



Automated Usability Evaluation

Overview of AUE & Its Test Tools



Agenda

- ✦ What is AUE
- ✦ Why Use AUE
- ✦ Traditional UE vs. AUE
- ✦ Risks of Not Being There
- ✦ Who is NIST
- ✦ NIST Web Metrics Tools
- ✦ More AUE Tools
- ✦ Conclusion
- ✦ Discussion session



What is AUE ?

• AUE (Automated Usability Evaluation)

- AUE focuses on developing tools and techniques to speed evaluation (**rapid**), tools that reach a wider audience for usability testing (**remote**), and tools that have built-in analyses features (**automated**).

• AUE Tools

Usability, Accessibility issues → Video, Audio, Mouse clicks, Screen capture

HTML validation, IA issues → consistency, links checking, color contrast, fault analyzer



Why use AUE ?

- AUE methods enable an evaluator to identify potential usability problems **quickly** and **inexpensively** compared to non-automated methods and can decrease the overall cost of the evaluation phase [John and Kieras 1996; Nielsen 1993].
- The contents, design, and technology of WWW interfaces are **changing** everyday.
 - AUE (Rapid, remote, and as automated as possible) fits their need!



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Traditional UE vs. AUE

Traditional Usability Evaluation	Automated Usability Evaluation
Time consuming	Faster
Expensive	Cheaper
Require usability engineers on call	Automated, remote
Small numbers of subjects	Larger numbers of subjects
Local users	Intercity, interregional, and international users
Controlled Lab	Home or Workplaces
Depth	Breadth
All (Website, Software, Web Applications)	Website, E-Commerce, WWW interfaces



Risks of "NOT" Being There

- ✖ When the unexpected happens
 - System compatibility, stability, and network issues.
- ✖ Missing indirect cues
- ✖ Difficulty of building monitor trust
- ✖ Missing the opportunity to understand cultural context
- ✖ Log files cannot accomplish some real users' tasks.
- ✖ Data from questionnaire are hard to identify usability problems and they fail to provide more accurate data.
- ✖ Design issues for log file standardization (FLUD ?)



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Who is NIST ?

✦ NIST ([National Institute of Standards and Technology.](#))

- Founded in 1901, NIST is a non-regulatory federal agency within the U.S. Commerce Department's Technology Administration.

✦ [NIST Web Metrics Project](#)

- The usability engineering research of the Visualization and Usability Group (VUG). As part of the Information Access Division of the Information Technology Laboratory at the NIST
- To explore the feasibility of a range of tools and techniques that support **rapid, remote, and automated** testing and evaluation of website usability.



NIST Web Metrics tools (2003)

• **WebSAT** (Static Analyzer Tool)

- Checks web page HTML against typical usability guidelines

• **WebCAT** (Category Analysis Tool)

- Lets the usability engineer construct and conduct a web category analysis

• **WebVIP** (Variable Instrumenter Program)

- Instruments a website to capture a log of user interaction



NIST Web Metrics tools (2003)



FLUD (Framework for Logging Usability Data)

- A file format and parser for representation of user interaction logs



FLUD Viz (FLUD Visualization Tool- 2D)

- Produces a 2D visualization of a single user session



VisVIP (FLUD Visualization Tool- 3D & 2D)

- Produces a 3D visualization of user navigation paths through a website



TreeDec (Tree Decorator Program)

- Adds navigation aids to the pages of a website



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More AUE Tools...

• **Camtasia Studio** (TechSmith) [Microsoft Demo](#)

- Off-line, for quickly creating professional-looking videos of the PC desktop activity

• **Morae** (TechSmith)

• **Lift** (UsableNet.com)

- Available from UsableNet.com, 2000; web-based and off-line, with ranking; fault analyzer and repair tool

• **A-Prompt (Accessibility Prompt)**

- Developed by the University of Toronto [ATRC, 1999]; off-line, with ranking; does fault analysis and repair



More *On-line* AUE Tools...

Bobby (1996)

- First released in 1996. Available from CAST, 1999 to Watchfire, 2003; web-based and off-line, with ranking; fault analyzer

Doctor HTML (Imagiware, 1997)

- Web-based, a Web page analysis tool which retrieves an HTML page and reports on any problems that it finds.

WebXACT (Watchfire, 2003)

- Web-based, a free online tool for testing single pages of web content for quality, accessibility, and privacy issues.



More *Money*...

• **NetRaker Suite** (NetRaker Corp.)

- Acquired by [Keynote](#)'s comprehensive WebEffective™ Intelligence Platform

• **Max** (WebCriteria, 2000)

- Acquired by [Coremetrics](#)' broad Marketforce online analytics platform
- Web-based; comparative evaluation of a website with respect to a benchmark derived from similar well-established websites; failure identifier



Still More...

✦ WebQA:

- By [WatchFire](#) [WatchFire, 2002]; off-line, with ranking; fault analysis and repair tool;

✦ LinkBot:

- By WatchFire [WatchFire, 2000]; off-line, with ranking; fault analysis and repair tool;

✦ MacroBot:

- By WatchFire [WatchFire, 2000]; off-line; failure identifier

✦ MetaBot:

- By WatchFire [WatchFire, 2000]; off-line; fault analyzer and repair tool;

✦ NetMechanic:

- By Netmechanic [Netmechanic, 2000]; web-based; fault analyzer and repair tool;



Which tool is the best ?

- Based on "[Automatic web usability evaluation](#)" by Giorgio Brajnik (*May, 2000*)

- Lift(34) > WebSAT(12) > Doctor HTML(10) > A-Prompt(9) = NetMechanic > Bobby(8) = LinkBot > WebCriteria (4)



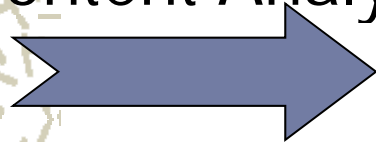
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Conclusion

- Characteristics of AUE
- Pros & Cons of AUE
- Select fitted AUE Tools
- Trend of combination (Usability, Accessibility, Web IA, End-user Studies, Marketing, Web Content Analytics, E-Commerce, Security)



Powerful Platform



Discussion Session

- ✦ What is lost as compared to traditional usability testing methods?
- ✦ How do you deal with a huge amount of data on user interaction? Can you mine it effectively for improving a web site?
- ✦ Is there a methodology for benchmarking approaches so that there is some assurance that the automated tools are indeed measuring usability?
- ✦ What analysis and visualization tools are useful to researchers and usability engineers?
- ✦ Which of the innumerable aspects of the user behavior should be captured by automated tools? Mouse clicks? Eye gaze? Blood pressure? Verbal self-reports and think-alouds?



Any Questions?

