in or add-on, the page's HTML code can be dynamically modified by the JavaScript to load a special version offering a link to the HTML version. As a result, all users are presented with the version that their browsers support, a link to the other version of the content, as well as a link to download the needed plug-in.
- With a progressive enhancement design, content text and links placed near the top of a page are more accessible to search engines than content placed near the bottom of a page.

Users **MUST** be able to access the main version of the product first. The product **MUST NOT** be made accessible only through a secondary (such as text-only) version of the site or pages.

All experiences of the online product **MUST** be served from the same HTML structure, from the same website, and from the same set of URLs (for example, separate desktop and mobile URLs are **NOT** supported).

1.3 Client-side scripts

Client-side scripts **MUST** be provided as part of a modular design, be unobtrusive, be completely separate from page content and structure, and be referenced as external files from within a page's head element. Inline or embedded client-side scripts **MUST NOT** be used.

- Inline event handlers (such as onclick or onfocus) **MUST NOT** be used in the HTML layer. Event handlers **MUST** be dynamically written to the Document Object Model (DOM) using valid, unobtrusive, DOM-scripting techniques.
- If a third-party script cannot easily be implemented unobtrusively, permission to use inline scripts or script elements **MUST** be requested from the VMC.
- In the case of the use of scripts from a third party, a use case diagram and the versions of the active scripts **MUST** be provided to the VMC at the quality control stage.

In keeping with progressive enhancement principles, client-side scripts **MUST** test for and execute based on the user agent support for the critical DOM objects implemented in the scripts, as opposed to testing for user agent strings, or otherwise “browser sniffing.” This ensures that script execution will be based on the supported DOM objects or methods, not on the browser agent used (for example, supported feature detection instead of browser detection).

1.4 Script independence

The online product's core content and functionality **MUST** be available without client-side scripts.

Note: JavaScript is considered a client-side script.

1.5 CSS independence

The online product's core content and functionality **MUST** be available without Cascading Style Sheets (CSS) when accessed through a desktop browser. This does **NOT** apply to mobile devices because CSS **MUST** be enabled for mobile optimization in a responsive web design.

The following measures **MUST** be adopted:

- When CSS is not supported, the content **MUST** be presented in a logical reading/viewing sequence.
- The sequence of the content **MUST** be consistent with the presentation achieved with CSS. The sequence in which content is presented affects its meaning.
- All font sizes **MUST** be set using a relative measurement, such as `em` or percentage (`%`), to ensure text can be enlarged without losing information or without being truncated.
- When a background image is used, a background colour **MUST** also be set.

1.6 Code formatting

Semantic markup (`<h1>`, `<h2>`, ``, `<abbr>`, etc.) **MUST** only be used to convey meaning (for example, to convey the semantics) of content, rather than to add visual style to online products.

Note: Pages **MUST** be structured to include proper header element levels (H1 to H6) indicating the level or priority of the page title, page section, and subsection titles.

Developers **MUST** follow best practices for the correct code formatting wherever possible. This includes line breaks, indentation, grouping of lines of code, spaces between tags, etc.

Note: This requirement does not apply in the case of external third-party libraries, such as JQuery, or code that has undergone minification.

2. Baseline technologies

Technologies must be chosen to ensure that the online product's content will be available to the greatest number of visitors regardless of the technical configuration of their system or device.

2.1 HTML5

Online products and all their pages **MUST** use only [HTML5](#) for semantic mark-up and content structure on web pages. During the development cycle of the product and up until they go into production, only HTML5 tags supported by the latest versions of the major PC and Mac browsers currently in use (Internet Explorer 11+, Firefox, Google Chrome, and Safari) can be used as part of the VMC Investment Program.

Online products and all their pages, including mark-up generated or modified dynamically by client-side DOM scripts, **MUST** validate using the latest available W3C Markup Validation Service for HTML5.

Note: The VMC **MAY** require proof from the client that the product's HTML markup has been successfully validated before proceeding further with any technical evaluation. The W3C Mark-up Validation Service is available [here](#). This [W3C service](#) integrates with the [validator.nu](#) engine for HTML5 support.

2.2 Cascading Style Sheets (CSS)

Presentation and style (such as visual layout and design) **MUST** be applied using valid CSS CSS3.

- CSS3 cascading style sheets **MUST** be used as the main visual layout and design standard for the online product. Every browser does not have to show the same CSS presentation of the product's content. During the development cycle of products and up until they go into production, page presentation should be verified in the latest version of the current principal browsers (Internet Explorer 9+, Firefox, Google Chrome, and Safari).
- Pages of the online product **MUST** be organized so that the desktop version may be read without style sheets. To meet this requirement, all pages **MUST** be tested with CSS disabled to ensure that content is presented in a logical order when CSS are not supported. This does **NOT** apply to mobile devices because CSS **MUST** be enabled for mobile optimization in a responsive web design.
- For mobile devices, presentation and style **MUST** be adaptable to various media types using media queries and be dependent on supported features (for example, display resolutions, aspect ratios, width, height, and colour).

CSS **MUST** be completely separate from page content and structure, and be referenced as external files from within a page's `head` element. Inline or embedded styles **MUST NOT** be used.

- CSS rules called dynamically by client-side DOM scripts **MUST NOT** be written inline. Instead, class names **SHOULD** be dynamically added to the relevant HTML elements, thus invoking the associated CSS rules contained in an external style sheet.

2.3 Transport Layer Security (TLS)

Online products **SHOULD** use the Transport Layer Security (TLS) protocol throughout the site. Online products **MUST** use the TLS protocol when users are required to input a username and password.

Note: Permission **MUST** be obtained from the VMC for online products soliciting users for any personal information (name, address, email address, telephone number, credit card number, etc.) that will be stored by the product and kept for use by the institution responsible for the online product.

- It is not necessary to use TLS when gathering information through form-based email feedback, nor when soliciting a user's nickname only (for example, to store a high score in an online game).

On pages using TLS, all hyperlinks to pages that do not use this protocol **MUST** use relative URLs once the user has sent a request to stop using TLS (for example, logout after opening a session).

3. Deployment requirements

When an online product is deployed, directories, files, and URLs **SHOULD** be configured clearly, concisely, and logically. The following are the VMC requirements for online product deployment.

3.1 Character encoding

Every online product page **MUST** use and declare UTF-8 character encoding.

Note: For more information about character encoding and the meta charset attribute in HTML5, go to the [W3C Declaring character encodings](#) site.

3.2 Content management systems (CMS)

- A CMS is **NOT** mandatory.
- It is the institution's responsibility to keep its CMS up-to-date for the duration of the contract.
- All online products developed using a CMS **MUST** output HTML pages to the browser whose page source can be inspected for the various quality control stages.
- Online products developed using a CMS **MUST** meet all requirements stated in this document.

3.3 File directory structure

3.3.1 File and directory structure and naming

The file naming and directory structure of the publicly available files **MUST** be simple and clear, with concise naming and minimal repetition or duplication of files or directory names. It must also adequately convey the language of the site through proper naming conventions.

Publicly available product files (such as HTML, images, CSS, JavaScript) that are common to all language versions of the online product **MUST** be placed in unique directories located in the product's top or root level directory, and **MUST NOT** be duplicated for each language version of the product.

The naming conventions for files and directories depend on how the online product handles bilingualism:

The online product **MAY** have a language directory with all publicly available files and directories for the product underneath it. If this is the case:

- File and directory names **MUST** be in the language indicated by the language directory that they fall under.
- The online product **SHOULD** have a unilingual domain name (the same domain name for both languages of the virtual exhibit).
- Examples:
 - http://www.ontario.com/eng/the_people/before-2000/
 - http://www.ontario.com/fra/les_peuples/avant-2000/

The online product **MAY** have NO language directory that includes all publicly available files and directories for the product. In this case:

- If the online product has a unilingual domain name, the file and directory names under the language directory **MUST** be bilingual (contain both French and English in the name unless the name is a single word that has the same meaning in both languages).
- File and directory names under the language directory **MUST** end with the ISO-639-2 three-letter code (“fra” or “eng”) reflecting the language version of the file/directory.
- Examples:
 - http://www.ontario.com/les_peuples-the_people/avant_2000-before_2000-eng/
 - http://www.ontario.com/les_peuples-the_people/avant_2000-before_2000/les_jeunes-youth-fra.php
 - <http://www.ontario.com/province/sport/hockey/joueurs-players-eng.php>
 - <http://www.ontario.com/province/sport/hockey-fra/>
- If the online product has a bilingual domain name (a different domain name for each language), file and directory names under the language directory **SHOULD** be unilingual (named according to the language of the domain name unless the filename is a single word that has the same meaning in both languages).
- File and directory names under the language directory **MUST** end with the ISO-639-2 three-letter code (“fra” or “eng”) reflecting the language version of the file/directory.
- Examples:
 - http://www.nova-scotia.com/the_people/before_2000-eng/
 - http://www.nouvelle-ecosse/les_peuples/avant_2000-fra/

3.4 File and directory naming conventions

3.4.1 Characters

The names of publicly available files and directories **MUST** use only the following characters:

- lower-case letters (a–z)
- numbers (0–9)

The following characters **MUST** only be used under the following circumstances:

- A hyphen (-) **MUST** only be used as a separator between equivalent bilingual words, phrases, or abbreviations, and the ISO-639-2 three-letter code. Hyphens occurring naturally in words or phrases **MUST** be omitted, and the resulting space, collapsed (for example, “avant-garde” becomes “avant-garde”).
- An underscore (_) **MUST** only be used as the replacement for spaces occurring naturally in terms used for filenames (for example, “new events” becomes “new_events”).

3.4.2 Naming

The names of publicly available files and directories whose content is **NOT** the same in both French and English versions of online products **MUST** be descriptive and include some if not all of the following, based on the applicable situation as described in 3.3.1:

- a French word, phrase or abbreviation, followed by a hyphen and an equivalent English word, phrase or abbreviation, followed by a hyphen and the ISO-639-2 three-letter code (“fra” or “eng”) reflecting the linguistic version of the file
- a single word, phrase or abbreviation that is the same in both languages, followed by a hyphen and the ISO-639-2 three-letter code (“fra” or “eng”) reflecting the linguistic version of the file
- a single word, phrase or abbreviation in one language, followed by a hyphen and the ISO-639-2 three-letter code (“fra” or “eng”) reflecting the linguistic version of the file

Examples:

- index-fra.html
- index-eng.html
- entete-header-fra.html
- entete-header-eng.html
- logo-fra.jpg
- logo-eng.jpg
- liste_de_membres-members_list-fra.html
- liste_de_membres-members_list-eng.html
- lm-ml-fra.html
- lm-ml-eng.html

3.5 Home page URLs

URLs for online product home pages **MUST NOT** include any URL query string name/value parameters.

Note: Web site settings **SHOULD** be set so that the home page URL does not display the home page filename; it is simply the domain name of the site.

3.6 Relative URLs

All href links within the site **MUST** be relative (not absolute), except for URLs used in hyperlinks from TLS-secured pages to non-TLS-secured pages.

4. Technical considerations for specific content pages

The VMC requires that certain pages be included within online products and have consistent user interface and user experience features. The following are the VMC requirements for specific mandatory pages in your online product..

4.1 Copyright

4.1.1 Copyright statement

The product **MUST** include a full copyright statement identifying all rights holders for each language version.

4.1.2 Location

The notice of copyright **MAY** be placed in a section on copyright, on the Information page, or on a separate web page for copyright.

4.1.3 Symbol

In the case where the copyright symbol, ©, appears on every page of the online product the information page that hyperlinks to a page with the full copyright statement, the name of the copyright holder, the year in which the product was launched, and the statement “All Rights Reserved” **MUST** be included in the statement.

Example: © Museum of History 2013. All Rights Reserved.

Note: If the institution holding the copyright is officially bilingual, use the institution’s English name in the English version of the product, and the institution’s French name in the French version. If the institution is unilingual, use the same unilingual name in each language version. The lang attribute for HTML5 documents **MUST** be declared for a unilingual institution name on a page where another language is used.

4.2 Credits

4.2.1 Credits statement

The product **MUST** include a page with full credits for each language version.

4.2.2 Acknowledging the financial participation of the Government of Canada

The statement **MUST** acknowledge the financial participation of the Government of Canada as follows:

English:

This online exhibition was developed with the support of the Virtual Exhibits Investment Program, Virtual Museum of Canada. The Virtual Museum

of Canada is managed by the Canadian Museum of History, with the financial support of the Government of Canada.

French :

Cette exposition en ligne a été réalisée grâce au Programme d'investissement pour les expositions virtuelles du Musée virtuel du Canada. Le Musée virtuel du Canada est administré par le Musée canadien de l'histoire avec le soutien financier du gouvernement du Canada.

4.2.3 Links from the credits page

The Credits page **MUST** name and provide hyperlinks, if available, to all institutional partners involved with the online product.

4.3 Feedback mechanism

The online product **MUST** include a simple HTML form for audience feedback in each language version. The feedback form **MUST** be configured to send an email both to the institution responsible for the product, and to the VMC (at infovmc@historymuseum.ca for the English version of the product, and at infovmc@museedelhistoire.ca for the French version), with the product name clearly identified in the subject line.

The feedback form **MUST** be organized in a logical order. Requirements for the form are as follows:

- The form **MUST** include an email field, comments text area, and a submission button followed by a clear button
- Labels **MUST** be associated with their controls, and logical grouping of form elements **MUST** be contained with the <fieldset> with a <legend> for each group.

Users **MUST** be advised that their feedback messages are also being forwarded to the VMC, and be provided with a hyperlink to the VMC Privacy Policy (see the example below).

English message example:

Your comments will also be forwarded to the Canadian Museum of History (CMH), which has overall responsibility for the Virtual Museum of Canada (VMC), to be used as part of its audience research. Please see the VMC Privacy Policy for more information.

French message example:

Vos commentaires seront également acheminés au Musée canadien de l'histoire (MCH), qui a la responsabilité globale du Musée virtuel du Canada (MVC). Ils seront utilisés à des fins de recherche sur le public. Veuillez consulter la Politique du MVC sur la protection des renseignements personnels pour de plus amples renseignements.

English VMC Privacy Policy URL: <http://www.virtualmuseum.ca/important-notice/>

French VMC Privacy Policy URL: <http://www.museevirtuel.ca/avis-importants/>

Users **MUST** be advised of the privacy issues associated with sending feedback through email as follows:

English:

The Internet is a public forum and electronic information can be intercepted. For reasons of security and privacy, we ask that you not send us any personal or confidential information, such as your Social Insurance Number (SIN), home or business address.

French:

L'Internet est un forum public et l'information électronique peut être interceptée. Pour des raisons de sécurité et de respect de la vie privée, nous vous demandons de ne pas nous faire parvenir de renseignements personnels ou confidentiels, tels votre numéro d'assurance sociale, l'adresse de votre domicile ou de votre bureau.

4.4 Sitemap

4.4.1 Format

The online product **MUST** include a sitemap page for each language version (a hierarchically organized or nested list of hyperlinks to all major sections and pages of the product, at least two directory levels deep), presented in a format that uses text hyperlinks, as opposed to graphical hyperlinks or buttons. The sitemap **MUST** be hyperlinked from the Information page.

Note: To increase the ability of search engines to properly index all product pages, it is strongly suggested that the product also implement an [XML sitemap](#).

4.4.2 Location of sitemap

Every online product page **MUST** include a text hyperlink to the sitemap in the appropriate language to help ensure that human users and search engines can find every page of the product.

Note: For mobile devices, the hyperlink **MUST** appear after the page navigation elements leading to more prevalent content.

4.5 Navigation

4.5.1 Language navigation

The online product **MUST** include a unilingual home page for each language version of the product.

Every online product page **MUST** include a hyperlink to the product's other language version(s). This hyperlink **MUST** be visible without scrolling at a screen resolution of 1024 x 768 pixels, and it **MUST** direct the user to the same page in the other language.

Note: For mobile devices, the placement of this hyperlink **MUST NOT** take precedence over the main navigation options and important information content, and it **MAY** require scrolling to access this information.

4.5.2 Home page navigation

Every online product page **MUST** include a hyperlink to the unilingual home page in the relevant language.

Note: The home page hyperlink **MUST** be placed last in the navigation options for tablet and smartphone optimized versions of the product.

4.6 Secondary/pop-up windows

The online product **MUST NOT** open links in new windows or tabs except when:

- opening a page containing context-sensitive information (such as help instructions), or an alternate means of completing a form field (such as a calendar-based date picker) in the same window or tab will significantly disrupt a multi-step workflow (such as filling in and submitting a form);
- opening a page outside a secure session in the same window or tab will break or destroy the current secure session.

Note: Users **MUST** be warned if a link will open in a new window or tab.

Note: For mobile optimization purposes, pop-ups are **NOT** allowed.

4.7 Online product title

Every online product page **MUST** include the product's main title as HTML to identify the page's content as part of the product.

Note: Images **MAY** be used to replace the HTML text version of the product's main title but **MUST NOT** prevent assistive technologies from accessing the replaced text.

4.8 VMC logo

Every online product page **MUST** display the appropriate VMC logo image in the page's top right-hand corner, without any image border. Only language toggle links can be placed above the VMC logo. Items **MUST NOT** be found to the right of the VMC logo.

The VMC will provide a copy of the VMC logo upon request. Different versions of the logo are available for greater compatibility with various visual designs and for product versions optimized for smartphones. The VMC logo **MUST** be implemented using the following HTML code to load and hyperlink the logo image:

- Logos for desktop and tablets:
 - English: ``
 - French: ``
- Logos for smartphones:

- o **English:** ``
- o **French:** ``

Note: Replace the src attribute in the code above with the correct file path for the logo image used in the product.

The VMC logo image **MUST NOT** form part of a client-side image map or CSS background-image without the VMC's approval.

4.9 HTML title element

Every page of the online product **MUST** include, within its head element, a title element containing a meaningful and keyword-rich title that is no more than 60 characters in length and unique to that page's content. The title element **SHOULD** use the title of the page if it reflects the content of the page.

Note: As an important page element from the perspective of search engine optimization (SEO), the title element's content **MUST** be written in the language of the page, from most specific to least specific, with the unique page title coming first, the product's section title second, and the product's main title last, separated by a pipe character (|).

For HTML titles on unilingual pages, metadata **SHOULD** be in the language of the page. Syntax should be as follows:

```
<title>About Dr. Neville | Specialized Practitioners | Doctors in the North</title>
```

For HTML titles on bilingual pages, both French and English metadata **SHOULD** be entered in the same element. First enter the title in the primary official language of the province where the server hosting the online product resides, followed by the title in the other official language, separated by a pipe character (|). For example, the syntax should be as follows if the product is hosted on a server in Quebec:

```
<title>Musée virtuel du Canada | Virtual Museum of Canada</title>
```

4.10 Banners, headers and footers

Online products **MUST NOT** use corporate or institution-branded website navigational elements, such as banners, headers, or footers, without the VMC's approval.

5. Content types and formats

5.1 Plug-ins and specialized software

The use of a plug-in or special software to view interactive content **MUST** be considered a [progressive enhancement](#) of the main simple-text HTML version.

Note: A plug-in **MUST NOT** be used in place of standard formats available and supported by HTML5 and the major browsers (Internet Explorer 11+, Firefox, Google Chrome, and

Safari) or those of mobile devices for interactive display of content (e.g. MP4, MP3, WebM, Ogg, Wav, Canvas).

If any online product content still requires a plug-in or specialized software to be viewed, actions to ensure accessibility, indicate file type and size, and hyperlink to the source must be completed. The following subsections outline how to accomplish these actions fully.

5.1.1 Accessibility

A plug-in or specialized software capable of presenting the content **MUST** be freely available for all desktop platforms (such as Windows, Mac, and Linux) and for tablets and smartphones.

NOTE:When a plug-in is not available for a particular platform, a compatible plug-in or specialized software, such as VLC, **MUST** be presented. (VLC is an open-source multimedia framework that will play most formats on any platform and could be used as a substitute).

5.1.2 Indication of file type and size

All hyperlinks to content that require a plug-in or specialized software **MUST** be accompanied by a text indication of its file type and file size (for example, [PDF document \[PDF 188 KB\]](#)).

5.1.3 Hyperlink to source

A hyperlink to the source of relevant plug-in or specialized software **MUST** be provided on each page where a plug-in or specialized software is needed to access content.

5.2 Text

5.2.1 Format

All text-based content **MUST** be presented primarily as text in HTML.

Note: While all text-based content **MUST** be displayed as HTML, such content **MAY** additionally be developed in another format for viewing or printing with the use of plug-in software freely available for all platforms. An example of this type of format is Adobe's PDF, for which the Adobe PDF viewer, Adobe Reader, is available for all platforms. If the content is made available in another format (for example, Adobe PDF), this document **SHOULD** contain metadata and language declaration.

5.3 Still images

All still-image graphics **MUST** be optimized and enhanced for the web to reduce file size and download time. Multiple image versions and resizing techniques should be employed so that the specifications of the image file match the purpose for which it is being requested as closely as possible.

- Example: Image thumbnails should not simply be scaled-down versions of the full-sized file.

Note: Exemptions to this requirement may be granted by the VMC in certain situations when the use of proprietary solutions is needed to meet project objectives. In this case, the optimized product intended for tablets and smartphones **MUST** offer the choice to continue with a main simple text HTML version.

5.4 Video/animations/moving images

5.4.1 Format

Video files **MAY** be uploaded and streamed from video-sharing websites from a created user account or from the institution's existing account.

Note: If the video is hosted on the exhibit's site, the video files **MUST** be available in variable format sources (for example, MP4 and WebM formats) within the video element in order to be supported by various browser agents. Adobe Flash format **MUST NOT** be used.

5.4.2 Video player

Video files that are loaded into a browser-embedded player **MUST NOT** start automatically, and the player **MUST** include controls for starting, stopping, and replaying the video.

5.4.3 Indication of duration

Video files loaded in an integrated browser video player **MUST** be accompanied by a contextual indication of the duration of the video clip.

5.4.4 Advertising

Advertising **MUST NOT** appear with any video clip.

5.4.5 Notice

A notice **MUST** be presented to visitors whose browser does not support the required file or format, such as MP4, or the plug-in. The notice **MUST** provide a link to download the plug-in and **MUST** provide a link to the transcript.

5.5 Audio/sound

5.5.1 Format

Audio files **MUST** be available in variable source formats (for example, MP3, Wav, or Ogg) within the audio element in order to be supported by various browsers, including mobile browsers. For more information about audio formats and browser support, see this [HTML5 audio article](#).

5.5.2 Streaming audio

If an audio file is prepared for delivery via streaming, it **MUST** be adaptive so that the quality of the audio stream is adjusted in real time based on the user's bandwidth.

5.5.3 Audio player

Audio files that are loaded into a browser-embedded player **MUST NOT** start automatically, and the player **MUST** include controls for starting and stopping the audio.

5.5.4 Non-streaming audio

Non-streaming audio files that are loaded into a browser-embedded player **MUST** be accompanied by a direct hyperlink to the audio file itself, enabling users to access it without having to rely on the browser-embedded player. This requirement does **NOT** apply to the version optimized for mobile.

5.5.5 Indication of duration and size for streamed audio

All hyperlinks to streamed audio files **MUST** be accompanied by a text indication of the streamed file's duration and the file's size.

5.5.6 Notice

A notice **MUST** be presented to visitors who do not support the required plug-in or format (such as MP3). The notice **MUST** provide a link to download the plug-in and **MUST** provide a link to the transcript.

5.5.7 Advertising

Advertising **MUST NOT** appear with **any** audio clip.

6. Web analytics and metadata

6.1 Web analytics

Every page of the online product **MUST** include additional code to enable the collection of visitor statistics for the product.

Note: The VMC will provide directions for implementing the analytics code to enable visitor statistic collection.

6.2 Metadata

6.2.1 Required metadata elements

The following required metadata elements **MUST** be embedded in the HTML code of the page:

- meta description
- DC "title" element
- DC "creator" element
- DC "subject" element
- DC "issued" element
- DC "modified" element
- DC "language element "

6.2.2 Meta description

Meta description **MUST** appear in the head section (metadata block) of all unilingual home, landmark, and section pages of the exhibit.

The meta description element contains one or more meaningful and keyword-rich sentences describing the online product's content as a whole. The meta description often appears as a description in search

engine results, so it **MUST** be unique to the page in order to be helpful to users in determining the page's content.

The meta description **SHOULD** be around 170 characters long but **MUST NOT** exceed 200 characters, including spaces.

Meta description on unilingual pages:

- Metadata **MUST** be in the language of the page. Syntax should be as follows:

```
<meta name="description" content="A virtual exhibit about mountaineers. Learn how mountain climbers were drawn to explore, map, enjoy, and fight to conserve peaks and wilderness areas in south-western British Columbia." />
```

Meta description on bilingual pages:

- Both French and English metadata **MUST** be entered in the same element. Enter the French description first, followed by the English description, separated by a pipe character (|). Syntax should be as follows:

```
<meta name="description" content="Page d'accueil bilingue qui permet d'accéder au Musée virtuel du Canada dans la langue de son choix. | Bilingual splash page that provides access to the Virtual Museum of Canada in the language of your choice." />
```

6.3 DC metadata elements

The following six “Dublin Core” (DC) elements (DC title, DC creator, DC subject, DC issued, DC modified, and DC language) **MUST** be created following [Dublin Core Metadata Element Set, Version 1.1](#).

The following six elements **MUST** be included within the metadata block on the following pages:

- the online product's unilingual home pages
- the main page for every major section of the product
- pages featuring resources with sufficient context and meaning that are worth listing in a search engine

6.3.1 DC “title” element

The DC title element contains the exact title as it appears on the page (for example, “Doctors in the North”). For sub-pages of a resource, enter the title of the subpage only (not the section heading).

DC title on unilingual pages:

- Metadata **MUST** be in the language of the page. Syntax **MUST** be as follows:

```
<meta name="DC.title" content="Doctors in the North" />
```

DC title on bilingual pages:

- Create one DC title element containing the French title, and a second DC title element containing the English title. Syntax **MUST** be as follows:

```
<meta name="DC.title" content="Musée virtuel du Canada" /><meta
name="DC.title" content="Virtual Museum of Canada" />
```

6.3.2 DC “creator” element

The DC creator element contains the name of the person or organization responsible for creating online product content.

Separate subdivisions of the organization name using commas. Separate multiple organization names using semicolons (if more than one organization created the resource).

DC creator on unilingual pages:

- Metadata **MUST** be in the language of the page. Syntax **MUST** be as follows:

```
<meta name="DC.creator" content="Vancouver Art Gallery; Royal British
Columbia Museum" />
```

DC creator on bilingual pages:

- Create one DC creator element containing the French creator name, and a second DC creator element containing the English creator name (if there are different language versions of the name). Syntax **MUST** be as follows:

```
<meta name="DC.creator" content="Musée canadien de l'histoire" />
<meta name="DC.creator" content="Canadian Museum of History" />
```

6.3.3 DC “subject” element

The DC subject element identifies the topic of the resource, using terms selected from the Government of Canada Core Subject Thesaurus.

Select one or more values from the Government of Canada Core Subject Thesaurus. Be as specific as possible. The thesaurus can be consulted [here in English](#) and [here in French](#).

DC subject on unilingual pages:

- Metadata **MUST** be in the language of the page. Syntax **MUST** be as follows, including the title for the encoding scheme (gcore):

```
<meta name="DC.subject" title="gcore" content="Archaeology; Art
galleries" />
```

DC subject on bilingual pages:

- Create one DC subject element containing the French subject terms, and a second DC subject element containing the English subject terms. Syntax **MUST** be as follows, including the title for the encoding scheme (gcore):

```
<meta name="DC.subject" title="gcore" content="Exposition virtuelle;
Collection numérique; Site Web" />
<meta name="DC.subject" title="gcore" content="Virtual exhibitions;
Digital collections; Websites" />
```

6.3.4 DC “issued” element

The DC issued element identifies the date the resource was first published on the web. It never changes.

Enter a single date in YYYY-MM-DD format. If only the year and month are known, enter "01" for the day (for example, 2012-04-01). If only the year is known, enter "01" for both the month and the day (for example, 2012-01-01).

Syntax **MUST** be as follows, including the title for the encoding scheme (W3CDTF):

```
<meta name="DC.issued" title="W3CDTF" content="2012-01-01" />
```

6.3.5 DC “modified” element

The DC modified element identifies the date the resource was reposted to the web following a substantial revision. This element **MAY** be left empty except in the case of substantial revision.

Enter a single date in YYYY-MM-DD format. If only the year and month are known, enter "01" for the day (for example, 2012-04-01). If only the year is known, enter "01" for both the month and the day (for example, 2012-01-01).

Syntax **MUST** be as follows, including the title for the encoding scheme (W3CDTF):

```
<meta name="DC.modified" title="W3CDTF" content="2012-01-01" />
```

6.3.6 DC “language” element

The DC language element defines the language of the web page being described. Enter a single three-letter language code from encoding scheme ISO639-2/T.

Example: English=eng; French=fra

DC language on unilingual pages:

- Metadata **MUST** be in the language of the page. Syntax **MUST** be as follows, including the title for the encoding scheme (ISO639-2/T):

```
<meta name="DC.language" title="ISO639-2/T" content="fra" />
```

OR

```
<meta name="DC.language" title="ISO639-2/T" content="eng" />
```

DC language on bilingual pages:

- Create one DC language element containing “fra”, and a second DC language element containing “eng”. Syntax **MUST** be as follows, including the title for the encoding scheme (ISO639-2/T):

```
<meta name="DC.language" title="ISO639-2/T" content="fra" />  
<meta name="DC.language" title="ISO639-2/T" content="eng" />
```

D) Back-end

1. Response time

Online products **SHOULD** load reasonably quickly. A slow response time increases the bounce rate and decreases the average page views per visit.

Response time **SHOULD** also be reasonable for mobile devices. In addition, the size of content and downloads, the number of calls to the server, as well as page refreshes **MUST** be reduced as much as possible.

File sizes for all file types **MUST** be optimized. In particular, to produce the final image, audio and video files, settings must be used to optimize file size down to something reasonable for web consumption, given the media type.

2. Password protection

During online product development, the site **MUST** be password protected so that search engines and the general public cannot access the site. Password protection **MUST** be done at the server level, rather than programmatically.