Usability evaluation & testing

Nils-Erik Gustafsson

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Methods

- *Evaluation*
- *Testing*
- *Observation*
- Survey
- Focus group discussion
- Logging
- User feedback

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Evaluation

- *Heuristic evaluation*
  Expert reviewer(s) critique a system to determine conformance with a short list of design heuristics
- *Consistency inspection*
  Expert(s) verify consistency, checking e.g., terminology, colour, layout
- *Cognitive walkthrough*
  Expert(s) simulate users walking through the system, performing typical tasks

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Nielsen's heuristics 1

1. Visibility of system status
   - The system should always keep users informed about what is going on, through appropriate feedback within reasonable time.
2. Match between system and the real world
   - The system should speak the users' language, with words, phrases and concepts familiar to the user, rather than system-oriented terms. Follow real-world conventions, making information appear in a natural and logical order.

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Nielsen's heuristics 2

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4. Consistency and standards
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Nielsen's heuristics 3

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   - Even better than good error messages is a careful design which prevents a problem from occurring in the first place.
6. Recognition rather than recall
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8. Aesthetic and minimalist design
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   - Even though it is better if the system can be used without documentation, it may be necessary to provide help and documentation. Any such information should be easy to search, focused on the user's task, list concrete steps to be carried out, and not be too large.

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Gustafsson's heuristics 1

Are terms and symbols used consistently?

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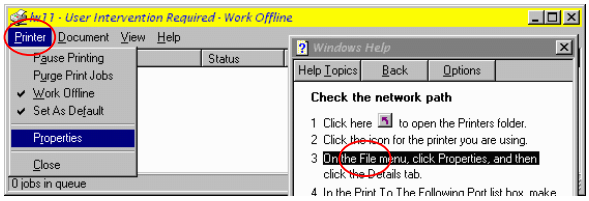
1 Consistency



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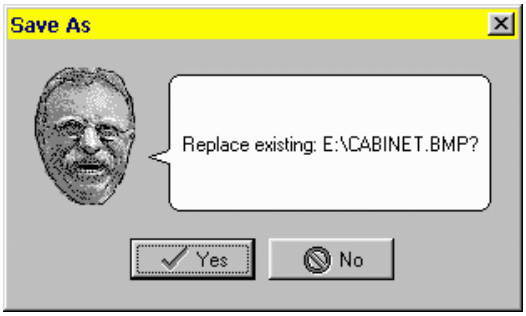

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Gustafsson's heuristics 2

Is the required information readily available?
The required functions?

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2 Required info/functions

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2 Required info/functions

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Gustafsson's heuristics 3

Where am I?

- What is the name of the application, the object (if any), and the operation?
- What is happening?

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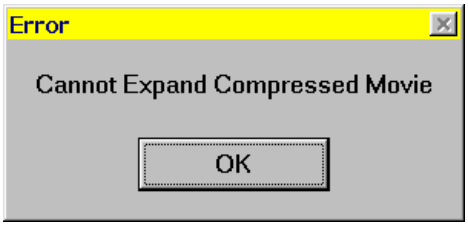
3 Where am I?



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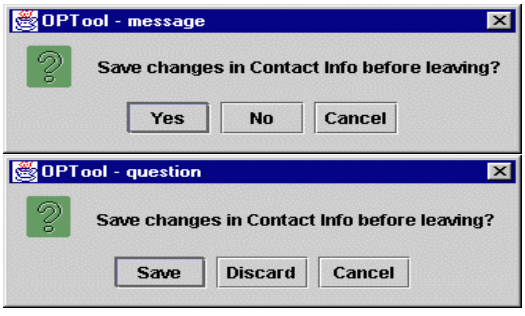
3 Name of operation?



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Gustafsson's heuristics 1

What can I do?

- Which operations are possible to perform?

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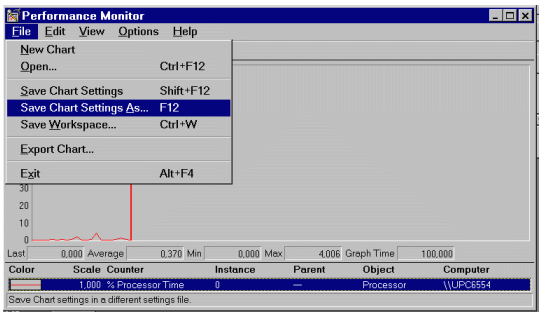
4 What can I do?



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Gustafsson's heuristics 5

Is all the required information *where* I need it?

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5 Information *where* I need it?

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Gustafsson's heuristics 6

Can I go back one step in the interaction and undo the previous operation?

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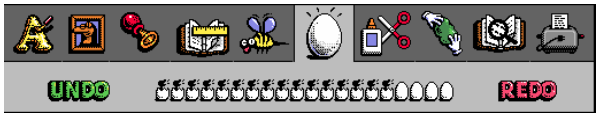
6 Undo?



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Gustafsson's heuristics 7

Can I interrupt and quit the application without losing information?

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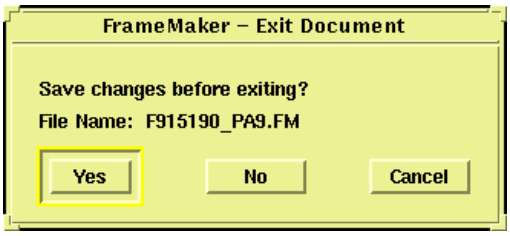
7 Interrupt & quit without loss?



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Gustafsson's heuristics 8

Is the information sensibly grouped?
(Menus, windows, etc.)

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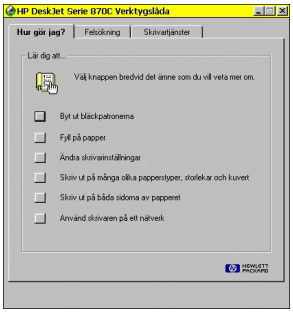
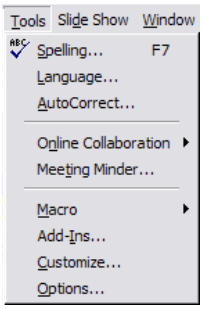
8 Info sensibly grouped





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Gustafsson's heuristics 9

Are graphical elements such as colour and lines used in a subtle and consistent manner?

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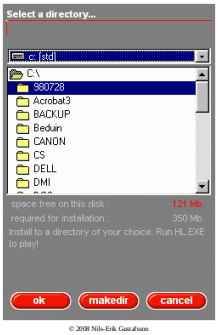
9 Subtle & consistent



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Gustafsson's heuristics 10

Are response times reasonable (from the user's point of view)?
Do I get the right type of feedback?

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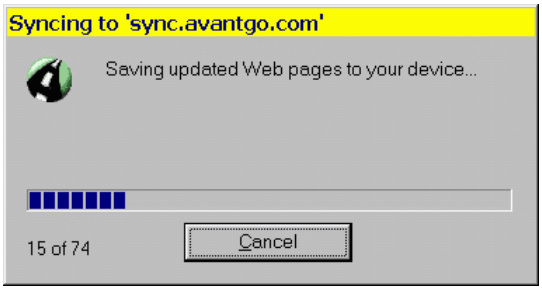
10 Response time/feedback



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Gustafsson's heuristics 11

Don't be funny!

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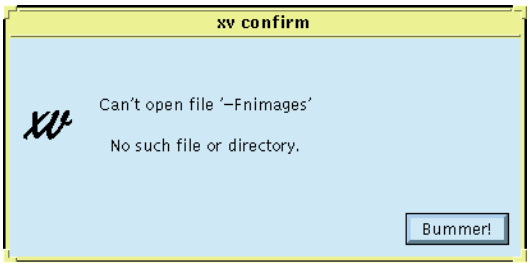
11 Don't be funny!



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Usability testing/review

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Usability testing

- Users
- Tasks
- Scenarios
- Usability requirements

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Before

•*Always* start with expert review(s)

•*Always* run pilot test(s) (rehearsal)

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Know thy users!

•Identify & describe user categories
•Find representative users
•Quality vs. quantity

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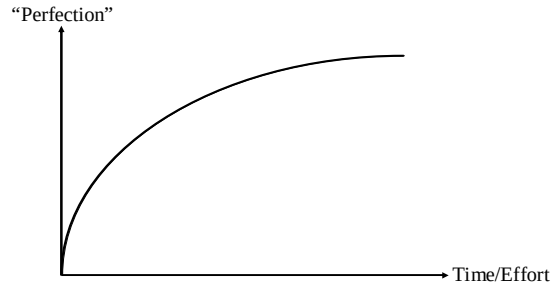
Perfect vs. "Good enough"



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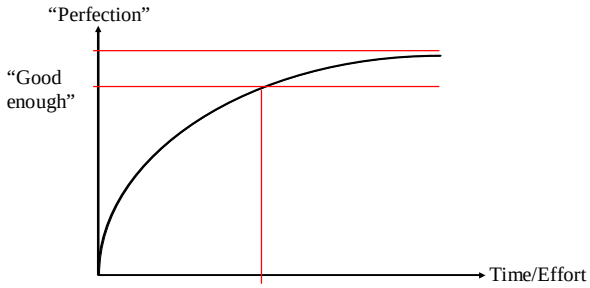

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Identify usability requirements

•Completion rate
•Success rate
•**Task time**
•Learnability (task time improvement)
•Retention
•Satisfaction

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What to aim for

•Optimal level (benchmark)
•Present level (manual/old system)
•**Desired level**
•Worst acceptable level

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Consider

•Go to users/Let users come to you
•User's own workplace/Laboratory

•Pen & paper/Video equipment

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LoFi vs. HiFi prototype

•Price
•Iteration speed
•Dynamics (response time)
•Democracy
•Expectations
•Fun & creativity

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LoFi vs. HiFi logging

•Price
•Ease of use
•Portability
•Malfunction
•Influence
•Symbolic value

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Who does what?

•Test leader
•Secretary (paper/logging software)
•Video technician
•Concerned parties (designers, etc.)

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Intro

•Introduce everyone & break the ice
•Explain purpose & procedure
•Get written agreement to record audio/video
•Get relevant background info.
•Introduce system, if suitable

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"Association test" (Gustafsson)

•Show system *without* any prior info.
•Ask user to explore & describe

•"Think aloud" vs. collaboration

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Perform tasks

•OK to interrupt, give up, ask for help
•Keep track of time
•Document everything/Annotate copies
•Paper/Screen
•Face
•Printed matter (User's guide, etc.)

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Outro

•Review notes/Annotations/Video(?)
•Questions & comments
•Subjective rating (away from system!)

•Reward?

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Afterwards

•Review: Notes/Annotations/Video
•Stop & iterate design or continue?

•Prepare "highlights"
•Analysis
•Report?

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Afterwards

- Quick review of Notes/Annotations/Video
- Stop & iterate design or continue?

- Prepare "highlights"
- Analysis
- Report?

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Reactions

- *Denial:* "This feature is important. Without it, users won't find what they need."
- *Anger:* "The users are stupid!"
- *Bargaining:* "Can't we provide more training? Then they would understand it."
- *Depression:* (Silence…)
- *Acceptance:* "Let's fix this!"

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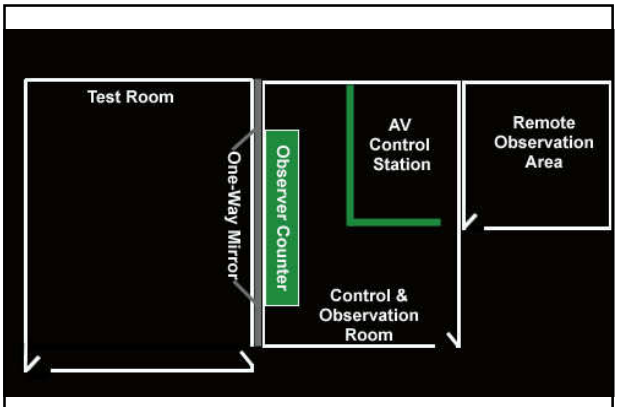

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Technology & Research

SunSoft Usability Labs

Offers usability evaluations and design services to Sun customers and invites volunteers to evaluate future Sun products.

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Pros & cons

- Evaluation
  - \+ Quick, cheap
  - – Expertise
- Testing
  - \+ Persuasive, terminology
  - – Slow, expensive, expertise

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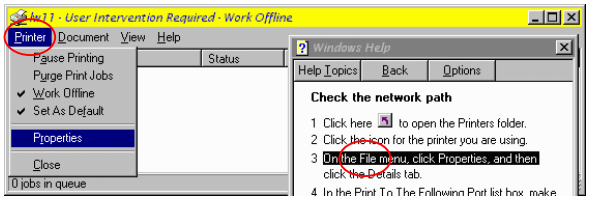

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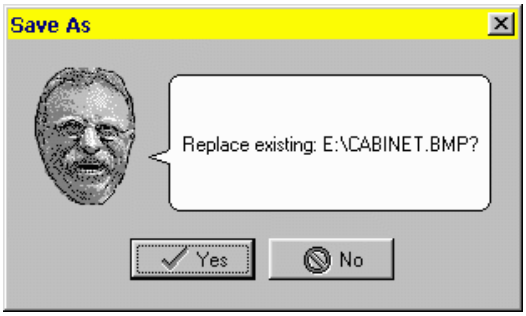

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Gustafsson's heuristics 2

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2 Required info/functions

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Gustafsson's heuristics 3

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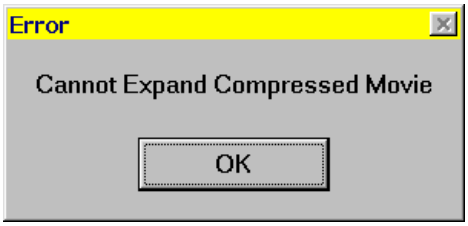

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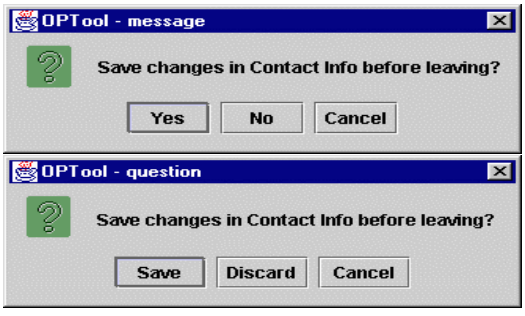
3 Name of operation?



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Gustafsson's heuristics 1

What can I do?

- Which operations are possible to perform?

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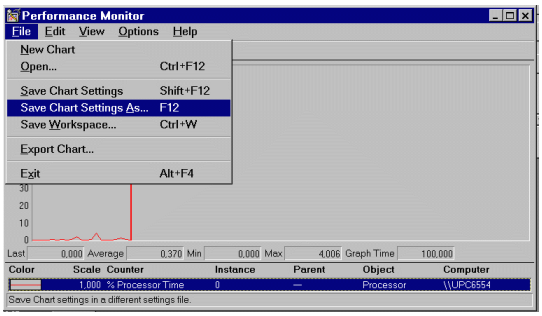
4 What can I do?



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Gustafsson's heuristics 5

Is all the required information *where* I need it?

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5 Information *where* I need it?

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Gustafsson's heuristics 6

Can I go back one step in the interaction and undo the previous operation?

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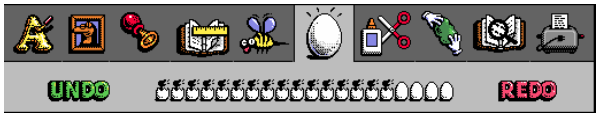
6 Undo?



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Gustafsson's heuristics 7

Can I interrupt and quit the application without losing information?

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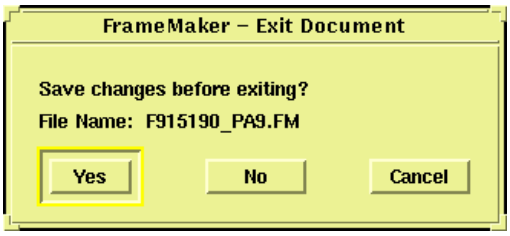
7 Interrupt & quit without loss?



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Gustafsson's heuristics 8

Is the information sensibly grouped?
(Menus, windows, etc.)

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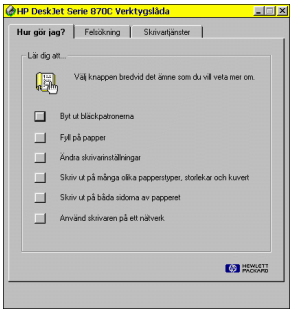
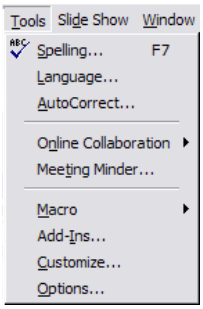
8 Info sensibly grouped





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Gustafsson's heuristics 9

Are graphical elements such as colour and lines used in a subtle and consistent manner?

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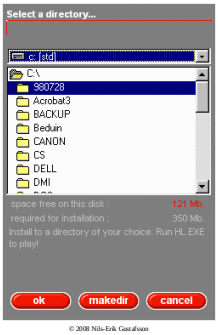
9 Subtle & consistent



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Gustafsson's heuristics 10

Are response times reasonable (from the user's point of view)?
Do I get the right type of feedback?

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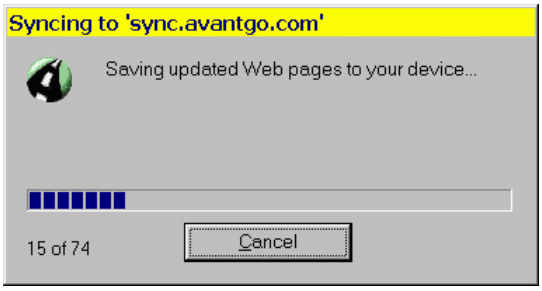
10 Response time/feedback



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Gustafsson's heuristics 11

Don't be funny!

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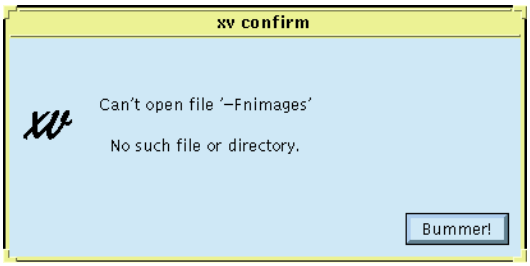
11 Don't be funny!



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Usability testing/review

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Usability testing

- Users
- Tasks
- Scenarios
- Usability requirements

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Before

•*Always* start with expert review(s)

•*Always* run pilot test(s) (rehearsal)

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Know thy users!

•Identify & describe user categories
•Find representative users
•Quality vs. quantity

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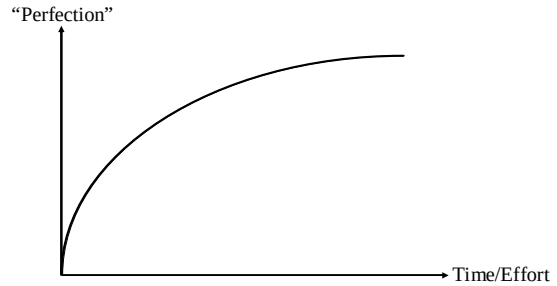
Perfect vs. "Good enough"



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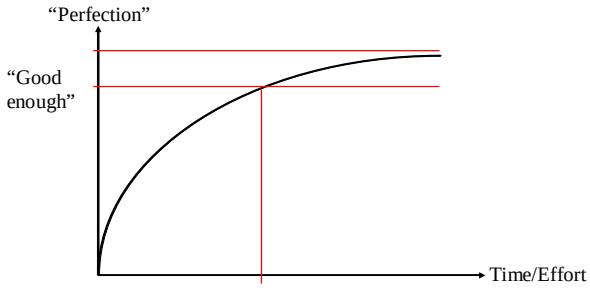

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Identify usability requirements

•Completion rate
•Success rate
•**Task time**
•Learnability (task time improvement)
•Retention
•Satisfaction

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What to aim for

•Optimal level (benchmark)
•Present level (manual/old system)
•**Desired level**
•Worst acceptable level

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Consider

•Go to users/Let users come to you
•User's own workplace/Laboratory

•Pen & paper/Video equipment

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LoFi vs. HiFi prototype

•Price
•Iteration speed
•Dynamics (response time)
•Democracy
•Expectations
•Fun & creativity

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LoFi vs. HiFi logging

•Price
•Ease of use
•Portability
•Malfunction
•Influence
•Symbolic value

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Who does what?

•Test leader
•Secretary (paper/logging software)
•Video technician
•Concerned parties (designers, etc.)

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Intro

•Introduce everyone & break the ice
•Explain purpose & procedure
•Get written agreement to record audio/video
•Get relevant background info.
•Introduce system, if suitable

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"Association test" (Gustafsson)

•Show system *without* any prior info.
•Ask user to explore & describe

•"Think aloud" vs. collaboration

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Perform tasks

•OK to interrupt, give up, ask for help
•Keep track of time
•Document everything/Annotate copies
•Paper/Screen
•Face
•Printed matter (User's guide, etc.)

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Outro

•Review notes/Annotations/Video(?)
•Questions & comments
•Subjective rating (away from system!)

•Reward?

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Afterwards

•Review: Notes/Annotations/Video
•Stop & iterate design or continue?

•Prepare "highlights"
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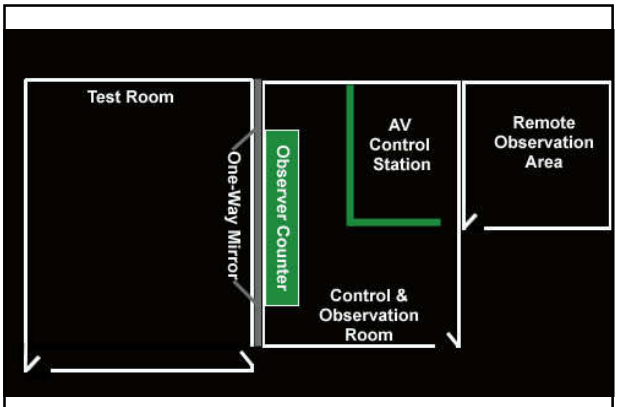

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Technology & Research

SunSoft Usability Labs

Offers usability evaluations and design services to Sun customers and invites volunteers to evaluate future Sun products.

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Pros & cons

- Evaluation
  - \+ Quick, cheap
  - – Expertise
- Testing
  - \+ Persuasive, terminology
  - – Slow, expensive, expertise

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Usability evaluation & testing

Nils-Erik Gustafsson

nils-erik@it-arkitekterna.se
gui@cmpmail.com

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Methods

- *Evaluation*
- *Testing*
- *Observation*
- Survey
- Focus group discussion
- Logging
- User feedback

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Evaluation

- *Heuristic evaluation*
  Expert reviewer(s) critique a system to determine conformance with a short list of design heuristics
- *Consistency inspection*
  Expert(s) verify consistency, checking e.g., terminology, colour, layout
- *Cognitive walkthrough*
  Expert(s) simulate users walking through the system, performing typical tasks

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Nielsen's heuristics 1

1. Visibility of system status
   - The system should always keep users informed about what is going on, through appropriate feedback within reasonable time.
2. Match between system and the real world
   - The system should speak the users' language, with words, phrases and concepts familiar to the user, rather than system-oriented terms. Follow real-world conventions, making information appear in a natural and logical order.

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Nielsen's heuristics 2

3. User control and freedom
   - Users often choose system functions by mistake and will need a clearly marked "emergency exit" to leave the unwanted state without having to go through an extended dialogue. Support undo and redo.
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Nielsen's heuristics 3

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Nielsen's heuristics 4

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Nielsen's heuristics 5

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Gustafsson's heuristics 1

Are terms and symbols used consistently?

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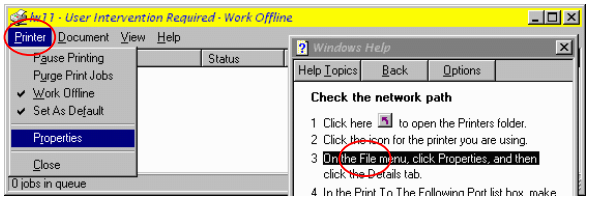
1 Consistency



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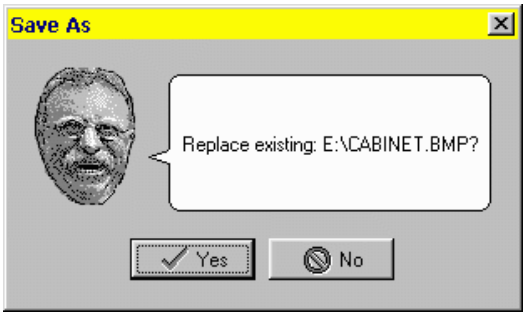

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Gustafsson's heuristics 2

Is the required information readily available?
The required functions?

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2 Required info/functions

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2 Required info/functions

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Gustafsson's heuristics 3

Where am I?

- What is the name of the application, the object (if any), and the operation?
- What is happening?

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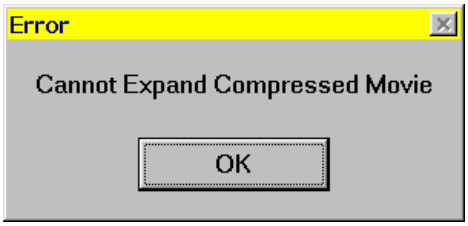
3 Where am I?



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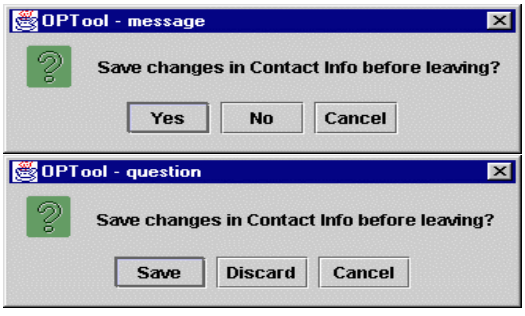
3 Name of operation?



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Gustafsson's heuristics 1

What can I do?

- Which operations are possible to perform?

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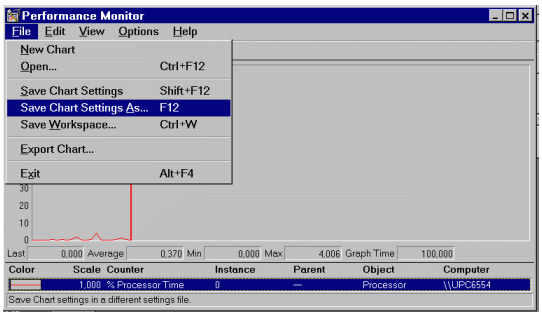
4 What can I do?



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Gustafsson's heuristics 5

Is all the required information *where* I need it?

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5 Information *where* I need it?

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Gustafsson's heuristics 6

Can I go back one step in the interaction and undo the previous operation?

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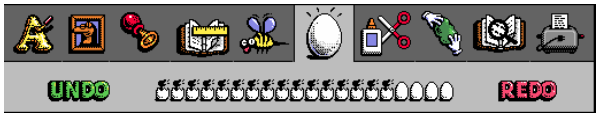
6 Undo?



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Gustafsson's heuristics 7

Can I interrupt and quit the application without losing information?

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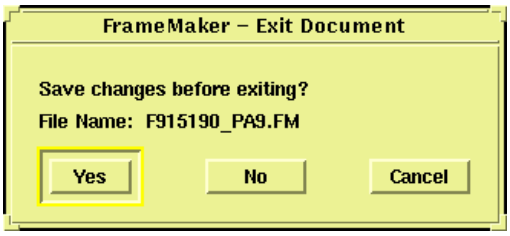
7 Interrupt & quit without loss?



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Gustafsson's heuristics 8

Is the information sensibly grouped?
(Menus, windows, etc.)

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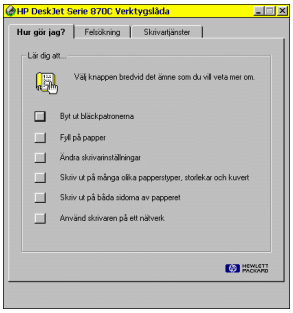
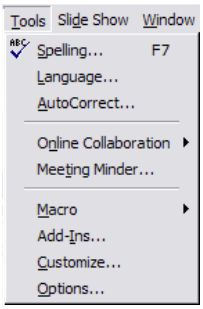
8 Info sensibly grouped





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Gustafsson's heuristics 9

Are graphical elements such as colour and lines used in a subtle and consistent manner?

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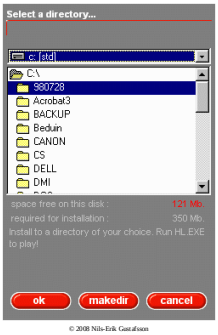
9 Subtle & consistent



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Gustafsson's heuristics 10

Are response times reasonable (from the user's point of view)?
Do I get the right type of feedback?

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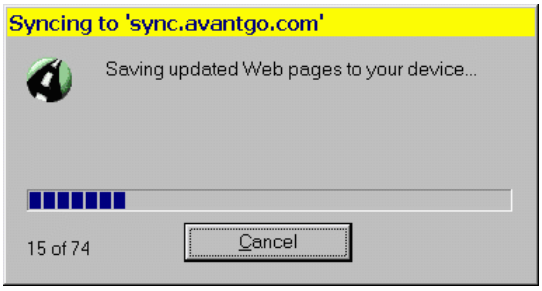
10 Response time/feedback



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Gustafsson's heuristics 11

Don't be funny!

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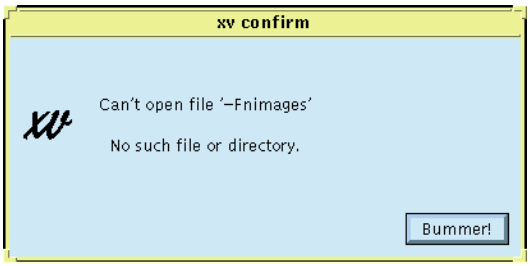
11 Don't be funny!



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11 Don't be funny!

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Usability testing/review

Nils-Erik Gustafsson

nils-erik@it-arkitekterna.se
gui@cmpmail.com

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Usability testing

- Users
- Tasks
- Scenarios
- Usability requirements

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Before

•*Always* start with expert review(s)

•*Always* run pilot test(s) (rehearsal)

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Know thy users!

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•Quality vs. quantity

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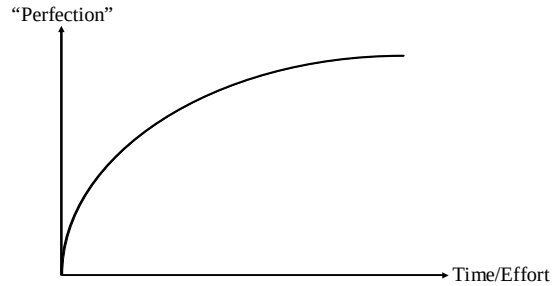
Perfect vs. "Good enough"



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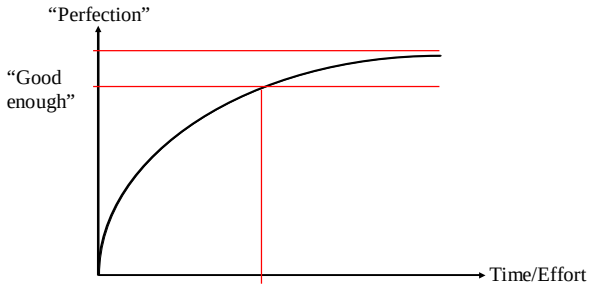

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Identify usability requirements

•Completion rate
•Success rate
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What to aim for

•Optimal level (benchmark)
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Consider

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LoFi vs. HiFi prototype

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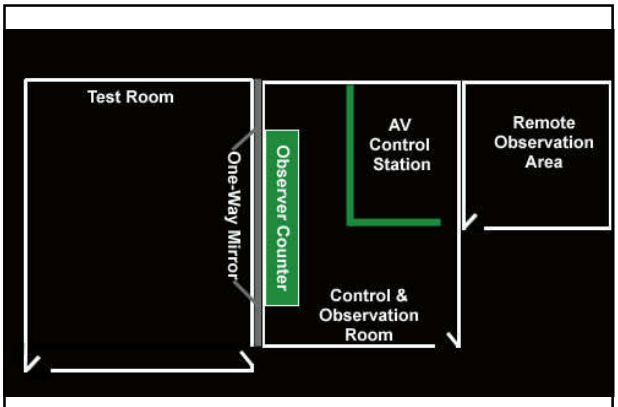

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- Testing
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Gustafsson's heuristics 1

Are terms and symbols used consistently?

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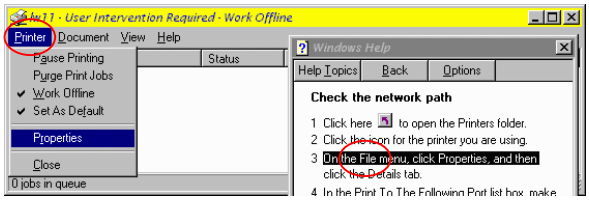
1 Consistency



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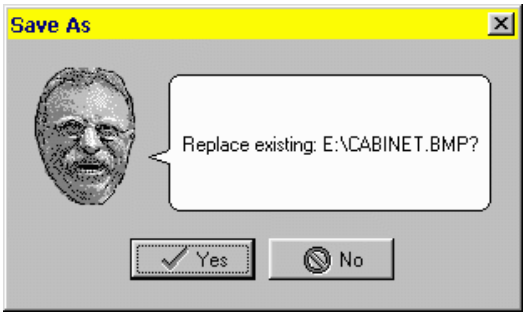

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Gustafsson's heuristics 2

Is the required information readily available?
The required functions?

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2 Required info/functions

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2 Required info/functions

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Gustafsson's heuristics 3

Where am I?

- What is the name of the application, the object (if any), and the operation?
- What is happening?

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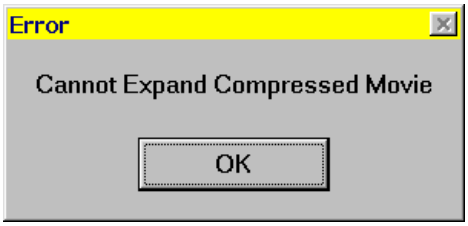
3 Where am I?



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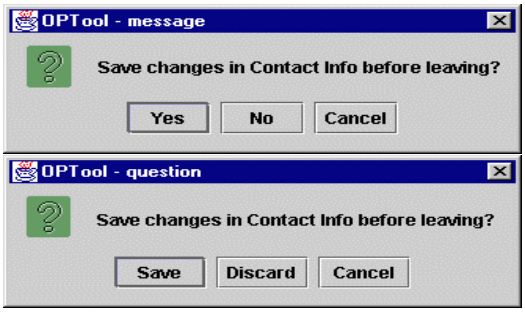
3 Name of operation?



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Gustafsson's heuristics 1

What can I do?

- Which operations are possible to perform?

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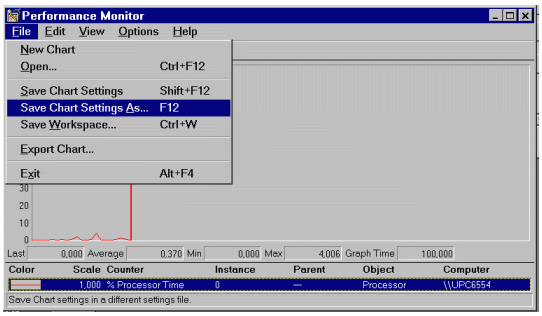
4 What can I do?



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Gustafsson's heuristics 5

Is all the required information *where* I need it?

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5 Information *where* I need it?

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Gustafsson's heuristics 6

Can I go back one step in the interaction and undo the previous operation?

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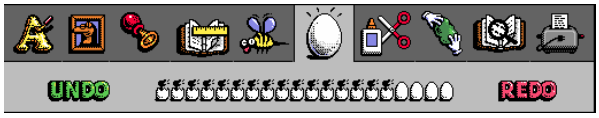
6 Undo?



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Gustafsson's heuristics 7

Can I interrupt and quit the application without losing information?

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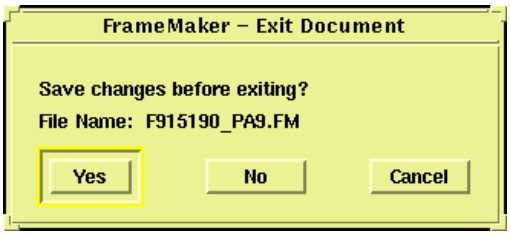
7 Interrupt & quit without loss?



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Gustafsson's heuristics 8

Is the information sensibly grouped?
(Menus, windows, etc.)

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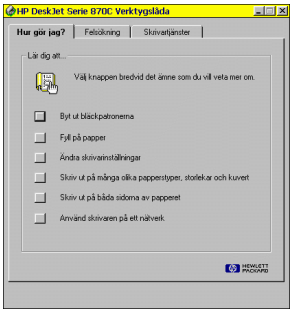
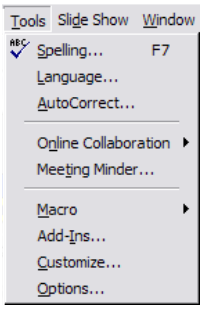
8 Info sensibly grouped





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Gustafsson's heuristics 9

Are graphical elements such as colour and lines used in a subtle and consistent manner?

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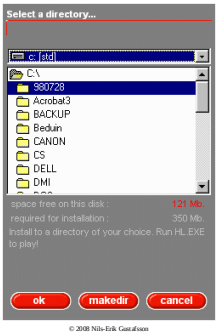
9 Subtle & consistent



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Gustafsson's heuristics 10

Are response times reasonable (from the user's point of view)?
Do I get the right type of feedback?

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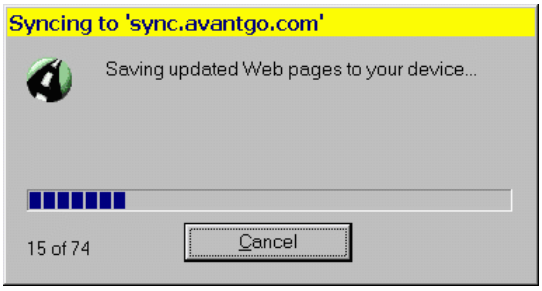
10 Response time/feedback



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Gustafsson's heuristics 11

Don't be funny!

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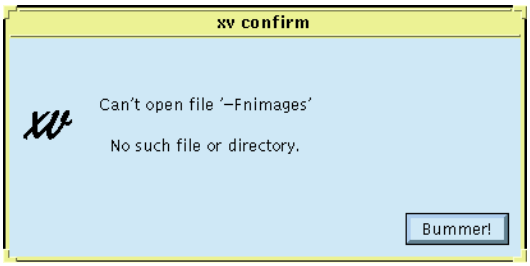
11 Don't be funny!



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11 Don't be funny!

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Usability testing/review

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Usability testing

- Users
- Tasks
- Scenarios
- Usability requirements

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Before

•*Always* start with expert review(s)

•*Always* run pilot test(s) (rehearsal)

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Know thy users!

•Identify & describe user categories
•Find representative users
•Quality vs. quantity

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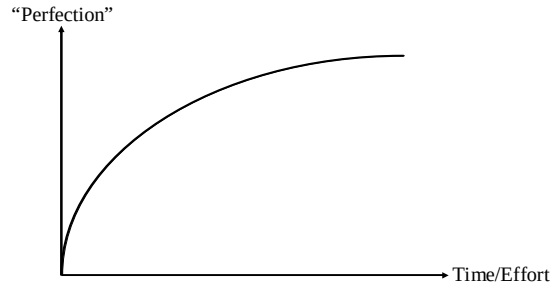
Perfect vs. "Good enough"



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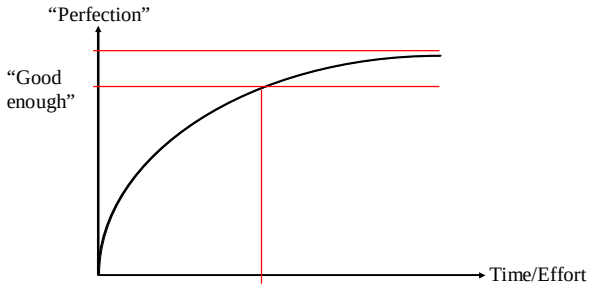
Perfect vs. "Good enough"



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Identify usability requirements

•Completion rate
•Success rate
•**Task time**
•Learnability (task time improvement)
•Retention
•Satisfaction

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What to aim for

•Optimal level (benchmark)
•Present level (manual/old system)
•**Desired level**
•Worst acceptable level

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Consider

•Go to users/Let users come to you
•User's own workplace/Laboratory

•Pen & paper/Video equipment

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LoFi vs. HiFi prototype

•Price
•Iteration speed
•Dynamics (response time)
•Democracy
•Expectations
•Fun & creativity

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LoFi vs. HiFi logging

•Price
•Ease of use
•Portability
•Malfunction
•Influence
•Symbolic value

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Who does what?

•Test leader
•Secretary (paper/logging software)
•Video technician
•Concerned parties (designers, etc.)

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Intro

•Introduce everyone & break the ice
•Explain purpose & procedure
•Get written agreement to record audio/video
•Get relevant background info.
•Introduce system, if suitable

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"Association test" (Gustafsson)

•Show system *without* any prior info.
•Ask user to explore & describe

•"Think aloud" vs. collaboration

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Perform tasks

•OK to interrupt, give up, ask for help
•Keep track of time
•Document everything/Annotate copies
•Paper/Screen
•Face
•Printed matter (User's guide, etc.)

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Outro

•Review notes/Annotations/Video(?)
•Questions & comments
•Subjective rating (away from system!)

•Reward?

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Afterwards

•Review: Notes/Annotations/Video
•Stop & iterate design or continue?

•Prepare "highlights"
•Analysis
•Report?

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Afterwards

- Quick review of Notes/Annotations/Video
- Stop & iterate design or continue?

- Prepare "highlights"
- Analysis
- Report?

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Reactions

- *Denial:* "This feature is important. Without it, users won't find what they need."
- *Anger:* "The users are stupid!"
- *Bargaining:* "Can't we provide more training? Then they would understand it."
- *Depression:* (Silence…)
- *Acceptance:* "Let's fix this!"

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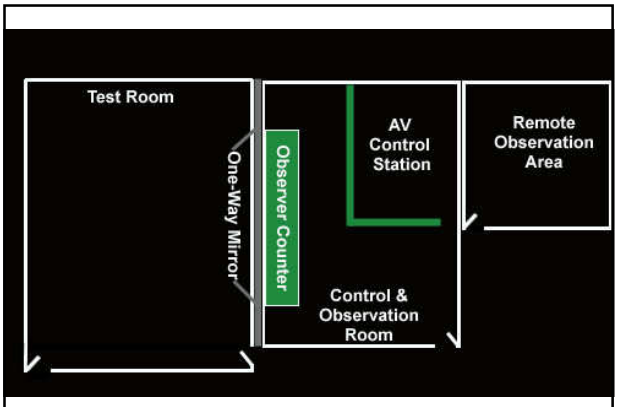

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Technology & Research

SunSoft Usability Labs

Offers usability evaluations and design services to Sun customers and invites volunteers to evaluate future Sun products.

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Pros & cons

- Evaluation
  - \+ Quick, cheap
  - – Expertise
- Testing
  - \+ Persuasive, terminology
  - – Slow, expensive, expertise

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