# Heuristic evaluation

Designed as a discount evaluation method based on inspection:

- Quick and cheap UI evaluation
- http://www.useit.com/papers/heuristic/

Principles:

- There is a list of important rules for UIs: “heuristics”
- Heuristics can be checked by experts with an precise outcome

# 10 Usability Heuristics

http://www.useit.com/jakob/photos/

- Meet expectations
  1. Match the real world
  2. Consistency & standards
  3. Help & documentation
- User is boss
  4. User control & freedom
  5. Visibility of system status
  6. Flexibility & efficiency
- Errors
  7. Error prevention
  8. Recognition, not recall
  9. Error reporting, diagnosis, and recovery
- Keep it simple
  10. Aesthetic & minimalist design

# Other usability guidelines

- Don Norman's principles:
  - visibility, affordances, natural mapping, and feedback
- Ben Shneiderman's 8 Golden Rules of UI design
  - https://www.cs.umd.edu/users/ben/goldenrules.html
- Bruce Tognazzini's 16 principles:
  - http://www.asktog.com/basics/firstPrinciples.html
- Scapin and Bastien's Ergonomic Criteria
  - http://ergoweb.ca/criteres/
- Jakob Nielsen's Heuristics

# Procedure

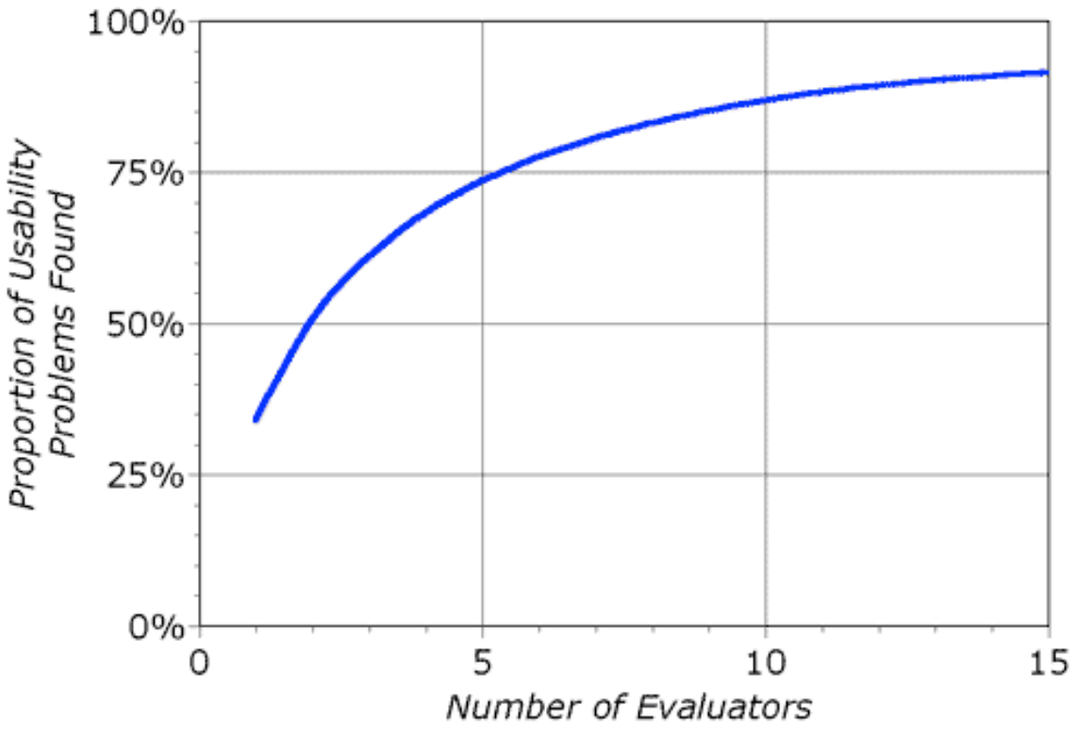
- A small number of evaluators examine the UI judging of its application of usability criteria (“heuristics")
- Either by systematic inspection, or through a scenario
- Problems are listed and organized by severity
- The evaluators’ opinions are synthesized in a report

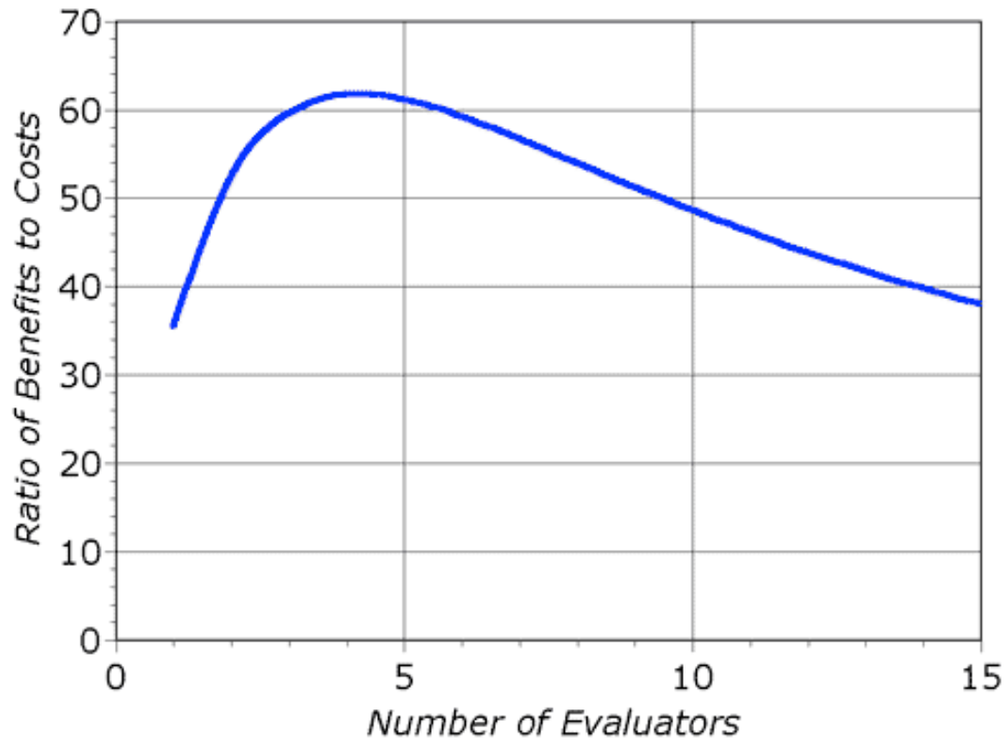
# How many evaluators

One evaluator delivers limited results

Finds only 35% of usability problems

5 evaluators can find ~75% of usability problems



# Heuristics

- Visibility of system status
- Match between system and the real world
- User control and freedom
- Consistency and standards
- Error prevention
- Recognition rather than recall
- Flexibility and efficiency of use
- Aesthetic and minimalist design
- Help users recognise, diagnose, and recover from errors
- Help and documentation

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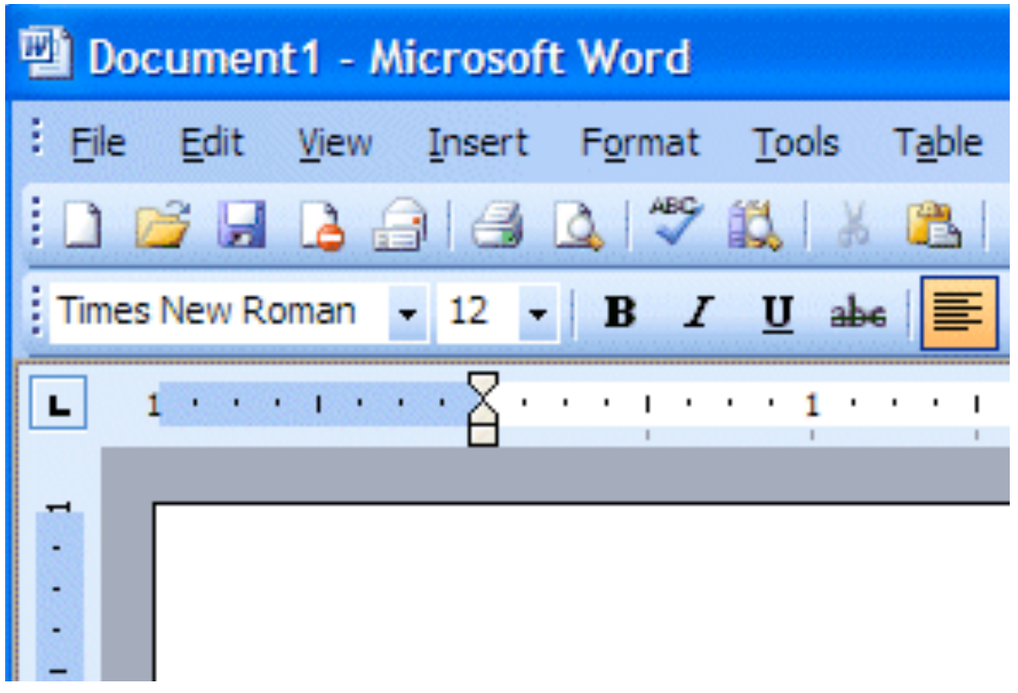

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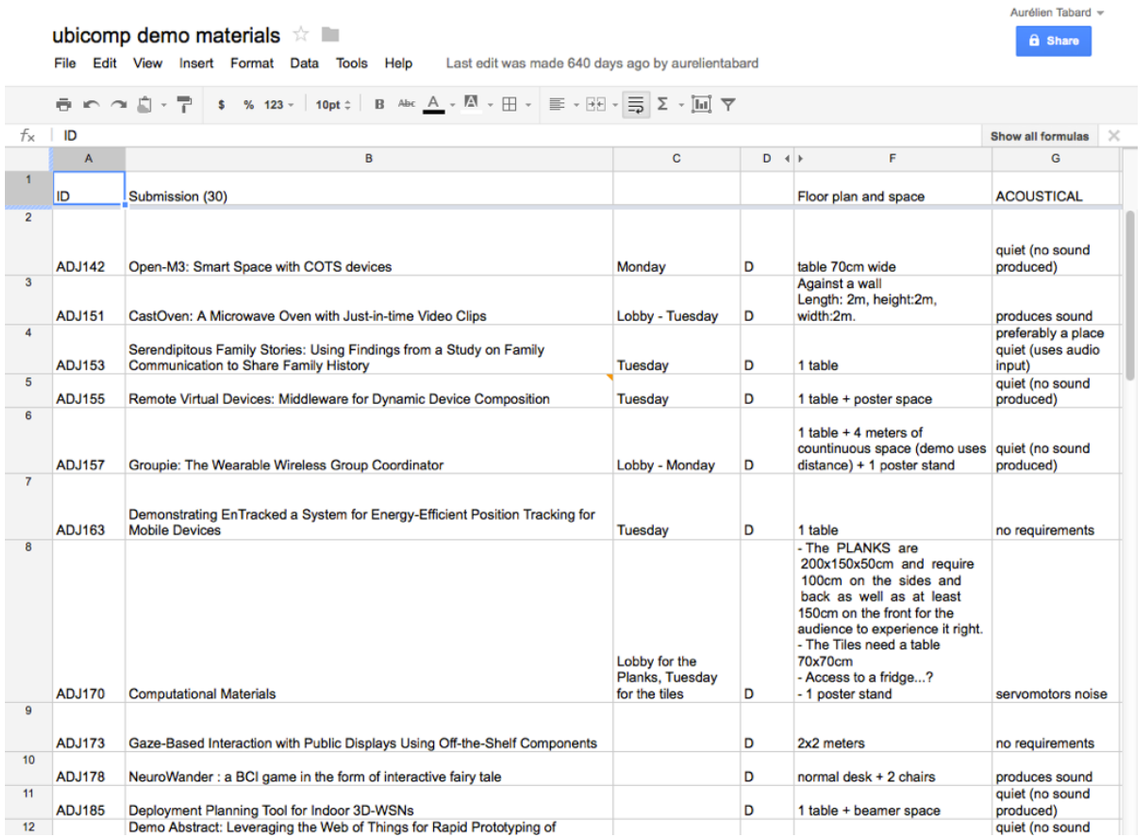

ubicomp demo materials

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| | A | B | C | D | F | G |
|---|---|---|---|---|---|---|
| 1 | ID | Submission (30) | | | Floor plan and space | ACOUSTICAL |
| 2 | ADJ142 | Open-M3: Smart Space with COTS devices | Monday | D | table 70cm wide | quiet (no sound produced) |
| 3 | ADJ151 | CastOven: A Microwave Oven with Just-in-time Video Clips | Lobby - Tuesday | D | Against a wall<br>Length: 2m, height:2m, width:2m. | produces sound |
| 4 | ADJ153 | Serendipitous Family Stories: Using Findings from a Study on Family Communication to Share Family History | Tuesday | D | 1 table | preferably a place quiet (uses audio input) |
| 5 | ADJ155 | Remote Virtual Devices: Middleware for Dynamic Device Composition | Tuesday | D | 1 table + poster space | quiet (no sound produced) |
| 6 | ADJ157 | Groupie: The Wearable Wireless Group Coordinator | Lobby - Monday | D | 1 table + 4 meters of countinuous space (demo uses distance) + 1 poster stand | quiet (no sound produced) |
| 7 | ADJ163 | Demonstrating EnTracked a System for Energy-Efficient Position Tracking for Mobile Devices | Tuesday | D | 1 table | no requirements |
| 8 | ADJ170 | Computational Materials | Lobby for the Planks, Tuesday for the tiles | D | - The PLANKS are 200x150x50cm and require 100cm on the sides and back as well as at least 150cm on the front for the audience to experience it right.<br>- The Tiles need a table 70x70cm<br>- Access to a fridge...?<br>- 1 poster stand | servomotors noise |
| 9 | ADJ173 | Gaze-Based Interaction with Public Displays Using Off-the-Shelf Components | | D | 2x2 meters | no requirements |
| 10 | ADJ178 | NeuroWander : a BCI game in the form of interactive fairy tale | | D | normal desk + 2 chairs | produces sound |
| 11 | ADJ185 | Deployment Planning Tool for Indoor 3D-WSNs | | D | 1 table + beamer space | quiet (no sound produced) |
| 12 | | Demo Abstract: Leveraging the Web of Things for Rapid Prototyping of | | | | quiet (no sound |

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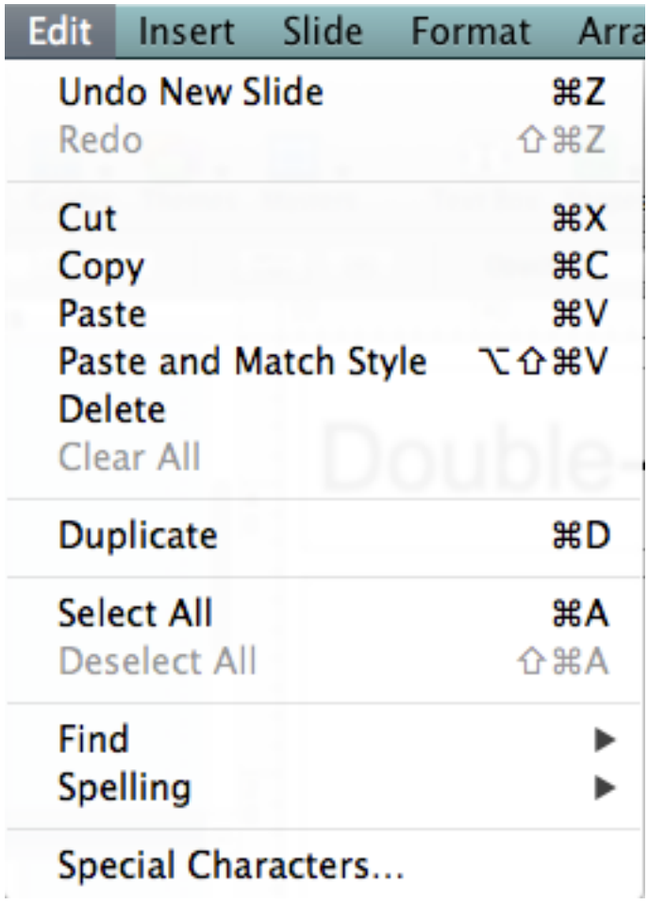

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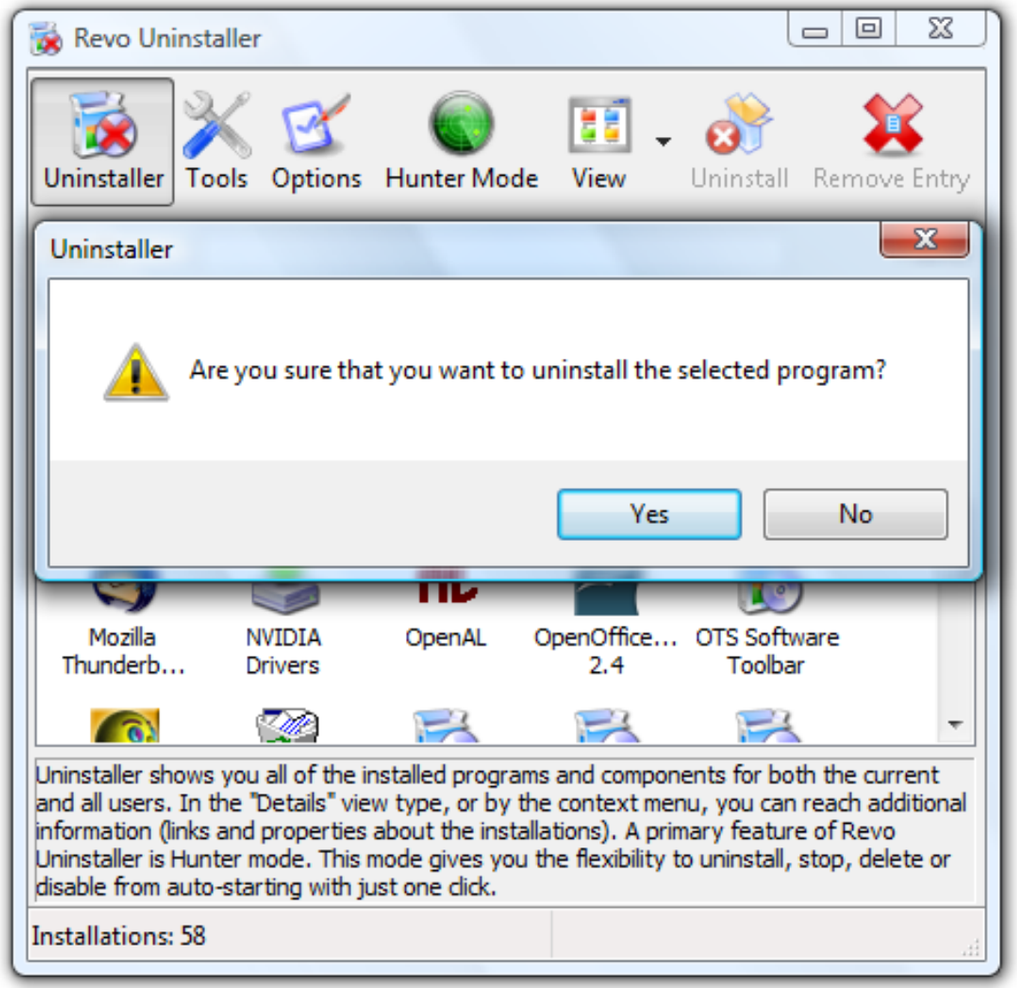

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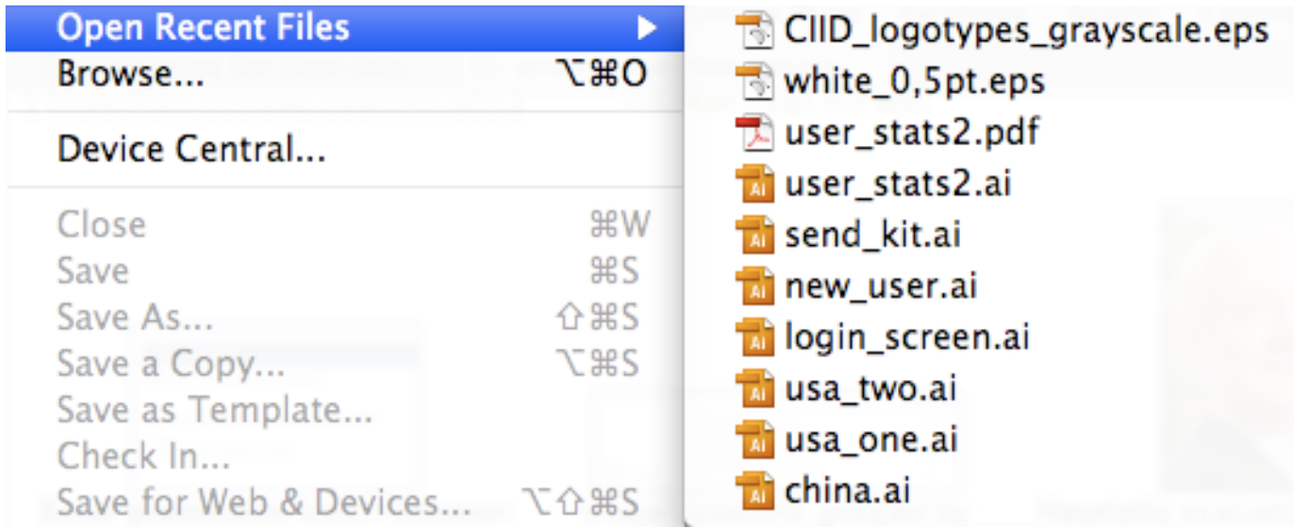

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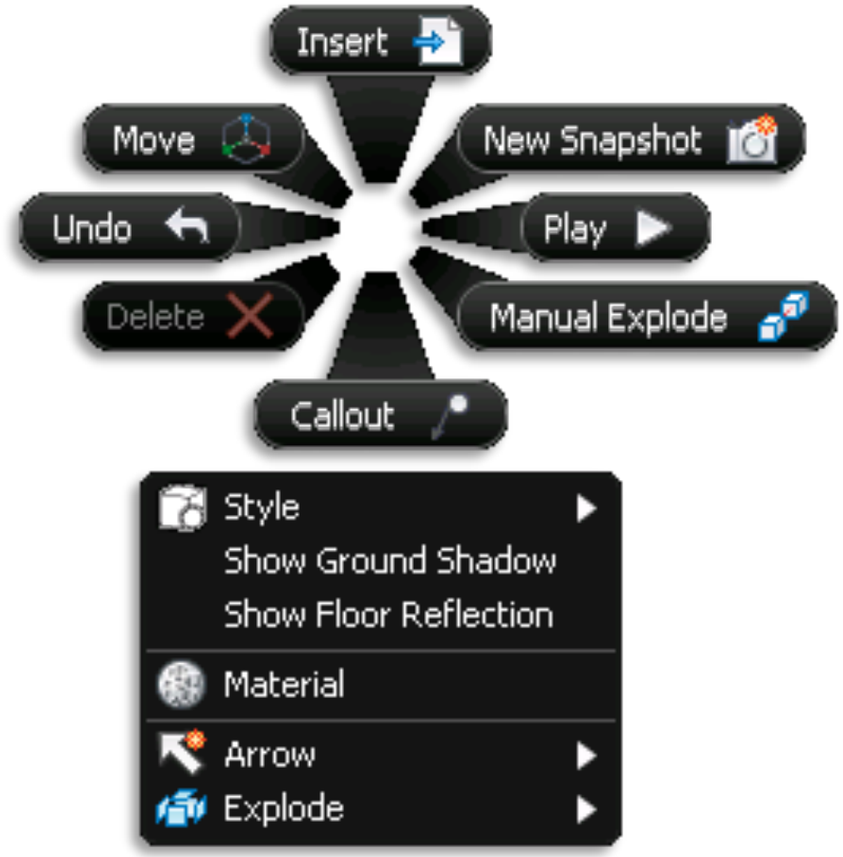

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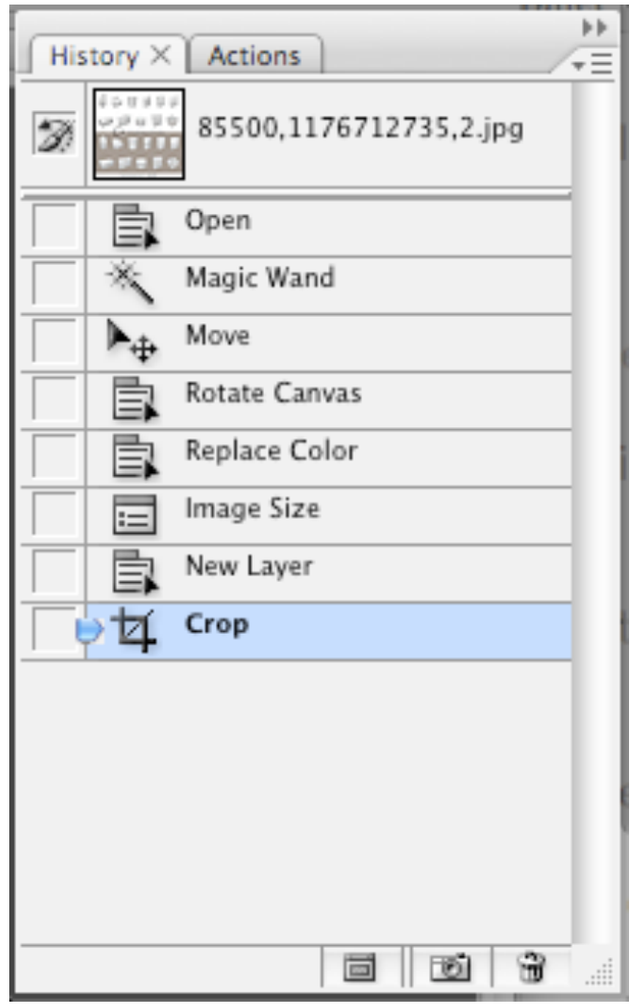

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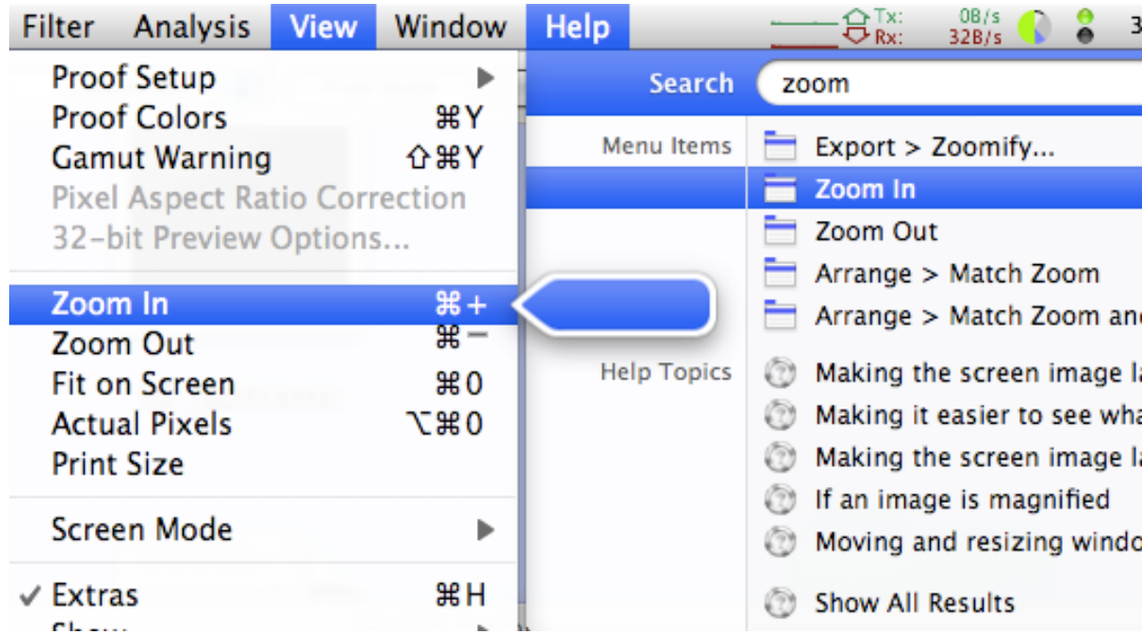


# Severity scale

## Factors

- Frequency: how often does it happen?
- Impact: how difficult is it to solve the problem?
- Persistance: faut il affronter le problème dans la durée?

## Severity scale

- Cosmetic: fixing not required
- Minor: fixing required but low priority
- Major: fixing required and high priority
- Catastrophic: fixing is imperative

# Writing good heuristic evaluations

- Heuristic evaluations must communicate well to developers and managers
- Include positive comments as well as criticisms
  - Good: Toolbar icons are simple, with good contrast and few colors (minimalist design)
- Be tactful
  - Not: the menu organization is a complete mess
  - Better: menus are not organized by function
- Be specific
  - Not: text is unreadable
  - Better: text is too small, and has poor contrast (black text on dark green background)

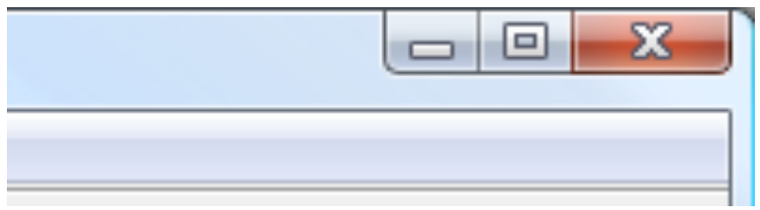
# Example

What to include:

- Problem
- Heuristic
- Description
- Severity
- Recommendations
- A screenshot

Severe: User may close window without saving data (error prevention)

If the user has made changes without saving, and then closes the window using the Close button, rather than File >> Exit, no confirmation dialog appears.



Recommendation: show a confirmation dialog or save automatically

# Summary

- Heuristic evaluation is a “low-cost” method
- Best to ask evaluators to go through the UI twice
  - Once focusing on heuristic problems
  - Then writing detailed analysis of each case
- Evaluators independently evaluate the severity
- Merge feedback from 3 to 5 evaluators
- Debrief problems within the design team
- Alternative to user testing
- Often identifies different issues so it’s actually complementary