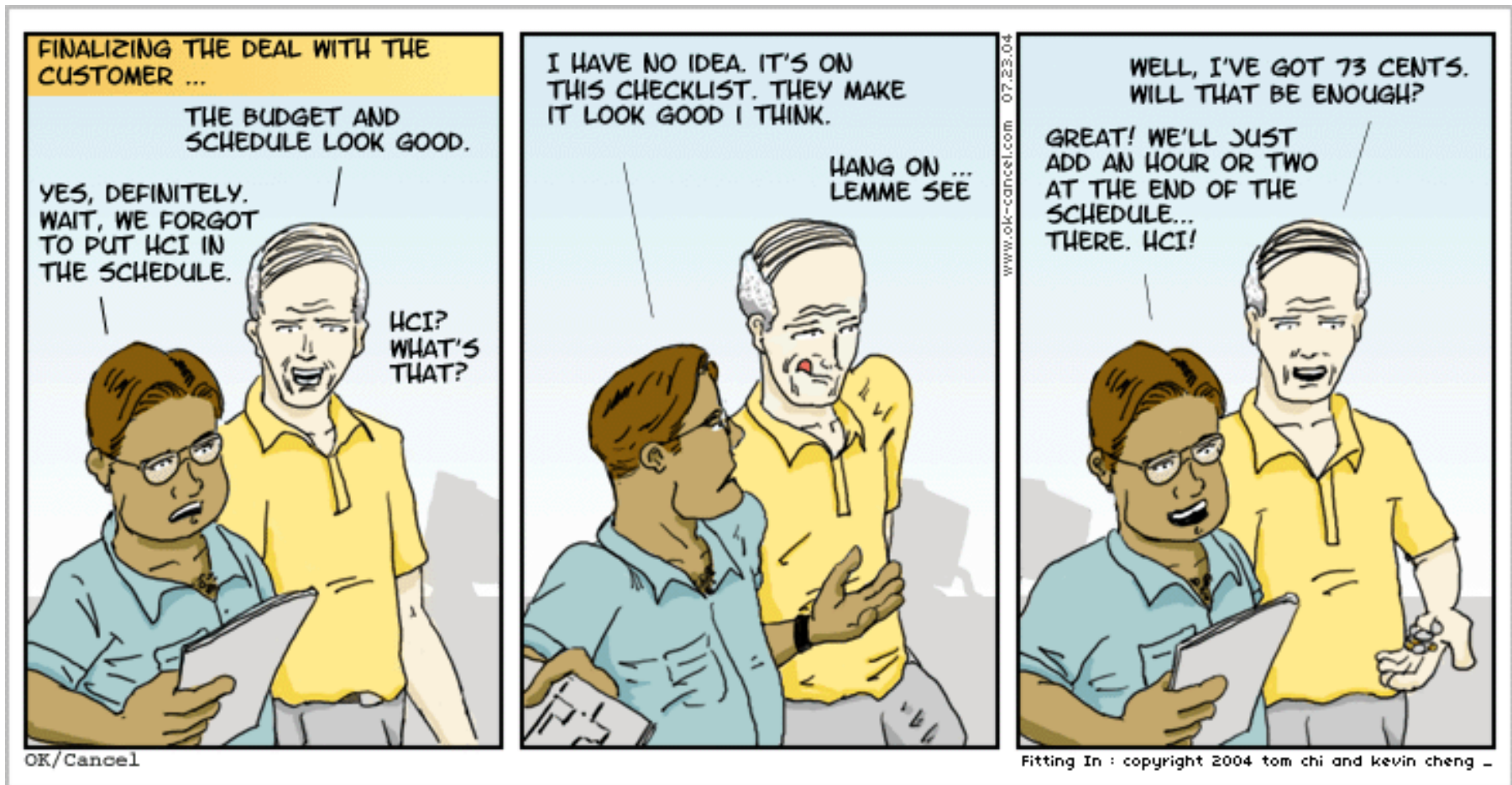


Expert Reviews



Carl Angiolillo

2011-10-31



Agenda

Evaluation overview

Last week

Usability evaluation methods

Heuristic evaluation

Cognitive walkthrough, KLM-GOMS

Next



Evaluation overview

Competitive analysis – October 24 ✓

Expert review – October 31

Web analytics – November 7

Think aloud – November 14

Clients: Reports – November 21



Last week

Competitive analysis questions?



NAVIGATION - Does a user know where he is now, where to go next, and how to get there from here?

HOMEPAGE - Does the homepage provide a comprehensive overview of what is available on the site and encourage exploration?

PRODUCTS - Can a user find "his" product easily? Are product pages scannable, highlighting features and benefits for a quick overview? Is there more detailed product information available for expert users?

SUPPORT - Does the site provide appropriate support for its users? Can a user find the support resource(s) he needs?

SEARCH - Are search results comprehensive? Is there [useful] advanced search functionality available?





























































EVIDENCE - Are testimonials, usage statistics, or clinical evidence content available and easy to locate?

EDUCATION - Are there educational resource available? Can a user quickly figure out what's available and how to register or get more information?

MULTIMEDIA - Does the site incorporate images, video, audio, or interactive elements? Are they presented in-context or easy to locate?

SOCIAL MEDIA - Does the site incorporate social media options such as bookmarking & sharing or RSS feeds? Are they easy to locate?

TECHNOLOGY - Does the site present an overview of the technology used?

Accessibility

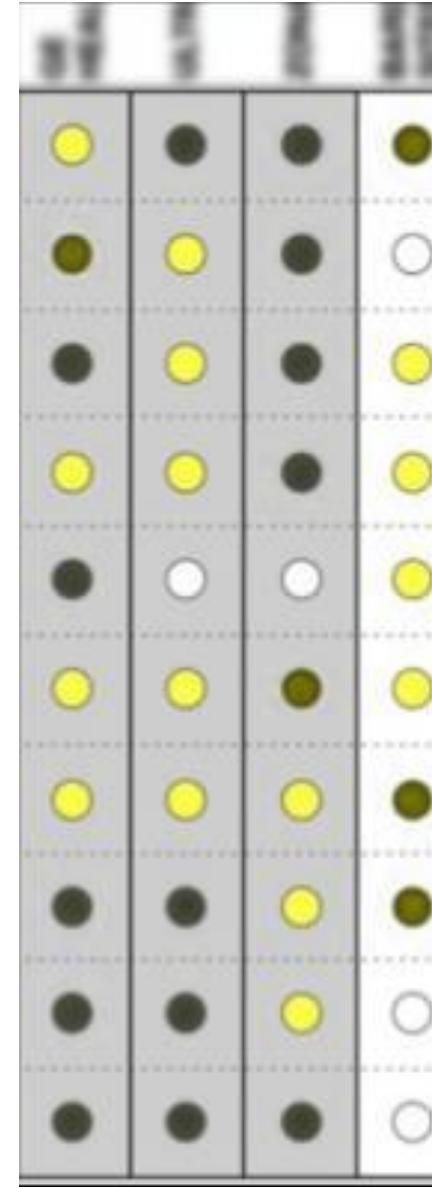
~7% of US males are red-green color blind:

<http://www.hhmi.org/senses/b130.html>

As designers we should strive to make our products accessible.

See for strategies:

<http://www.uxmatters.com/mt/archives/2007/02/ensuring-accessibility-for-people-with-color-deficient-vision.php>



What *is* usability?

A usable product:

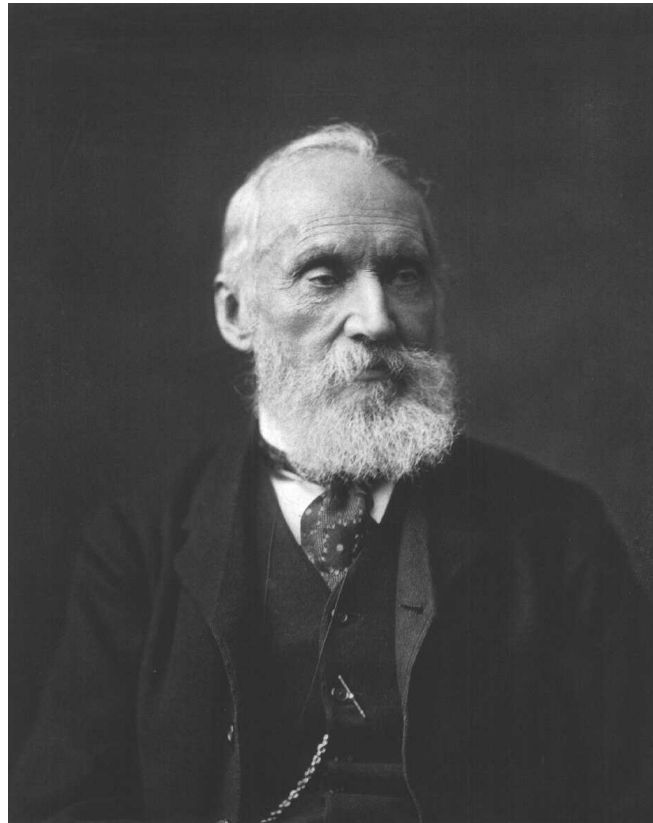
- Supports routine performance
- Supports non-routine performance
- Reduces or prevents human error
- Prevents or recovers from system error
- Pleasant to use

usable \neq useful



We want to improve usability!

If you cannot measure it,
you cannot improve it.



Usability Evaluation Methods

Empirical methods \$\$\$

- Observation
- Experimentation

Analytical methods \$

- Derived from physical, psychological, sociological, or design theories
- Heuristics derived from experience



Empirical (testing) methods

- **Contextual inquiry** (September 19)
- **Web analytics** (November 7)
- **Think aloud** (November 14)
- Remote testing
- Log analysis
- Eye tracking
- “Wizard of Oz” studies
- Surveys and questionnaires
- Diary studies



Analytical (inspection) methods

- **Heuristic evaluation** (UIM¹ Ch2)
- The GOMS (Goals, Operators, Methods, and Selection rules) family
 - *Keystroke-Level Model* (KLM)
- *Cognitive walkthrough* (UIM¹ Ch5)
- Pluralistic walkthrough (UIM¹ Ch3)

¹UIM = Usability Inspection Methods, Nielsen & Mack



Analytical (inspection) methods

“Discount usability engineering methods” –Jakob Nielsen (\$)

Usually a small team of evaluators using analytical methods to review an interface based on recognized usability principles



Heuristic evaluation

0

Brief the group

1

Evaluate individually

2

Aggregate issues

3

Apply severity ratings

4

Summarize findings



Step 0: Brief the group



Heuristic evaluation methodology (this)

Domain briefing

- Important if evaluators are unfamiliar with the product's domain

Scenario briefing

- Can optionally include specific tasks or scenarios or allow evaluators to explore on their own



Step 1: Evaluate individually



Two passes

1. Inspect flow (and optional tasks/scenarios)
2. Inspect each element against heuristics

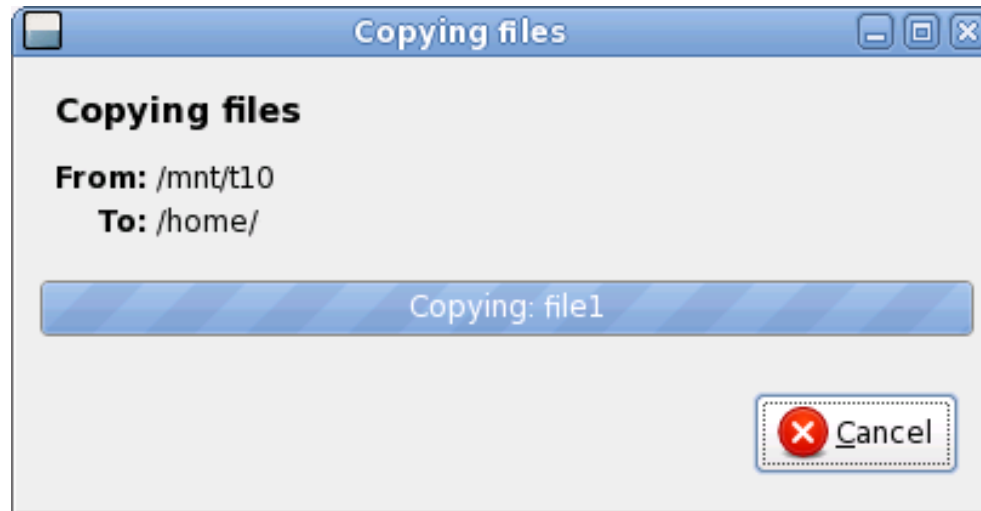
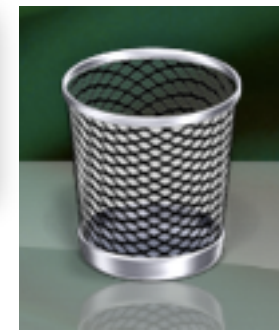
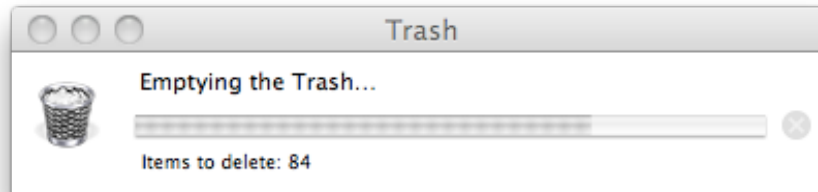
Recognized usability principles

- 10 Nielsen heuristics (UIM Ch2, p.30)



H1: Visibility of system status

Keep users informed



H2: Match between system and real world

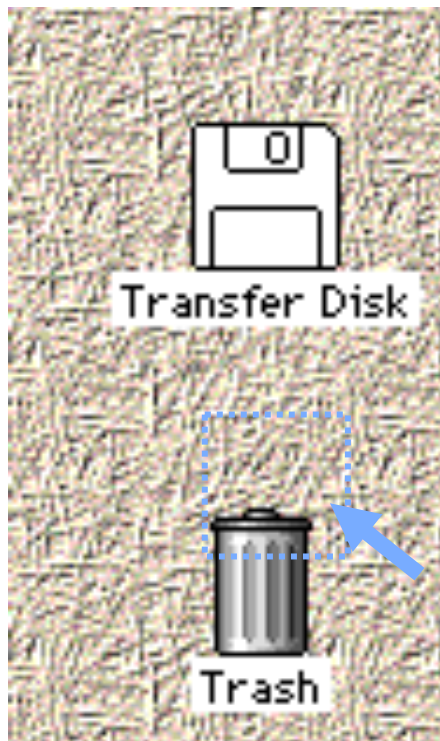
0

Speak the users' language

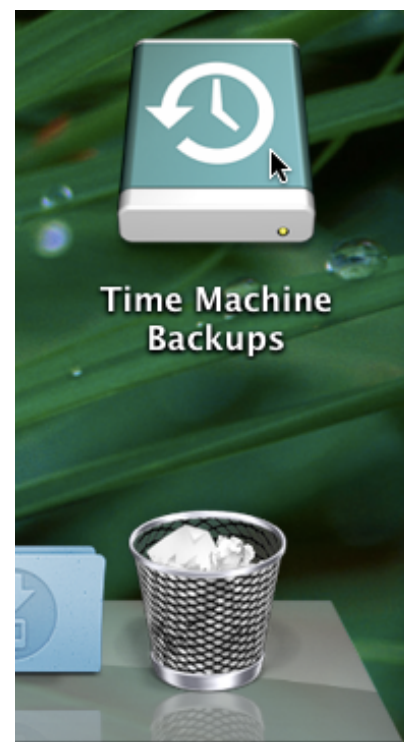
1

Follow real-world conventions

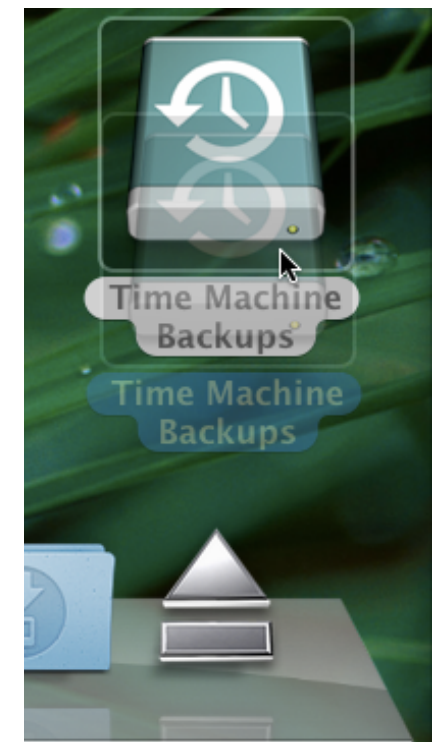
2



3



4



H3: User control and freedom

0

Undo, exits for mistaken choices

1

Don't force fixed paths

2

3



1. Don't use your browser's BACK button. If you click on it, you will return to this page.

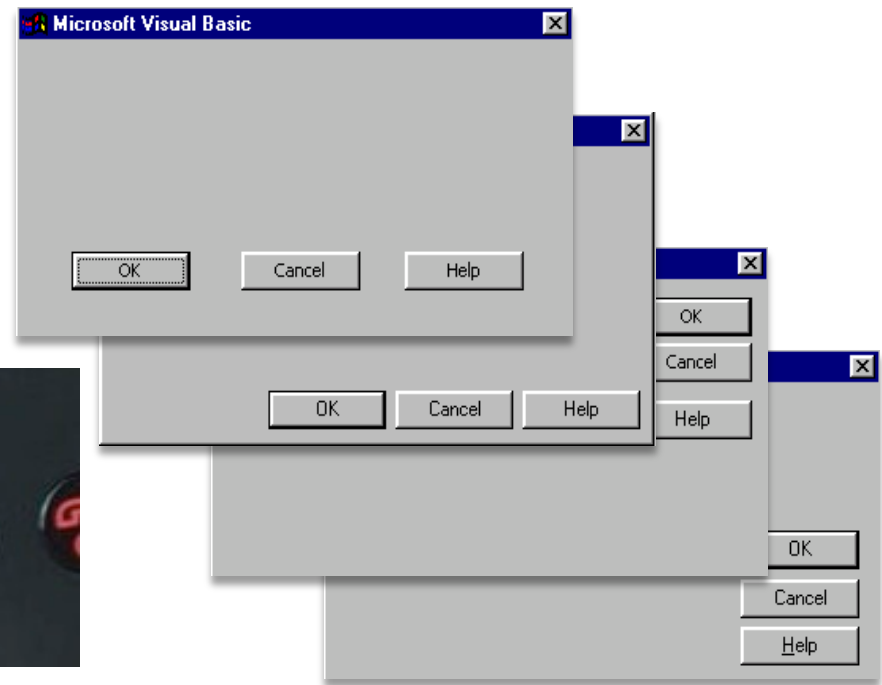
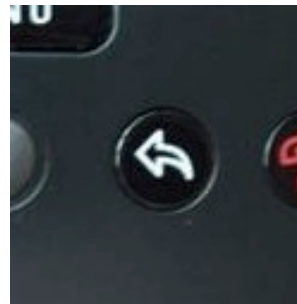
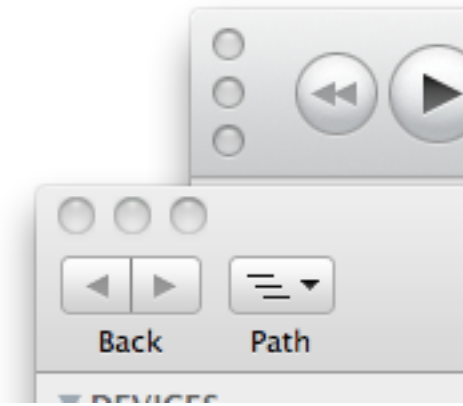
4

<http://www.dshs.wa.gov/ppa/PoMdocuse.shtml>



H4: Consistency and standards

Same words, situations, and actions mean the same -- follow platform conventions



H5: Error prevention

Careful design to prevent problems from occurring in the first place

0

1

2

3

4

The screenshot shows a Windows application window titled "Form1" with three different date input methods:

- Method 1:** A single text box labeled "Date:" with the date "May 22 1997" entered.
- Method 2:** Three separate text boxes labeled "Month", "Day", and "Year" with "May", "22", and "1997" entered respectively.
- Method 3:** Three dropdown menus labeled "Month", "Day", and "Year" with "May", "22", and "1997" selected.



H6: Recognition rather than recall

Make objects, action, and options visible



```
Terminal — bash — 51x15
KisMAC.app
MacSaber.app
MacTheRipper.app
Mac_OS_X_Freemind-0_8_0
Macromedia Dreamweaver 8
Macromedia Extension Manager
Macromedia Fireworks 8
Macromedia Flash 8
Macromedia Flash 8 VideoEncoder
Mail.app
MenuShade.app
Microsoft AutoUpdate.app
Microsoft Messenger.app
Microsoft Office 2011
boole:Applications carl$ rm *
iSerial_Reader.app
iSquid
iStum
iSyno
iTune
iTune
iTune
iWeb.
iWork
siden
start
svnX.
xwepg
```

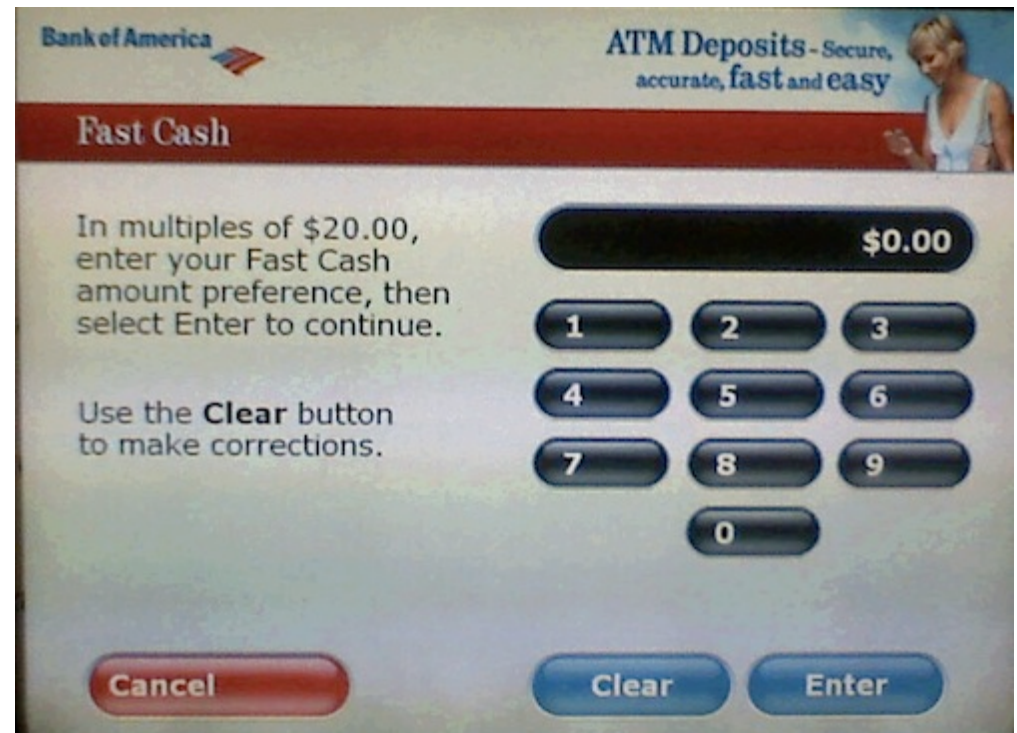
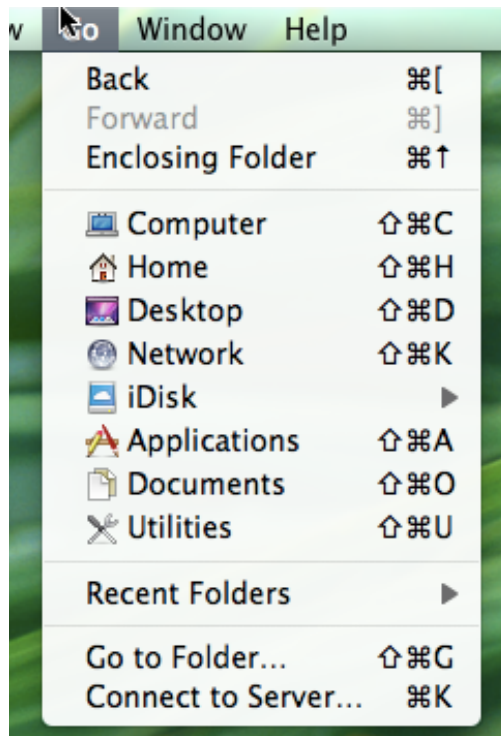
```
<body>
  t
</t>
<> table TAG
<> tbody TAG
<> td TAG
<> textarea TAG
<> tfoot TAG
<> th TAG
<> thead TAG
<> title TAG
<> tr TAG
<> tt TAG
```



H7: Flexibility and efficiency of use

Accelerators for experts

Tailor frequent actions or objects



H8: Aesthetic and minimalist design

Extraneous information in an interface competes with relevant information



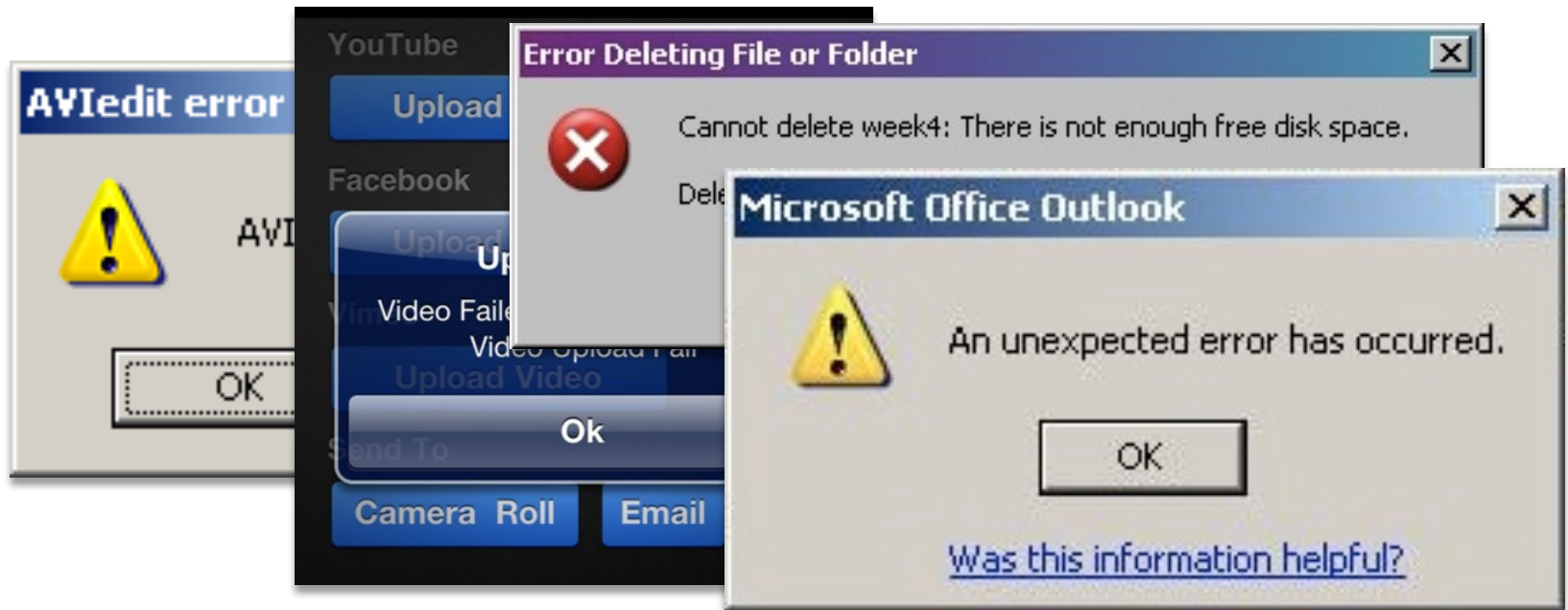
Form Title -- (appears above URL in most browsers and is used by WWW search)		Background Color:
Q&D Software Development Order Desk		FFFBF0
Form Heading -- (appears at top of Web page in bold type)		Text Color:
Q&D Software Development Order Desk <input checked="" type="checkbox"/> Center		000080
E-Mail responses to (will not appear on)	Alternate (for mailto forms only)	Background Graphic
dversch@q-d.com		
Text to appear in Submit button	Text to appear in Reset button	<input type="radio"/> Mailto
Send Order	Clear Form	<input checked="" type="radio"/> CGI
Scrolling Status Bar Message (max length = 200 characters)		
****WebMania 1.5b with Image Map Wizard is here!****		
<input type="button" value=" << Prev Tab"/>		<input type="button" value=" Next Tab >>"/>



H9: Error recovery

Help users recognize, diagnose, and recover from errors

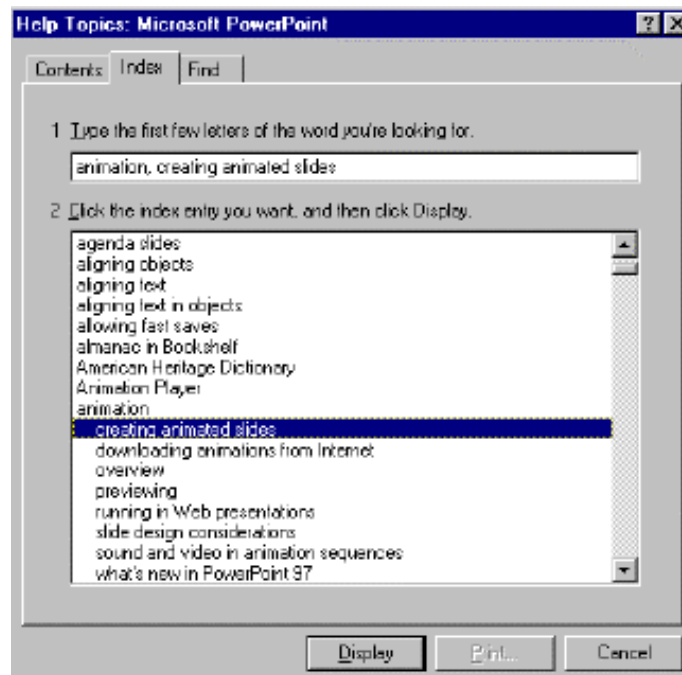
Solution-oriented



H10: Help and documentation

Easy to search and find

Always available and task-oriented



Nielsen's Heuristics

0

H1: Visibility of system status

1

H2: Match between system and real world

2

H3: User control and freedom

3

H4: Consistency and standards

4

H5: Error prevention

H6: Recognition rather than recall

H7: Flexibility and efficiency of use

H8: Aesthetic and minimalist design

H9: Error recovery

H10: Help and documentation



Step 1: Evaluate individually

ID, name, heuristic

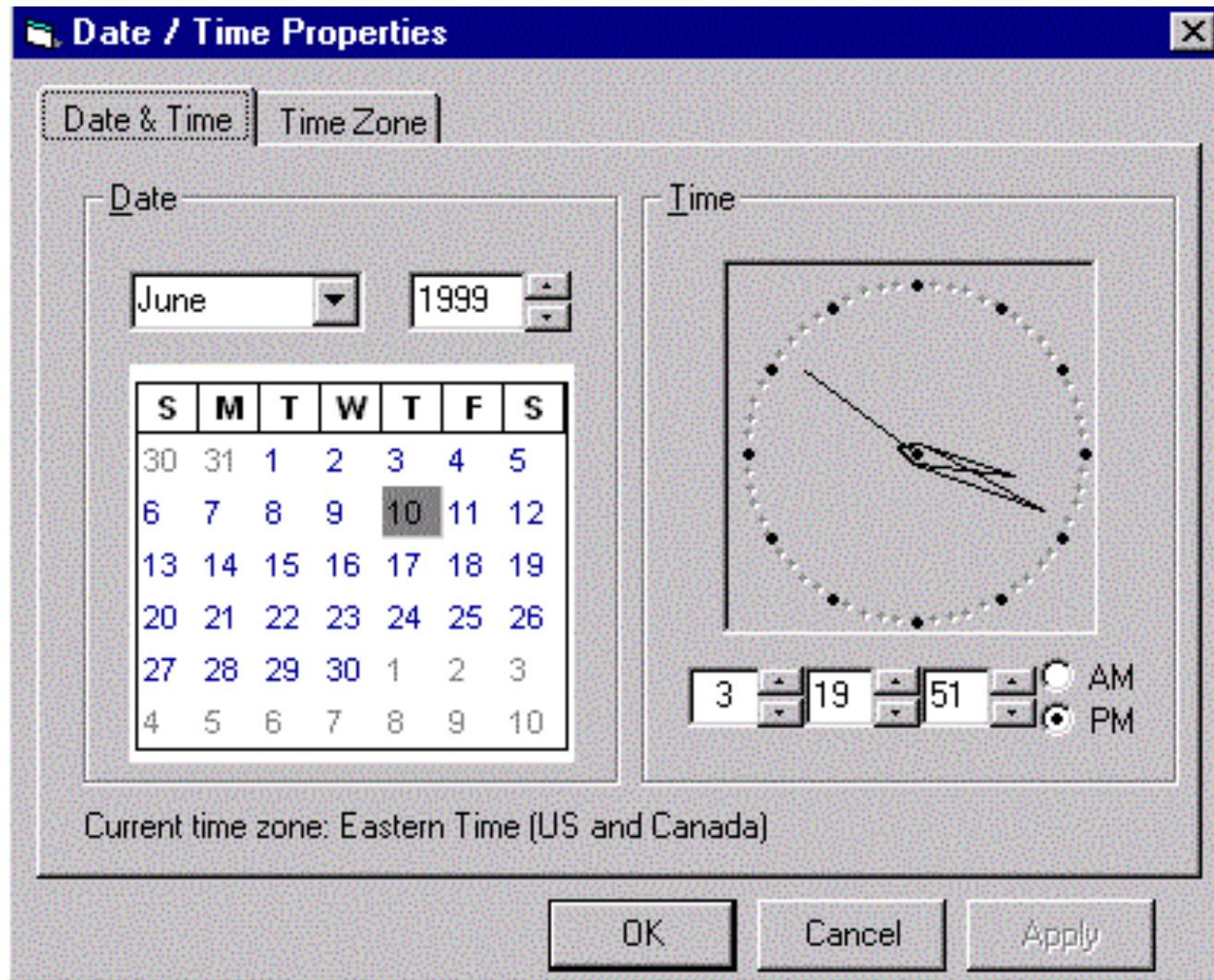
- **ID:** <evaluator's initials>-HE-##
- **Name:** succinct description
- **Heuristic:** H1-10

ID	Name	Heuristic(s)
cda-HE-09	No feedback during image upload process	H1 Visibility
cda-HE-10	File size instructions use jargon	H2 Match
cda-HE-11	Upload error message provides no guidance	H9 Recovery
cda-HE-12	File navigator starts from root folder every time	H7 Flexibility
cda-HE-13	Image upload requires users specify file type	H6 Recognition

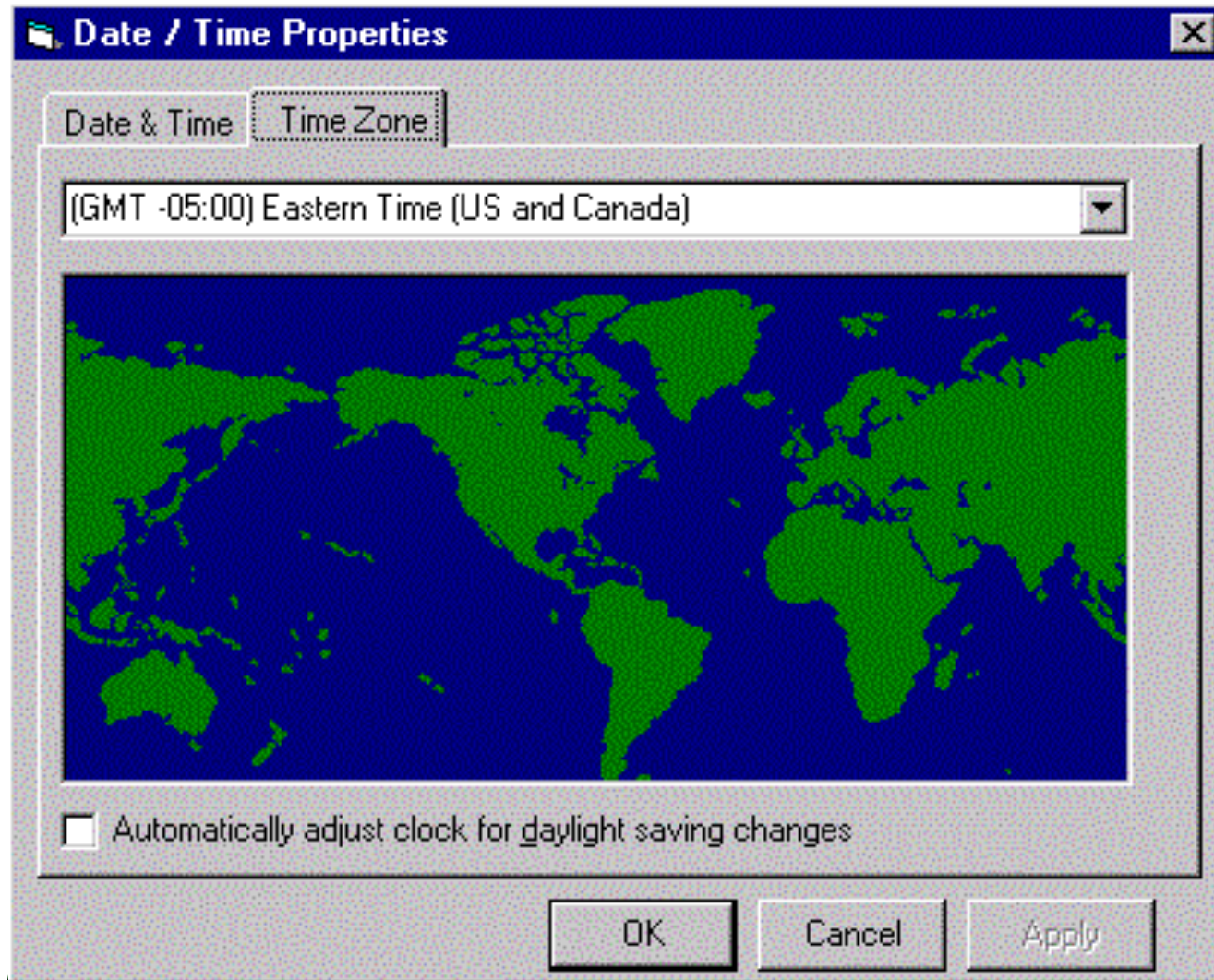


Step 1: Evaluate individually

- 0
- 1
- 2
- 3
- 4



Step 1: Evaluate individually



Individually

- 0
- 1
- 2
- 3
- 4

Grsync: default
File Sessions Help

Sessions
default [v] [Add] [Delete]

Source and Destination *(directories need a trailing "/")*

/media/D4AA1D6CAA1D4C7C/Users/.../Desktop [Browse]

/home/.../Desktop/backup/ [Browse]

Basic options **Advanced options** **Extra options**

<input checked="" type="checkbox"/> Preserve time	<input type="checkbox"/> Preserve permissions
<input type="checkbox"/> Preserve owner	<input type="checkbox"/> Preserve group
<input type="checkbox"/> Delete on destination	<input type="checkbox"/> Do not leave filesystem
<input checked="" type="checkbox"/> Verbose	<input checked="" type="checkbox"/> Show transfer progress
<input type="checkbox"/> Ignore existing	<input type="checkbox"/> Size only
<input type="checkbox"/> Skip newer	<input type="checkbox"/> Windows compatibility

Notes:
[Text Area]

[Quit] [i Simulation] [Execute]



Individually

- 0
- 1
- 2
- 3
- 4

Grsync: default
File Sessions Help

Sessions
default [Add] [Delete]

Source and Destination (directories)
/media/D4AA1D6CAA1D4C7C/Users
/home/.../Desktop/backup/

Basic options | **Advanced options**

- Preserve time
- Preserve owner
- Delete on destination
- Verbose
- Ignore existing
- Skip newer
- Do not leave filesystem
- Show transfer progress
- Size only
- Windows compatibility

Notes:

[Quit] [Simulation] [Execute]

rsync: running

PJM Training/manuals/m19.pdf
7%

Global progress
15% (0:06 elapsed, 0:35 remaining)

+ Rsync output:

[Warning] [Pause] [Stop]



Individually

- 0
- 1
- 2
- 3
- 4

Grsync: default

File Sessions Help

Sessions

default Add Delete

Source and Destination (directories)

/media/D4AA1D6CAA1D4C7C/Users

/home/.../Desktop/backup/

Basic options Advanced options

Preserve time Pr

Preserve owner Pr

Delete on destination De

Verbose Sh

Ignore existing Siz

Skip newer W

Notes:

Quit Simulation Execute

rsync: stopped

Completed with errors!

0%

Global progress

100% (0:50 elapsed, 0:00 remaining)

Rsync output:

1039070 100% 1.80MB/s 0:00:00 (xfer#395, to-check=100
matlabWin/win32/archives/Fixed_Point_Toolbox31_win32.zip
46345217 100% 23.81MB/s 0:00:01 (xfer#396, to-check=106
matlabWin/win32/archives/Fuzzy_Logic_Toolbox2211_win32.zip
4091928 100% 4.00MB/s 0:00:00 (xfer#397, to-check=1062
matlabWin/win32/archives/Gauges_Blockset205_win32.zip
2123310 100% 1.93MB/s 0:00:01 (xfer#398, to-check=1061
matlabWin/win32/archives/Global_Optimization_Toolbox30_win32.
6084246 100% 27.63MB/s 0:00:00 (xfer#399, to-check=106
matlabWin/win32/archives/IEC_Certification_Kit12_win32.zip
45133579 100% 18.67MB/s 0:00:02 (xfer#400, to-check=105
matlabWin/win32/archives/Image_Acquisition_Toolbox35_win32.zi
32768 0% 103.90kB/s 0:03:49
rsync error: received SIGINT, SIGTERM, or SIGHUP (code 20) at rsy
rsync: writefd_unbuffered failed to write 78 bytes to socket [gener

Warning Play Close



Step 2: Aggregate issues

Read issues in turn, consolidate a list

ID	Combined name	Heuristic(s)	Evaluator(s)
HE-12	No feedback during image upload process	H1 Visibility	cda-HE-09, ljd-HE-02, ht-HE-04
HE-13	OK and Apply button perform same action	H4 Consistency	ljd-HE-03, sh-HE-11
HE-14	New entries appear above viewable area, user must manually scroll to see them	H1 Visibility	ljd-HE-06, sh-HE-02, ht-HE-04
HE-15	Email addresses must be added manually from memory	H5 Error prevention, H6 Recognition	ljd-HE-07, cda-HE-04, ht-HE-01



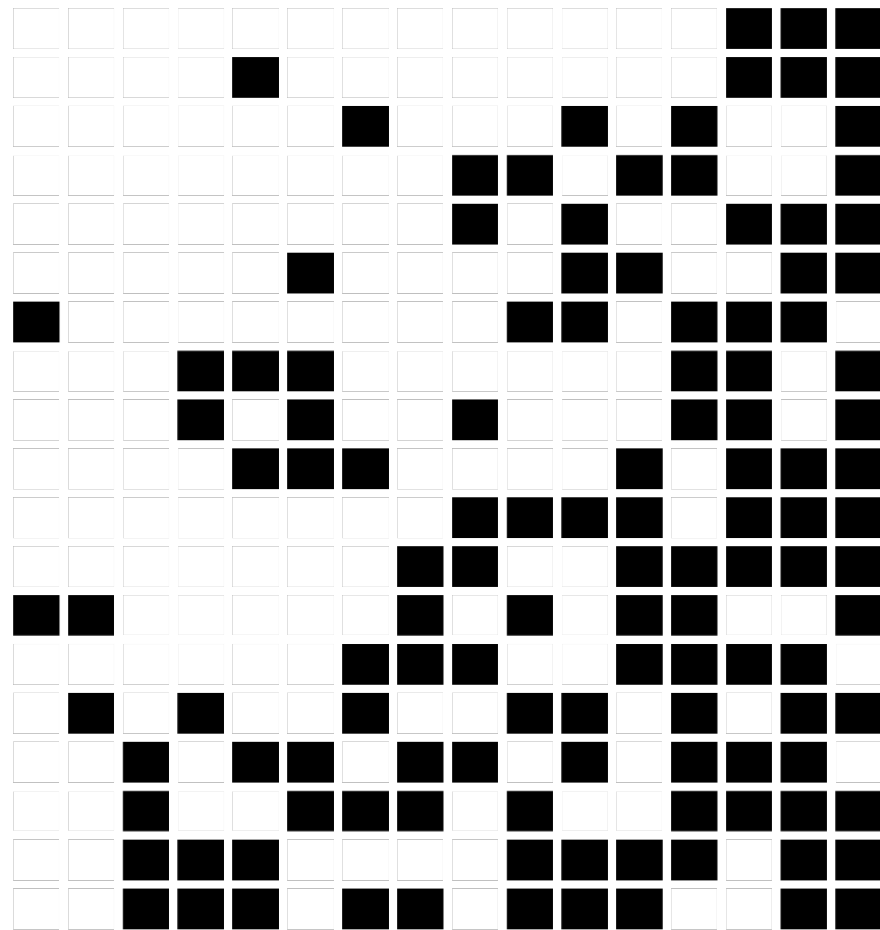
Step 2: Aggregate issues



Activity



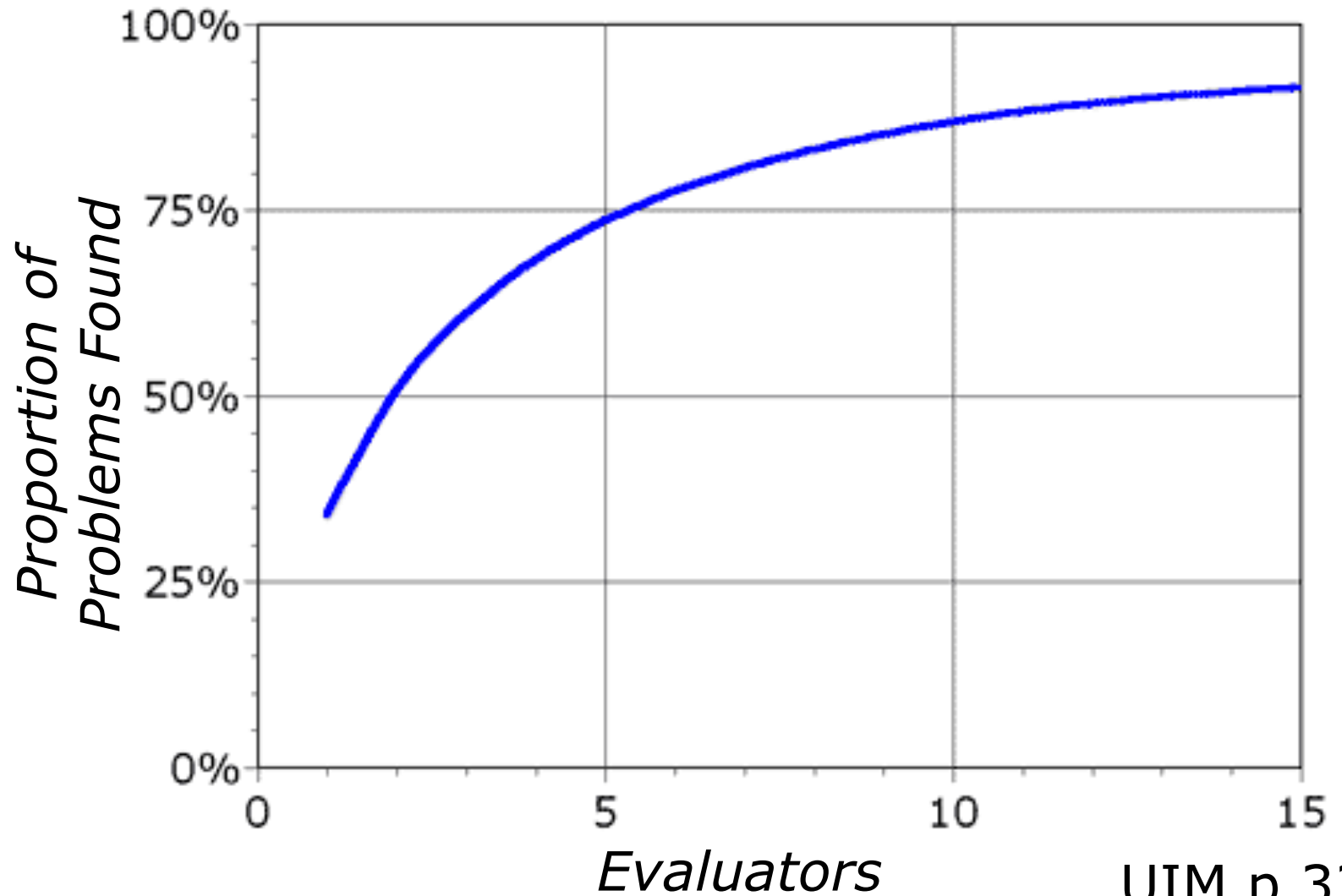
How many evaluators?



UIM p.27



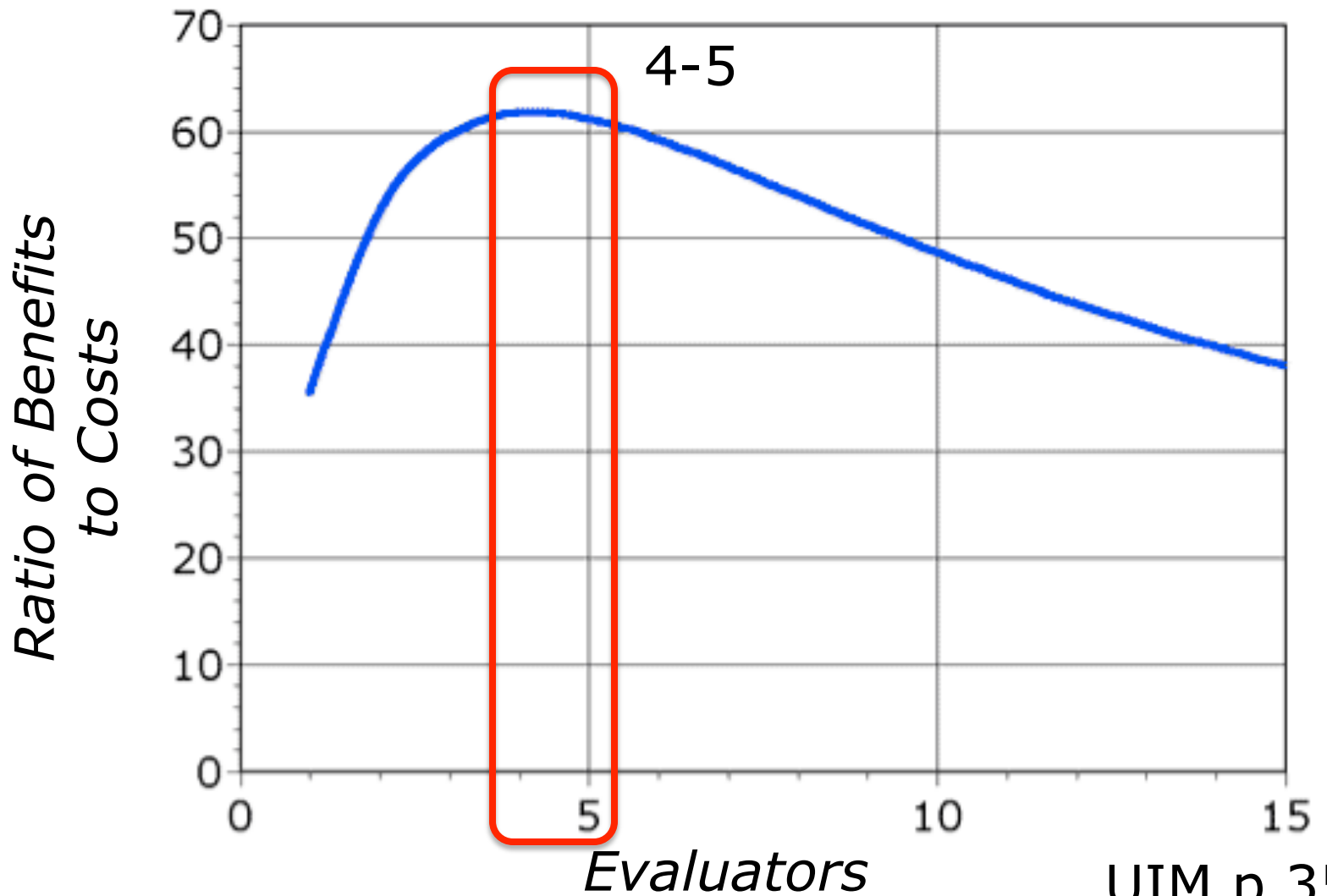
How many evaluators?



UIM p.33



How many evaluators?



UIM p.35



Step 3: Apply severity ratings



4 Catastrophic

- Product cannot be released

3 Major

- High-priority issue

2 Minor

- Good to fix when there's a lull

1 Cosmetic

- Icing on the cake (these rarely get done)

0 Not a problem

- I don't agree that this is a problem at all



Step 3: Apply severity ratings



Justification:

- **Frequency:** Common or rare occurrence?
- **Impact:** How bad is it? How hard to recover?
- **Persistence:** One-time problem users can work around or unavoidable problem?

For each issue, average the rating from each evaluator



Step 3: Apply severity ratings



Activity



Step 4: Summarize findings: Usability Aspect Reports

Short (1 page max) report for each issue

Goes by many names

- Usability Problem Report (UIM Ch11)
- Usability *Aspect* Report (CMU)
- Bug/Issue Report (Bugzilla, JIRA, Rational)

Audience: primarily developers

- Specific and convincing
- Compiled in final report's appendix or entered directly into bug tracking system



Step 4: Summarize findings: Usability Aspect Reports

ID: "HE-##"

Name: succinct description

Evidence: just the facts, ma'am

Explanation: which heuristic violated, your interpretation of the evidence

Severity: rating and justification

Solution:(optional) include possible fixes

Relationships:(optional) link to related reports



Step 4: Summarize findings: Usability Aspect Reports



OK/Cancel



www.ok-cancel.com 12.05.03



First Things First : copyright 2003 tom chi and kevin cheng _



Step 4: Summarize findings: Executive summary



What are the important take-aways for people who do not read the individual Usability Aspect Reports?

Look for the forest in the trees
– Consider affinity diagramming

Audience: Project managers, team leads



Heuristic evaluation

0

Brief the group

1

Evaluate individually

2

Aggregate issues

3

Apply severity ratings

4

Summarize findings



Heuristic evaluation advantages

“Discount usability engineering”

Low intimidation

Don't need to identify tasks, activities

Can identify obvious fixes

Can expose problems user testing doesn't

Provides a shared language for talking about usability recommendations



Heuristic evaluation disadvantages

Un-validated

Inconsistent

False alarms -- problems unconnected with tasks

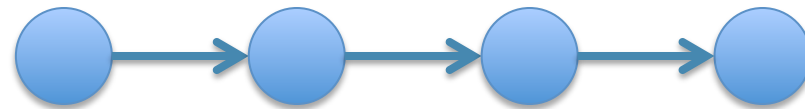
May be hard to apply to new technology



Cognitive Walkthrough

Especially suited to “first-time” use

Cognitive theory, exploratory learning



Evaluator(s) walk through each state of a task while answering questions about a hypothetical user’s goals, perceptions, and comprehension (See UIM Ch5)

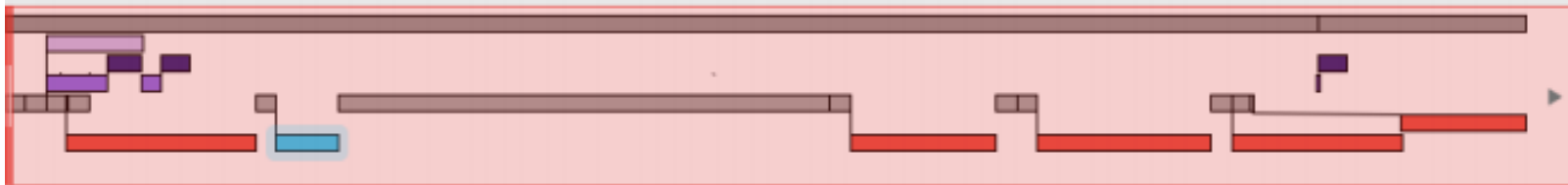


Keystroke-Level Model (KLM-GOMS)

GOMS methods apply to skilled users *only*

Quantitative prediction of performance

Model Human Processor, ACT-R, Fitts' Law



KLM is an easy-to-use GOMS and CogTool
is a free software tool for doing KLM

(see <http://cogtool.hcii.cs.cmu.edu/>)



Agenda

Evaluation overview

Last week

Usability evaluation methods

Heuristic evaluation

Cognitive walkthrough, KLM-GOMS

Next



Next

Readings

- Usability Inspection Methods Ch2 & Ch11

Discussion Section

- Practice heuristic evaluation (bring laptops)

Homework

- Conduct a heuristic evaluation

Next week's lecture

- Web analytics on November 7

