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Policy issues regarding electronic government and Web accessibility in Japan

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Abstract

The Japanese government has been developing infrastructures and services for electronic government since 2001. One of the challenges identified in this regard is to ensure "accessibility" or to enable everyone, including the elderly and those with disabilities, to access the infrastructures and services of an electronic government.

In 2004, the JIS (Japan Industrial Standard) X 8341-3 was issued as a Web accessibility standard in Japan. It is expected to function as a basis to ensure the Web accessibility of the electronic government in the central and local governments in Japan. Recently, however, the Ministry of Internal Affairs and Communications found a widespread lack of understanding of and respect toward the JIS X 8341-3 among the local governments in

Japan. In December 2005, a study group under this ministry proposed "Operational Models to Improve Accessibility of Public Web sites" in order to supplement the JIS X 8341-3.

Thus, this paper reviews the standards and policy initiatives for improving the Web accessibility of the electronic government in Japan and discusses the challenges faced by libraries to ensure the provision of access to government information in terms of Web accessibility and electronic government.

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1. Issues involved in electronic government and Web accessibility

In Japan, as in other countries, the central and local governments are taking initial steps to establish what is referred to as an "electronic government" or "e-government." The establishment of an electronic government can be defined as the "use of technology, particularly Web-based Internet applications, to enhance the access to and delivery of government information and service to citizens, business partners, employees, and other agencies, and entities."[1] Without doubt, a Web site is the most important platform for electronic government, because it functions as an interface between the government and citizens. This paper deals with the issues of how government Web sites can be useful for anyone, especially those who have difficulties in using the Web and the Internet.

Although the theme of this session is "Technology Strategies and Tools for Dynamic Information Delivery," this paper discusses "Web accessibility." This is because the concept of "Web accessibility" is closely related to this theme, and it is more definitive to the issue of access to government information, especially for elderly people and those with disabilities.

According to Jaeger[2], accessibility is defined as "[t]he physical and intellectual access to an object." He points out that, "[a]ccessibility allows individuals with disabilities to be able to have use of information and services that is equal or equivalent to the use enjoyed by everyone else." Several products such as household devices and transportation equipments can be dealt in the name of accessibility. However, "Web accessibility" is increasing in importance in terms of the access to information; this is because, presently, more and more kinds and amounts of information, including government information, are provided through Web sites. In this sense, as Jaeger states, "E-government has great potential to allow citizens to become more involved in government," if the e-government ensures its accessibility.

In fact, the Web is so flexible that it contributes significantly to accessibility for people with disabilities. The existing media of government information, such as publications and TV and radio programs, prohibit access to information for the disadvantaged people. However, the Web is a more accessible medium. First, the Web is available via networks for those who are unable to go away from home. Second, Web contents can be easily processed for the use of the disadvantaged. Such processing includes enlarging and reading texts through various facilities provided by Web browsers. The abovementioned usefulness and importance of the Web is applicable to elderly people as well as those with temporary disabilities due to illness and/or injuries. The Japanese government, as well as its Korean counterpart, is faced with the issues of an "aging society." The National Institute of Population and Social Security Research of Japan expects Japan to have a

population of 32 million elderly people (over 65 years old), one-quarter of the entire population, in the year 2015[3]. Therefore, developing and managing Web sites that cater to the needs of the elderly population is an inevitable step.

How can Web accessibility be ensured? One of the key issues is the technical standards that govern Web accessibility. Such standards will be powerful tool if they are implemented to electronic government web contents, through policy instruments. This practice is followed in Japan, although the policy instruments are not yet sufficiently developed to realize Web accessibility in electronic government. The aim of this paper is to discuss the issues of Web accessibility and electronic government in Japan, and to discuss the role of libraries in ensuring access to government information in terms of Web accessibility.

2. Standard for Web accessibility in Japan: JIS X 8341

2.1 The structure of the standards for Web accessibility in Japan

Since 2001, along with electronic government policy initiatives, which will be discussed later, the Japanese government deals with Web accessibility issues through the development of standards. This began with an international standard followed by the Japanese government, followed by a national standard—Japan Industrial Standard (JIS)[4]—specialized for Web designing and management. Such a standard is expected to affect the development of government Web sites in Japan.

In November 2001, the International Organization for Standardization (ISO) and International Electrotechnical Commission (IEC) jointly issued "ISO/IEC GUIDE 71: Guidelines for standards developers to address the needs of older persons and persons with disabilities." This is the first ISO guide headed by the Japanese government, which has experienced rapid growth in the aging population. Although it is not a standard for specific products and services, this guide functions as the roadmap for all standardization procedures concerning the use of products and services by elderly persons and those with disabilities. It is localized to countries around the world; JIS Z 8071:2003 is the Japanese version of ISO/IEC GUIDE 71.

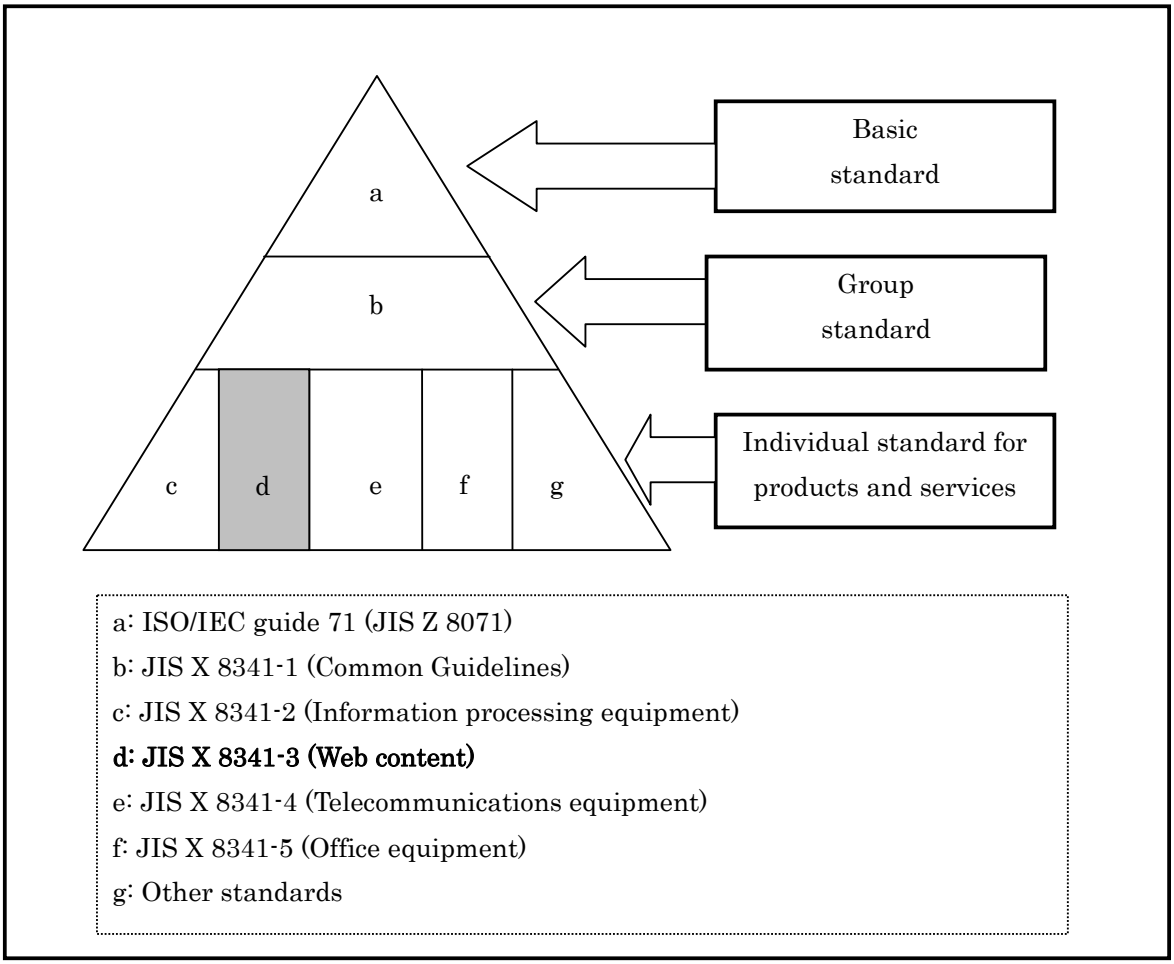
Based on ISO/IEC GUIDE 71 and JIS Z 8071, the Japanese government began the development of standards for Web accessibility. After research and discussion with an advisory group for the Japanese Standards Association, which manages JIS, ISO, and other industrial standard issues in Japan, the Association issued a series of standards for accessibility; these were known as "JIS X 8341: Guidelines for older persons and persons

with disabilities—Information and communications equipment, software and services." Currently, five components of JIS X 8341 have been issued: Part 1 (JIX X 8341-1: 2004) "Common Guidelines" and Part 2 (JIS X 8341-2: 2004) "Information processing equipment" were issued in May 2004, while Part 3 (JIS X 8341-3: 2004) "Web content" was issued in June 2004. In addition, Part 4 (JIS X 8341-4: 2005) "Telecommunications equipment" that was issued in October 2005 and Part 5 (JIS X 8341-5: 2006) "Office equipment" that was issued in January 2006 are also available.

The structure of the standards discussed above is shown in Fig. 1. The most important standard, which governs the entire procedures and structures of accessibility standards, is ISO/IEC GUIDE 71, and its Japanese counterpart is JIS Z 8071. Further, JIS X 8341-1 functions as "middleware," which regulates the common elements for accessibility issues. The "bottom" standards are Parts 2–5 of JIS 8341, which function as standards for industries that are involved in developing hardware, software and other equipment to ensure the accessibility of information.

Fig. 1: The structure of Web accessibility standards in Japan

(Source: Japanese version of JIS X 8341-3, p. 50, and Allied-Brains (2004),[5] p. 60, slightly modified. Tentative translation by the author.)



Generally, it is enough for private companies to follow JIS standards voluntarily. However, this is not the case with national and local government agencies. Section 67 of the Industrial Standardization Law of 1954 in Japan mandates that national and local government agencies must value JIS standards when defining technical specifications for the procurement of industrial products. In addition, "the General Guidelines for the Procurement of Computer Products and Services" that were proposed in 1995 request national government agencies to follow JIS and ISO standards for such procurement. In this manner, the series of JIS 8341 specifications for Web accessibility functions as a facilitator of Web accessibility for national and local government agencies, as well as private companies dealing with government procurement.

2.2 The specifications of JIS X 8341-3—a Web accessibility standard

Among the series of accessibility standards defined as the JIS X 8341 series, JIS X 8341-3 defines several important specifications for Web accessibility. These specifications have been summarized below; the quotations have been taken from the English version of JIS X 8341-3, and the parentheses indicate the number of headings at the JIS standard.

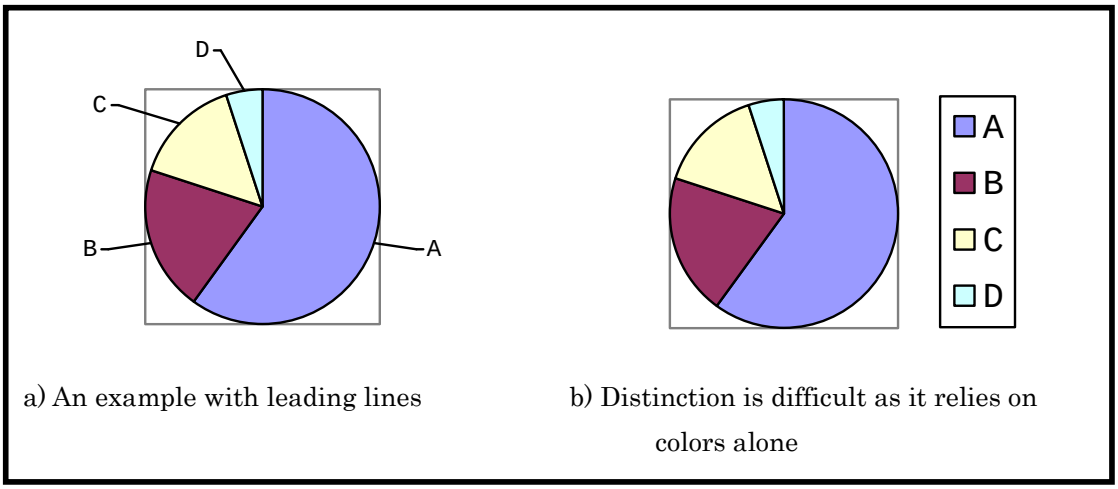
- **Document structure**: "Web content must define document structure using heading, paragraph, list, and other elements" (5.2.a). The reason why the document structure is so important is that it helps people with disabilities in understanding the Web contents; a voice browser can understand the structure and provide users with appropriate auditory information (for example, it can read headings slowly, and provide sounds at each element of a list).
- **Images**: "Images shall have alternative information such as text information so that users can appropriately understand content of the image" (5.4.a). "Alternative information such as text which describes the linked content shall be provided when an image is used as a hyperlink" (5.4.b).
- **Navigation**: "Information which indicates the structure such as the hierarchy should be provided to enable users to understand the location of current page displayed within the Web site structure" (5.2.g). "The basic operation component should be consistent in its location, display style, and notation throughout the Web site" (5.3.f).
- **Operation**: "Web content shall not assume operation with certain, single device, and at least all operations shall be possible by keyboard" (5.3.a). For example, mouse operation may be inconvenient for those who are vision-impaired, so alternative operations such as those using a keyboard are needed. In addition, the people whose arms are impaired need to use special equipment such as pointing devices using eyeshots. For these people, a Web design with visual effects using JavaScript and/or Flash tends to be really inconvenient.
- **Description of Hyperlink**: "Hyperlinks and buttons should be easy to be distinguished and operated" (5.3.g). A bad example is one that states, "Pricing information is here" and specifies "here" as link. In this case, users cannot understand which hyperlink is linked to what information. Instead, specifying "Pricing information" as linked text clearly indicates what is linked.
- **Color**: "Information required to understand and operate Web content shall not rely on color alone" (5.5.a). For example, the use of leading lines to indicate a specific area on a pie chart is recommended, as shown in Fig. 2.
- **Character and font**: "Character size and font shall be able to be adjusted by users as

needed" (5.6.a). This is necessary for older persons and those with poor vision who have difficulty in reading Web contents.

- **Language**: "Where language can be specified, language code associated with the natural language shall be specified" (5.9.a).

Fig. 2: Issues of color and chart from JIS X 8341-3

(Source: English version of JIS X 8341-3, p. 15, slightly modified.)



a) An example with leading lines

b) Distinction is difficult as it relies on colors alone

In addition to the technical requirements to secure Web accessibility, it is important to develop standards to ensure accessibility through the entire process of Web management. This process includes the planning stage, procurement and bidding, and the update and management of Web contents. JIS X 8341-3 covers the issues of Web site management.

2.3 Comparison with international standards

With regard to Web accessibility standards, "Web Content Accessibility Guidelines 1.0 (WCAG 1.0)" of 1999,[6] prepared by the Web Accessibility Initiative (WAI) of the World Wide Web Consortium (W3C), works as an international de-fact standard. Currently, WAI follows the revision of WCAG and issues WCAG 2.0 as a working draft.[7] JIS X 8341-3 defines several important points for Web accessibility beyond WCAG 1.0 and also includes some points from the draft version of WCAG 2.0. In addition, JIS X 8341-3 adds some points that are unique to Japan in terms of the presentation of text and languages, such as Kanji and Kana characters.

The specifications of JIS X 8341-3 that differ from WCAG 1.0 are shown below:[8]

- **Page title**: "A page shall have a title which enable users to identify content of the page,"

(5.2.e) instead of merely including the URL in the title section. Further, the use of the same title in different pages should be avoided.

- **Operation and input**: Avoid a timeout for input as far as possible (5.3.c). If a timeout is necessary (such as for input of ID and password), the users should be able to extend or remove the timeout, or to use an alternative (5.3.d).
- **Shape and location**: "Information required to understand and operate Web content shall not rely on shape and location (such as charts and maps) alone." Instead, it is desirable to use shape and location together with text information (5.5.b).
- **Font**: "Font which is easy to read considering size and typeface should be specified." (5.6.b)
- **Sound**: "Sound [such as one just used for a BGM] should not be played automatically." (5.7.a) This is because such sound may prevent the functioning of voice browsers. If sound is used, it should be controlled by users (5.7.b).
- **Language:** "In Japanese pages, foreign terms that may not be understood by assumed audience should not be used." (5.9.b)

3. Policy issues surrounding Web accessibility

While technical standards for Web accessibility have been established in Japan, it is important to investigate whether and how the issue of Web accessibility is reflected in the actual policy. This chapter deals with (1) the general policies of electronic government and (2) recent issues involved in the "operational models" for Web accessibility.

3.1 Policy programs concerning electronic government and Web accessibility in Japan

In Japan, electronic government has been developed at national and local levels under the "e-Japan Strategy," a set of national policy initiatives for the general establishment of an information society in Japan. The IT Strategic Headquarters under the Prime Minister of Japan and his Cabinet has pursued initiatives under the e-Japan strategy since 2001, and the Headquarters' Web site provides overall information regarding this strategy.[9] The e-Japan Strategy consists of five core plans: (1) accelerated construction of the world's most advanced networks, (2) enhancement of IT human resource development, (3) facilitation of e-commerce, (4) digitization of the administration, or establishment of electronic governments, and (5) ensuring the security and reliability of advanced information and telecommunications networks.

Among the policy initiatives of the e-Japan Strategy, the "e-Japan Priority Policy Program"[10] that was announced in March 2001 mentioned the "barrier-free" operation of

government Web sites, although it did not clarify concrete measures or procedures to realize such operation. The "e-Japan Priority Policy Program–2003"[11] declared the following points concerning the accessibility of electronic government, as a measure to bridge the "digital divide":

1) Ensuring the accessibility of electronic government, as a task of each central government agency and
2) Providing support for ensuring the accessibility of local public agencies and other public areas, as a task of the Ministry of Internal Affairs and Communications (MIC).

Such policy guidance has been succeeded by following policy programs concerning the "e-Japan Strategy".

In January 2006, the Headquarters issued the "New IT Reform Strategy,"[12] as a new general policy program of the IT society in Japan and as a successor of the e-Japan Strategy. One of the key policy issues of this new Strategy of 2006 is "an IT society that adopts universal design." The concrete measures to realize "universal design" include "the creation of guidelines for the standardization of labeling and methods of operation of devices and terminals" and the "promotion of user-friendly Web sites." The problem is that due to the emphasis on "universal design" in this new strategy, the issue of the accessibility of electronic government recedes into the background.

Besides the general policy programs such as e-Japan and the New IT Reform Strategy, several basic policy programs clarify the necessity of the Web accessibility of an electronic government. For example, the "Basic Programme for Persons with Disabilities,"[13] issued by the Cabinet Office in 2002, declares that the "guidelines for designing accessible telecommunication equipment for persons with disabilities should be standardized by JIS." This statement is realized as the abovementioned JIS standards. This Programme also declares, "As for administrative information, the homepages of Web sites should be provided in accessible formats." In addition, the "Development Plan of Electronic Government,"[14] issued by the CIO Council of the Government of Japan in 2003, declared "securing universal design" as one of the eight core principles of electronic government in Japan. Here, "universal design" implies "Web contents recognizable by voice browsers." The revised version of the "Basic Plan for Electronic Provision of Administrative Information" in 2004[15], also issued by the CIO Council as a subpart of the "Development Plan of Electronic Government," urges central government agencies to revise and maintain their Web contents along with Web accessibility standards defined in JIS X 8341-3.

3.2 Acceptance of JIS X 8341 and operational models

In spite of JIS X 8341-3 and policy initiatives that urge government agencies to secure Web accessibility, these measures are found to be ineffective in the current situation. The extent to which central government agencies in Japan comply with Web accessibility standards and policies has not yet been fully verified, although several important government Web sites—such as the general portal site "e-Gov"[16]—modify their site design such that it becomes compatible with JIS X 8341-3. On the other hand, the MIC, which is responsible for overseeing the local governments, takes serious steps for the promotion of Web accessibility among the local governments.

According to the research conducted by the MIC in February and March 2005,[17] 74.1% of local governments in Japan knew details about Web accessibility. However, only 28.2% knew the details of JIS X 8341-3, and 33.3% had never come across it. In addition, this research highlighted several obstacles in facilitating Web accessibility:

- **Status of the staff in charge of Web accessibility**: In many local governments, which section was in charge of Web accessibility was unclear. In addition, the transition of work concerning Web accessibility was not smoothly undertaken. This implies that once the staff in charge of Web accessibility moved to another section, the task of Web accessibility was not well sustained.
- **Procurement**: It is difficult to ensure to what extent a contractor who develops and/or manages a Website for a government agency is skilled to satisfy Web accessibility standards. It is also difficult for a government agency to develop a procurement request that covers accessibility standards.
- **Maintenance of accessibility**: Few local governments have policies and procedures to ensure accessibility for their Web pages that are updated frequently (e.g., daily news).
- **Evaluation**: Very few local governments have procedures wherein their Websites are evaluated by their users, especially those who need accessibility, i.e., people with disabilities and elderly people.

Therefore, in December 2005, a study group under the MIC proposed the "Operational Model to Improve Accessibility of Public Websites."[18] This model includes a series of work procedures that cover the "lifecycle" of government Web site management. The model particularly emphasizes quality management issues based on the following "PDCA (Plan-Do-Check-Action)" cycle:

- **Plan**: The basic policy, implementation plan and procedure, range of implementation, and goals should be formulated. It is particularly important that the top management understand and approve of the plan.
- **Do**: The elements of training, inspection of products, ensuring the update of Web pages

and resources such as accessibility checker software should be considered.

- **Check**: Regular evaluation of Web accessibility and work procedure is indispensable.
- **Action**: Based on the results of the evaluation, it may be necessary to undertake a revision of the basic plans and procedures as well as the working process and resources at the level of the government.

There are several challenges to explore the operational models. The issues suggested in the operational models are as follows:

- Training programs and learning materials for government staff
- Evaluation measures of Web accessibility skills for technical staff
- Common infrastructures and resources to ensure Web accessibility, such as the templates of Web pages
- Environment for Web accessibility evaluation, such as a "pool" of monitors that consist of people with disabilities and elderly people
- Measures to evaluate Web accessibility regularly and efficiently

Currently, the MIC tries to diffuse its operational models through the introduction of the best and good practices of local governments concerning Web accessibility and by holding seminars throughout Japan to implement the models.

4. Challenges for electronic government, Web accessibility, and librarianship

While the central and local government need to comply with Web accessibility standards and the MIC's Operational Models when dealing with Web accessibility issues, libraries—as an information mediator regardless of information formats—need to investigate the extent to which government agencies ensure access to their information for their users.

Access to government information has been one of the important missions of libraries. However, the measures adopted for achieving the mission are changing rapidly due to the development of electronic government. Of course, the discovery and organization of government information on the Web is a huge issue for libraries. In addition, libraries should also carefully deal with Web accessibility issues, which have a decisive influence on intellectual access to government information in the era of electronic government.

The author holds that libraries perform a two-fold role with regard to providing access to government information:

- **Libraries as service providers and investigators**: Libraries perform the role of not only identifying the distribution route of government information as "gray literature" but also of investigating how government agencies disseminate their information, and

whether such dissemination ensures "intellectual access" to government information—in other words, whether users can really see, read, and understand the contents of government information. A number of researchers and librarians in Japan and other countries suggest the evaluation standards of design and organization for government Web sites.[19] The elements of such evaluation standards include the following: clear notification of Web site authority (who manages the Web site) and the aim of the Web site, correctness of the contents (including least literal errors), navigation and organization of the contents, compliance with legal issues such as privacy, and so forth. In addition to these, libraries and librarians need to focus on the elements described in Web accessibility standards such as document structure and use of color, and if possible, suggest improvements to government agencies that create and manage Web sites. Of course, the Web site of the library itself should be compliant with such standards.

- **Libraries as "archives" of government information**: Another challenge for libraries concerning electronic government and accessibility is archiving the contents of electronic government. In terms of "archives," the role of libraries is not only to preserve the contents, but also to ensure "permanent public access" to government information, that is, to ensure the use of archived contents for the long term. In Japan, the National Diet Library has conducted the Web Archiving Project (WARP) for archiving national and local government Web sites as well as other important Web sites such as those of universities and quasi-government organizations.[20] In terms of accessibility, the gateway Web site for archived contents such as the WARP site needs to comply with accessibility standards. A considerably more difficult issue is how to ensure the accessibility of archived contents: on the one hand, as archives, it is necessary to preserve the "look and feel" of the archived contents, even if the contents do not comply with the accessibility standards. On the other hand, it is of no use to the users if they cannot see and read archived contents. Therefore, in the future, it may be necessary to develop systems and/or programs to modify the design and/or source language (such as HTML) of archived Web contents without altering the contents themselves. However, this will not be possible without revising important legislations such as the copyright law.[21]

5. Conclusion

The characteristics of government information itself, as well as the environment surrounding the information, have undergone drastic changes along with the popularization of the Internet. The development of electronic government is a global trend, and librarians need to keep up with the trend. Understanding the issues of Web accessibility standards and policy issues concerning Web accessibility will be one of the key issues that librarians need to pursue in order to secure and facilitate access to government information. This paper introduced issues in Japan,[22] and the author hopes that it will help librarians worldwide to understand the issues involved in Web accessibility and facilitate access to government information in the era of electronic government.

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[21] The Copyright Law of Japan allows the government to hold copyrights for its "works," with the exceptions of legislative texts and court decisions. Under this law, the government web contents, design, and source language are protected by this law and cannot be modified freely. For more details, see: Koga, Takashi (2003): "Access to Government Information in Japan: A Long Way toward Electronic Government?," *Government Information Quarterly* 20(1), p. 47-62.

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