Web Accessibility

Digital Inclusion Division
Office of the
Government Chief Information Officer

6 March 2013

(Adapted for COMP 4021 by Dik Lee)

What is Web Accessibility?

- Making website **Content** available for **ALL**
  - Including persons with disabilities (361,000 about 5.2% of total population)

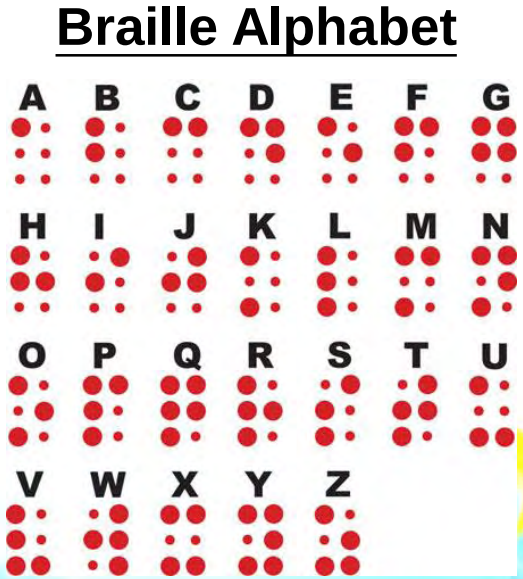
Four Major categories of disabilities

- Physical Impairment
- Hearing Impairment
- Visual Impairment
- Cognitive Impairment

Visual Impairment

Reading with Refreshable Braille Display Device

- Electrical device connected to computer
- Contents of webpage in text format can be converted to Braille (點字) display on the device



Visual Impairment

Reading with Screen Reading Software

- Use text-to-speech (TTS) engine to interpret what is displayed on the screen

Reading with Screen Magnification Tools

- Zoom into sections of a screen and change contrast level to assist users with poor or low vision

Physical Impairment

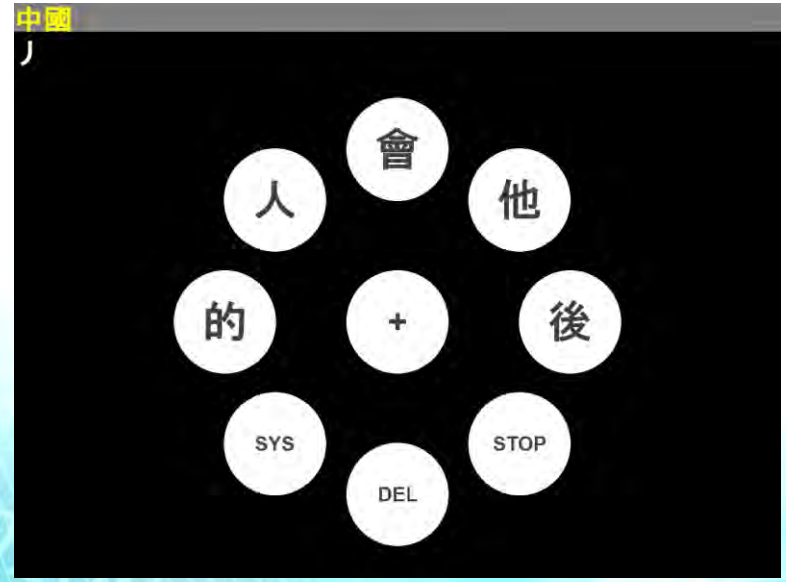
Barrier-free Input Device

- Special hardware and software for accessing webpages

Physical Impairment

Brain-Computer Interface System

- User concentrates on the characters and strokes displayed which flashed sequentially on the screen
- System monitors brain activity



Hearing Impairment

Provision of content in different mediums

- If information is conveyed in audio, ensure to provide an alternative way to access this information
- Provide a text transcript, subtitles or sign language

Cognitive Impairment

May not require special tools to use websites but some design considerations, e.g.

- Ensure that navigation is consistent throughout a website
- Similar interface elements and similar interactions
- Avoid distractions (e.g. animation, unusual font faces)
- Pair icons or graphics with text to provide contextual cues

Ambiguous meaning

Clear meaning

Common Pitfalls in Web Accessibility

1. No alternatives for non-text content

- **Persons with visual impairment cannot perceive the image content**

Alt = “Image 1”

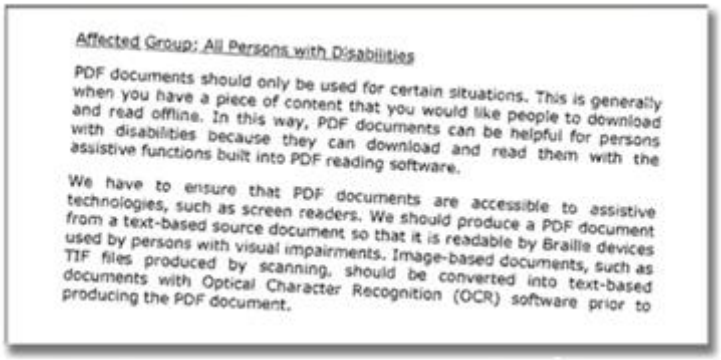
Alt = “Officiating guests attending the Launch Ceremony of the Web Accessibility Recognition Scheme”

✓ e.g. contain descriptive text alternative for image

Common Pitfalls in Web Accessibility

2. Inaccessible PDF Files

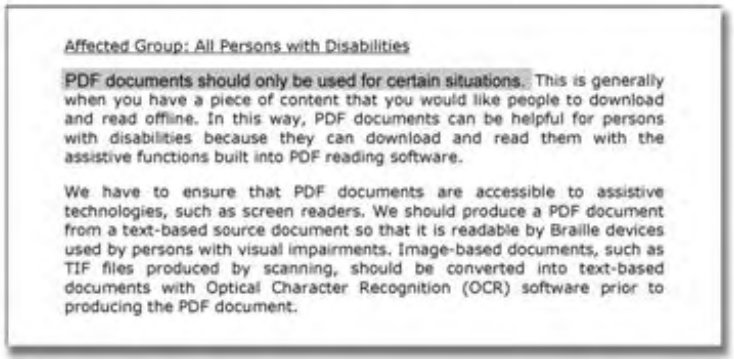
- **Screen reader cannot read the content**


Affected Group: All Persons with Disabilities

PDF documents should only be used for certain situations. This is generally when you have a piece of content that you would like people to download and read offline. In this way, PDF documents can be helpful for persons with disabilities because they can download and read them with the assistive functions built into PDF reading software.

We have to ensure that PDF documents are accessible to assistive technologies, such as screen readers. We should produce a PDF document from a text-based source document so that it is readable by Braille devices used by persons with visual impairments. Image-based documents, such as TIF files produced by scanning, should be converted into text-based documents with Optical Character Recognition (OCR) software prior to producing the PDF document.

Scanned Image not accessible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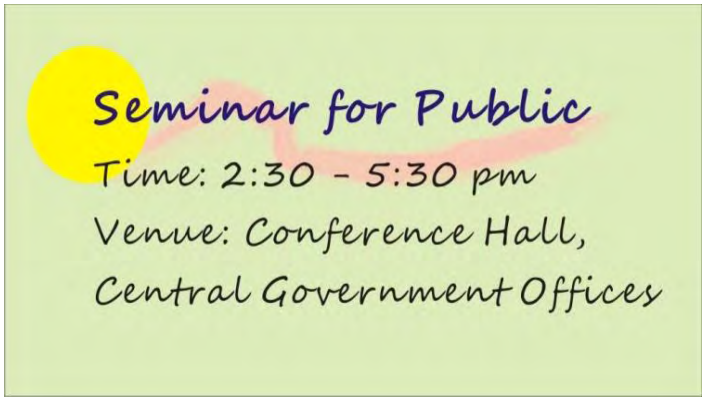
Text-based accessible PDF

- ✓ e.g. use proper PDF generator to produce a PDF document from a text-based source document;
- ✓ use Optical Character Recognition (OCR) software after scanning

Common Pitfalls in Web Accessibility

3. Text in Image is not accessible

- **Information is not conveyed to all**



Text in image

Accessible text on a webpage

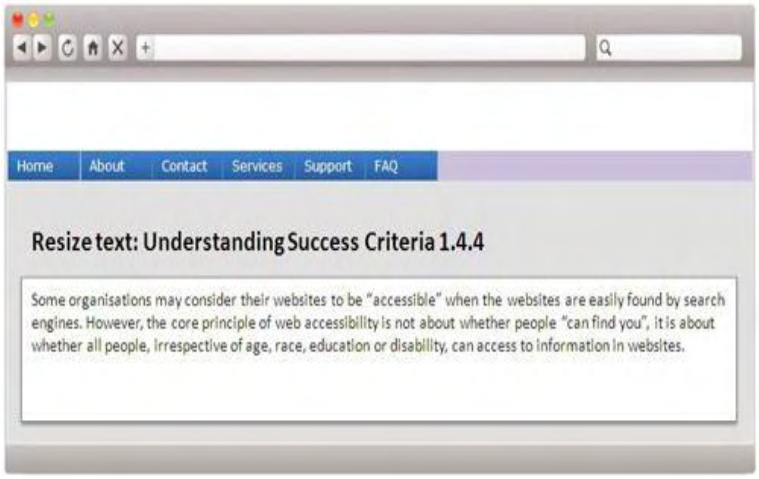
✓ Avoid to convey information of wide public interest

✓ If avoidable, provide descriptive text alternatives

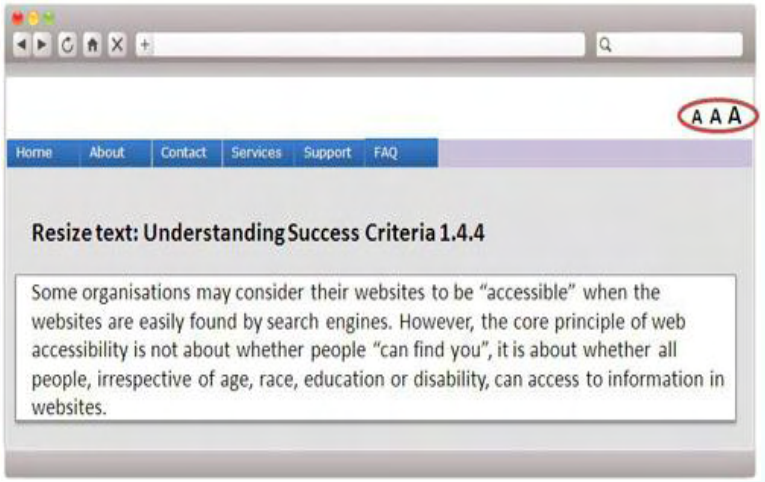
Common Pitfalls in Web Accessibility

4. Small font sizes

- **Persons with low vision cannot read the text**



Cannot resize text



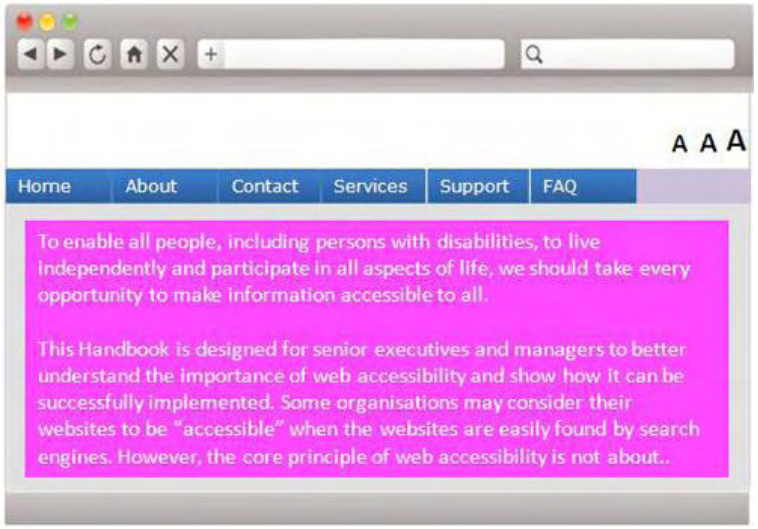
Can resize text

✓ e.g. provide text resize function

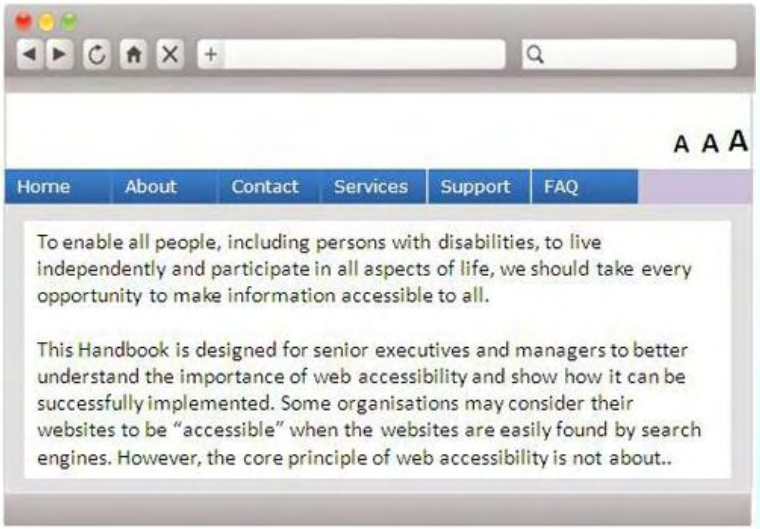
Common Pitfalls in Web Accessibility

5. Insufficient colour contrast

- **Persons with low vision have difficulty reading text that does not contrast with its background**



Poor background contrast



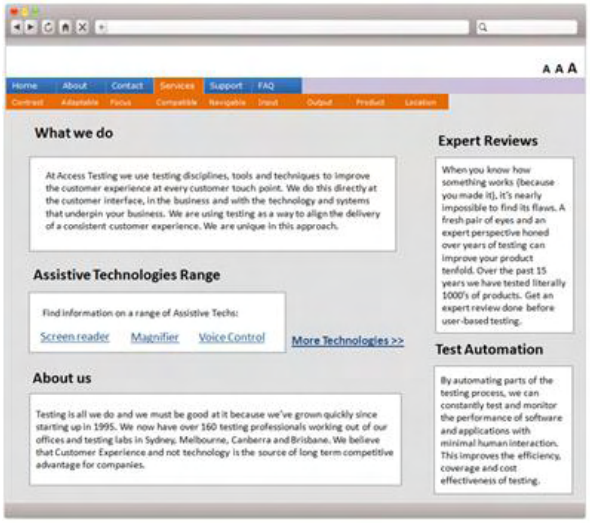
Easier to read with higher contrast

✓ e.g. provide sufficient contrast ratio

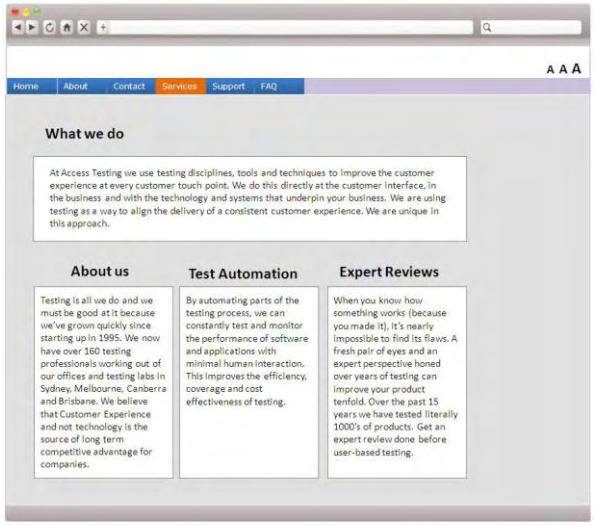
Common Pitfalls in Web Accessibility

6. Complicated website infrastructure

- **Persons with cognitive impairment have difficulty reading complex website structures**



Complex structures

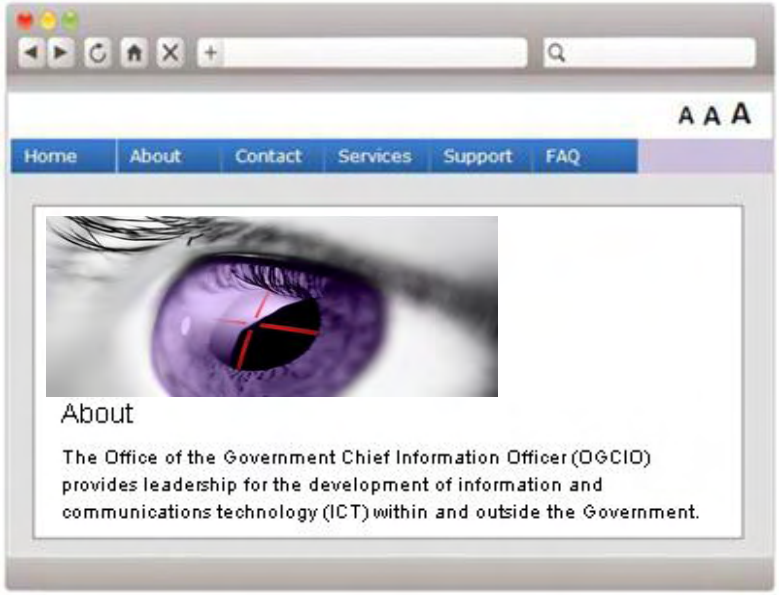


Simple structure

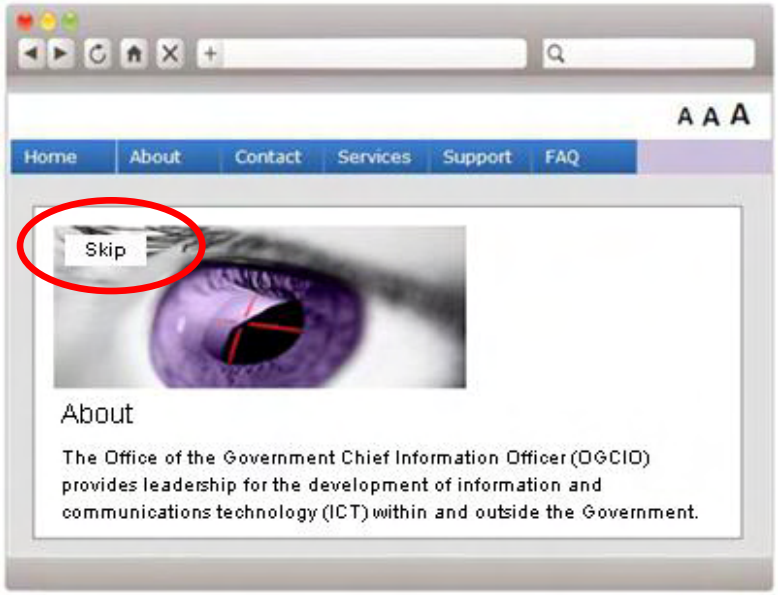
✓ e.g. provide simpler and ordered website structure

Common Pitfalls in Web Accessibility

7. Unable to skip inaccessible Adobe Flash and moving objects



Unable to skip



Skip function added

✓ e.g. add a skip function

Common Pitfalls in Web Accessibility

8. **Websites with background audio**
9. **Video without captions and audio description**
   - **Persons with visual or hearing impairments have difficulty to understand the video**

Legislation / Guideline

Country	Legislation / Guideline
Australia	• Disability Discrimination Act (DDA) of 1992 • WWW Access: DDA Advisory Notes • The Guide to Minimum Website Standards
Canada	• Canadian Human Rights Act of 1977 • The Government of Canada Internet Guide
China	• 國務院令第622號 -《無障礙環境建設條例》
United Kingdom	• The Equality Act 2010 • Formal investigation report on Web Accessibility
United States	• American with Disability Act (ADA) • Section 508 of the Rehabilitation Act • Assistive Technology Act of 1998 • Section 255 of the Telecommunications Act of 1996
European Union	• Accessibility of Public Websites – Accessibility for PWDs: Council Resolutions, 2002

Lawsuit: Australian Olympic Games website

- A person with visual impairment lodged a complaint against Sydney Organising Committee for the Olympic Games 2000
  - No alternative text for image
  - Contained inaccessible image map
- Respondent was ordered to make the website accessible including alternative text on all images and image map links together with other features
- Compensation sum of AU$20K paid by respondent

Lawsuit: inaccessibility of Target.com

National Federation of the Blind filed a class-action suit with 50,000 names:

- No alternative text for image
- Inaccessible image maps and graphical features
- Required the use of a mouse to complete an online purchase
- In Sep 2006, the Federal District Court sustained the claims against Target.com
- Set a precedent case that retailers must make their websites accessible under the Americans with Disability Act (ADA)
- Target made the website fully accessible
- Settled the class suitcase by set up a fund US$6M for claims

Local Complaint Cases

- A NGO issued a press release in June 2012
- Complained about inaccessible PDFs published on Government website

選舉處涉歧視殘障

無法在月底前向選舉處申索的人士，將不能在9月投票。

【本報訊】選舉事務處在核實選民登記冊時涉觸犯《殘疾歧視條例》。香港失明人士協進會會長莊陳有昨去信平機會，指選舉事務處在本月15日公佈的臨時選民登記冊及抽樣調查信件，只提供一般文字版本，視障人士無法查閱，隨時在不知情的情況下喪失選民資格。

莊陳有指失明人士看不見選舉事務處發出的抽樣信件，可能連需要核實身份也不知道。「事務處嘅網頁都係只得文字，欠缺無障礙設施，香港話就話無障礙城市，事實仲好落後。」莊陳有已在本月15日去信選舉管理委員會主席馮驊，要求改善，至今仍未獲回覆。

Source: Apple Daily Newspaper

International Standards

- **World Wide Web Consortium (W3C)**
  - **Web Content Accessibility Guidelines (WCAG)** have been developed over the years by W3C
- Version 1.0 in 1999; version 2.0 in 2008

  http://www.w3.org/WAI/

International Standards

- The WCAG consist of four parts —

Principle 1 - Perceivable

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

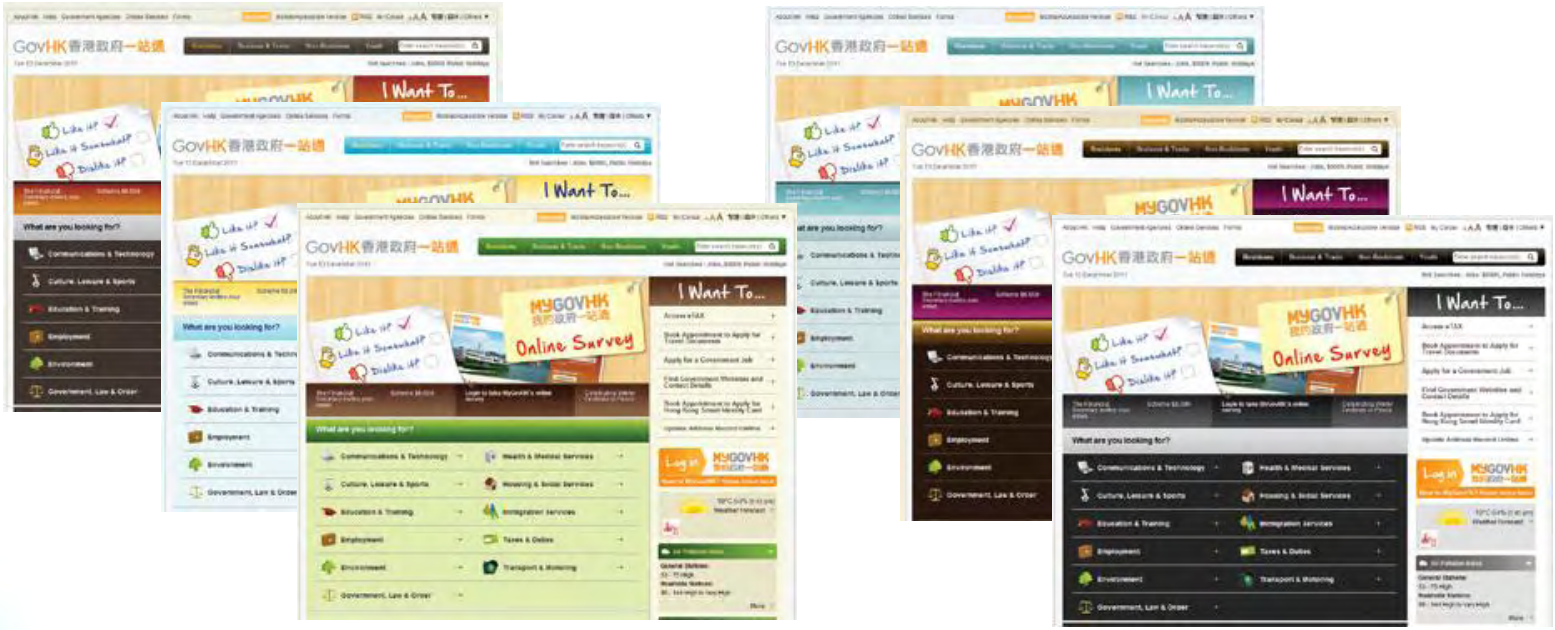
1.2 **Time-based Audio and Video Media**: Provide alternatives for time-based media

1.3 **Adaptable**: Create content that can be presented in different ways without losing information or structure

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

Principle 1 - Perceivable

- Example - Sufficient colour contrast **4.5 : 1**



www.gov.hk

Principle 2 - Operable

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

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

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

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

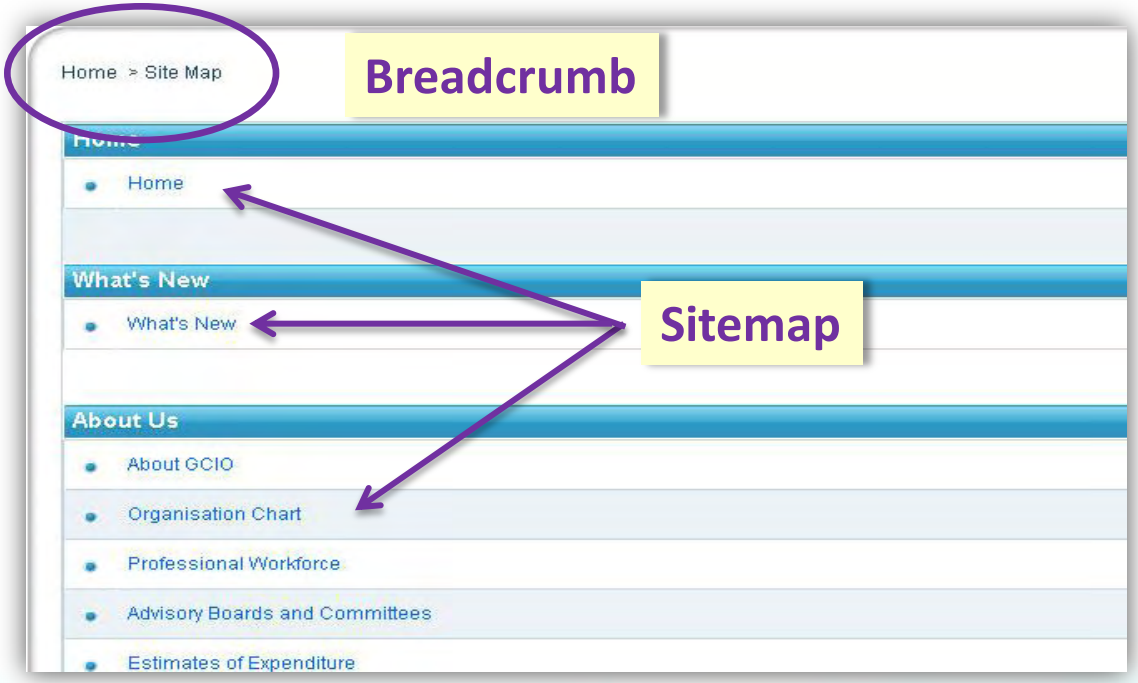
Principle 2 - Operable

- Example - Provide users enough time to read and use content

www.ogcio.gov.hk

Principle 2 - Operable

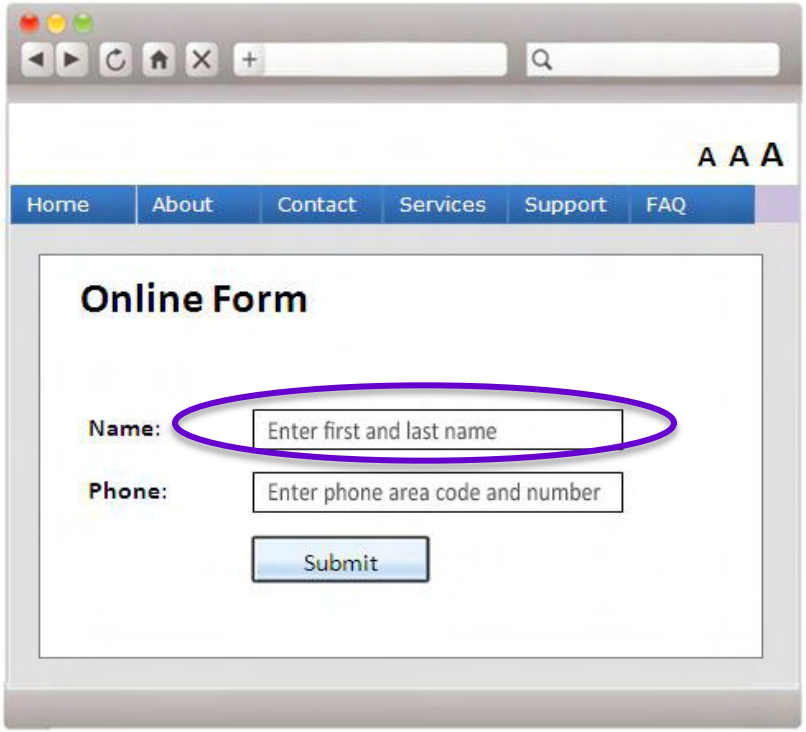
- Example - More than one way to help users navigate and find content



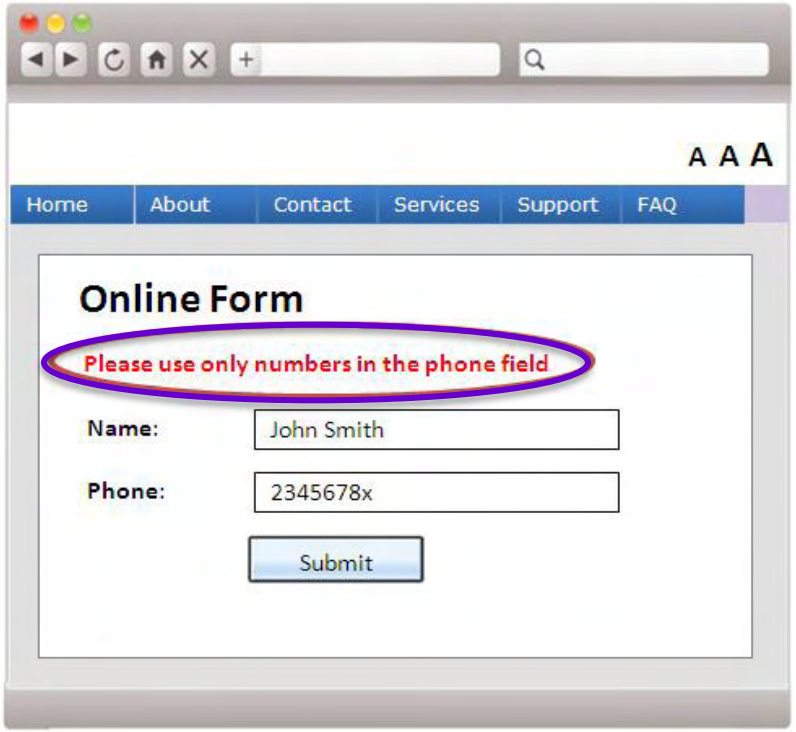
www.ogcio.gov.hk

Principle 3 – Understandable

- Example - Clear label with cue and error identification



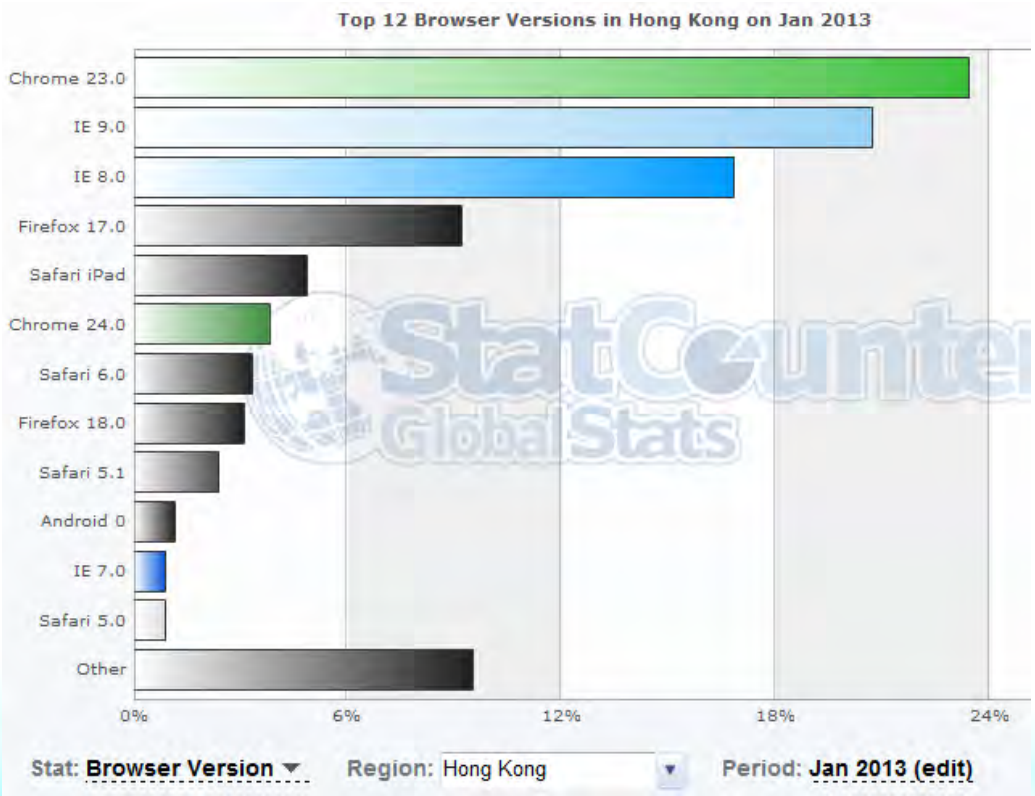
Input assistance



Error identification

Principle 4 – Robust

- Compatibility with browsers



http://gs.statcounter.com/

WCAG - Conformance

- Latest version of W3C WCAG 2.0 promulgated in end 2008
- There are three Levels of conformance –

Level A 25 success criteria	Level AA +13 success criteria	Level AAA +23 success criteria
Basic	Recommended	Ideal

Level AA Conformance

WCAG - Conformance

- Example - Audio and Video Requirements

	Level A	Level AA	Level AAA
Pre-recorded Audio only	Text-transcript		Sign language
Pre-recorded Video only	Text-transcript / audio track		Sign language
Pre-recorded Video	Captions + (audio description / text transcript)	Captions + audio description	Extended audio description + Text description + Sign language
Live Video		Captions	
Live Audio only			Live text caption / provide a link to a text transcript of a prepared script

Governments Websites adopting WCAG

Country	Standard	Timeline to achieve standard
New Zealand	WCAG 2.0 Level AA	June 2010
United Kingdom	WCAG 1.0 Level AA	March 2011
Hong Kong	WCAG 2.0 Level AA	January 2013
Canada	WCAG 2.0 Level AA	July 2013
Singapore	WCAG 1.0 and key aspects of WCAG 2.0	December 2013
Australia	WCAG 2.0 Level A & AA	December 2014

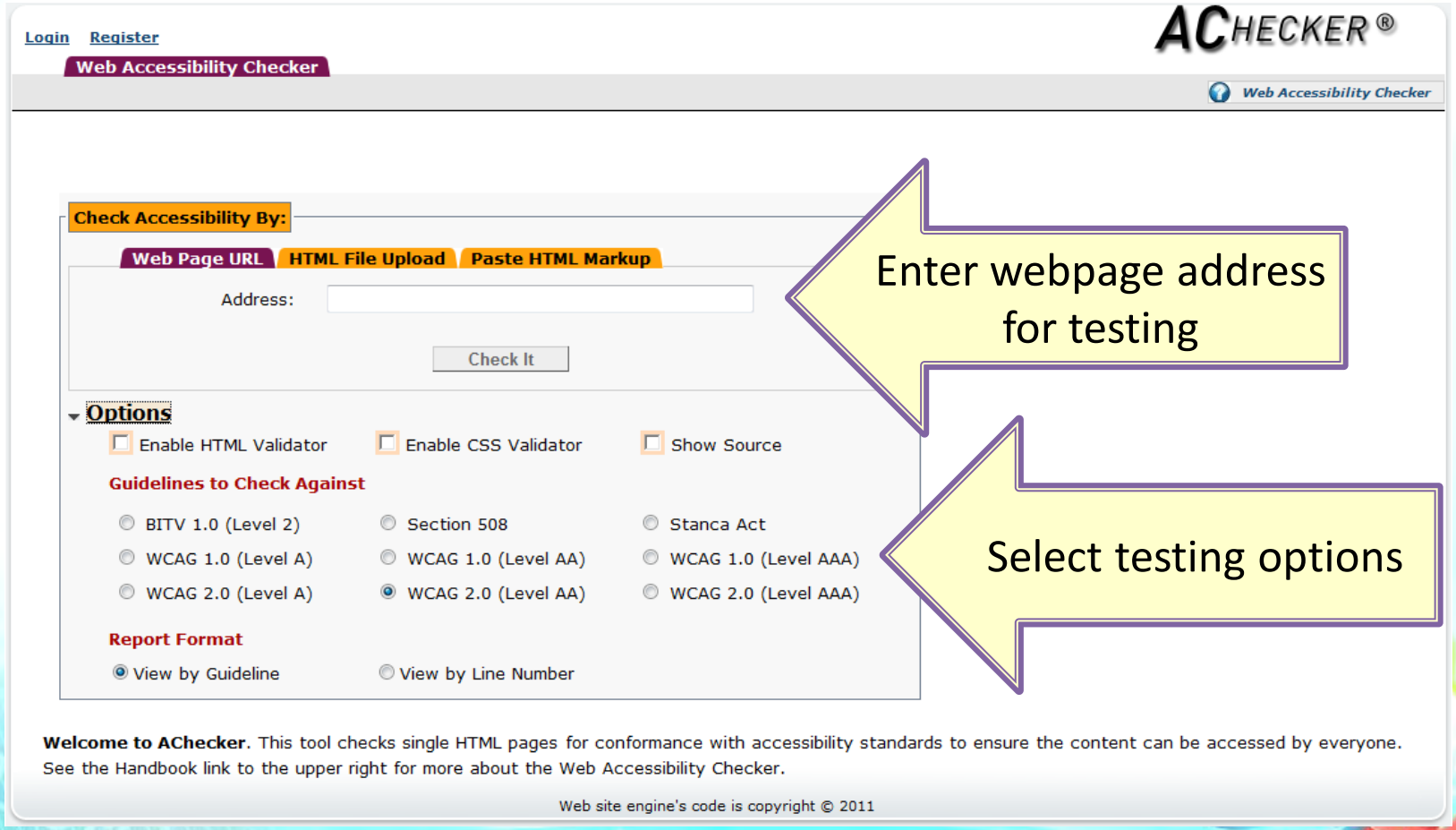
Testing Techniques

1. Code scanning

- Many accessibility issues can be detected automatically using specialist software and tools
- Example tools –
  - AChecker
  - WAVE
  - PDF Accessibility Checker

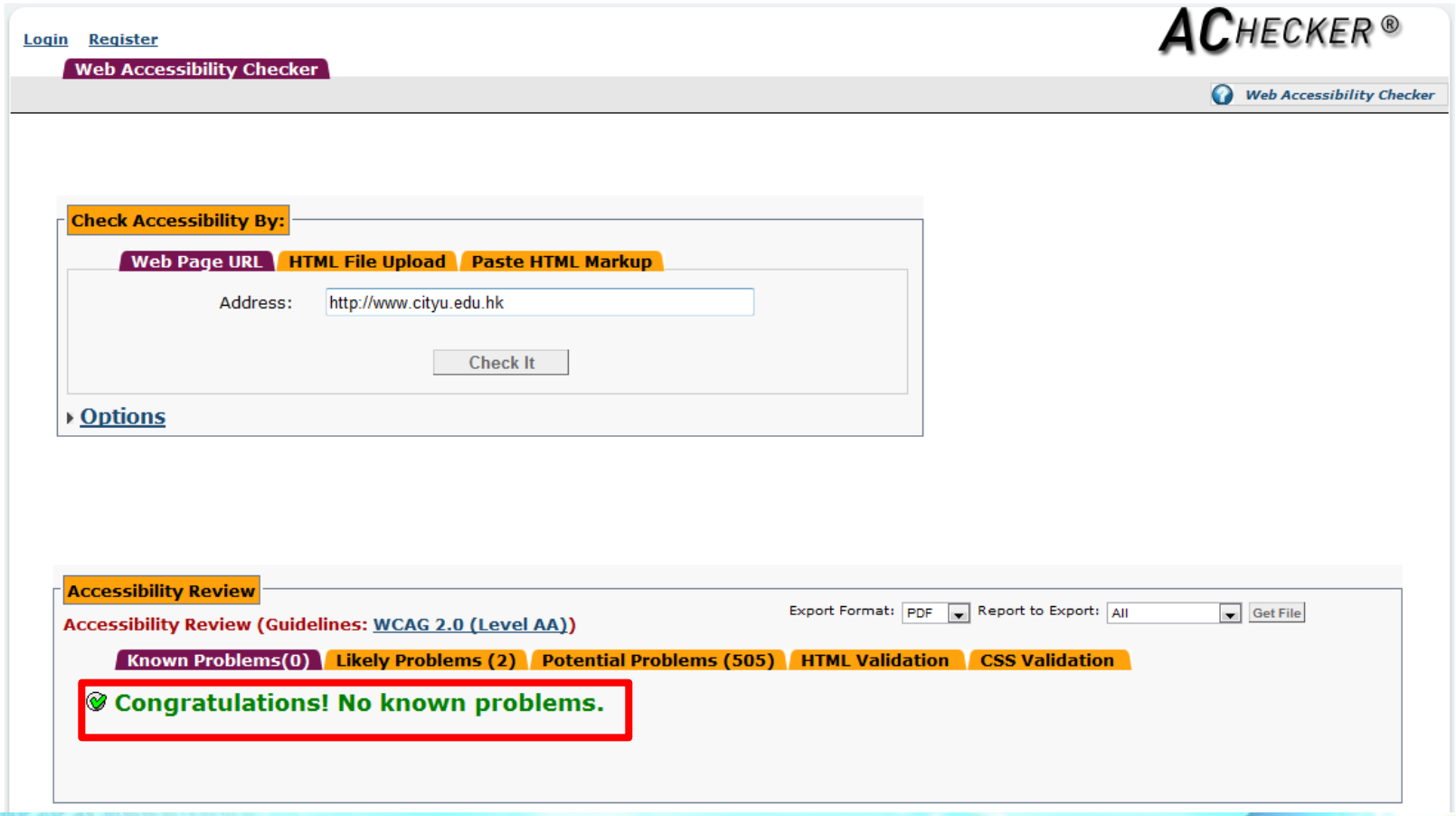
Code Scanning

- http://achecker.ca/checker/index.php



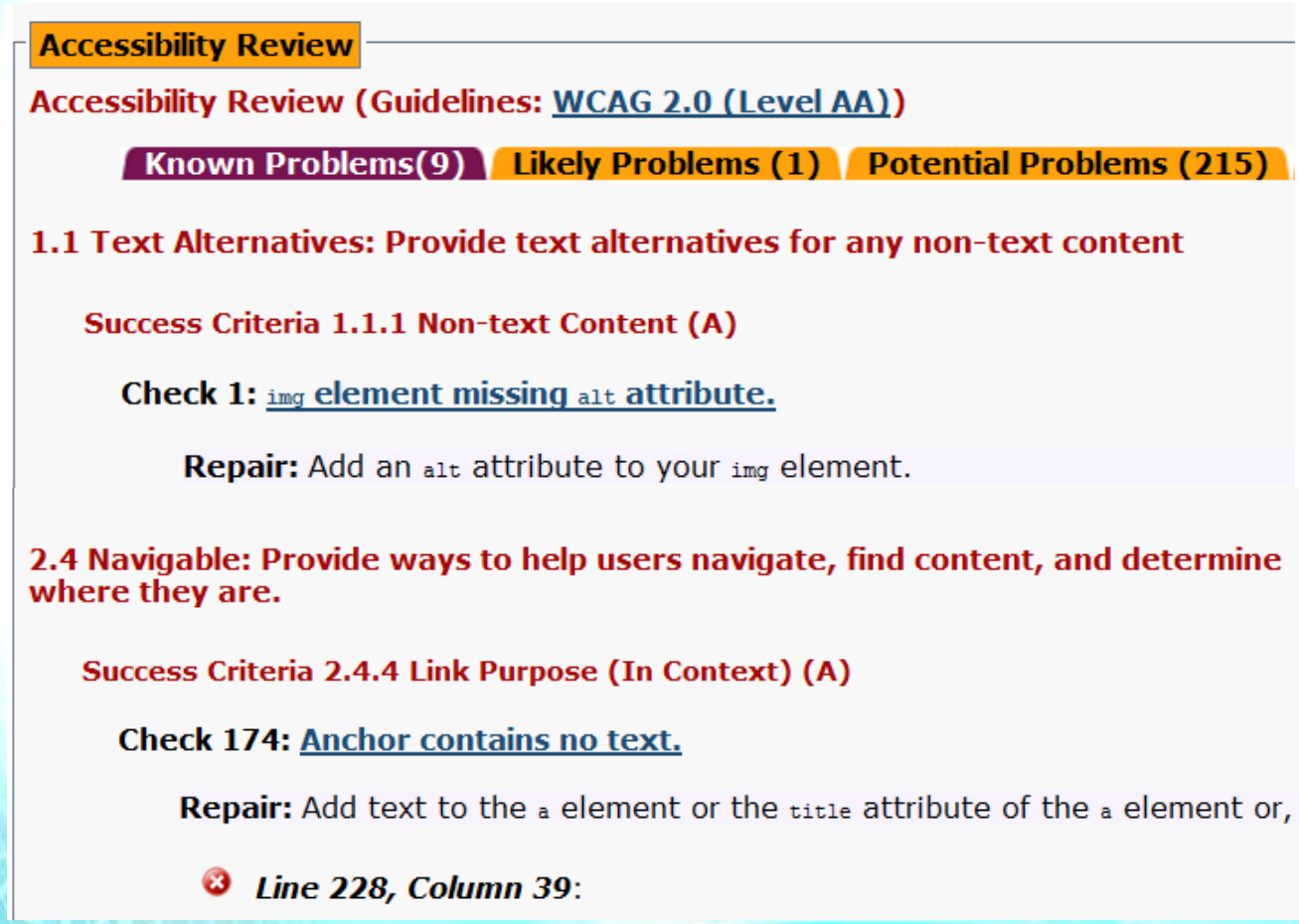
Code Scanning

- Sample report - no known problem



Code Scanning

- Sample report – known web accessibility problem



Accessibility Review

Accessibility Review (Guidelines: WCAG 2.0 (Level AA))

Known Problems(9) | Likely Problems (1) | Potential Problems (215)

1.1 Text Alternatives: Provide text alternatives for any non-text content

Success Criteria 1.1.1 Non-text Content (A)

Check 1: img element missing alt attribute.

Repair: Add an alt attribute to your img element.

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

Success Criteria 2.4.4 Link Purpose (In Context) (A)

Check 174: Anchor contains no text.

Repair: Add text to the a element or the title attribute of the a element or,

Line 228, Column 39:

Testing Techniques

2. **Visual review:** Tools include Vischeck and Colour Contrast Check

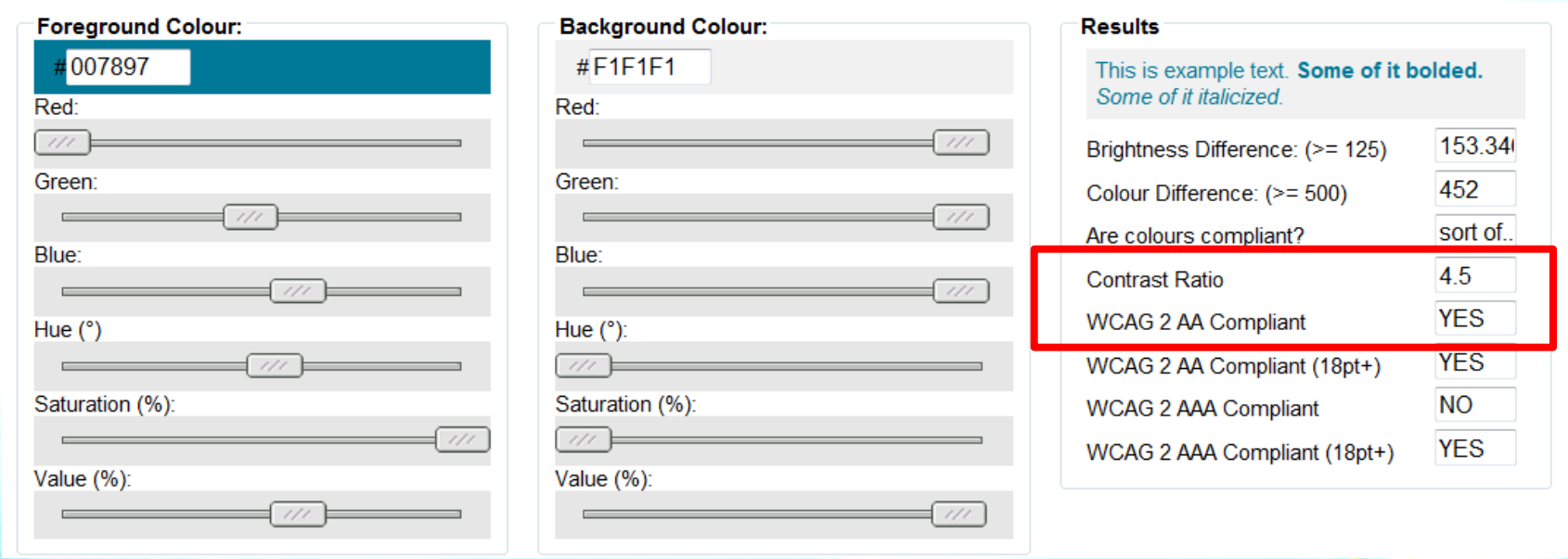
- http://www.vischeck.com/vischeck/ shows you what things look like to someone who is colour blind

www.ogcio.gov.hk

Looks to a person with a red/green color deficit (deuteranopia)

Colour Contrast Check

- http://snook.ca/technical/colour_contrast/colour.html
- Text has a contrast ratio of at least 4.5 : 1 between the background and the foreground



Testing Techniques

3. **Manual testing with screen readers**
   - Navigate website and access the content through the screen readers
   - Example tools – Jaws, NVDA and VoiceOver

4. **Manual testing with other assistive technologies**
   - Screen magnification tools and voice control tools
   - Example tools – ZoomText and Dragon Naturally Speaking

5. **Human testing**

Policy in Hong Kong

- Government has been implementing web accessibility guidelines since 1999
- Internal guidelines has been updated to follow latest international standard - W3C WCAG 2.0
- Require all government websites including thematic websites, except archive materials, to achieve W3C WCAG 2.0 Level AA conformance by January 2013 within practicable means

- Ask quasi-government and public service organisations to take corresponding action

Capability Building

Webforall Portal: www.webforall.gov.hk

- Illustration examples of success criteria (WCAG 2.0 Levels A & AA)
  http://www.ogcio.gov.hk/en/community/web_accessibility/handbook/live_example.htm
- Presentation slides of seminars / technical workshops
- Government's best practices
- Web Accessibility Handbook
- Web Designers' Corner
- Frequently Asked Questions

Capability Building

Web Accessibility Handbook

- Introduction and basic principles
- Top 10 concerns from persons with disabilities
- All WCAG 2.0 success criteria
- Success criteria checklist
- Testing techniques
- Introduction of testing tools

Web Accessibility Recognition Scheme

Two-tier Accreditation System

- **1st tier (Silver Award)**
  - Websites incorporating basic web accessibility features

- **2nd tier (Gold Award)**
  - Websites incorporating basic and key features

- Accreditation logos will be granted to awardees for display in their accredited websites
- The accreditation needs to be renewed annually

What you can help?

- Develop awareness, attribute and mindset on web accessibility in your organization
  - Observe latest guidelines and standards
  - Adopt web accessibility designs in institution
  - Help business partners or clients aware of the importance and relevant skills
  - Encourage and incorporate web accessibility elements in design stage in information and communication systems, products and services
  - Uphold the professional ethics
- “I had never thought about it …” is not an excuse