GOVERNMENT
OF JAMAICA

DIGITAL MEDIA

STANDARDS MANUAL

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Overview

This document outlines standards and guidelines for implementing digital media solutions on behalf of the Government of Jamaica. The document is divided into three (3) sections with five compliance categories. The three sections are Web Standards Guide (WSG), Mobile Standards Guide (MSG), and Social Media Standards Guide (SMSG). Within each section, categories such as Visual Identity, Technical Standards, Artificial Intelligence, Security Standards and Search Engine Optimisation standards are further outlined.

The standards and guidelines are heavily referenced from the World Wide Web Consortium (W3C), the Common Look and Feel (CLF) Standards developed by the Treasury Board of Canada and other reputable sources.

This document is targeted to support those responsible for the planning, implementation, and maintenance of GOJ Digital Media not limited to Social Media, Websites, and Mobile Applications. Over time this document is expected to be updated to reflect the advances in technology.

1 - Background

“Thanks largely to the efforts of the World Wide Web Consortium (W3C), Internet accessibility has become a global issue that commands the attention of software and system designers during the development phase.” The standards outlined in this document are aligned to the W3C Web Content Accessibility Guidelines (WCAG), developed by the W3C and closely follow the Common Look and Feel (CLF) Standards developed by the Treasury Board of Canada.[1]

The standards outlined in this document represent a customization of the Canadian CLF Standards to fit the Jamaican environment. Other standards have also been reviewed and, where appropriate, used as guideposts in drafting this document.

The standards outlined in this document are intended to be both the de facto and de jury standards for GOJ Digital Media.

1.1 Definition

Digital Media is defined as any modern digital communication media. This extends from Websites, Social Media and Mobile.

1.2 Audience

This document contains digital media standards intended to support those responsible for the planning, implementation, and maintenance of GOJ Digital Media not limited to Social Media, Websites, and Mobile Applications.

It is expected that these standards will evolve as technology advances and the needs of users change.

[1] Reference to the Standard Web Accessibility https://www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=23601.

1.3 Related Documents

The GOJ Digital Media Standards Manual is broken into three sections: The Web, the Mobile, and the Social Media Standard Guides.

The Web Standards Guide(WSG) defines the rules that all Government of Jamaica sites should follow in order to be considered compliant. Various compliance categories and levels are defined and the individual rules are revised and expanded upon as user expectations and technology evolves over time.

The Mobile Standards Guide (MSG) outlines standards for all Government of Jamaica installable mobile applications. This guide will provide guidelines on standardizing the look and feel and recommendations for securing the application.

The Social Media Standards Guide (SMSG) provides the guidelines for all Government of Jamaica Social Media Accounts. This standards' guide aims to provide guidelines, tools and techniques towards communicating with your audience securely and efficiently.

1.4 Audience

The standards have been broken into five (5) categories:

1.4.1 Visual Identity Standards

The Visual Identity Standards represent the easiest to attain of the compliance categories and focus entirely on the presentation or "look and feel" of the site.

1.4.2 Technical Standards

The Technical Standards category represents the baseline expected in order to meet the accessibility and other common technical standards agreed to by the GOJ.

1.4.3 Artificial Intelligence (AI) Standards

The Artificial Intelligence category focuses on the standards and guidelines that will govern the continued demand for AI on Government sites and applications.

1.4.4 Security Standards

The Security Standards category focuses on the standards and guidelines based on international best practices towards ICT infrastructure security and privacy.

1.4.5 Search Engine Optimisation

The Search Engine Optimisation category focuses on the standards and best practices used on the world wide web and is aligned with the top search engines.

1.5 Media Subjected to Standards

The following media are subjected to the standards but should not be considered as an exhaustive list:

- All websites, web applications, mobile applications and portals developed for and maintained by the Government of Jamaica must adhere to these standards.
- Social Media Platforms utilized on the behalf of the Government of Jamaica.
- All the aforementioned Media produced on behalf of the Government of Jamaica should address all relevant areas of the Technical Standards, AI Standards and Security Standards where applicable.

1.5.1 Collaborative Arrangements or Strategic Alliance Standards

GOJ institutions participating in collaborative arrangements with other levels of government or the private sector face additional challenges in ensuring identity, presence and visibility meets the GOJ standards and guidelines.

WEB Standard Guide

2 - WEB Standard Guide (WSG)

2.1 Visual Identity Standards

These standards are specifically designed to assist in creating a common look, navigation experience and feel for all GOJ public facing web solutions regardless of the services rendered through them.

2.1.1 Page Layout Guidelines

GOJ Websites should adhere to common layouts where possible.

Table 1: GOJ Standard Page Layout

Page Sections	Rationale
GOJ Common Header	• Mandatory on all GOJ Websites • Entity logo across from the Government of Jamaica Flag and optional search bar displayed below the flag.
Horizontal Navigation Bar	• Recommended for site-wide major section navigation
GOJ Common Footer	• Mandatory on all GOJ Websites.
Content Area	• The primary area for content. This area can be placed within a container to provide enough margin from the left and right sides. Best Practice web design and typography should be adhered to.

Figure 1: Sample Full-width layout

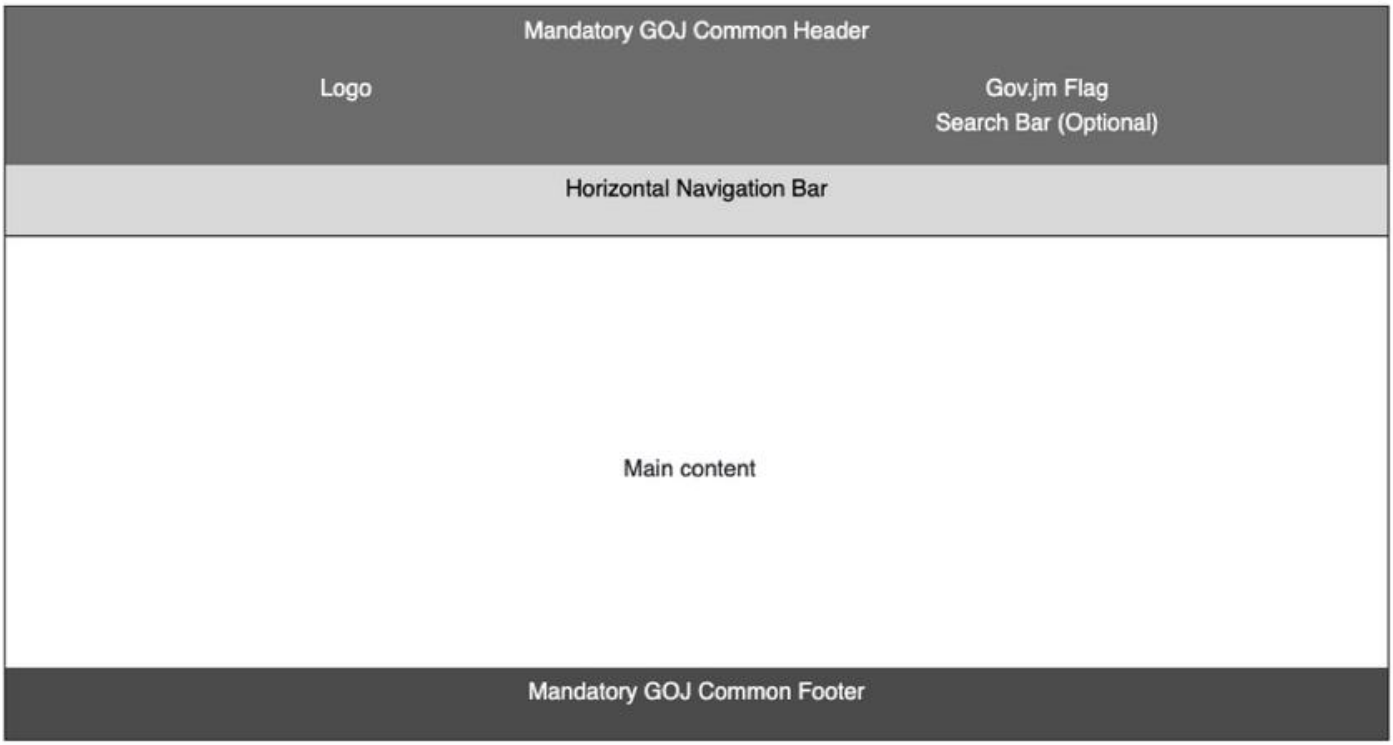
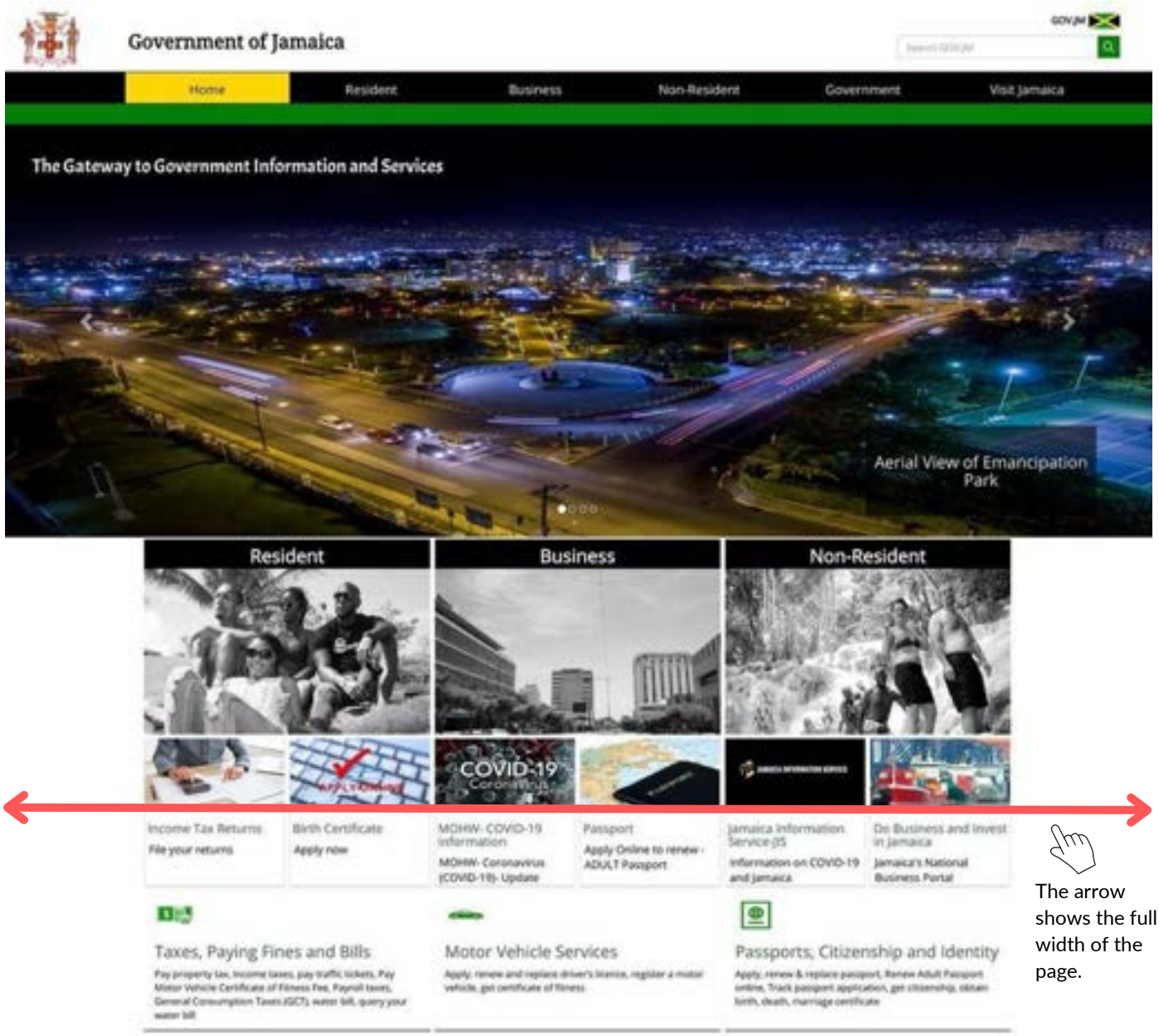


Figure 2: Exampe of Full-width layout.
Full-width Layout - The full-width layout is a more modern approach and tends to be more popular towards sites that focus more on visual appeal and scrollable content.



The arrow shows the full width of the page.

2.1.2 GOJ Common Menu Bar

All GOJ Web pages must include the common menu bar, placed at the top of every web page, to facilitate navigation through and between GOJ sites. Note that GOJ institutions must display the Jamaican flag thereby achieving a visual presence and balance between the government and its partners. One example might be a portal or gateway site. In other collaborative arrangements, the GOJ institution may have a lead responsibility. The institution may have funded the design, development and implementation of the site and may host the solution. Other participants may play a minor or limited role, for example as information sources. For such solutions, in case of web solutions the domain should be the gov.jm domain and all solutions should adhere to the CLF standards.

The GOJ menu option must be aligned as follows:

Mandatory GOJ Common Header

- Top Right: Link: GOV.JM, Flag
- Left: Logo of GOJ Entity
- Right: Search Bar (Optional)

Below Common Header

- Left: Navigation Menu
- Right: Additional Menus (Eg. Login, Sign in)

Requirement: Mandatory

Rationale:
The colour of the menu bar can be modified to accommodate the ministry or agency. The navigation links and dividers must be in a high contrast colour and must all be the same colour.

2.1.2.1 *Government of Jamaica & Flag Link*

The "Government of Jamaica" title to the left of the Jamaican flag must be hyperlinked to the url https://gov.jm with alt text being "GOV.JM Portal".

Requirement: Mandatory
Rationale:
The "Government of Jamaica" title and flag must be linked to https://www.gov.jm/ and have an alt attribute that reads "GOV.JM Portal".

Figure 3: Header for GOJ entity without logo.
Coat of arms to the left with the Title of the entity right of the coat of arms, below the title "A Department/Agency of" of the affiliated Ministry.

2.1.2.2 *Usage of the Coat of Arms*

The Coat of Arms is a national emblem and must be used within the guidelines stipulated by the Office of the Prime Minister (OPM). No object should be above or to the left of the Coat of Arms.

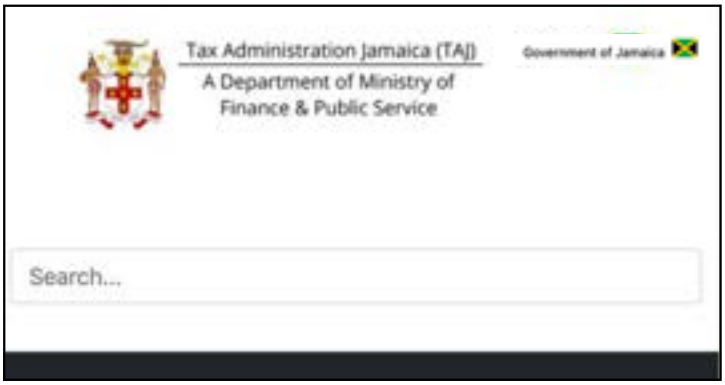
Requirement: Mandatory
Rationale:
In situations where the GOJ entity does not have a logo and chooses to use the Coat of Arms as a part of their logo or use otherwise, the minimum requirement is that the Coat of Arms emblem should be at the top of the page and **no other element or object should be above or before or to the left of the emblem**. For further usage instructions reference the guidelines as stipulated by the Office of the Prime Minister (OPM).

Figure 4: Header for GOJ Entity with existing logo.
Logo of entity and below the logo the title “A Department/Agency of” of the affiliated Ministry.

Figure 5: Header for GOJ Entity with logo inclusive of the Coat of Arms

Figure 6: Logos that are vertically long can add “A Department/Agency of” to the right of the logo as shown below:

Figure 7: Mobile Responsive Representation of Common Header.
In mobile ready view the logo should not be above the GOV.JM and the Flag or should anything be above the flag and/or the Coat of Arms.



2.1.3 Home

All GOJ sites must have a "Home" link that will return the user to the main page of the local institutional site.

2.1.4 About Us

All GOJ sites must have an "About Us" link to a page with descriptions of the institutional mandate.

2.1.5 Contact Us

All GOJ sites should provide relevant contact information, including information that could accommodate those with disabilities or special needs. The contact information provided should be in the context of where a user is on the Web site.

- Institutions should establish service standards or refer to existing institutional service standards. Service standards should be provided to the user upfront so that they understand the process and know what to expect, i.e. response time for service delivery.

- Ensure proper implementation of acknowledgements

2.1.6 Search

All GOJ sites must be search enabled.

- This button should link to search and retrieval systems that enable users to obtain information on a particular subject on said GOJ website.
- Provide detailed help on how to search the information on your site with examples of how to conduct both a simple and an advanced search.
- Provide links to the other levels of searching within your institution e.g. Department or Agency.

2.1.7 Pages Exempt from Common Menu Bar

CLF Standards are mandatory on all HTML navigation pages of GOJ Web sites.

In the case of downloadable versions of documents that are in non-HTML formats such as **.pdf**, **docx** and **jpg** the implementation of the menu bars is not required.

2.2 Common Footer

CLF Standards are mandatory on all HTML navigation pages of GOJ Web sites.

Requirements: Mandatory

Rationale:
It is useful to establish a standard marker that signifies users have reached the end of any given Web page. A Standard GOJ Footer will ensure common utilities and sources for information.

Figure 8: Footer Layout

The GOJ menu footer must include:

- **Center aligned:**
  Inline aligned links to Privacy Policy, Terms of Use and Contact

- **Right aligned:**
  Government of Jamaica Link with flag to https://gov.jm

- **Center aligned below links and Government of Jamaica link:**
  Copyright © <CURRENT YEAR> Government of Jamaica. All Rights Reserved.

Figure 9: Mobile Responsive Representation of Common Footer
In mobile ready view the GOV.JM and the Jamaican flag should be above the content as represented below.

2.2.1 Copyright/Permission

All GOJ websites must include a Copyright for the current year in the footer of all web pages.

- Anyone wishing to reproduce materials from an institutional website requires permission. Instead of responding to individual requisitions for permission, institutions should provide a notice to the public indicating the terms and conditions on which the materials on the site may be reproduced without further permission from the author institution. In fact, a copyright notice without a permission notice leaves the user in the position of not being able to reproduce the materials without infringement of copyright.

- In exceptional circumstances, institutions may wish to prohibit the reproduction of some materials posted on their sites. Such institutions should carefully examine their reasons for prohibiting the commercial redistribution of these materials. If the institution's primary interest is in facilitating the widest possible dissemination of its information, commercial redistribution should not be prohibited. Rather, commercial redistributors should be required to attach a notice to their reproductions to the effect that the materials are available in their original form from a GOJ website.

- Finally, it is important to consider adequate protection for third-party copyright materials and graphical elements on GOJ websites. Generally, it is preferable for institutional websites to provide links to third-party materials, rather than host them directly. An institution that hosts non-governmental copyright materials that are subject to prohibitions on reproduction really has no meaningful way of ensuring that the third-party copyright is respected. In such cases, a "third-party copyright" notice should be provided that indicates the conditions for reproduction of non-governmental copyrighted content.

2.2.2 Privacy Policy

All GOJ websites must adapt the following Privacy Policy guidelines and should be linked at the bottom of all GOJ web pages.

Requirement: Mandatory

Rationale:
The Privacy Policy assures end-users that information automatically acquired through a visit to any GOJ site will not be used other than for the express purposes of web maintenance and security.

All GOJ websites must include a Privacy Policy, whenever web pages provide an opportunity for users to input personal information to ensure that they are informed of the conditions under which their personal information will be protected and data subjects should be allowed to give consent for use of their data.

One of the differences between electronic communications and paper-based communications is that it may not be obvious to the individuals involved whether or not personal information is being collected in the course of any specific interaction. For these reasons, every website must include a Privacy Policy, even if no personal information is collected through that site.

A statement must appear next to the text requiring the personal information, for example, an application form or survey, etc. informing individuals how the personal information will be used, which parts of the form are discretionary or mandatory, how long the personal information will be kept, where it will be kept (which Personal Information Bank) and how they can obtain access to their information.

Privacy Policy **Shall** Include:

Identification of the organization and how it can be contacted, including the name or position title of the person to contact with any website privacy concerns.

- A statement explaining that should the user choose to provide personal information through e-mail or other means, such information will only be used for the specific purposes for which it has been provided (e.g. to respond to a specific request), or where required by law, how long it is kept, where it is kept and how to obtain access and request corrections.
- A statement that non-identifiable or statistical information may be collected for audit purposes, for use in maximizing effectiveness, or for another purpose specified here, if this is the case.
- An explanation of any security use of information for purposes such as tracking suspected intrusions or the source of a computer virus, or controlling access to the system
- A statement concerning whether cookies, or any other data, is placed on the user's machine, and how they are used
- A description of any privacy-enhancing technologies in use or available for use such as the Public Key Infrastructure (PKI) or Secure Socket layer (SSL).
- Links to other sites not covered by this privacy policy
- Any specific institutional policy on collecting information from children online

Institutions should also remind users that, unless specifically noted otherwise, neither electronic systems nor e-mail is a secure information transmission method, and that it is not recommended that sensitive personal information be transmitted electronically.

The Privacy Policy must provide enough detail to allow users to understand what information will be collected and when, and to make an informed decision concerning whether to remain at the site or to make their data available to be stored.

In some circumstances, institutions may use an outside service provider as a webmaster and may provide a link for sending a message to the webmaster. In those circumstances, the outside service provider must be under a contractual obligation to treat any personal information as though it were covered by the Privacy Policy as established by these standards. In addition, the institution must make it clear to users that they are sending information outside the institution.

Privacy Policy Statement Checklist Indicates:

1. That all personal information provided is protected under the Privacy Policy as established by these Standards
2. Under what authority the personal information is being collected
3. Why is personal information being collected?
4. What personal information is collected automatically?
5. On input forms, which parts are mandatory and which are discretionary
6. How is personal information collected automatically?
7. How long the personal information will be kept
8. When the cookie will expire if cookies are used
9. How users can gain access to their personal information
10. How users can correct their personal information
11. Contact Information

2.2.3 Help

All GOJ websites must have a Help Page.

Requirement: Mandatory

Rationale:
Help pages provide users with assistance in order to ensure that they are able to use your website as intended.

Help pages should:

- Provide an overview of any Accessibility features that are available on your site. e.g. Access Keys, personalization.
- Describe what formats are available throughout your site (for example, PDF files).
- Provide a link to technical help for problems with the website or for users who are having problems accessing the information on the website, i.e. link to the webmaster's e-mail.
- Provide a link to the "Contact Us" page on the Web site.
- Provide site-specific help information as well as links to the institution's more general help, a link should be either in the top navigation or footer of the site.

2.2.4 Date Indicator

All GOJ content pages that is validated by the currency of its content must have a date indicator to signal to users that they have reached the end of that page and to signify the currency of the content.

Requirement: Mandatory

Rationale:
All currency indicators must use the ISO standard for all-numeric date display (YYYY-MM-DD eg. 2022-04-25) or the GOJ standard for all alphanumeric date display (DDth/st/nd/rd MMMM YYYY eg.10th April 2022) and use one of the following formats: Date published, Date modified, or Last updated.

The date indicator informs the users of the date of the original posting (issuance or publication) to the Web site or the date of the last update (modification) of the resource. Because of its positioning at the bottom of the page, the date indicator can also signal to the users that they have reached the end of that page.

As GOJ sites are increasingly used to obtain valid, accurate and up-to-date information for personal and professional use, it is vitally important that GOJ institutions provide clear date indicators for the resources placed on their Websites.

The standard provides for two kinds of dates: “Date published” and “Date modified”. The dates must be represented in the ISO all-numeric date standard YYYY-MM-DD. The two dates are defined as follows:

- “Date published” is the date of formal issuance (i.e., posting to the Web site) of the resource.
- “Date modified” is the most recent date on which the document was substantially changed and re-posted to the Web site. “Last updated” is alternative wording. Use of “Date modified” is preferred.
- Either ‘Date published’ or ‘Date modified’ must be used, as applicable in accordance with the definitions above.

2.3 Disclaimers

Where externally sourced information, i.e., third-party information, is hosted on the institutional Web site, a liability disclaimer must be directly attached to the externally sourced information and should describe the type of information to which the disclaimer applies, i.e., databases, documents.

Requirement: Mandatory

Rationale:
Institutions that choose to host or make links to externally sourced information on their Web sites must protect themselves from liabilities associated with the accuracy or reliability of such information.

However, institutions are cautioned against the overuse of disclaimers as they have the tendency to discredit the product and the information source. If a disclaimer is used it must be directly attached to the externally sourced information and must describe the information to which the disclaimer applies.

The following are examples of disclaimers:

- Third-party information hosted on the institutional Web site:
  - This information has been provided by an external source. Although every effort has been made to ensure the accuracy, currency and reliability of the content, [name of institution] does not offer any guarantee in that regard.
-
- For links to other Web sites not under the control of the institution:
  - This link is provided solely for the convenience of [department] Web site users. [Institution] is not responsible for the information found through this link.

2.4 Institutional Menus

GOJ entities are free to develop additional secondary menu systems as required. Entities with many websites or many levels of the content may need this additional navigation assistance. Such secondary menus may be located in the left column of Content Pages. They may incorporate a more graphic or visually thematic approach to displaying navigation options than is used in the mandatory menu. Secondary menus should be designed with the appropriate attention to accessibility concerns and should visually complement the overall Web page layout.

2.5 Logos and Symbols

GOJ Web sites must not display third-party icons, symbols or logos that represent the products and services of private enterprises or individuals, except where exemptions are made within the context of partnership/collaborative arrangements and the use of approved symbols for government-wide use.

Requirement: Recommended

Rationale:
The GOJ disallows the creation or continuance of unfair competitive advantage in the private sector through the endorsement of private interests. As well, the GOJ must be sure to avoid making or implying an endorsement of an individual, company, organization or product.

Trademarks, logos, professional certifications, special file formats, and software plug-ins may be important to a specific audience; however, the use of associated icons can be perceived to constitute an endorsement.
Otherwise, the use of symbols and logos is allowed in collaborative arrangements.

2.6 Formatting Guidelines

GOJ Web sites must not display third-party icons, symbols or logos that represent the products and services of private enterprises or individuals, except where exemptions are made within the context of partnership/collaborative arrangements and the use of approved symbols for government-wide use.

Requirement:
Formatting Guidelines are not mandatory with respect to this policy but are provided to help institutions carry out government policy efficiently and effectively.

Rationale:
The following style sheet techniques should be used to control layout and presentation.

- Use style sheets for text formatting rather than converting text to images. For example, stylised text on a coloured background can be created with style sheets instead of as an image. This provides flexibility for people to view the text in a form that is most readable to them including magnified, in a particular colour combination such as white on black, or in a particular font.
- Use style sheets rather than invisible or transparent images to force layout.
- Use style sheets instead of deprecated presentation elements and attributes that control visual presentation (elements {BASEFONT, CENTER, FONT, S, STRIKE, and U}. attributes {"align," "background," "bgcolor," "colour," and "face"}. Authors are encouraged to use elements (such as strong, em, h1, h2, abbr, etc.) that add structure to documents.
    - Each new release of the major graphical browsers includes more and better support for the CSS guidelines. Many CSS commands especially for font effects, simple margins etc., have been well supported since level 4 graphical browsers. More advanced CSS support is being developed. CSS markup must be used to replace the deprecated <FONT> tag in any case.
    - Examples: N/A
    - Reference: W3C Cascading Style Sheets (easy reference http://www.w3.org/Style/CSS/) or W3C
    - CSS Validator (easy reference http://jigsaw.w3.org/css-validator/)

2.7 Website Design

All Websites must be professionally designed and must utilize a modern intuitive design that is user-friendly and adheres to the Common Look and Feel guidelines.

Requirement: Mandatory

Rationale:
Effective design results from careful consideration of several elements: colour, space, imagery, typography and layout. While Web technologies offer new opportunities for creativity, there are distinct benefits to be gained in communication, identification, navigation and content through standardization of some design elements. When applied across a large group of related Web sites, design standards increase visual recognition by end-users and lead to stronger associations between various GOJ institutions.

In keeping with good design principles, the common look and feel Web page layout guidelines observe practices developed to maintain consistent, professional and highly cognitive relationships between all elements on each Web page.

Effective use of space is crucial to good information design. Effective use of white space in the left-hand column, along with a fixed width for content space, reinforces visual recognition of GOJ sites. Consistent use of labels, line width, Web page layout, etc., will further enhance visual recognition of GOJ sites and make it easy for users to locate exactly what they are looking for. Carefully coded Cascading Style Sheets are the most efficient means of achieving this standard, but simply coded tables may also be used to establish the placement of elements.

Example: N/A
References: Accessibility Standard 3.1.7

2.8 Contact Information

2.8.1 Contact Information

All GOJ Web sites must provide users with a means of contacting institutions / individuals via electronic mail options.

Requirement: Mandatory

Rationale:
While GOJ and affiliated Web sites are an excellent means of providing information to Jamaicans and the world at their convenience, it is important that individuals also be given the opportunity to contact a specific institution, operational area or individual when they need additional information or support. Electronic mail is an effective alternative to personal contact via the telephone or in-person visits, but it has inherent challenges.

Example: The e-mail address supplied as a link from the 'Contact' button/link on the common menu bar is one way the user can contact the institution. Another means would be a feedback form provided under the 'Help' button located on the same common menu bar.

When personal information is being collected, users must be informed of their rights and responsibilities and the obligations of the institution regarding its protection. Although contact forms are generally represented on a separate page on Web sites, they are subject to the same CLF standards regarding the identification of the institution and accessibility requirements.

2.8.2 Email

Institutions must include appropriate identification information in all electronic correspondence.

Requirement: Mandatory

Rationale:
By standardizing the look and feel (content and format) of electronic forms on all GOJ websites, this initiative will make it easier for individuals using electronic media to make contact with public servants from any institution. Emails should include the following contact information: Name, Title, Ministry/Agency, Physical Address, Telephone, Facsimile, Email Address and URL.

In situations in which e-mail is sent not by a specific individual, but rather by a service or program office (i.e. Webmaster@webmaster.com) institutional contact information should still be made available.

Example:

Individual, John Doe
Webmaster
Ministry of Science, Energy & Technology
2nd Floor PCJ Building
36 Trafalgar Road, Kingston 10, Jamaica, W.I.
Tel (876) 960-1623
jdoe@mset.gov.jm www.mset.gov.jm

Or Institutional
Webmaster
Ministry of Science, Energy & Technology
2nd Floor PCJ Building
36 Trafalgar Road, Kingston 10, Jamaica, W.I.
Tel (876) 960-1623
webmaster@mset.gov.jm www.mset.gov.jm

2.8.3 Forms

Forms should include fields for the user's name, E-mail address, and mailing address, as well as a field where they can input comments, questions, or requests for information. Additionally, users should be given the opportunity to indicate their preferred method of receiving a response.

Requirement: Recommended

Rationale:
The use of mailto tools has become a widely used convention on the Web and is an excellent means of enabling end-users to make quick comments about specific web pages or topics. These tools offer several benefits in that users do not have to input their personal information because the message header automatically includes their addressing information, a date stamp, and various other pertinent information. They can also easily be tailored to include the URL of the originating Web page in the subject line.

Mailto tools also have several disadvantages. Firstly, the client's browser must be configured to send E-mail (most systems are configured in this manner), and because all text is free-text input, it cannot be validated. The tool lacks an automatic confirmation or acknowledgment function, meaning there is no way to inform users that their correspondence has been received. To facilitate universal accessibility, the Internet address that MAILTO responses will be delivered to should be made visible for users who cannot utilize this function. Although this will open up that address to SPAM, the risk is unavoidable.

HTML forms are not, in and of themselves, inaccessible. What the programmer/page author does with them determines the accessibility of the end product.
Elements of an inaccessible form:

- Complex visual layout and placement of controls and fields
- Badly explained requirements

- Field/control labels separated from and not clearly associated with their controls
- Client-side scripting to perform entry validation or completion
- No alternative method of posting information provided (e.g. no e-mail contact provided, no phone number to call for help, etc.)
- Elements of an accessible form:
- Simple (e.g. single column) layout of controls and entry fields
- Clear (meaningful) explanations or labels associated with fields and controls
- Appropriate use of HTML mark-up specifically intended to enhance accessibility (e.g. LABEL, OPTGROUP, etc.)
- Server-side verification and validation of data entry
- Provision of alternate methods of contact/submission

The oldest assistive technologies can handle well-designed HTML forms. The trick is to get page designers to keep them simple and on the server-side.

2.8.4 Encrypted Form Data

All Forms that are used for collecting Personal Identifiable Information (PII) and/or Sensitive Personal Information must use End-to-end encryption (E2EE).

Requirement: Mandatory

Rationale:
Data that falls within the category of Personal data and/or Sensitive personal data[2] should be protected with a high level of priority. Protecting this data from malicious attacks or unlawful exposure must be in keeping with the data protection Act.

Reference: Data Protection Act, 2020

2.9 Domain Naming

2.9.1 Primary Domain

A GOJ institution's primary site and any related sub-sites must use a .gov.jm domain designation. This includes sites that could be described as primarily related to program delivery and / or the provision of corporate information.

Requirement: Mandatory

Rationale:
All government sites irrespective of whether or not they have a **gov.jm** domain name must apply all mandatory GOJ Web Standards.

[2] Defined in Data Protection Act, 2020 – Section 2. (Interpretation & Objects)

2.9.2 Formatting of Domain Names

Government of Jamaica domain names must adhere to the following domain naming convention: www.organization.gov.jm

Requirement: Recommended

Rationale:
Organizations that consist of several sub-organizations may have multiple domain names. These domains may be used to define the sub-organizations and thus permit the reorganization of the domains without incurring dramatic changes throughout the ministries or departments.

F**or Example:**
The Ministry of Education, Youth and Information domain would be **https://moey.gov.jm/** while the sub-components of Education, Youth and Information may each maintain their own domains of: www.education.gov.jm, www.youth.gov.jm, and www.information.gov.jm.

2.9.3 Collaborative Arrangements or Strategic Alliances

GOJ organizations must ensure that websites that represent a collaborative arrangement acknowledge their participation by prominently displaying the Jamaican Flag according to the regulation governing its use, on each web page pertaining to the collaboration, thereby achieving a visual presence and balance between the government and its partners.

Requirement: Mandatory

Rationale:
Collaborative sites with others, such as NGOs, the private sector, etc. should have a different domain designation than gov.jm, such as .jm, .org.jm or .com.jm (e.g. organization-name.gov.jm/). On these sites, appropriate GOJ Web Standards as they relate to the technical standards still apply to the GOJ contribution.

2.10 Mobile Ready Guidelines

All public facing GOJ websites must be fully mobile ready. Mobile Ready refers to accessibility of a website designed to adjust the dimensions of the website in accordance with the form factor of the mobile device that is being used to view the said site.

The major goals for mobile-ready/responsive sites are as follows:

- Ensure accessibility on mobile devices
- Ensure it is appropriately adjusted to small, medium, and large device screens
- Ensure there is a functional or adjusted Navigation appropriate for Mobile Users
- Ensure that touch functionalities are available and adapted; such as on-hover to long hold or press.
- Ensure overall functionality of the site is maintained.

Use of Grid/Column Layouts:

With modern HTML and CSS helpers such as Bootstrap[3], creating responsive and standardized web pages is easier than ever. Bootstrap and other similar solutions have comparable structures with slightly different syntax.

Bootstrap uses six breakpoints and each breakpoint can be broken up into 12 columns:

- Extra small (xs)
- Small (sm)
- Medium (md)
- Large (lg)
- Extra large (xl)
- Extra extra large (xxl)

[3] Reference: https://getbootstrap.com/docs/5.0/layout/grid/

Figure 10: An example of breakpoints and class prefix syntax.

	xs <576px	sm ≥576px	md ≥768px	lg ≥992px	xl ≥1200px	xxl ≥1400px
Container `max-width`	None (auto)	540px	720px	960px	1140px	1320px
Class prefix	`.col-`	`.col-sm-`	`.col-md-`	`.col-lg-`	`.col-xl-`	`.col-xxl-`
# of columns	12					

The table outlines mobile device resolutions and the corresponding breakpoints for mobile responsiveness based on Twitter's Boostrap v4 (https://getbootstrap.com/docs/4.0/layout/grid/).

2.11 Technical Standards[4]

These standards explain how to make web content universally accessible to all users, including those people with disabilities, regardless of the user agent they are using (e.g., desktop browser, voice browser, mobile phone, automobile-based computers, etc.) or constraints they may be operating under (e.g., noisy surroundings, under-or over-illuminated rooms, in a hands-free environment, etc.). Adhering to these standards will facilitate better Search Engine Optimization and better overall user experience on GOJ sites.

All GOJ Websites must conform to the mandatory standards to ensure the site can be easily accessible by the widest possible audience.

2.11.1 Mandatory Standards

2.11.1.1 Text Equivalents

Provide a text equivalent for every non-text element.

Requirement: Mandatory

Rationale:
Text equivalents are necessary for all users who cannot or choose not to browse graphic, video or audio information. Text equivalents are also used by search engines. They describe the purpose and function of all non-text content, including images, text graphics, symbols, image maps, animations, applets, objects, ASCII art, frames, scripts, graphical bullets, spacers, graphical buttons, sounds, stand-alone audio files, video audio files and video clips.

[4] Reference all W3 checkpoints here: https://www.w3.org/TR/WAI-WEBCONTENT/checkpoint-list.html

Example:

"alt" tags, "longdesc", or in element content. for images, graphical representations of text (including symbols), image map regions, animations (e.g., animated GIF's), applets and programmatic objects, ASCII art, frames, scripts, images used as list bullets, spacers, graphical buttons, sounds (played with or without user interaction), stand-alone audio files, audio tracks of video, and video.

Reference: W3C Checkpoint 1.1
https://www.w3.org/TR/WAI-WEBCONTENT/full-checklist

2.11.1.2 Font Types

All GOJ sites are required to web safe fonts and font-families. The use of web safe fonts is the easiest way to guarantee a consistent user experience.

Requirement: Mandatory

Rationale:
Standard font types have been proven to be quite user friendly and readable. It also ensures that all GOJ sites meet the w3 standards. CSS font stacks or Font Families allows the web developer to give several font backups to the browser.

All browsers have a default font they'll render if, for some reason, they can't load your website's font file. You can delay this process by using a series of web-safe fonts in your font stack.

Table 3: A list of web-safe fonts recommended to be used.

Font Family	Fonts
Sans-Serif	• Arial • Arial Black • Verdana • Tahoma • Trebuchet MS • Impact • Helvetica
Serif	• Times New Roman • Didot • Georgia • American Typewriter
Monospaced	• Andalé Mono • Courier • Lucida Console • Monaco
Google Fonts	• Roboto • Open Sans • Poppins • Montserrat

Reference: https://www.w3.org/Style/Examples/007/fonts.en.html

2.11.1.3 *Server-Side Image Maps*

Provide redundant text links for each active region of a server-side image map.

Requirement: Mandatory

Rationale:
Some user agents, such as text-only browsers, do not recognize server-side image maps. The links hidden in the server-side image map must also appear as a set of text links on the same page.

Example: The links hidden in the server-side image map must also appear as a set of text links on the same page.

Reference: W3C Checkpoint 1.2
https://www.w3.org/TR/WAI-WEBCONTENT/full-checklist

2.11.1.4 *Colour*

Ensure that all information conveyed with colour is also available without colour, for example from context or markup.

Requirement: Mandatory

Rationale:
People with colour deficits and those using monochrome displays must be able to access all information on the Web site. This includes text, images and navigation directions

When designing a document or series of documents, content developers should strive first to identify the desired structure for their documents before thinking about how the documents will be presented to the user. Distinguishing the structure of a document from how the content is presented offers a number of advantages, including improved accessibility, manageability, and portability.

Identifying what is structure and what is presented may be challenging at times. For instance, many content developers consider that a horizontal line communicates a structural division. This may be true for sighted users, but to unsighted users or users without graphical browsers, a horizontal line may have next to no meaning. For example, in HTML content developers should use the HTML heading elements (h1-h6) to identify new sections. These may be complemented by visual or other cues such as horizontal rules, but should not be replaced by them.
Reference: W3C Checkpoint 2.1

2.11.1.5 Colour Contrast

Ensure that foreground and background colour combinations provide sufficient contrast when viewed by someone having colour deficits or when viewed on a monochrome screen.

Requirement: Mandatory

Rationale:
All text and images that convey information must be visible when viewed by someone having colour deficits or when viewed on a monochrome display.

Example:
CSS Technique - Use numbers, not names, for colours:

- h1 {colour: #808000}
- h1 {colour: RGB (50%,50%,0%)} Deprecated example.
- h1 {colour: red}

Reference: W3C Checkpoint 2.2

2.11.1.6 Bitmap Images

When an appropriate mark-up language exists, use mark-up rather than images to convey information.

Requirement: Mandatory

Rationale:
Bitmapped graphics used in place of text present accessibility problems because the text will be distorted when magnified.

Text in images may be used if:

- the text is serving a graphical function, as in the case of a logo;
- the text effect cannot be achieved with a cascading style sheet; and
- if a text equivalent is provided for the image.

Example: N/A

Reference: W3C Checkpoint 3.1

2.11.1.7 Valid Documents

Create documents that validate published formal grammars.

Requirement: Mandatory

Rationale:
All GOJ websites must validate against XHTML 1.0 Transitional or higher

Validating to a published formal grammar and declaring that validation at the beginning of a document lets the user know that the structure of the document is sound. It also lets the user agent know where to look for semantics if it needs to.

Design documents for compatibility and accessibility. Choose W3C-approved technologies, use languages to specification and apply standard software conventions to control the behaviour and activation of user interface components. By using mark-up according to specification, content developers promote consistency, compatibility and accessibility, and maximize the effectiveness of indexing tools, search engines and navigation tools.

Example: N/A

Reference: W3C Checkpoint 3.2

2.11.1.8 Style Sheets

Use style sheets to control layout and presentation. Consider using a helper framework such as Bootstrap v4 or higher.

Requirement: Mandatory

Rationale:
Cascading Style Sheets (CSSs) separate style from mark-up and allow precise control over fonts, spacing, numbering, alignment and positioning of text and other content elements. This prevents the misuse of HTML tags, reduces the size of files, enhances the usability of reading browsers and allows users to override author styles through a user style sheet. CSSs also support aural style sheets that specify properties such as volume and background sounds. Because some browsers either do not support or do not implement CSSs consistently, developers must verify CSS styles through a tool such as the W3C CSS Validator and ensure that documents and presentation features are accessible when style sheets are turned off or not supported.

Example: N/A

Reference: W3C Checkpoint 3.3 and https://getbootstrap.com/docs/4.0/layout/grid

2.11.1.9 Units

Use relative rather than absolute units in mark-up language attribute values and style sheet property values.

Requirement: Mandatory

Rationale:
All sizes in style sheets and attributes must use either percentages or “em”.

Pixels, points and other absolute dimensions are only allowed for media such as a print style sheet

It is recognized that one exception to this rule is permissible – the width of a page container or the width of a column within the page container may be defined using fixed units.

Example: N/A
Reference: W3C Checkpoint 3.4

2.11.1.10 Headings

Use header elements to convey document structure and use them according to specification.

Requirement: Mandatory

Rationale:
The proper use of headings helps separate content from structure, which is one of the core techniques of Web site accessibility. Heading elements must not be used only to create formatting effects. Heading level increments must be used correctly and in order. User-agents navigating documents through headings look for heading mark-up to create an outline of a page. If headings are used incorrectly, the outline will be confusing. Use CSS for general font sizing and effects.

Long documents are often divided into a variety of chapters, chapters have subtopics and subtopics are divided into various sections, sections into paragraphs, etc. These semantic chunks of information make up the structure of the document.

Sections should be introduced with the HTML heading elements (H1-H6). Other mark-ups may complement these elements to improve presentation (e.g., the HR element to create a horizontal dividing line), but the visual presentation is not sufficient to identify document sections.

Since some users skim through a document by navigating its headings, it is important to use them appropriately to convey document structure. Users should order heading elements properly. For example, in HTML, H2 elements should follow H1 elements, H3 elements should follow H2 elements, etc. Content developers should not “skip” levels (e.g., H1 directly to H3). Do not use headings to create font effects; use style sheets to change font styles for example.

Example: Note that in HTML, heading elements (H1 - H6) only start sections, they don’t contain them as element content. The following HTML mark-up shows how style sheets may be used to control the appearance of a heading and the content that follows:

```
<head>
<title>Cooking techniques</title>
<style type=”text/css”>
/* Indent heading and following content */
div.section2 { margin-left: 5% }
</style>
</head>
<body>
<h1>Cooking techniques</h1>
... some text here ...
<div class=”section2”> <h2>Cooking with oil</h2>
... text of the section ...
</div>
<div class=”section2”>
<h2>Cooking with butter</h2> ... text of the section ...
 </div>
```

Reference: W3C Checkpoint 3.5 3.1.10

2.11.1.11 Lists

Markup lists and list items properly.

Requirement: Mandatory

Rationale:
The HTML list elements DL, UL, and OL should only be used to create lists, not for formatting effects such as indentation.

Ordered lists help non-visual users navigate. Non-visual users may “get lost” in lists, especially in nested lists and those that do not indicate the specific nest level for each list item. Until user agents provide a means to identify list context clearly (e.g., by supporting the ‘: before’ pseudo-element in CSS2), content developers should include contextual clues in their lists.

For numbered lists, compound numbers are more informative than simple numbers. Thus, a list numbered “1, 1.1, 1.2, 1.2.1, 1.3, 2, 2.1,” provides more context than the same list without compound numbers, which might be formatted as follows:

1.
    1.
    2.
        1.
    3.
2.
    1.

and would be spoken as “1, 1, 2, 1, 2, 3, 2, 1”, conveying no information about list depth.

Example:
The following CSS3 style sheet shows how to specify compound numbers for nested lists created with either UL or OL elements. Items are numbered as “1”, “1.1”, “1.1.1”, etc.

<!-- Code-->
<style type=”text/css”> ul, ol { counter-reset: item } li { display: block }
li:before { content: counters(item, “.”); counter-increment: item } </style>
<!-- End Code-->

Reference: W3C Checkpoint 3.6

2.11.1.12 Quotations

Mark up quotations. Do not use quotation markup for formatting effects such as indentation.

Requirement: Mandatory

Rationale:
<blockquote> must not be used for formatting effects such as indentation. A screen reader, for example, interprets a <blockquote> as a verbatim quotation. This can cause the user to misinterpret the content of the text.

Example: N/A

Reference: W3C Checkpoint 3.7

2.11.1.13 Natural Languages

Clearly identify changes in the natural language of a document's text and any text equivalents (e.g., captions).

Requirement: Mandatory

Rationale:

If you are using another language in the document, indicate the change through markup (e.g. "lang" attribute in HTML; "xml:lang" in XML). The markup is used by Braille readers, reader browsers and translating machines to interpret and render natural language characters, pronunciation and translation. Changes in language include the "Language Choice" button on GOJ Welcome pages and on the Common Menu Bar.

Identifying changes in language are important for a number of reasons:

- Users who are reading the document in Braille will be able to substitute the appropriate control codes (markup) where language changes occur to ensure that the Braille translation software will generate the correct characters (accented characters, for instance). These control codes also prevent Braille contractions from being generated, which could further confuse the user. Braille contractions combine commonly used groups of characters that usually appear in multiple cells into a single cell. For example, "ing" which usually takes up three cells (one for each character) can be contracted into a single cell.

- Similarly, speech synthesizers that “speak” multiple languages will be able to generate the text in the appropriate accent with proper pronunciation. If changes are not marked, the synthesizer will try its best to speak the words in the primary language it works in. Thus, the French word for car, « voiture » would be pronounced “voter” by a speech synthesizer that uses English as its primary language.

- Users who are unable to translate between languages themselves, will be able to have unfamiliar languages translated by machine translators.

Example:
And with a certain je ne sais quoi, she entered both the room, and his life, forever.

<q>My name is Natasha,</q> she said. <q lang=”it”>Piacere,</q> he replied in impeccable Italian, locking the door.

Reference: W3C Checkpoint 4.1

2.11.1.14 Table Headers

For data tables, identify row and column headers.

Requirement: Mandatory

Rationale:
The proper mark-up of tables, including rows, data cells and nested tables, is required to ensure that tables are read correctly by browsers and devices. Screen readers, for example, use mark-up to correctly interpret both the structure of the table and the relationships between headings, columns, rows and data.

Example:
This example shows how to associate data cells (created with TD) with their corresponding headers by means of the “headers” attribute. The “headers” attribute specifies a list of header cells (row and column labels) associated with the current data cell. This requires each header cell to have an “id” attribute.

<table border=”1”
summary=”This table charts the number of cups of coffee consumed by each senator, the type of coffee (decaf or regular), and whether taken with sugar.”>
<caption>Cups of coffee consumed by each senator</caption>
<th id=”header1”>Name</th>
<th id=”header2”>Cups</th>
<th id=”header3” abbr=”Type”>Type of Coffee</th>
<th id=”header4”>Sugar?</th>
<tr>

<td headers=”header1”>T. Sexton</td>
<td headers=”header2”>10</td>
<td headers=”header3”>Espresso</td>
<td headers=”header4”>No</td>
<tr>
<td headers=”header1”>J. Dinnen</td>
<td headers=”header2”>5</td>
<td headers=”header3”>Decaf</td>
<td headers=”header4”>Yes</td> </table>

A speech synthesizer might render the preceding table as follows:

Caption: Cups of coffee consumed by each senator

Summary: This table charts the number of cups of coffee consumed by each senator, the type of coffee (decaf or regular), and whether taken with sugar.

Name: T. Sexton, Cups: 10, Type: Espresso, Sugar: No

Name: J. Dinnen, Cups: 5, Type: Decaf, Sugar: Yes

Reference: W3C Checkpoint 5.1

2.11.1.15 *Avoid Tables for layout*

Do not use tables for layout unless the table makes sense when linearized. Otherwise, if the table does not make sense, provide an alternative equivalent (which may be a linearized version).

Requirement: Mandatory

Rationale:
Style sheets must be used for the layout and positioning of content elements. However, when it is necessary to use a table for layout, the contents of the table must be understood when the cells become a series of paragraphs.

Example: N/A
Reference: W3C Checkpoint 5.3

2.11.1.16 *Avoid Tables for Format*

If a table is used for layout, do not use any structural mark-up for the purpose of visual formatting.

Requirement: Mandatory

Rationale:
Stylesheet mark-up must be used for layout, positioning and formatting of text in cells. Do not use table elements that are intended to convey semantic meaning simply to emphasize text. The inappropriate use of table elements, such as <TH>, may cause unexpected results in some Web devices.

Example:
The TH (table header) element is usually displayed visually as centred, and bold. If a cell is not actually a header for a row or column of data, use style sheets or formatting attributes of the element.

Reference: W3C Checkpoint 5.4

2.11.1.17 Order Style Sheets

Organize documents so they may be read without style sheets. For example, when an HTML document is rendered without associated style sheets, it must still be possible to read the document.

Requirement: Mandatory

Rationale:
Some browsers either do not support or do not implement CSSs consistently. Developers must verify CSSs through a tool such as the W3C CSS Validator and ensure that documents and presentation features are accessible when style sheets are turned off or not supported.

Example:
See http://www.w3.org/TR/WCAG10-CSS-TECHS/#style-transform-gracefully for examples.

Reference: W3C Checkpoint 6.1

2.11.1.18 *Update Dynamic Content*

Ensure that equivalents for dynamic content are updated when the dynamic content changes.

Requirement: Mandatory

Rationale:
Text descriptions of dynamically changing visual items, e.g. a timed series of images depicting a tourist attraction, must be kept up to date and synchronized with the content.

Example: N/A
Reference: W3C Checkpoint 6.2

2.11.1.19 *Programmatic Objects*

Ensure that pages are usable when scripts, applets, or other programmatic objects are turned off or not supported. If this is not possible, provide equivalent information on an alternative accessible page.

Requirement: Mandatory

Rationale:
Programmatic objects include scripts, applets, and other plug-ins that provide content and navigation features on the page. Redundant functionality must be provided through HTML or equivalent.

Example: N/A
Reference: W3C Checkpoint 6.3

2.11.1.20 *Event Handlers*

For scripts and applets, ensure that event handlers are input device-independent.

Requirement: Mandatory

Rationale:
Use the <NOSCRIPT> element to ensure that all users have access to the information that would be provided if their Web device does not support event triggers.

Do not write event handlers that rely on mouse coordinates since this prevents device-independent input.

Example: N/A
Reference: W3C Checkpoint 6.4

2.11.1.21 *Accessible Dynamic Content*

Ensure that dynamic content is accessible or provide an alternative presentation or page.

Requirement: Mandatory

Rationale:
An alternative presentation for dynamic content, including frames and scripts that cause changes, is required to make Web pages accessible. In the case of frames, the source of each frame must be in HTML or in another W3C-approved language. For scripts, <NOSCRIPT> elements are needed. Where scripts are implemented, use the <NOSCRIPT> element.

The LINK element may also be used to designate alternative documents. Browsers should load the alternative page automatically based on the user's browser type and preferences. For example, use the LINK element as follows:

User agents that support LINK will load the alternative page for those users whose browsers may be identified as supporting "aural"," Braille", or "tty" rendering.

<!-- Begin Code -->
<HEAD>
<TITLE>Welcome to the Virtual Mall!</TITLE>
<LINK title="Text-only version" rel="alternate" href="text_only"
media="aural, Braille, tty">
</HEAD>
<BODY><P>...</BODY>
<!-- End Code -->

Reference: W3C Checkpoint 6.5

2.11.1.22 Flickering

Avoid causing the screen to flicker.

Requirement: Mandatory

Rationale:
A flickering or flashing screen may cause seizures in users with photosensitive epilepsy and content developers should thus avoid causing the screen to flicker. Seizures can be triggered by flickering or flashing in the 4 to 59 flashes per second (Hertz) range with a peak sensitivity at 20 flashes per second as well as quick changes from dark to light (like strobe lights).

Example: N/A
Reference: W3C Checkpoint 7.1

2.11.1.23 Blinking

Users must be provided with a mechanism on the page or through a CSS to stop content from blinking.

Requirement: Mandatory

Rationale:
Until user agents allow users to control blinking, avoid causing content to blink (i.e., change presentation at a regular rate, such as turning on and off).

Example: N/A
Reference: W3C Checkpoint 7.2

2.11.1.24 Moving Content

Avoid movement in pages.

Requirement: Mandatory

Rationale:
Screen readers are unable to read moving text. People with physical disabilities might not be able to move quickly or accurately enough to interact with moving objects. Provide a mechanism within a script or applet to allow users to freeze motion. The movement created through CSS scripting allows users to turn off or override movement more easily.

Note. The BLINK and MARQUEE elements are not defined in any W3C HTML specification and should not be used.

Example: N/A
Reference: W3C Checkpoint 7.3

2.11.1.25 *Auto-Refreshing Pages*

Do not create periodically auto-refreshing pages.

Requirement: Mandatory

Rationale:
The automatic refreshment of pages can be disorienting to users. Alternatives include using the server to generate HTTP-appropriate redirection codes or providing a static page that informs users that they should refresh the page often or that they should go to the URL of the updated page.
Example: N/A
Reference: W3C Checkpoint 7.4

2.11.1.26 *Redirected Pages*

Do not use mark-up to redirect pages automatically. Instead, configure the server to perform redirects.

Requirement: Mandatory

Rationale:
The automatic refreshment of pages can be disorienting to users. Alternatives include using the server to generate HTTP-appropriate redirection codes or providing a static page that informs users that they should refresh the page often or that they should go to the URL of the updated page.

Example:

Content developers sometimes create pages that refresh or change without the user requesting the refresh. This automatic refresh can be very disorienting to some users. Instead, in order of preference, authors should:

1. Configure the server to use the appropriate HTTP status code (301). Using HTTP headers is preferable because it reduces Internet traffic and download times, it may be applied to non-HTML documents, and it may be used by agents who requested only a HEAD request (e.g., link checkers). Also, status codes of the 30x type provide information such as “moved permanently” or “moved temporarily” that cannot be given with META refresh.
2. Replace the page that would be redirected with a static page containing a normal link to the new page.

Deprecated Example

The following HTML example (using the META element) forwards the user from one page to another after a timeout. However, users should not redirect users with this mark-up since it is non-standard, it disorients users, and it can disrupt a browser’s history of visited pages.

<head>
<title>Don’t use this!</title>
<meta http-equiv=”refresh” content=”5;
http://www.example.com/newpage”>
</head>
<body>
<p>If your browser supports Refresh, you’ll be transported to our
<ahref=”http://www.example.com/newpage”>ne w site in 5 seconds, otherwise, select the link manually.
</body>

Reference: W3C Checkpoint 7.5

2.11.1.27 *Embedded Objects*

Make programmatic elements such as scripts and applets directly accessible or compatible with assistive technologies.

Requirement: Mandatory

Rationale:
When an embedded object, such as a video object control panel, has its own interface, the interface must be accessible. If the interface of the embedded object cannot be made accessible, an alternative form of the content of the object must be provided.

Example: N/A

Reference: W3C Checkpoint 8.1
For further information about accessible interfaces, please consult W3C's User Agent Accessibility Guidelines (http://www.w3.org/TR/WAI-USERAGENT/)and Authoring Tool Accessibility Guidelines (http://www.w3.org/TR/WAI-AUTOOLS/).

2.11.1.28 *Client-Side Image Maps*

Provide client-side image maps instead of server-side image maps except where the regions cannot be defined with an available geometric shape.

Requirement: Mandatory

Rationale:
Client-side image maps can be made accessible by using "alt" attributes for all links within the map. Server-side maps are not accessible to all users.

When a server-side image map must be used, content developers should provide an alternative list of image map choices. There are three techniques:

- Include the alternative links within the body of an OBJECT element.
- If IMG is used to insert the image, provide an alternative list of links after it and indicate the existence and location of the alternative list (e.g., via that “alt” attribute).
- If other approaches don’t make the image map accessible, create an alternative page that is accessible.

Server-side and client-side image maps may be used as submit buttons in Forms.

Example:

```
<a
href=”http://www.example.com/cgi-
bin/imagemap/my-map”>
<img src=”welcome.gif” alt=”Welcome! (Text links
follow)” ismap /></a>
<p>[<a href=”reference.html”>Reference</a>]
[<a href=”media.html”>Audio Visual Lab</a>]
```

Reference: W3C Checkpoint 9.1

2.11.1.29 *Element Interfaces*

Ensure that any element that has its own interface can be operated in a device-independent manner.

Requirement: Mandatory

Rationale:
Authors must not assume that all users will be using the same input device. Input devices include pointer devices, keyboards, Braille devices, head wands, microphones and others. Output devices may include monitors, printers, speech synthesizers and Braille devices. In practice, ensure that users can interact with all elements using a keyboard because most input devices provide controls that mimic keyboard inputs.

Example:
If an interface object, e.g. a multi-media player is imported into a page, it must be accessible to a keyboard, or an accessible alternative must be provided.

Reference: W3C Checkpoint 9.2 and W3C Checkpoint 8.1

2.11.1.30 *Design for Device-independence*

For scripts, specify logical event handlers rather than device-dependent event handlers.

Requirement: Mandatory

Rationale:
An event handler invokes a script when a certain event occurs (e.g, the mouse moves, a key is pressed, the document is loaded, etc.). In XHTML, event handlers are attached to elements via event handler attributes (the attributes beginning with “on”, as in “onkeyup”).

What happens when an event occurs depends on the script the page author has created. Some produce purely decorative effects such as highlighting an image or changing the colour of an element's text. Others produce much more substantial effects, such as carrying out a calculation, providing important information to the user, or submitting a form. For scripts that do more than just change the presentation of an element, content developers should do the following:

- Use application-level event triggers rather than user interaction-level triggers. In XHTML, application-level event attributes are "onfocus", "onblur" (the opposite of "onfocus"), and "onselect".

Note that these attributes are designed to be device-independent, but are implemented as keyboard specific events in current browsers.

Otherwise, if you must use device-dependent attributes, provide redundant input mechanisms (i.e., specify two handlers for the same element):

- Use "onmousedown" with "onkeydown"
- Use "onmouseup" with "onkeyup"
- Use "onclick" with "onkeypress"

Note that there is no keyboard equivalent to double- clicking ("ondblclick") in HTML 4.0

Example: http://www.w3.org/WAI/wcag-curric/sam71-0.htm

Reference: W3C Checkpoint 9.3

2.11.1.31 *Pop-up and New Windows*

Do not cause pop-ups or other windows to appear and do not change the current window without informing the user.

Requirement: Mandatory

Rationale:
Pop-up windows are not accessible to non-visual browsers. All users are disoriented when displays or other outputs change suddenly. Users must be able control changes.

Example: N/A

Reference: W3C Checkpoint 10.1

2.11.1.32 *Labels and Form Controls*

Ensure that the label for a form control is properly positioned.

Requirement: Mandatory

Rationale:
Non-visual users need to associate a control label with the control mechanism. Labels must be positioned on the same line as the control when there are two or more controls on a single line. Labels must be positioned on the line before the control when there is only one control on a line.

- Text labels for checkboxes and radio buttons must immediately follow the form element.
- Text labels for text fields must immediately precede the form element
- Buttons must be labelled using the value attributes or enclosed text

Example: The following example shows how a label and form control may be implicitly associated with mark-up:

<label for="firstname">First name:
<input type="text" id="firstname" tabindex="1" />
</label>

Reference: W3C Checkpoint 10.2

2.11.1.33 W3C Technologies

Use W3C technologies when they are available and appropriate for a task and use the latest versions when supported.

Requirement: Mandatory

Rationale:
The W3C provides extensive information about technologies recommended and under review. Use technologies to specification, even if browsers do not currently support some elements. They are likely to be supported in future versions.

Reference: W3C Checkpoint 11.1

2.11.1.34 Deprecated Elements

Avoid deprecated features of W3C technologies.

Requirement: Mandatory

Rationale:
Deprecated (outdated) techniques and attributes, such as the <FONT> attribute, may cause accessibility problems with new browsers.

Example:
Deprecated HTML tags and their replacements:

Deprecated	Replacement
<applet>	<object>
<basefont>	CSS
	CSS (text-align: center)
<dir>	
<font>	CSS
<isindex>	<form>
<menu>	
<s>	CSS
<strike>	CSS
<u>	CSS

Deprecated HTML attributes

Attribute	Deprecated if used in
align	<caption>,<img>,<table>, <hr>, ,<h1..6>,<p>
alink	<body>
background	<body>
bgcolor	<body>,<table>,<tr>,<td>,<th>
clear	
compact	,
color	<basefont>,<font>

Deprecated HTML attributes (con't)

Attribute.	Deprecated if used in
border	<img>,<object>
hspace	<img>,<object>
link	<body>
noshade	<hr>
nowrap	<td>,<th>
size	<basefont>,<font>,<hr>
start	
text	<body>
type	
value	
vlink	<body>
width	<hr>,<pre>,<td>,<th>
space	<img>,<object>

Reference: W3C Checkpoint 11.2

2.11.1.35 Accessible Equivalents

If, after best efforts, you cannot create an accessible page, provide a link to an alternative page that uses W3C technologies, is accessible, has equivalent information (or functionality), and is updated as often as the inaccessible (original) page.

Requirement: Mandatory

Rationale:
Content developers should only resort to alternative pages when other solutions fail because alternative pages are generally updated less often than “primary” pages.

An out-of-date page may be as frustrating as one that is inaccessible since, in both cases, the information presented on the original page is unavailable. Automatically generating alternative pages may lead to more frequent updates, but content developers must still be careful to ensure that generated pages always make sense and that users are able to navigate a site by following links on primary pages, alternative pages, or both. Before resorting to an alternative page, reconsider the design of the original page; making it accessible is likely to improve it for all users.

Example: N/A

Reference: W3C Checkpoint 11.4

2.11.1.36 Frames

Frames are not allowed for GOJ websites

Requirement: Mandatory

Rationale:
Frames are an example of non-sequential text, which can create interpretation problems for individuals using assistive technologies and for advanced multi-modal systems. Frames present additional problems when trying to ensure that organizational identification and GOJ Identifiers remain attached to content when located via search engines. Frames can also prevent users from easily bookmarking specific Web site content.

Example: N/A

Reference: W3C Checkpoint 12.1

2.11.1.37 Information Blocks

Divide large blocks of information into more manageable groups where natural and appropriate.

Requirement: Mandatory

Rationale:
Large blocks of information, including lists and controls, must be divided into natural groupings through the use of XHTML mechanisms. Groupings can improve the navigability and comprehension of the document.

Example:
Use FIELDSET to group form controls into semantic units and describe the group with the LEGEND element.

- Use OPTGROUP to organize long lists of menu options into smaller groups.
- Use tables for tabular data and describe the table with CAPTION.
- Group table rows and columns with THEAD, TBODY, TFOOT, and COLGROUP.
- Nest lists with UL, OL, and DL.
- Use section headings (H1 - H6) to create structured documents and break up long stretches of text.
- Break up lines of text into paragraphs (with the P element).
- Group related links.

All of these grouping mechanisms should be used when appropriate and natural, i.e., when the information lends itself to logical groups. Content developers should not create groups randomly, as this will confuse all users.

Reference: W3C Checkpoint 12.3

2.11.1.38 *Control Labels*

Associate labels explicitly with their controls.

Requirement: Mandatory

Rationale:
Non-visual users must be able to associate a control label with the appropriate control mechanism, so all controls must be labelled.
Example: A label is implicitly associated with its form control either through mark-up or positioning on the page. The following example shows how a label and form control may be implicitly associated with mark-up.

<label for="firstname">First name:
<input type="text" id="firstname" tabindex="1">
</label>

Reference: W3C Checkpoint 12.4

2.11.1.39 *Link Targets*

Clearly identify the target of each link.

Requirement: Mandatory

Rationale:
A link text must make sense when read out of context, either on its own or as a sequence of links. Link text must also be clear. For example, use the text "information about version 4.3" instead of "click here".

If more than one link on a page shares the same link text, all those links should point to the same resource.

If two or more links refer to different targets but share the same link text, distinguish the links by specifying a different value for the “title” attribute of each A element.

Example:
My document is available in HTML,
PDF,
plain text

Reference: W3C Checkpoint 13.1

2.11.1.40 External Link Notification

Provide a notice, hint or notification to users if a link on the site will navigate them away from the main domain to a third-party site or domain.

Requirement: Mandatory

Rationale:
Users should be aware that the desired link will navigate them away from the main site to a third-parties website or URL.

The user should receive a notice, hint or notification with example message “You are about to proceed to an external website. We have no control over the content of this site. Click OK to proceed.”

2.11.1.41 *Metadata*

Provide metadata to add semantic information to pages and sites.

Requirement: Mandatory

Rationale:
Metadata provides information about Web resources, improving accessibility, and assists with Search Engine Optimization (SEO). The following core META items must be included with all pages: Title, Description, and Keywords. Additional META items may be included as required.

Example: N/A

Reference: W3C Checkpoint 13.2

2.11.1.42 *Navigation*

Use navigation mechanisms in a consistent manner.

Requirement: Mandatory

Rationale:
A consistent style of presentation on each page allows users to easily find navigation buttons between pages, as well as find the primary content for each page. While this helps make it easier for everyone, it especially benefits people with learning and reading disabilities. Making it easy to predict where the needed information is found on each page will increase the likelihood that it will be found.

Example: N/A
Reference: W3C Checkpoint 13.4

2.11.1.43 *Writing Styles*

Use the clearest and simplest language appropriate for a site's content.

Requirement: Mandatory

Rationale:
Clear and accurate language for body text, heading and links will make it easier for everyone to use the site, including people using screen readers and those with reading and cognitive disabilities.
Example:
The W3C provides several tips regarding writing styles in Core Techniques for Web Accessibility Guidelines 1.0 (http://www.w3.org/TR/WCAG10-CORE-TECHS/#writingstyle).

Reference: W3C Checkpoint 14.1

2.11.1.44 *Document Technologies*

HTML and other W3C recommended (standard) languages must be the primary format for all documents on GOJ Websites.

Requirement: Mandatory

Rationale:
In cases where the document cannot be represented in HTML, users should be given information on how to obtain alternate versions, e.g., print, Braille, audio, etc. Portable Document Format minimum version 2.1 should only be used as an alternate format.

Simply using W3C languages for mark-up or application design does not mean that Web content will be naturally accessible: using W3C languages does however allow developers to use standard methods to ensure the accessibility of your products.

Current W3C technologies

- MathML - for mathematical equations
- HTML, XHTML, XML - for structured documents
- RDF - for metadata
- SMIL - to create multimedia presentations
- CSS and XSL - to define style sheets
- XSLT - to create style transformations
- PNG - for graphics (although some are best expressed in JPG, a non-W3C spec)

2.11.1.45 Alternate Formats

Web pages that offer information in alternate formats must include a text indication of the file type that provides a hyperlink to a site where the necessary software can be obtained.

Requirement: Mandatory

Rationale:
The first format encountered by a browser should be the most accessible format (usually, accessible HTML), however, if the information is presented in other formats, the content provider should clearly indicate what those formats are and if possible, include a link to a site where the visitor can download an appropriate viewer or "plug-in" application. If an accessible version of a plug-in is also known to be available, then a note and a link to that product should also be included.

2.11.1.46 Acronyms Usage

Acronyms may be used at times throughout the website for both convenience and restricting factors such as mobile responsiveness or other use-cases

Requirement: Mandatory

Rationale:
A list should be made of the acronyms the respective government agencies commonly use internally, along with the full spelt-out versions of what they stand for, Indicate whether it's appropriate to use the acronyms on this medium, or if the full terms should be used.
Reference: (Newberry, 2020)

2.11.2 Recommended Standards

2.11.2.1 Auditory Descriptions

Provide an auditory description of the important information of the visual track of a multimedia presentation.

Requirement: Recommended

Rationale:
Auditory descriptions provide information about the actions, body language, graphics, and scene changes through pre-recorded human voices or synthesized voices. The auditory descriptions are usually fit within natural pauses in the audio track and must be synchronized with the visual track.

Example:
Here's an example of a collated text transcript of a clip from "The Lion King". Note that the Describer is providing the auditory description of the video track and that the description has been integrated into the transcript.

Simba: Yeah!

Describer: Simba races outside followed by his parents. Sarabi smiles and nudges Simba gently toward his father. The two sit side-by-side, watching the golden sunrise.

Mufasa: Look Simba, everything the light touches is our kingdom.

Simba: Wow.

Reference: W3C Checkpoint 1.3

2.11.2.2 Synchronize Equivalents

For any time-based multimedia presentation (e.g., a movie or animation), synchronize equivalent alternatives (e.g., captions or auditory descriptions of the visual track) with the presentation.

Requirement: Recommended

Rationale:

Text equivalents for the audio tracks of multimedia presentations are used by screen readers, search engines and people accessing the Web site without the aid of a sound system. The text equivalents can be text transcripts of dialogs and sounds; a set of captions describing actions; or a collated text combining a dialog transcript and captions. Transcripts, captions and collations must be synchronized with the action.

Some media formats (e.g., QuickTime 3.0 and SMIL) allow captions and video descriptions to be added to the multimedia clip. SAMI allows captions to be added. The following example demonstrates that captions should include speech; as well as other sounds in the environment that help viewers understand what is going on.

Example: Captions for a scene from “E.T.”

The phone rings three times, then is answered.
[Phone rings]
[ring]
[ring]
Hello?”

Reference: W3C Checkpoint 1.4

2.11.2.3 *Table Structure*

For data tables that have two or more logical levels of row or column headers, use markup to associate data cells and header cells.

Requirement: Recommended

Rationale:
To clarify the meaning of data in complex tables, use markup elements to associate individual data cells with their respective row and column headers.

Example:
Refer to http://www.w3.org/TR/WCAG10-HTML-TECHS/#identifying-table-rows-columns for more complex examples.

Reference: W3C Checkpoint 5.2

2.11.2.4 *Page Structure*

Pages utilizing full-width or boxed layout should consider the use of helper frameworks such as bootstrap that provides containers, columns and rows instead of using tables.

Requirement: Recommended

Rationale:
Utilizing standard CSS & HTML frameworks reduces the possibility of using deprecated syntax and reduces time to create HTML with CSS.

Reference:
https://getbootstrap.com/docs/4.0/layout/overview/

2.12 Visually Impaired Accessibility

Visual impairments span a range of issues and disabilities, the most prominent of which are colour blindness, low vision, and blindness. As a result, GOJ sites and web applications must consider the visually impaired and a variety of design adjustments to facilitate this group.

Requirement: Recommended

Rationale:
The following are some guidelines to enhance the user experience for the visually impaired when using websites or web applications.

- Allow the user to manually adjust the font size of the site.
- Don't rely on colour alone to communicate important information. Use colour combined with icons and/or texts. Example showing an alert with an exclamation icon. If the colour is not visible the user would be able to identify the icon or the text.
- Use explicit and descriptive labels for links and buttons
- Provide alternate (alt) text or descriptions for non-text content. Those who are visually impaired utilize screen-readers, as a result, the alt text is read to describe what is on the screen.
- Provide sufficient contrast using colours and textures. For content that can be represented with texture instead of colours are best for those who may be colour blind.

Reference: WCAG 2.0

2.13 Hearing Impaired Accessibility

GOJ sites that contain content such as multimedia, podcasts, audio, and video must consider the needs of those who have auditory impairments.

Requirement: Recommended

Rationale:
Audio content and video without sound are challenging, and users can also miss audio alerts from applications. These users rely on visual cues and video captions. The following are some guidelines to enhance the user experience for those with hearing impairment.

- Avoid requiring audio to interact with the site or application.
- Add captions to all video content.
- Create text transcripts for audio content.
- Provide redundant cues: audio plus visual text equivalents.
- Make sure your content is keyboard accessible: deaf or blind users can use screen readers that convert text to Braille on refreshable Braille devices.

Reference: WCAG 2.0

2.14 Artificial Intelligence Standards

The use and Implementation of Artificial Intelligence (AI) technology can be considered on a needs-by-needs basis. However, once implemented the following standards should be considered.

AI has a variety of benefits. Some of these benefits include boosting visitor interaction, delivering a tailored user experience, and increasing response times to questions of varying complexity within the GOJ service offerings.

2.14.1 Chatbots

AI should be implemented to strengthen its search abilities, improve interaction with visitors, and provide personalized user experience. An AI-based chatbot interacting with a human user will not just be able to produce replies, but answer them in as human a way as possible so as to create unique answers for each query.

Requirement: Recommended

Rationale:
Chatbots utilized throughout government websites are recommended to be based on advanced natural language processing (NLP) systems that are able to generate meaningful conversations that have far better results in generating engagement.

Chatbots will be used to automate communication without compromising on interactivity. To envisage this type of AI, think of chatbots and smart personal assistants whose abilities can vary from answering pre-built questions to understanding the conversation context.

Example:
Advanced AI chatbots such as the Watson Assistant can understand the business's historical chat logs and calls and develop its own knowledge base. Moreover, it can request customers for more clarity, ask customers for human assistance, and provide recommendations for conversation styles.

References: https://usabilitygeek.com/artificial-intelligence-and-the-future-of-web-design/ & https://acodez.in/artificial-intelligence-web-design/

2.15 Security Standards

Designing and Implementing the Cyber-Security standards is a mandatory requirement for all GOJ web solutions. The recommended solutions are a starting point and should not be considered as an exhaustive list for a robust cyber-security implementation.

2.15.1 Security Headers

All GOJ web solutions must include at minimum the following security headers.

Requirement: Mandatory

Rationale:
Strict-Transport-Security - is an excellent feature to support your site and strengthens your implementation of TLS by getting the User-Agent to enforce the use of HTTPS. Recommended value "Strict-Transport-Security: max-age=31536000; includeSubDomains".

Content-Security-Policy - is an effective measure to protect your site from XSS attacks. By whitelisting sources of approved content, you can prevent the browser from loading malicious assets.
X-Frame-Options - tells the browser whether you want to allow your site to be framed or not. By preventing a browser from framing your site you can defend against attacks like clickjacking. Recommended value "X-Frame-Options: SAMEORIGIN".
X-Content-Type-Options - stops a browser from trying to MIME-sniff the content type and forces it to stick with the declared content type. The only valid value for this header is "X-Content-Type-Options: nosniff".
Referrer-Policy - is a new header that allows a site to control how much information the browser includes with navigations away from a document and should be set by all sites.
Permissions-Policy - is a new header that allows a site to control which features and APIs can be used in the browser.

Testing:
(https://securityheaders.com/) Security Headers website is a free to use web tool for scanning websites for proper implementation of security headers.

2.15.2 Protocols (TLS/SSL)

All GOJ web solutions must use the latest versions of web security protocols.

Requirement: Mandatory

Rationale:
Web security protocols such as SSLv2, SSLv3, TLSv1.0 and TLSv1.1 have all been deprecated and will result in security vulnerabilities.

Testing:
(https://www.cdn77.com/tls-test/)

CDN7 is a free to use website that checks for the latest versions of web security protocols.

2.15.3 Valid SSL Certificates

All GOJ web solutions must use a valid SSL certificate and URL starting with HTTPS. The URL bar should contain a lock or emblem representing a secured connection.

Requirement: Mandatory

Rationale:
Having a valid SSL certificate protects the website from an easy interception/hijacking of sensitive information being sent via the internet.

2.15.4 Acceptable SSL Certificates

All GOJ sites and web applications must use acceptable types of SSL certificates. There are four (4) main types of SSL Certificates, they are Shared, Domain Validated, Organization Validated and Extended Validation. Each type can be considered for specific use cases.

Requirement: Mandatory

Rationale:
The following are:
Shared SSL – One SSL that is installed on a server and shared with multiple domains. Typically provided by online hosting providers with shared hosting.
Domain Validated SSL – SSL that shows that the domain is registered.
Organization Validated SSL – Shows ownership of the domain and validates the organization that owns the domain.
Extended Validation SSL – Requires the organization to provide more records to prove ownership of the company.

Figure 11: A list of web-safe fonts recommended to be used.

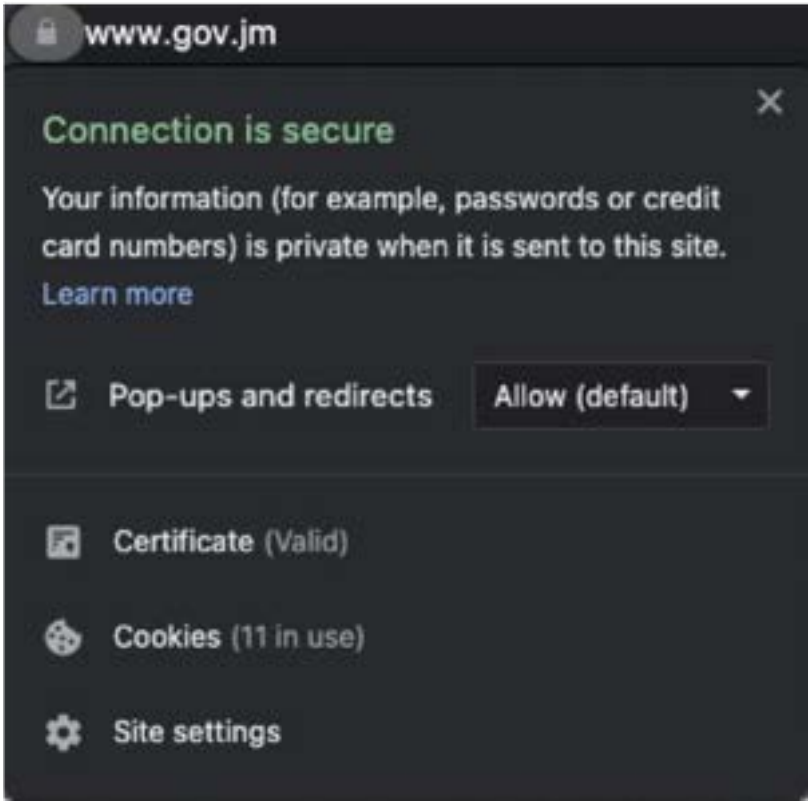


Figure 12: The following are scenarios for choosing the right type of SSL.

SSL Types	Use Cases
Shared	Not recommended
Domain Validated Certificate	Website not storing or transmitting Personal Identifiable Information (PII) or Sensitive Personal Information
Organization Validated Certificate	Sites storing or transmitting Personal Identifiable Information or Sensitive Personal Information
Extended Validation Certificate	eCommerce sites or sites conducting online transactions. Sites storing or transmitting Personal Identifiable Information or Sensitive Personal Information.

2.15.5 Security and Data Retention

All GOJ web solutions should consider the security and privacy of all data belonging to Data Subjects. Additional safeguards should be provided to secure sensitive personal data. The Data Subject should be informed of the expected period of retention where applicable.

Requirement: Mandatory

Rationale:
Having clear security protocols and mechanisms in place to secure data that will be transmitted or stored via your web solution is a mandatory requirement. In accordance with the Data Protection Act the Data Subject should be informed of the expected period of retention whether legally required, for reasons related to specific circumstances or for means relating to the processing of said data.

2.15.6 Data Privacy

GOJ web solutions need to clearly state the purpose or purposes for which the personal data is being used. Full disclosure should also be provided of any third party to which disclosure is required.

Requirement: Mandatory

Rationale:
Proper disclosure of Data Privacy standards and guidelines will give users the confidence to engage online and feel that their data will be secured and maintained at the highest standards. This is especially important when using Cookies to track users on a website.

Figure 13: Cookies Notification

2.15.7 Data Encryption/Hashing

All data needs to be encrypted in transmission when users are being authenticated or even transferring any personal information. Rather than develop custom encryption algorithms it is recommended that you use trusted or verified algorithms.

Requirement: Mandatory

Rationale:
All GOJ websites, web applications and portals that transfer or collect data should ensure that data is encrypted through trusted SSLs and appropriate data encryption is done on non-transient data.

Example: MD5, SHA-1, SHA-2, AES and RSA

2.15.8 *Strong Passwords*

Pick a strong password and keep it safe.

Requirement: Mandatory
Rationale:

- Choose a password that is difficult to guess by using a combination of at least six numbers, letters, and symbols.
- GOJ account passwords should never be shared with unauthorized personnel, including any third-party app.
- When account managers log out of GOJ web accounts, ensure not to check the "Remember Me" box.

2.15.9 *Storing of shareable documents*

All government-issued documents that are stored, displayed, and shared via the internet must be stored on a fully managed hosting server or cloud platform with security functionalities to prevent unauthorized access with encryption features and access management tools functionalities.

Requirement: Mandatory
Rationale:
Government-issued documents shared, and/or displayed via the internet must consider security, data sovereignty constraints, and/or legal ramifications. Tools such as Google Drive and Microsoft On-Drive should not be used to share government-issued files with the public or other government entities. File storage platforms such as Amazon Web Services Simple Storage Service (S3) that provides encryption and customizable access management functionalities must be used for sharing files with the general public if not already hosted on a fully managed localized hosting server.

2.16 Search Engine Optimisation

Search Engine Optimisation standards are mandatory requirements for all GOJ web solutions. Search engine optimisation is the analysis of search engine protocols, actions, resources, and guidelines for the purpose of improving website compliance and search performance.

2.16.1 SiteMap[5]

All GOJ websites and publicly searchable web applications should have a sitemap that has been properly formatted.

Requirement: Mandatory

Rationale:
A site map will provide the content and structure needed to appropriately represent your website on a search engine.

2.16.2 Robots.txt[6]

All GOJ websites and publicly searchable web applications is required to have a robots.txt file. This file gives search engines permission to crawl your website or web application and what URL paths to exclude. Configuring this file is critical to ensure that only URL paths that should be visible in search queries are displayed.

Requirement: Mandatory

Rationale:
A search engine will index a website once a robots.txt file is present and the search engine is given the requisite permissions. The file must be named robots.txt and is placed in the root of the site. It is also possible that pages blocked by robots.txt can still be crawled/indexed, so for sensitive pages use more secure methods.

[5] Reference:https://developers.google.com/search/docs/advanced/sitemaps/build-sitemap
[6] Reference: https://developers.google.com/search/docs/advanced/robots/create-robots-txt

2.16.3 Page Title and Descriptions

Create unique and accurate page titles for all searchable pages. Use the page description meta tag to add a description of each searchable page.

Requirement: Mandatory

Rationale:
Titles are used to display the name of popular pages when the search result is returned. The description is important because the search engines might use them as snippets for the pages.

Example:
<title>MOFP | About</title>
<meta name=”description” content=”The MOFP was created in March 2016.”>

2.17 Website/Web Application Registry

The GOJ should consider putting in place a website/web application registry. To classify and log all web solutions belonging to the Government.

All public-facing websites and applications should be added to this registry to support easy discovery and streamlined exploratory research for all agencies. A list of current Jamaican Government websites should be added to the Jamaican Government's central website (https://gov.jm). This will also assist with SEO for all sites that are referenced from gov.jm. This registry once completed will be publicised to all the GOJ Ministries Departments and Agencies (MDAs).

Mobile Standards Guide

3 - Mobile Standards Guide (MSG)

These standards should be considered as a guide towards standardizing the development and implementation of mobile applications within the GOJ.

A mobile app should only exist if it is the best way possible to help people complete tasks better and faster. An alternative such as creating a mobile-optimised website or a Progressive Web Application (PWA) is easier to adapt to changing technology and future needs. Websites designed to adapt to mobile use can perform many of the same functions like apps while reaching a greater audience.

Like all government services, mobile apps are not developed and forgotten. All mobile apps should form part of the continuous improvement plan for the multi-channel/omnichannel delivery of the service.

3.1 Visual Identity Standards

3.1.1 Security Headers Typography/Font

All GOJ mobile apps should have connection specific typographic fonts for branding. For general information on IEEE typography, consult the "Typography" section on the Branding and Visual Elements page.

Requirement: Mandatory

Rationale:
Test custom fonts: Make sure all styles of a custom font are legible at different sizes.
Use one typeface, with many styles: In general, use a single typeface throughout your app.
Use weights and styles to create visual contrast: Use different weights and styles of the same typeface to create design contrast.
Use white space: Crowding pages with text or other design elements can diminish the effectiveness of the app

3.1.2 Navigation

Device presentation space is at a premium, from necessity, mobile/tablet navigation needs to be greatly simplified and reduced from desktop/laptop applications when users are exploring GOJ Mobile Apps.

Requirement: Mandatory

Rationale:
There are three main styles of app navigation, each of which is well suited to a specific app structure:

1. Hierarchical: Users navigate into sections, subsections, and sub-sections using a Back command to return up the tree-like structure.
2. Flat: All sections are accessible at all times.
3. Content- or experience-driven: This is more like an old-fashioned "choose your own adventure", where the user can move around and within. Navigational items should globally appear for a user to get back to a home screen/start point.

If applicable for app functions. Bars include the following elements:

- Navigation bar: Contains contextual information that tells users where they are and gives users an easy way to traverse a hierarchy of data
- Tab bar: Used to display several peer categories of content or functionality.
- Segmented control: Used to give users a way to see different categories or aspects of the content on the screen; does not enable navigation to a new screen.
- Toolbars: Toolbars look like navigation bars but don't enable navigation. Instead, a toolbar gives users controls that act on the contents of the current screen.

Reference: For more details and visuals on navigation best practices, consult the iOS Human Factors Guidelines Bars/Controls Use bars to provide navigational elements such as Back, Home, etc.,

3.1.3 Iconography

Supporting Multiple Screens Iconography Icons should be used where possible to save space and provide constant visual cues.

Requirement: Recommended

Rationale:
All icons should be one of the following:

Common: The meaning of the icon is generally universally known and accepted, even if that meaning is not intrinsic in its shape. For example, the hexagon is almost universally known for meaning "stop." Rotating icons are commonly known for “loading content.”
Recognizable: The meaning is obvious without the context of any related text, generally because the icon has an easily identifiable shape that represents a real-world object. For example, the icon of an umbrella—while not particularly common—is easily recognizable as long as it is not made too abstract.
Illustrative: The icon helps reinforce the meaning of the text but may not be immediately obvious without it. This is especially true with instructional text, where the icons might be combined to show a process.

3.1.4 Launch Icon

The launch icon is the first interaction with the mobile application that a user or potential user will have. The launch icon is used to display the name of the app and defines the app’s identity within the app market place and on the user’s device.

Requirement: Recommended

Rationale:
The Launch icon for the application should visually show the flag and Government of Jamaica title below the logo of the app.

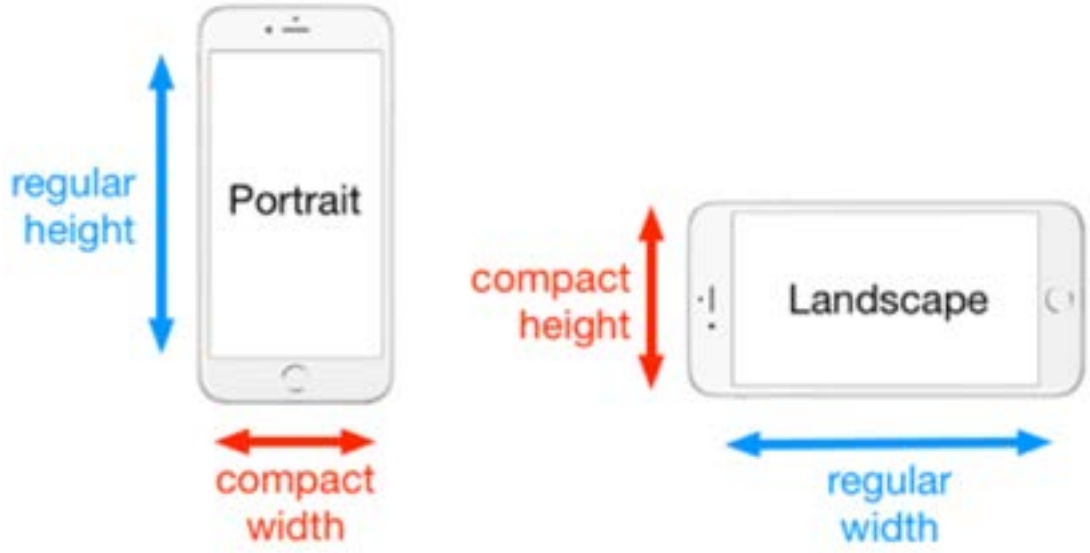
Figure 14: Launch Icon Sample

3.1.5 Orientation

Requirement: Mandatory

Rationale:
Unlike desktops or laptops, mobile devices can be held in two distinct positions. It is important to determine before the design starts what orientation will be used: landscape, portrait, or both. For mobile devices, in landscape orientation, the design can either scale to fit the page or be redrawn to show additional content.

Figure 15: Sample Portrait & Landscape Orientation



3.1.6 Splash Screen

Requirement: Mandatory

Rationale:
The government's coat of arms and name should be clearly displayed on the splash screen. However, the usage of the Coat of Arms must satisfy the minimum requirement; the Coat of Arm emblem should be at the top of the page and no other element or object should be above or before the emblem. For further usage instructions reference the guidelines as stipulated by the Office of the Prime Minister (OPM).

Figure 16: Sample Splash Screen

3.1.7 Home Screen

Requirement: Mandatory

Rationale:

- The home screen must include the name and/or logo of the GOJ entity or affiliated entity that is primarily responsible for the mobile app.
- The mobile app's home screen must include a visible link/option/button to gov.jm.
- The home screen should also have a visible representation of the Jamaican flag.

3.2 Technical Standards

All GOJ mobile apps should comply with the internationally recognized Mobile Accessibility Guidelines by W3C.

Reference: https://www.w3.org/TR/mobile-accessibility-mapping/

3.2.1 Adaptability

Mobile development tools provide screen-size buckets to ensure the best levels of adaptability for various mobile form factors. Also both native and hybrid development solutions provides various input methods, such as touch input and keyboard, mouse input, as well as remote control inputs.

Requirement: Recommended

Rationale:
Screen densities are represented as “dp” based on the number of pixels within a constant area of the display. Mobile devices support various screen densities.
The definitions are:

- xlarge screens are at least 960dp x 720dp.
- large screens are at least 640dp x 480dp.
- normal screens are at least 470dp x 320dp.
- small screens are at least 426dp x 320dp. (Android does not currently support screens smaller than this.)

3.2.2 Content Design

Designing the content and interface of mobile applications for small, medium and large screen sizes and for different input methods, such as touch and gesture inputs. Android and IOS both provide standard layouts for representing content; such as Grids, Columns Rows, List Views and many more.

Requirement: Mandatory

Rationale:
Using the standard components provided by either Android or IOS guarantees that content represented on the mobile devices will be responsive to the various form factors that are available on the market.

3.2.3 Layout

All GOJ mobile applications shall adopt specific layout principles.

Requirements: Mandatory

Rationale:

1. Each screen should allow the user to access the application menu.
2. The mobile layout shall be able to adapt to the changing device
3. orientation so that it fills up the full-screen width at all times.

Aspect ratio of full-width images should be 16:9 and that of smaller images should be 4:3.

3.2.4 Usability

Usability Standards for Device-based Mobile Applications

Requirement: Mandatory

Rationale:
Agencies shall develop mobile applications for Android and iOS platforms at the least for maximum user reach.

3.2.5 Mobile App Registry

Government-developed mobile apps should be registered on the Jamaican Government mobile apps registry.

Requirements: Recommended

Rationale:
All government mobile apps (both internal to and external to government) should be registered on the Jamaican Government mobile apps registry to support easy discovery and streamlined exploratory research for all agencies. A list of current Jamaican Government mobile apps for download should be on the Jamaican Government central website. This registry once completed will be publicised to all the GOJ Ministries Departments and Agencies (MDAs).

3.3 Security Standards

3.3.1 Data Encryption

All data needs to be encrypted in transmission when users are being authenticated or even transferring any personal information.

Requirement: Mandatory

Rationale:
All GOJ Apps need to provide the right protection of the user data in transmission especially when that particular data is session data, authentication data or even personal information.

Any data that GOJ Mobile Apps store on behalf of the users, especially the passwords and sensitive information and vital authentication information such as email addresses, usernames and passwords must be encrypted using a secure encryption algorithm such as Secure Hash Algorithm (SHA) or equivalent.

3.3.2 Security and Data Retention

Apps cannot access or collect the user data unless the app requires it.

Requirement: Mandatory

Rationale:
The app stores and the platform may have their own set of rules regarding the use of user information and its collection for various purposes such as advertising. Any data which is not required to be retained for any clear business purpose must be deleted.

It is vital to limit the total volume of sensitive data that is linked to an identifier of the user. Only store any sensitive data with a particularly unique identifier for a given time frame that is required to operate the app and deliver any service to the users.

Along with deletion, de-identification of their data may be sufficient enough in case there is no reasonable chance of the data which can be re-identified, which his, linked back to any user or device. Consider all the retention periods of your different vendors along with when assessing any particular third-party service that you will be sending the user data.

3.3.3 Enabling Security Measures

All apps that use, access or transfer data of any individual needs to be rigorously tested for different security purposes and also comply with various current best security practices of security. It is important to implement data retention policies as well as security measures which will help in ensuring that the user data is rightly safeguarded.

3.3.4 Actively address security and privacy concerns

User trust is essential to maximise uptake of digital channels and any failure on any single channel could reduce trust and jeopardise digital transformation, innovation and online service delivery.

Requirement: Mandatory

Rationale:
Mobile apps will seek the least number of privileges on the device that it is installed on. For example, write access to the device's data store should not be sought unless it is essential for the mobile app to perform its functions.

Mobile apps users should be given clear, specific and complete notice on how the GOJ will use and disclose personal information collected by the mobile app, including the device features (e.g. camera) the app requests access to and the reasons for seeking these permissions.

It is important to design a mobile app with privacy in mind from the outset. Mobile apps should protect information during collection, transfer and storage and have security controls and testing practices, supported by a strong information governance framework.

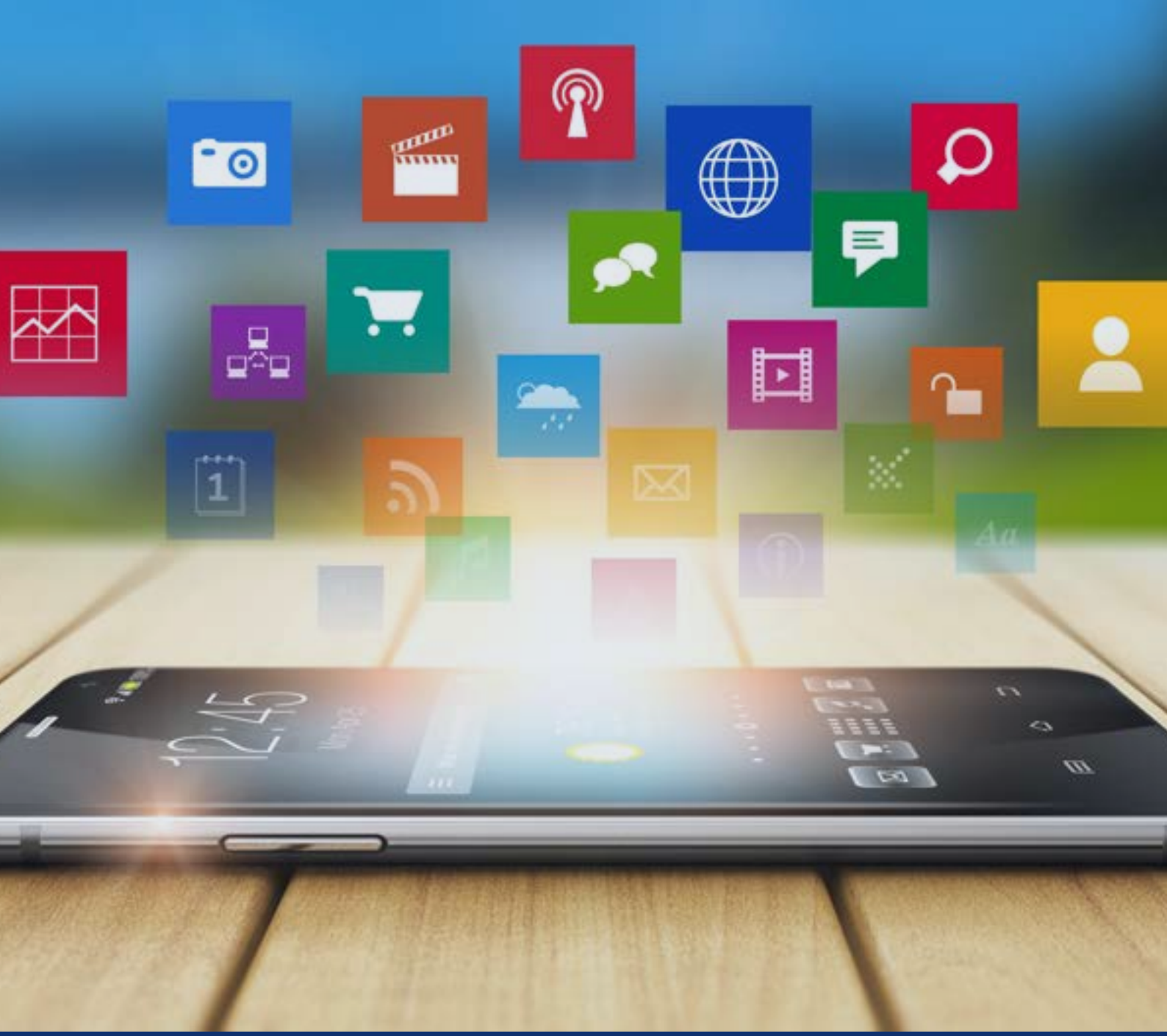
3.3.5 APIs for improved security

User trust is essential to maximise uptake of digital channels and any failure on any single channel could reduce trust and jeopardise digital transformation, innovation and online service delivery.

Requirement: Mandatory

Rationale:
A secure authentication and authorization system should be properly implemented for all GOJ mobile apps. APIs should be developed with other protective features to reduce the system's vulnerability to malicious attacks during API calls. API should successfully validate any and all input from users collected once prompted and utilizing prepared statements with bind variables is one of the most effective ways to shield the API from SQL injection.

Example:
Open Authorization (OAuth) is an open standard for token-based authentication and authorization on the Internet. OAuth allows an end user's account information to be used by third-party services, such as Facebook, without exposing the user's password. OAuth acts as an intermediary on behalf of the end-user, providing the service with an access token that authorizes specific account information to be shared.



Social Media Standards Guide

4 - Social Media Standards Guide (SMSG)

Social Media provides the opportunity for the GOJ and its agencies to improve the quality of government services and enable greater citizen engagement. Publicly available social media sites, such as Facebook, Twitter, Instagram and LinkedIn allow the GOJ to establish communities and networks; and provide a wide range of audio, video, and interactive capabilities without substantial costs.

4.1 Visual Identity Standards

4.1.1 Posting Guidelines

The posts made by GOJ social media accounts should maintain a high acceptable standard which should be transparent, legible and free of grammatical errors.

Requirement: Mandatory

Rationale:

- It is always best to use the GOJ/agency name in your social media post captions. When only the acronym is used for the GOJ/agency name, it can be confusing to users who do not know what the acronym stands for.
- When using hashtags, capitalize the first letter of each word within the hashtag. Ex. #TeamJamaica or #DancehallMusic
- Limit the use of emojis and emoticons in social media posts. Screen readers will use descriptions for each emoji and each character within emoticons which can become time-consuming and affect user experience.
- Animated GIFs have limited accessibility support on social media platforms. The use of GIFs should be limited and not be the main content in a post.
- Spacing between sentences, as appropriate, to increase readability.

Reference: (the University of West Florida, n.d.)

4.1.2 Display Banner

Display banners of all GOJ social media accounts should be standardized.

Requirement: Mandatory

Rationale:
It is essential to consider and establish GOJ agencies brand image. If someone looks at a GOJ related page, and then a GOJ website, and a GOJ mobile app, the look and feel should be consistent across the board.

An image of the Jamaican coat of arms is the proposed standardized banner.

4.1.3 Display Picture/ Profile Picture

Requirement: Recommended

Rationale:
All GOJ related agencies should brandish their respective agency logo as its display picture/profile picture.

If GOJ agency logos does not work well as a square or circle image, they may need to create a modified version specifically for social media use.

4.1.4 User Account Description/Bio

The formatting of the description/bio of all GOJ social media accounts should be standardized.

Requirement: Mandatory

Rationale:
The information should be presented in the following order:

1. The agency along with its acronym.
2. A statement declaring that it is the official governmental agency account.
3. Motto/Logo/Theme
4. Contact Information
5. Link to link tree to other government social media accounts, government informational sites and portals and government downloadable apps.

4.2 Technical Standards

4.2.1 Accessibility

Social media is not always completely accessible due to the limited technical control over social media platforms and posted content.

Requirements: Recommended

Rationale:
Social media accounts and content associated with the GOJ should be designed, developed and edited making the best effort to uphold accessibility standards, in order to allow for all users to have equal access to information and functionality.

Reference: (University of West Florida, n.d.)

4.2.2 Accommodations for the Disabilities

Requirement: Mandatory

Rationale:
Individuals with disabilities use technologies such as screen readers, captioning software and other tools that enable them to hear or read the content on their device. To ensure that access to content is seamless for users with disabilities, social media content developed and shared by GOJ accounts must comply with Section 508 of the Rehabilitation Act.

Example:
Photos posted on social media outlets should contain alternative text descriptions.

- Facebook, Twitter and Instagram all have the ability to edit and customize alt text captions retroactively.
- Facebook and Instagram generate an automatic general alt text but allow accounts to edit the alt text on their website or app after posting.
- When editing an automatic general alt text, provide descriptive captions for images.

Reference: (University of West Florida, n.d.)

4.2.3 Accounts Privacy

All social media accounts of the GOJ should be set to public in order to maintain transparency, accountability and increase accessibility to both citizens and non-citizens.

Requirement: Mandatory

Rationale:

Social media platforms such as Facebook, Linkedin, Instagram and Twitter allows accounts to be set to public, which means that anyone with Internet access can view the content.

When a user clicks Facebook's "Like" button on the GOJ page, they are authorizing the GOJ to post updates on their news feed. Similarly, users can authorize the publication of news from the GOJ Twitter and Instagram feed by becoming a follower.

Reference: (Policy on the Use of Social Media, n.d.)

4.2.4 Comments Etiquette

The GOJ use social media to share news with the public and gather comments. There are times the GOJ may consider a comment to be absurdly unacceptable; before removing or taking any action, a review of any existing legislation should be done and any action taken must be in keeping with existing laws.

Requirements: Recommended

Rationale:

Managing user comments whether in removing or taking further actions specifically for comments that seem inappropriate should be actioned in accordance with legal guidance. If users do not follow the terms of service of these service providers, they may be reported to Facebook, Instagram, YouTube, or Linkedin.

Reference: (Policy on the Use of Social Media, n.d.)

4.2.5 Capitalizing on Link Trees

Social media platforms such as Instagram and Tik Tok does not afford accounts the opportunity to post multiple links in its accounts' biography/description.

Requirement: Recommended

Rationale:
Linktree is a tool that allows you to share multiple links on social media. It creates a simple landing page that hosts multiple links. this link would then be posted in the bio of social media accounts in the bio in order to drive traffic to specific areas of your site. These links should be related to other government social media accounts, government informational sites and portals and government downloadable apps.

4.2.6 Responding to comments

Requirement: Recommended

Rationale:
The Social Media accounts of the GOJ sites should be focused on an informational purpose solely, hence these pages will not respond to any comments or messages posted on the Social Media sites. Reference: (Ministry of Foreign Affairs of Japan Social Media Moderation Policy, n.d.)

4.2.7 Acronyms Usage

Acronyms may be used at times throughout posts for both convenience and restricting factors depending on the type of social media platforms.

Requirement: Mandatory

Rationale:
A list should be made of the acronyms the respective government agencies commonly use internally, along with the full spelt-out versions of what they stand for. Indicate whether it's appropriate to use the acronyms on each social channel, or if the full terms should be used.
Reference: (Newberry, 2020)

4.3 Security Standards

4.3.1 Facebook

4.3.1.1 Passwords

GOJ Facebook passwords should be unique, and never shared with unauthorized personnel.

Requirement: Mandatory

Rationale:

- Avoid using anything that's government-related, like the name of the agency name, phone number, or address.
- Ensure it's at least 6 characters long and use a complex combination of numbers, letters and punctuation marks.
- Avoid using common words.
- Use a unique password that is not currently in use anywhere else online.

4.3.1.2 Social Network URL Verification

Requirement: Mandatory

Rationale:
Always check the website's URL before you enter your login information. When in doubt, re-type the social network's URL into your browser to get to the platform's login screen.

4.3.1.3 *Emails*

Requirement: Mandatory

Rationale:
Emails from Facebook about your account always come from fb.com, facebook.com or facebookmail.com. You can always visit www.facebook.com or open your Facebook app to check for important messages from us.

4.3.1.4 *Additional Security*

Social Networks provides additional security mechanisms outside of the traditional username and password functionalities. The GOJ social media accounts must enable at least one additional security feature as a layer of additional security.

Requirement: Mandatory

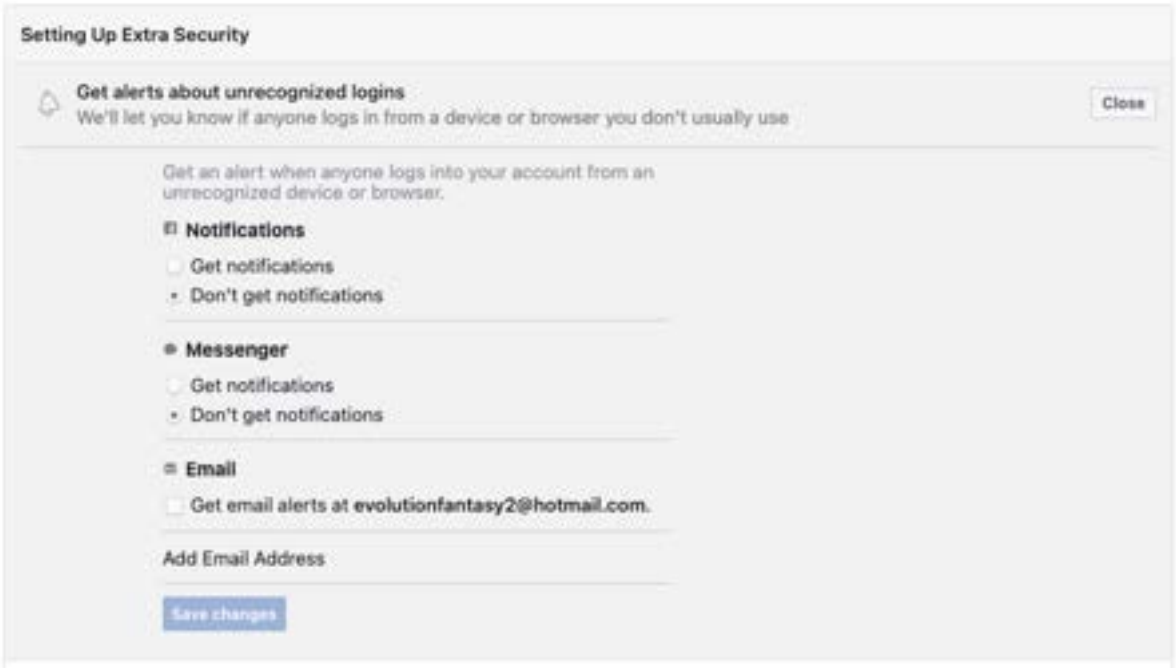
Rationale:
Most social media platforms provide at least one of the following additional layers of security for social accounts:

- Two (2) Factor Authentication (2FA)
- Multi-factor Authentication
- Token-based Authentication

Example.
Enabling two-factor authentication will require the user to enter a special login code or confirm their login attempt each time someone tries accessing Facebook from a browser or mobile device it doesn't recognize.

Note: These features are currently available to users logged into Facebook on a computer or the latest version of the Facebook for Android or Facebook for iOS app.

Figure 17 : Additional Security



4.3.2 Instagram [4]

4.3.2.1 *Manual Comment Filter*

Enabling, Disabling and blocking comments from the specific entity are options typically provided by most social media platforms. However, these actions should be guided by legal guidelines and in agreement with terms of use provided by the social platform.

Requirement: Mandatory

Rationale:
Instagram provides the opportunity to account managers to create a list of keywords or emojis that will be disallowed to be displayed in the comments section of GOJ posts.

Commonly expressed curse words and phrases should be added to this list to maintain a high level of professionalism on all GOJ Instagram page accounts.

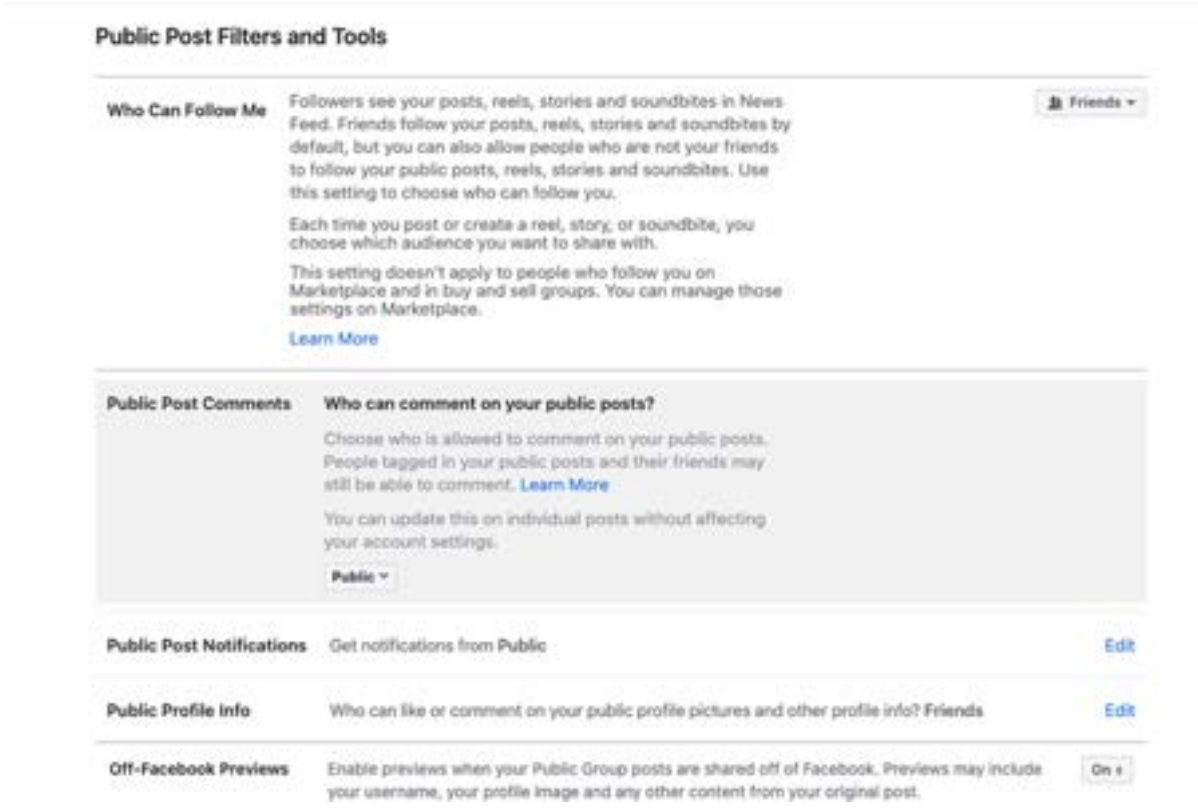
4.3.2.2 *Revoke Access to Third-Party App*

Many third-party apps connect to Instagram to provide additional functionality across the web.

Requirement: Mandatory

Rationale:
Keep tabs on these connections via Settings > Security > Apps and Websites, where you can view active and expired authorized apps, then remove or grant access to the services you want. From the web, click the gear icon to access the settings menu and click Authorized Apps.

Figure 18 : Comment Controls



4.3.2.3 *Password*

Pick a strong password and keep it safe.

Requirement: Mandatory

Rationale:

- Choose a password that is difficult to guess by using a combination of at least six numbers, letters and symbols and ensure it is unique to Instagram.
- GOJ account passwords should never be shared with unauthorized personnel, including any third-party app.
- When account managers log out of GOJ Instagram accounts, ensure not to check the "Remember Me" box.

4.3.2.4 *Login Activity*

Security checks for hackers can be done by checking the account's login activities.

Requirement: Mandatory

Rationale:
This page will show you a list of locations where you have logged in with your account. You can verify your current location and look through previous activity. If there are locations you do not recognize, it is a good idea to log out from those devices and change your password.

4.3.3 Twitter

4.3.3.1 Passwords

Create a strong and unique password for your Twitter account. You should also create an equally strong and unique password for the email address associated with your Twitter account.

Requirement: Mandatory

Rationale:

- Do not reuse passwords across websites. GOJ Twitter account password should be unique to Twitter.
- GOJ account passwords should never be shared with unauthorized personals, including any third-party app.
- Create a password at least 10 characters long. Longer is better.
- Use a mix of uppercase, lowercase, numbers, and symbols.

Reference: (Tips for Keeping Your Twitter Account Secure | Twitter Help, n.d.)

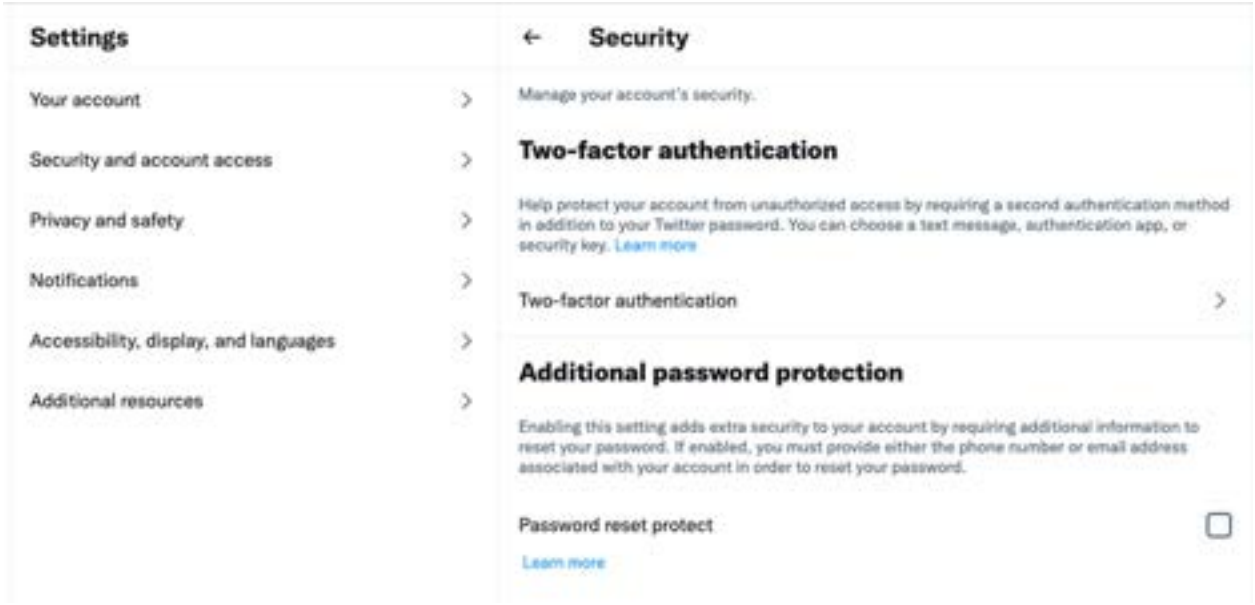
4.3.3.2 Use Two-Factor Authentication

Two-factor authentication is an extra layer of security for your account.

Requirement: Mandatory

Rationale:
Instead of relying on a password only, two-factor authentication introduces a second check to help make sure that you, and only you, can access your Twitter account. Only authorized employees who have access to both your password and your mobile phone will be able to log in to the account.

Figure 19 : Twitter 2FA Settings



Reference: **(Tips for Keeping Your Twitter Account Secure | Twitter Help, n.d.)**

4.3.3.3 *Third-Party Applications*

There are many third-party applications built on the Twitter platform by external developers that you can use with your Twitter account(s).

Requirement: Mandatory

Rationale:

- Account managers must be cautious before giving third-party applications access to GOJ accounts. If there is a wish to grant third-party application access to a GOJ account, it is recommended to only do so using Twitter's OAuth method.
- OAuth is a secure connection method and does not require you to give your Twitter username and password to a third party.
- It is advisable to review third-party applications that have access to your account from time to time.
- Account managers can revoke access for applications that you don't recognize or that are Tweeting on your behalf by visiting the Applications tab in your account settings.

Reference:
(Tips for Keeping Your Twitter Account Secure | Twitter Help, n.d.)

References & Resources

5 - References & Resources

5.1 References

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University of West Florida. (n.d.). Social Media Accessibility Guidelines | University of West Florida. The University of West Florida Brand Portal. Retrieved July 26, 2021, from https://uwf.edu/brand/social-media/social-media-accessibility-guidelines/

W3C Checkpoint Full Checklist https://www.w3.org/TR/WAI-WEBCONTENT/full-checklist

5.2 Resources

W3C Validator
Link: http://validator.w3.org/

Common Look and Feel (CLF) Standards developed by the Treasury Board of CanadaStandard Web Accessibility.
Link: https://www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=23601.

Web Accessibility Toolbar is a tool for advanced users or web developers, that helps to examine the structure, components and accessibility features of any given web page.
Link: https://www.snapfiles.com/get/AccessibilityToolbar.html

Security Header Scanner - Quickly and easily assess the security of your HTTP response headers

Link: https://securityheaders.com/

Dead Link Checker - Dead Link Checker crawls through your website, identifying broken links for you to correct.

Link: https://www.deadlinkchecker.com/