ITU Workshop on Making Television Accessible – From idea to reality" hosted and supported by Nippon Hōsō Kyōkai (NHK)

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Universal Design in Information-Communication

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Introduction

- The number of Internet users with disabilities, elderly people is increasing every year.
- Universal Design of Information and Communication Technologies (ICT) service is as important as TV broadcasting service.
- Universal Design
  = Usability + Accessibility

Accessibility of ICT

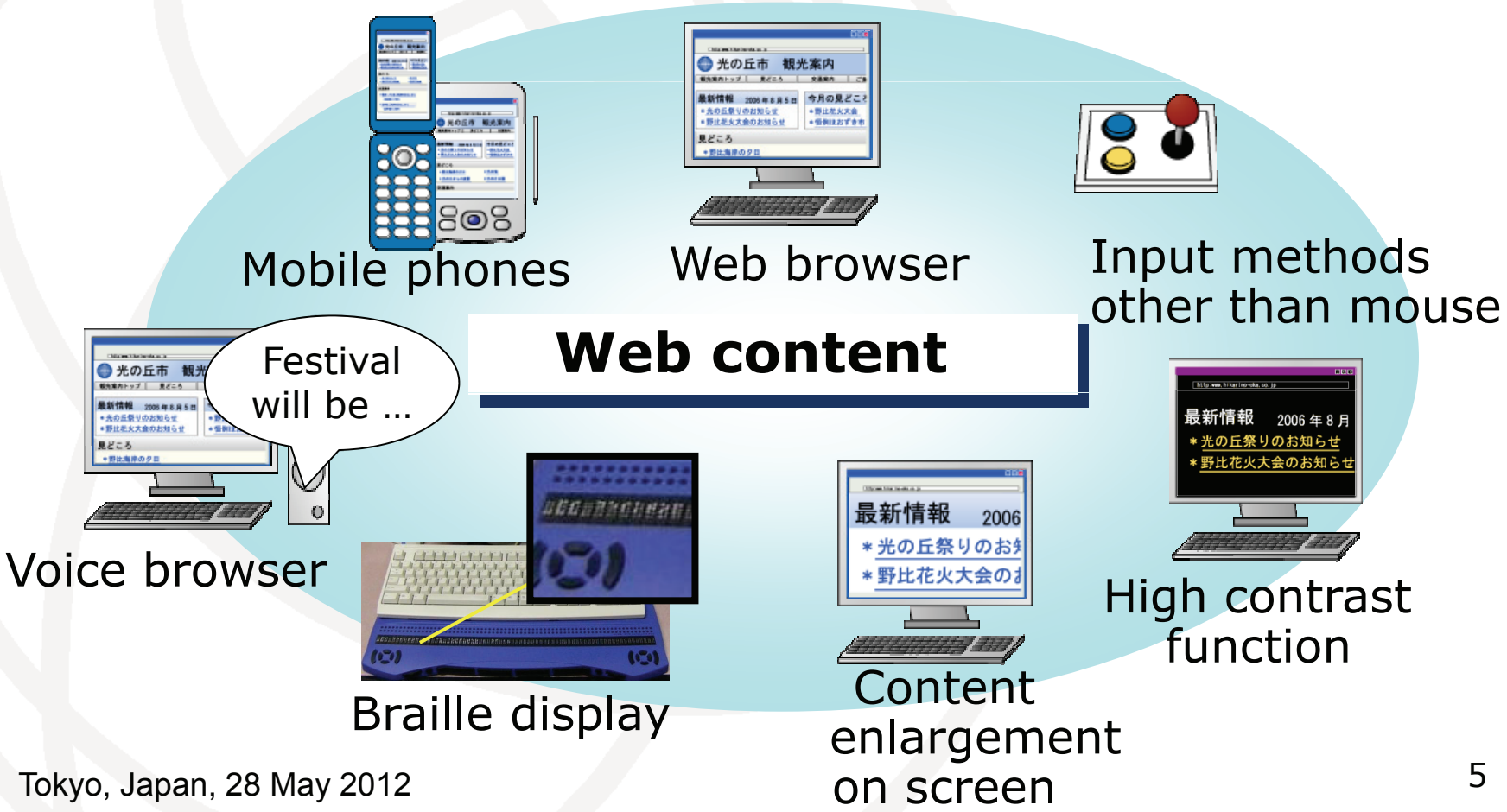
- ICT device's (PC's or mobile phone's) operating systems or software provides some assistive technologies, such as voice presentation, enlarged text, or changing color of the text.

Example of accessible mobile phone

- A mobile phone of NTT DoCoMo, the RakuRaku PHONE simplifies the menu on the phone for easier understanding.
- Because it can read aloud an e-mail or phone's menus with synthesized voice, many visually impaired use the RakuRaku PHONE.

Web accessibility

- People accessing Web content use their own preferred device and browser.



Popular problem 1: alternative text of an image

- If there is no alternative text for an image, a voice browser does not support content understanding.
- Alternative text of an image should be set and explain the meaning of the image.

Popular problem 2:
Colors of text and background

- If color contrast ratio between text and background is too low, some senior users or low-vision users unable to perceive the text and could not understand the meaning of the content.
- Text color should be changeable by users as they like.

Popular problem 3:
Too small text

- If the text in the content is too small, senior users or low-vision users unable to perceive the text and fail to understand the content.
- Text size should be changeable by users as they like.

Basic idea of accessible Web design

- It is important not to fix the presentation such as color of text, size of text by Web designer.
- Presentation of Web content should be changed as user like.
- The meanings and presentation of Web content should be set with HTML elements and with Cascading Style Sheet (CSS), respectively.

Feature of Web accessibility

- Web content can rendered to suit the user (e.g. font size).

Standard of Web content accessibility

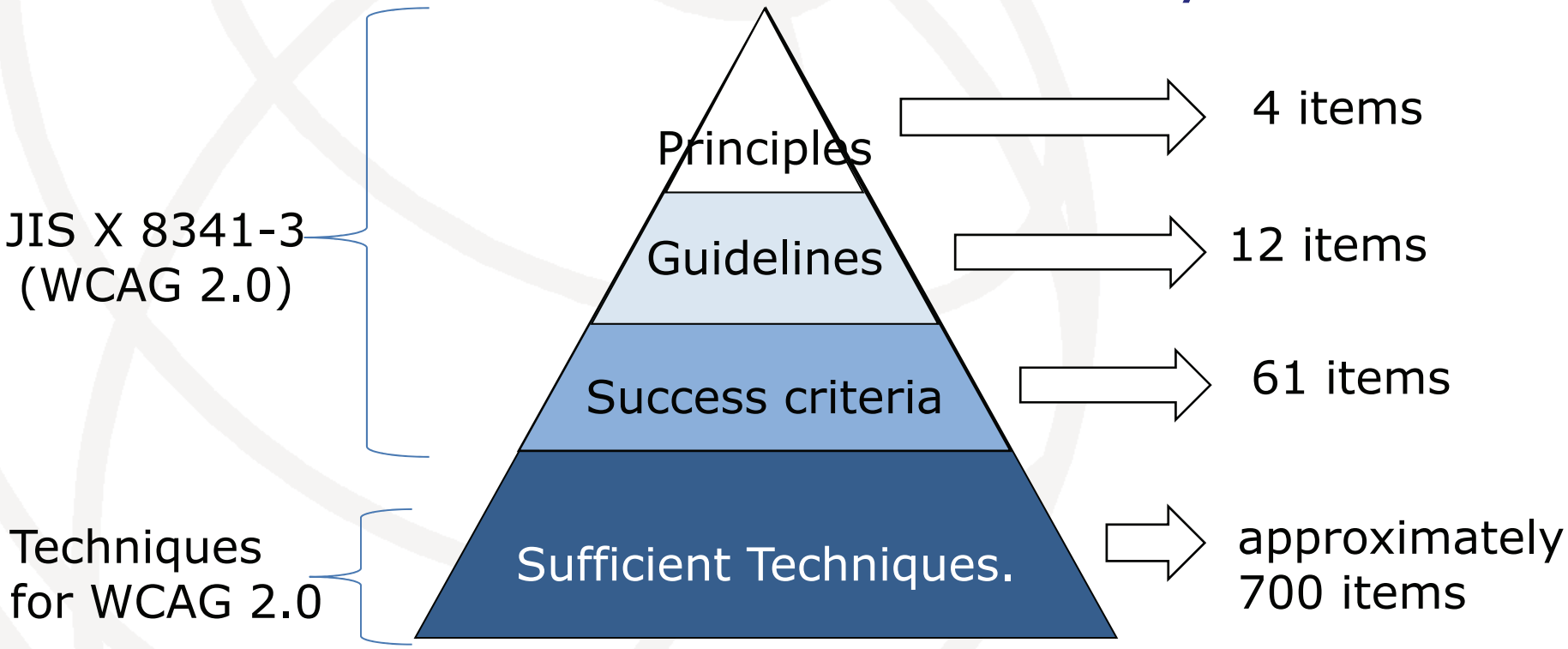
- World Wide Web Consortium (W3C)
  - Web Content Accessibility Guidelines 2.0
- Japanese Industrial Standards
  - JIS X 8341-3:2010
  - Guidelines for older persons and persons with disabilities – information and communications equipment, software and services – Part 3: Web content

Features of JIS X 8341-3

- It is harmonized with WCAG 2.0.
  - It is testable.
  - We can use the same standard throughout the world.
  - It refers to some technical documents of WCAG 2.0.
    - Documents must be translates into Japanese.

Composition of JIS X 8341-3

- JIS uses many documents of WCAG 2.0.
  If we check the Web content based on JIS,
  we have to take care of too many items.



Issues of JIS X 8341-3

- JIS X 8341-3 is not popular because,
  - it is difficult to understand the guidelines and the documents.
  - it takes a long time to evaluate Web contents.
  - accessible design is expensive.
  - it is difficult to confirm the benefits of accessible design, because virtually all Web designers have no disabilities.

Policies for popularization of JIS

- Ministry of Internal Affairs and Communications made the following based on WAIC's documents.
  - A model for designing public Web sites
  - An evaluation tool: miChecker
- Web Accessibility Infrastructure Committee (WAIC) made some documents for JIS.

Policies for popularization of JIS

- Web Accessibility Infrastructure Committee (WAIC)
  - One division of Info-communication Access Council.
  - Major companies and Web users join this committee.
  - goal: popularization of Web accessibility with JIS X 8341-3.

Activity of Web Accessibility Infrastructure Committee (WAIC)

- Technical information made by WAIC.
  - Technical information about JIS
    - Explication of JIS
    - Accessibility Supported Information
    - Guidelines for Test based on the JIS
  - Technical information about WCAG 2.0
    - Translation of “WCAG 2.0”
    - Translation of “Understanding WCAG 2.0”
    - Translation of “Techniques for WCAG 2.0”

Activity of NTT laboratory

- NTT ICT Design Center

  - The ICT Design Center (IDeC) of NTT Laboratories is striving to create user-friendly ICT services by utilizing various techniques of human-centered design and cognitive psychology.
  - http://www.waza.jp/idec/e/
  - http://www.waza.jp/idec/(in Japanese)

Activity of NTT ICT Design Center

- Promotion for standards for Web content accessibility
  - We were members of the draft making committee of the JIS.
  - We are member of the WAIC.
- Research and development for the NTT's Web site and the business.
  - We made Web Accessibility Guidelines for NTT group companies.

Activity of NTT ICT Design Center - Research and Development

- Web design method for senior users
- Color design considering color blind people (Color Universal Design)
- Web Accessibility Evaluation Technology
  - Evaluation tool “Check U.D.”
  - Evaluation procedure manual

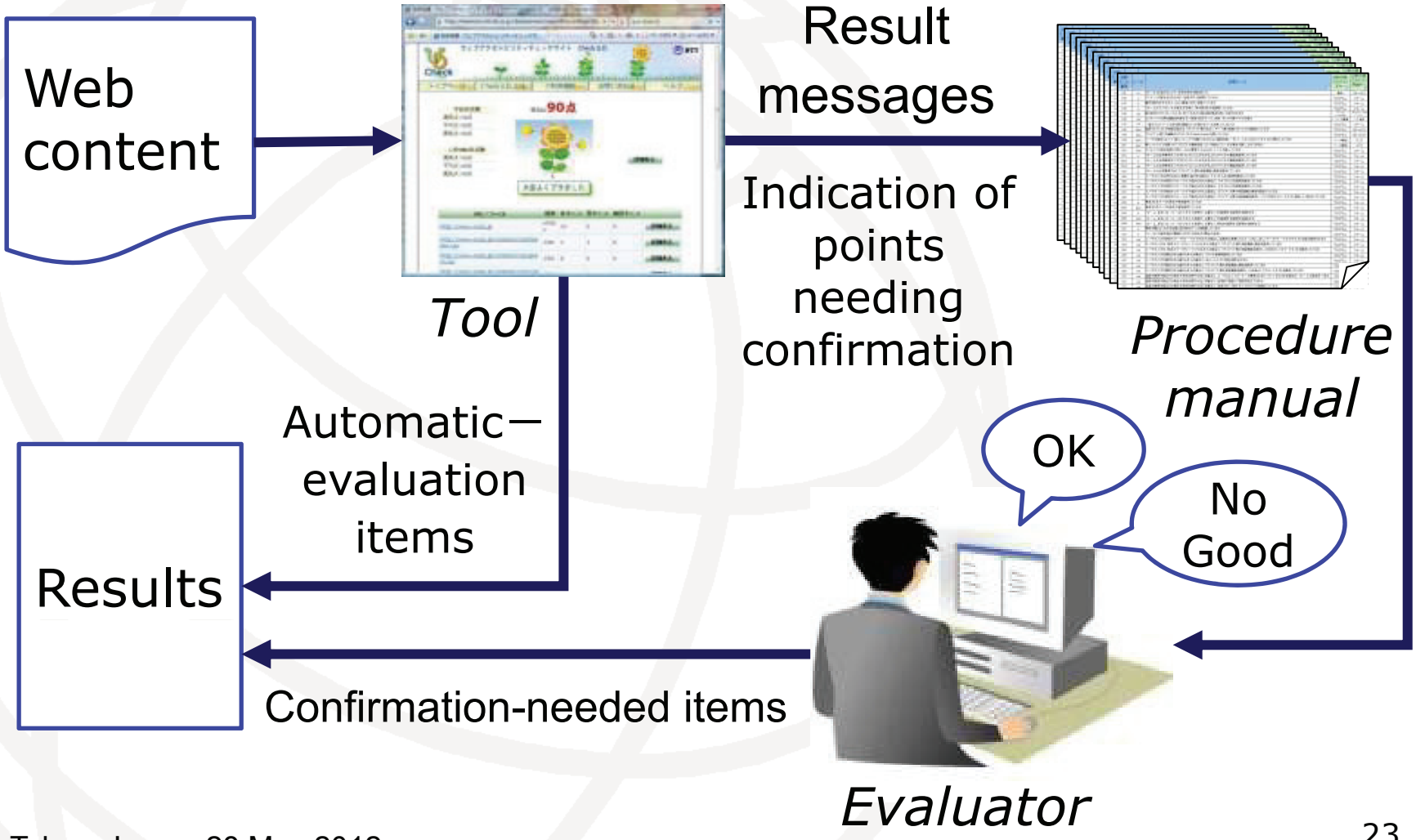
Web design method for senior users

- We observed some senior users as they accessed Web sites such as electronic commerce site.
- We clarified some attributes of senior users.
  - They often could not perceive the changes in a Web page after operating.
  - They often focused on the center of a Web page.

Color design considering color blind people (Color Universal Design)

- We focused not only on the perceptive aspect of color but also the emotional aspect.
- We found that it is effective to focus on appealing colors in re-coloring.
- We are studying emotional aspect of color combination pattern in color blind people.

Evaluation Technology: the procedure by using the manual and the tool



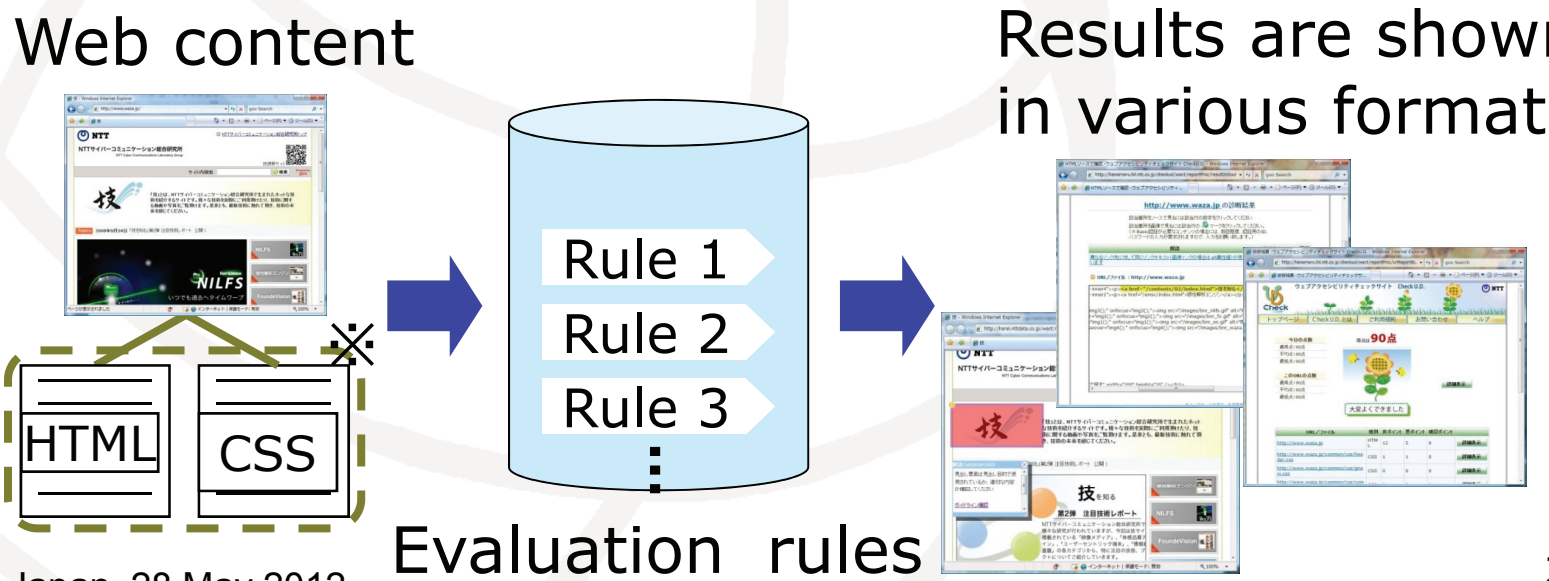
Evaluation procedure manual

- Evaluation procedure manual displays all evaluation procedure in one table based on JIS X 8341-3.
  - Evaluation rules are made by reference to “Techniques for WCAG 2.0”.

ルール番号	レベル	診断ルール	診断対象のカテゴリ	適合条件	場合分け	ステップ1	ステップ2	ステップ3	ステ4
1	A	img 要素に適切なalt 属性があるか	画像	1&2	Situation A: 非テキストコンテ	img 要素に alt 属性があるか	alt属性値は適切か(画像中に		
2	A	リンクのあるimg 要素に適切なalt 属性があるか	画像	2&3	Situation A: 非テキストコンテ	a要素において、テキスト、ある	a要素にimg要素しか含まれ	a要素に一つ以上含まれるimg	
3	A	隣接し、参照先が同一の画像とテキストリンクは、同じリンク内で記述しているか	画像	1&2&3	Situation A: 非テキストコンテ	隣接し、参照先(hrefが)	画像とテキストは同じリンク	代替テキストは適切か	
4	A	画像のグループを代表した代替テキストを、グループ内の一つの画像には付けているか	画像	1&2&3	Situation A: 非テキ	グループの中の	グループの中のる	支援技術に無視さ	

Evaluation tool “Check U.D.”

- Evaluation tool evaluates Web content based on JIS X 8341-3.
  - Evaluation rules were made with reference to “Techniques for WCAG 2.0”.



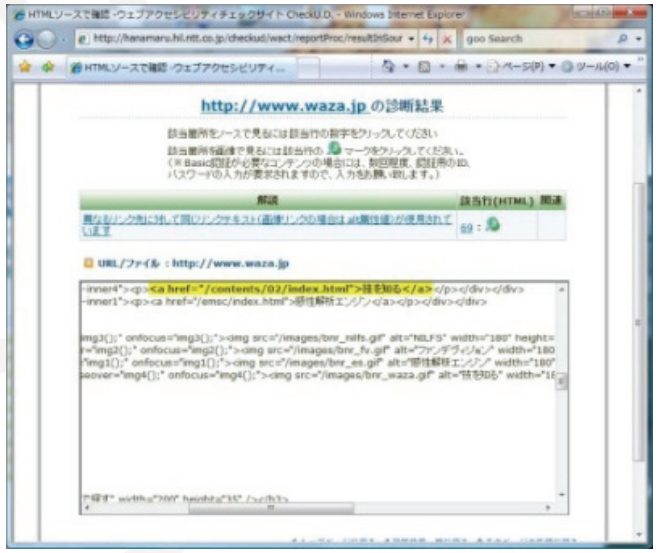
Operation 1: Evaluation tool

(1) Put the URL into the top page of the tool.
(2) Press the “check” button.

Summary of the results is shown.

Operation 2: Evaluation tool

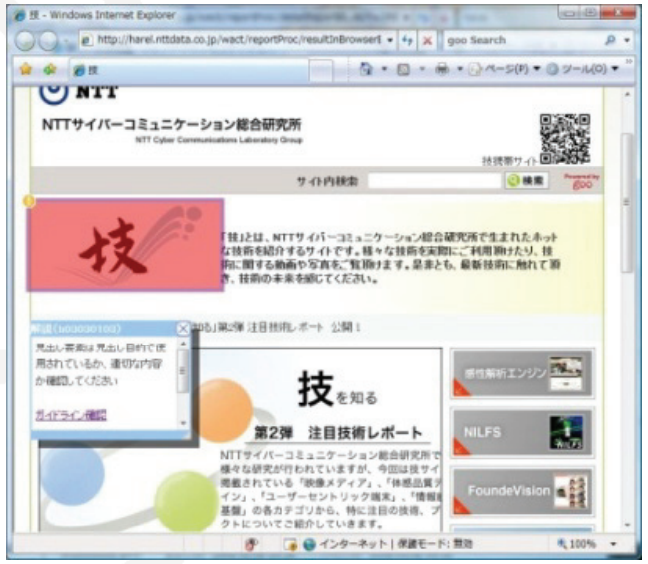
(3) Enter the link of the line number.



The pointed area is highlighted in the source code.

Operation 3: Evaluation tool

(4) Press the “show as rendered.”



The rendered window appears and the area pointed is highlighted.

Conclusions

- There is a standard (JIS X 8341-3) of Web content accessibility in Japan.
- Web accessibility based on JIS is extended to foster adoption.
- NTT Laboratory is studying support technologies that encourage accessible ICT services for elderly users and people with disabilities.