The Role of Tool Support in Public Policies and Accessibility

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CNR-ISTI HIIS Laboratory Focus: Usability and Accessibility

- Usability and Accessibility are strictly related to each other
- Accessibility aims at increasing the number of users
- Usability aims at making users more efficient and satisfied
- Usability without accessibility, there are users who cannot access some information
- Accessibility without usability, all users can access but at least some with difficulties

The Current Scenario

- There are many international (W3C) and national (Section 508 / Stanca Act / …) guidelines
- Are these enough for universal usability?
- Need for guidelines providing integrated support for usability and accessibility for specific classes of users or domains or cultures
- Need for corresponding automatic tool support for design and evaluation

Guidelines for Visual-impaired Users

- Issues with assistive technologies: lack of page context perception, information overloading, sequential reading
- They can be addressed through page organization and structure; content appropriateness; multimodal support, consistency …

- Result in a user study with two Web sites (one with basic accessibility support and one with our guidelines):
- on average about 37% navigation time saved

  – More information:

  B.Leporini, F.Paternò, Applying Web Usability Criteria for Vision-Impaired Users: Does It Really Improve Task Performance?, International Journal of Human-Computer Interaction, Volume 24, Issue 1, pp. 17-47.

Automatic Tool Support

- It reduces the costs and efforts for usability and accessibility evaluation
- It increases consistency in the identification of the problematic parts
- It increases the types of features that can be evaluated
- Automatic tools can provide support in various ways: capture of user behaviour, analysis of implementation, support for redesign
- Validators are usually developed by considering 2 - 3 sets of guidelines, and are difficult to update
- Various of them have soon became obsolete and of little utility

Why Public Policies should support more automatic tools adoption ?

- They have limitations but …
- Even expert manual validation has critical issues:
  - Experts are more accurate but require more time to validate sites with many pages
  - Automatic tools can help in detecting most common and frequent errors thus reducing their workload and allow them to focus on more sensistive aspects
- User testing is limited to consider specific users while validators can handle specific problems of groups of users
- Public policies should also provide guidance on how to ensure accessibility is maintained over time

Requirements for Effective Automatic Validation Support

- Applicability to various technologies (HTML, CSS, …) and various pages or sites
- Expandability and upgradeability
- Alignment with the latest technology
- Effectiveness of the reports for all the various roles (developers, designers, public officers, ….)

Guideline independent support

- Easily add new guidelines, modify or delete existing ones
- Define and use different sets of guidelines
- Separate tool implementation from the definition of guidelines
- Avoid repetitive recoding of the tool by the implementers

Technological trends: Device Fragmentation





- Personal Computers (PCs) usually vary between 800x600 and 1920x1200 pixels,
- Mobile devices usually between 320x240 and 1920x1080 pixels (Iphone 6 plus) – 2560*1440 (Galaxy S 6)
- Public Displays are becoming cheaper and cheaper
- Smart TVs
- Smartwatches (e.g. Gear S 2.0” 360x480)
- Features vary more with mobile devices than desktop ones

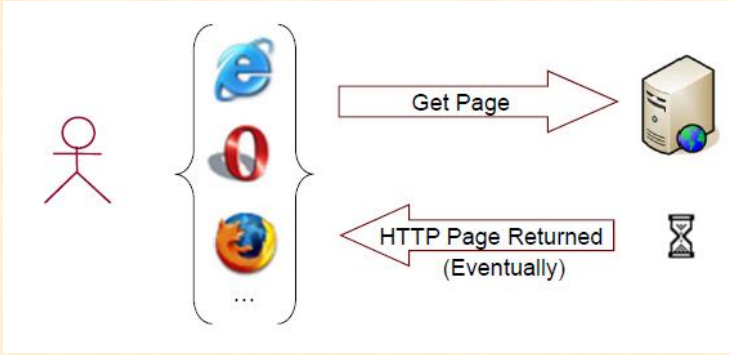




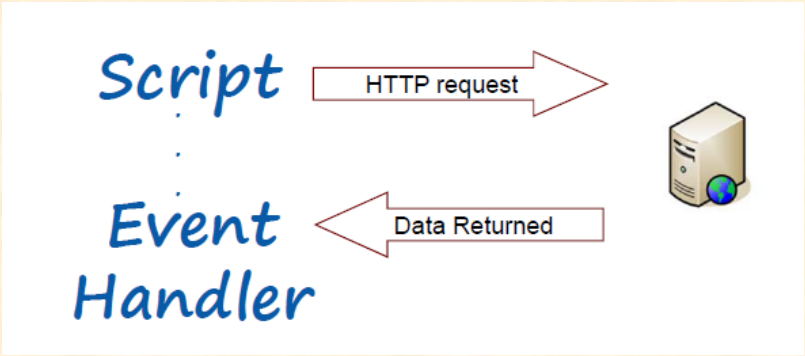
Technological trend: Web site evolution

- From sets of pages connected through links …
- … each page is a set of files (HTML, CSS, Javascript) whose content can be dynamically changed (for example google suggest)

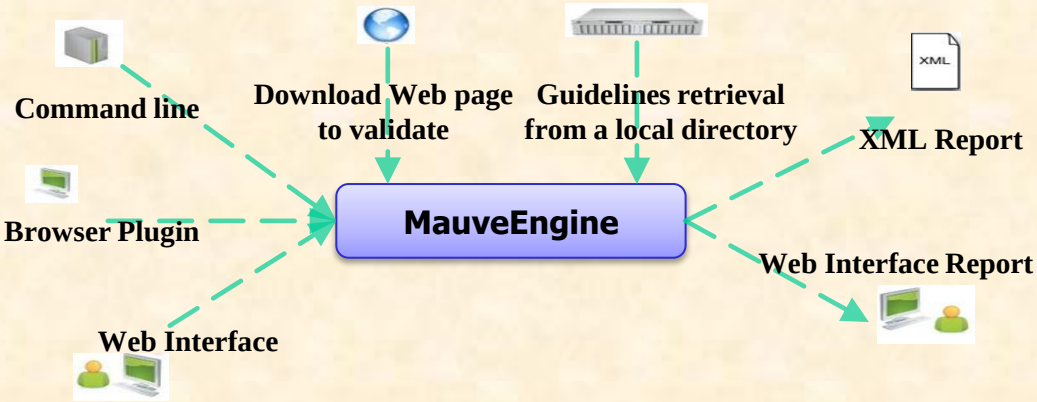
Traditional Approach



Modern Dynamic Approach



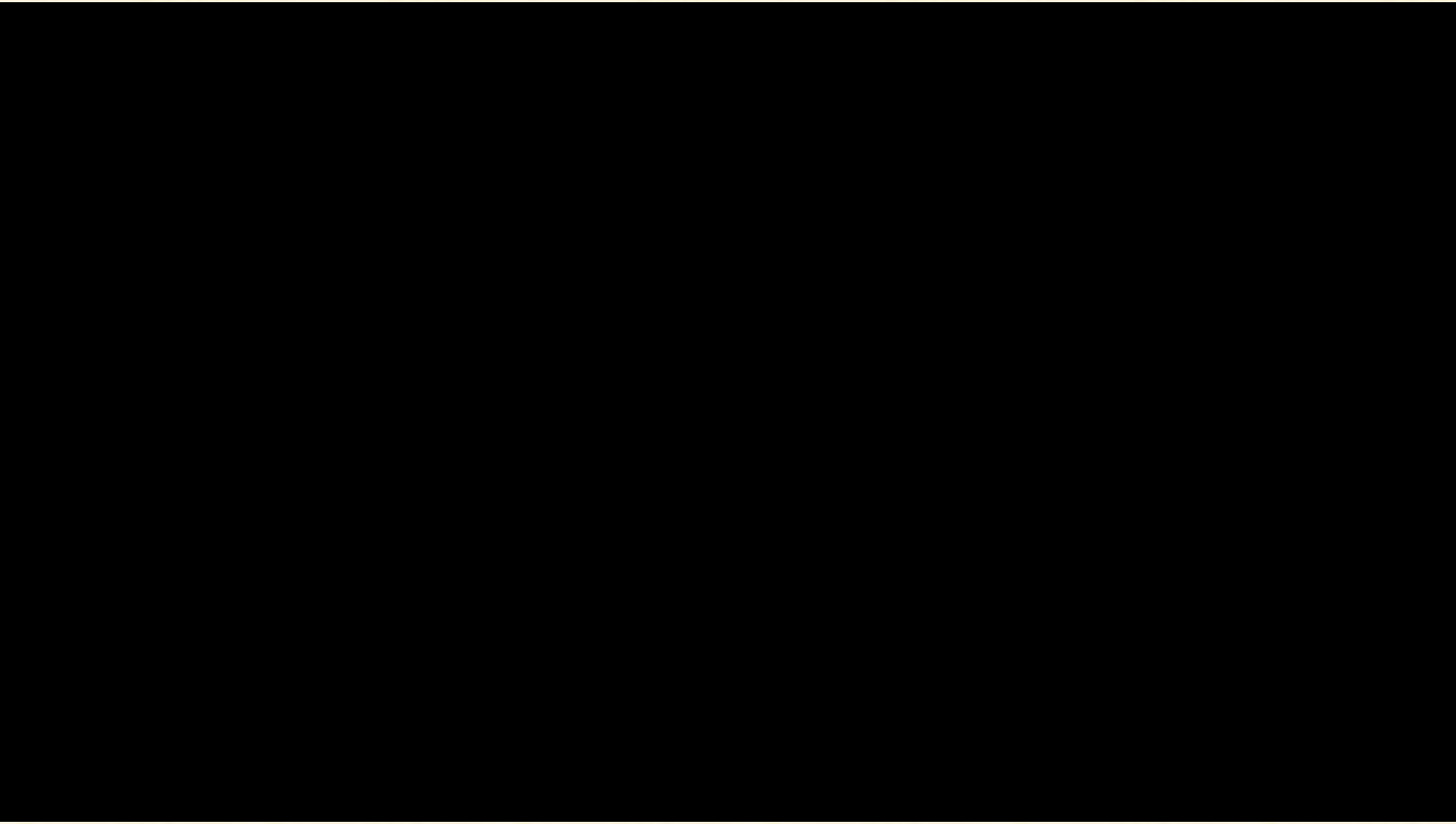
Multiguideline Accessibility and Usability Validation Environment (MAUVE)



- **Guidelines coded through our XML-based language and externally stored. Guidelines repository is easy to expand and/or upgrade.**
- **Ability to validate variours device-specific versions of a website (Desktop, Tablet, Smartphone, Video Game Console, Smart TV).**
- **Dynamic websites validation through browsers' plugins.**
- **Web developers-oriented report system, with indications of the accessibility problems directly into web page source code.**
- **HTML5 and CSS3 compliant.**
- **Web page selection by URL, file upload or source code direct input.**
- **Web page validation against custom user guidelines (if specified with our formalization language).**
- **On the report page, direct link to the documentation for the detected problems.**

Available at http://giove.isti.cnr.it:8080/MauveWeb/

MAUVE Demo



Conclusions

- Various years since the appearance of the first validators but their adoption is not yet fully addressed in public policies (which methodologies?)
- Even if they are not able to provide complete analysis they are fundamental in making the validation process more efficient, consistent, reliable and cost-effective
- Guidelines-based evaluation can provide flexible evaluation for different targets: specific user types, application domains, cultures
- Public services are ever more been provided through the Web ….
- …. Public administrations have the duty to support all citizens giving everyone the same quality of services !