



CO328- Human Computer Interaction  
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# Heuristic Evaluation

University of  
**Kent**

## Signage:



What does this tells you?

- History, what went earlier there before
- Tells you more about a problematic situation before

**This is the sign I see various times in  
restaurants**



Employees  
Must Wash  
Hands

# Heuristic Evaluation

- A method to identify usability problems in interfaces (i.e. evaluate interface)
- Both **analytical** (evaluate existing interfaces) or **constructive** (during design)
  - When used constructively: Often used on prototypes / sketches
- Developed by Jakob Nielsen

## “Guerrilla HCI” (Nielsen)

- People rarely use elaborate usability engineering methods in real life. – can be very expensive and complicated
- HE gets usability evaluation in without (much of) the overhead.

# “Guerrilla HCI” (Nielsen)

- It's cheap, easy and quick
  - No special labs
  - Can be learnt in a few hours
  - Less than a day to carry out

# How does it work?

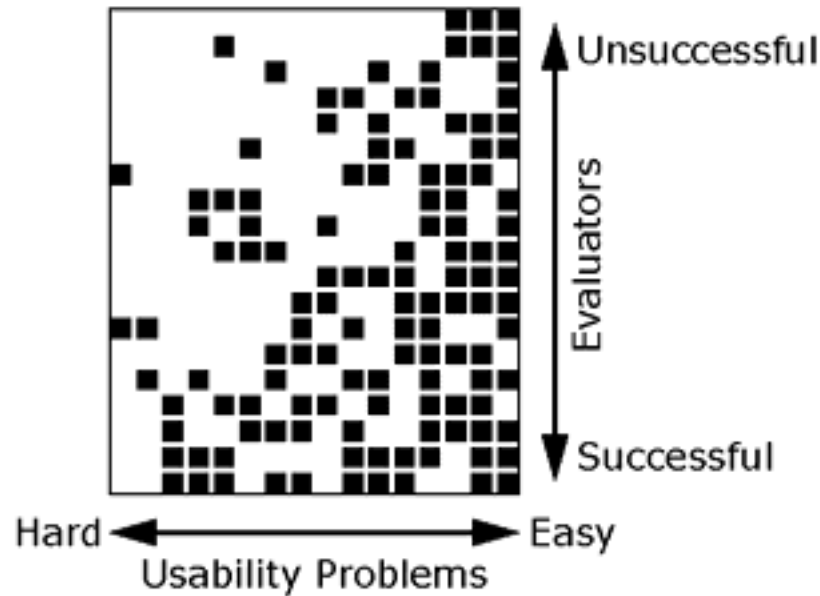
- Evaluators: Several evaluators evaluate the interface independently.
- Ask them to do sth: Usually by going through some specified task. (i.e. testing emails system)
- The evaluators are usually experts (usability or human factors), but ...
  - ... some results can also be achieved by training and using non-expert users.
- The good news: Not many are needed.
  - 3 to 5 testers is enough.



# How does it work?

- Evaluators usually go through several scenarios / tasks.
  - They work independently.
  - They evaluate what they see against the heuristics and other guidelines they know.
- Designers aggregate the results afterwards.
- Different people will find different problems.
- Not everyone finds everything, but ...
- a small number of testers will find most things.

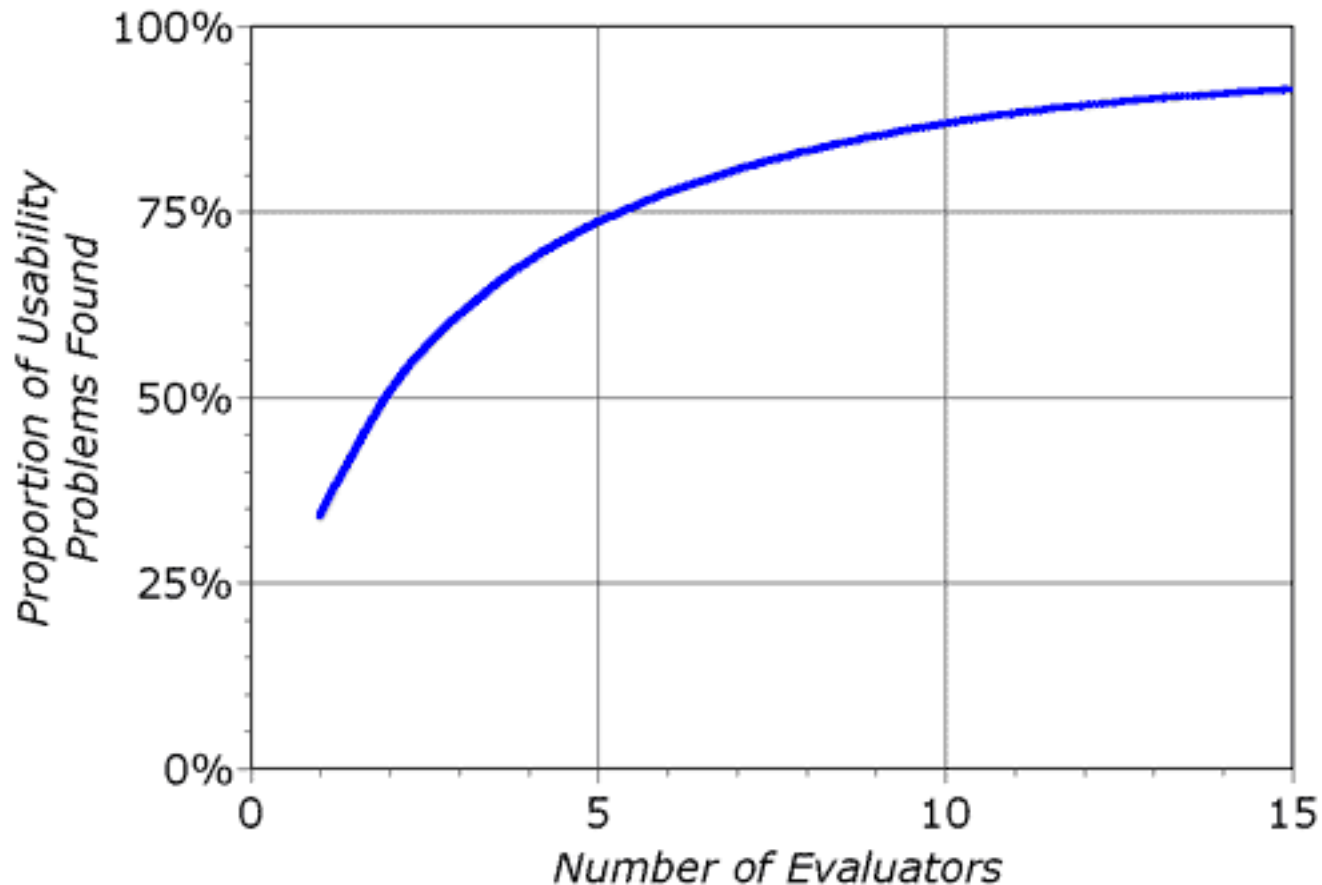
# Multiple evaluators



Example: Evaluation of a banking system. 16 usability probs, 19 evaluators.

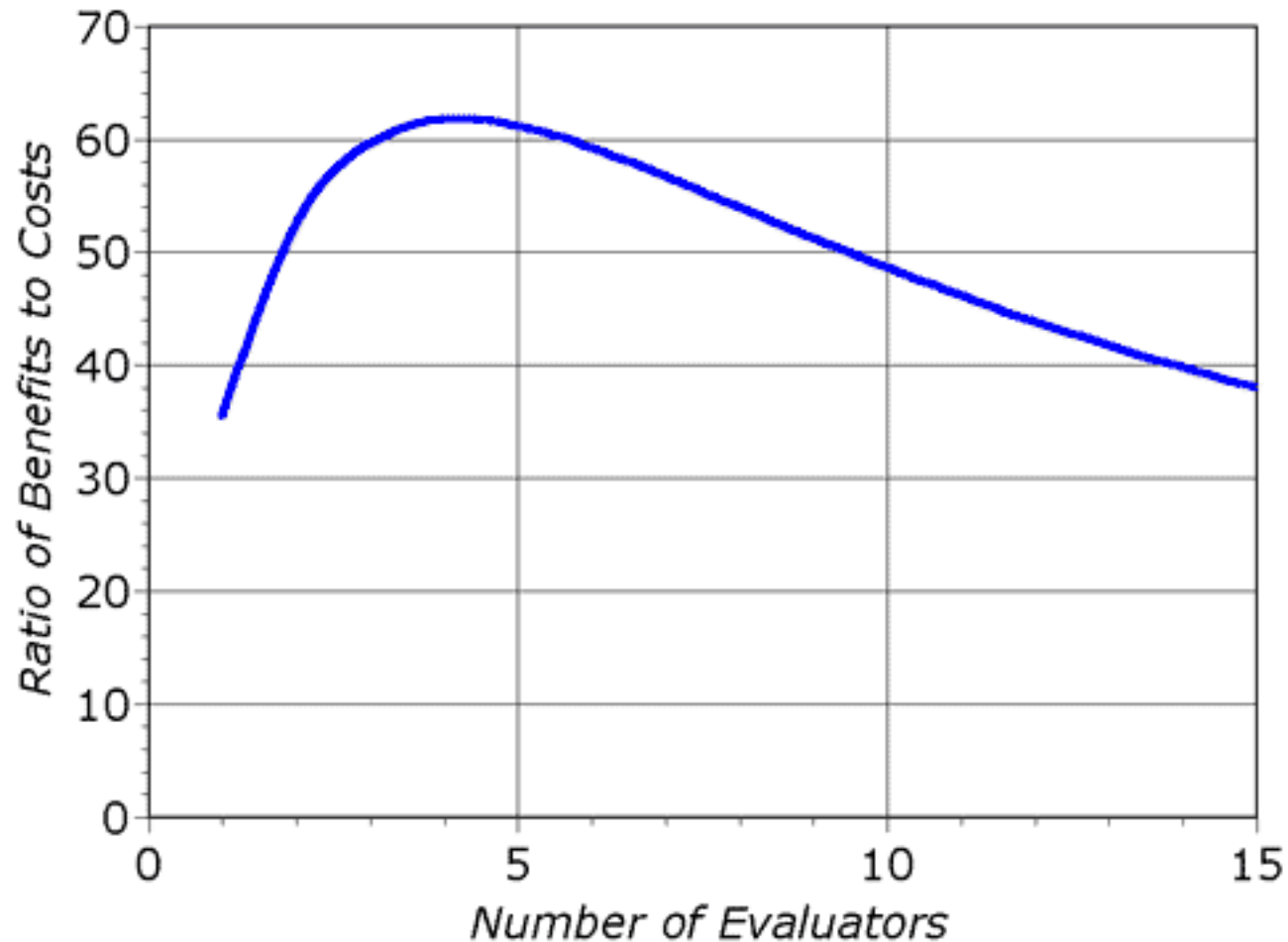
(Source: Jakob Nielsen: *How to Conduct a Heuristic Evaluation*.  
[http://www.useit.com/papers/heuristic/heuristic\\_evaluation.html](http://www.useit.com/papers/heuristic/heuristic_evaluation.html))

# Problems found / multiple evaluators



(Source: Jakob Nielsen: How to Conduct a Heuristic Evaluation.  
[http://www.useit.com/papers/heuristic/heuristic\\_evaluation.html](http://www.useit.com/papers/heuristic/heuristic_evaluation.html))

## Multiple evaluators: cost / benefit



(Source: Jakob Nielsen: How to Conduct a Heuristic Evaluation.  
[http://www.useit.com/papers/heuristic/heuristic\\_evaluation.html](http://www.useit.com/papers/heuristic/heuristic_evaluation.html))

# Nielsen's heuristics (first cut)

1. Simple & natural dialogue
2. Speak the users' language
3. Minimize users' memory load
4. Consistency
5. Feedback
6. Clearly marked exits
7. Shortcuts
8. Precise & constructive error messages
9. Prevent errors
10. Help and documentation

- Definition (Wikipedia):
- **Heuristic** ( [/hjʊˈrɪstɪk/](#); or **heuristics**; [Greek](#): "Εὕρισκω", "find" or "discover") refers to **experience-based** techniques for problem solving, learning, and discovery.
- Heuristic methods are used to speed up the process of finding a satisfactory solution, where an exhaustive search is impractical.
- Examples of this method include using a "**rule of thumb**", an educated guess, an intuitive judgment, or common sense.



# Heuristics (current set)

1. Visibility of system status
2. Match between system and the real world
3. User control and freedom
4. Consistency and standards
5. Error prevention
6. Recognition rather than recall
7. Flexibility and efficiency of use
8. Aesthetic and minimalist design
9. Help users recognize, diagnose, and recover from errors
10. Help and documentation

# Other guidelines

- See also guidelines mentioned earlier
  - Shneiderman
  - GNOME Human Interface Guidelines
  - Tog's First Principles (Tognazzini)
- Not so different, but...

# Not only guidelines, but also Method

- Heuristic Evaluation combines heuristics with a ***method***.
- “The method will provide recommendations for design improvements.” (Nielsen)
- Expert evaluators use a fixed format to report problems:

Description of **problem**

The **heuristic** is violates

A **severity rating**

How to **fix** it

# Preparation / process

- Planning / preparation
  - Designers agree on time, place, and specific use cases.
- Briefing / training
  - Evaluators should be made familiar with the product, context and use case.
- Running
  - Evaluators work with the system on use cases and record observation of problems. Evaluators should not communicate with each other until finished. They then rate the severity of the problems found.
- Reporting
  - Evaluators aggregate results, prioritise on severity.
  - Evaluators may discuss the results with the design team.

# Severity Rating

- Severity is a combination of 3 factors:
  - The frequency of the problem: common or rare?
  - The impact of the problem (if it occurs): Will it be easy or difficult for the users to overcome? (i.e. lose all your data)
  - The persistence of the problem: user can work around it easily?
- Also assessed: the “**market impact**”

# Severity Rating

- All the factors are combined into a single rating.
- Usually on a 0–4 scale:
  - **0** = I don't agree that this is a usability problem at all
  - **1** = Cosmetic problem only: need not be fixed unless extra time is available on project
  - **2** = Minor usability problem: fixing this should be given low priority
  - **3** = Major usability problem: important to fix, so should be given high priority
  - **4** = Usability catastrophe: imperative to fix this before product can be released

In real world, software get released even when there are some problems



# The report format

**Problem:** Don't have copy and paste

**Heuristic:**

**Severity rating:**

**Fix:**

# Heuristics (current set)

1. Visibility of system status
2. Match between system and the real world
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# The report format

<b>Problem:</b>	Don't have copy and paste
<b>Heuristic:</b>	H7: Flexibility and efficiency of use
<b>Severity rating:</b>	3
<b>Fix:</b>	Implement copy-and-paste

# The report format

**Problem:** Menu item uses unclear jargon

**Heuristic:** H2: Match between system and the real world  
H6: Recognition rather than recall

**Severity rating:** 2

**Fix:** reword menu item

## Let's try it...

Do it yourself now:

Get out mobile phone. Swap with neighbour.

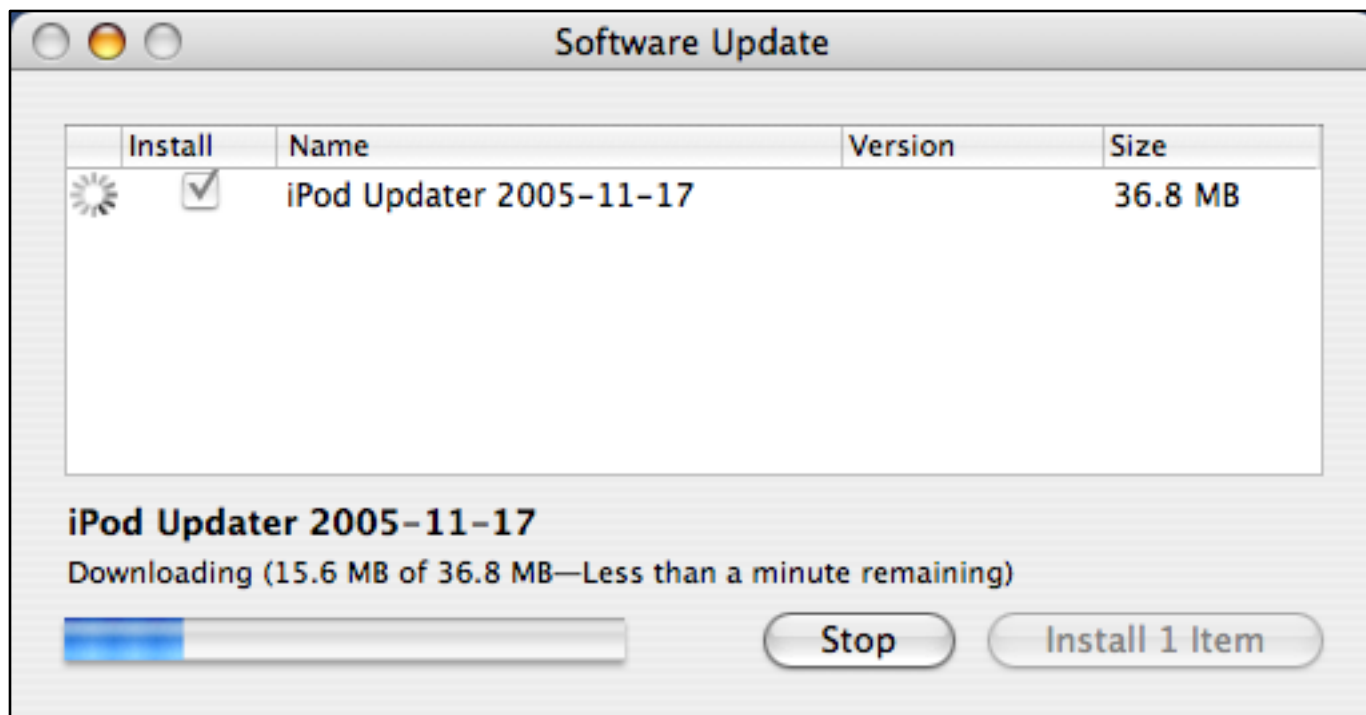
Send text message to yourself. (Kölling)

# Heuristics (current set)

1. Visibility of system status
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- **1: Visibility of system status**
- The system should always keep users informed about what is going on, through appropriate feedback within reasonable time.





Compare with the Ryanair website?

# Response times: The power of 10s

- **0.1s**: no progress indicator needed
  - **1.0s**: mildly irritating, users get distracted
  - **10s**: maximum for users to stay on task
  - for **longer** delays: use percent progress bars
- 
- i.e. financial transaction page, they will tell you “do not click the back button”

- **2: Match between system and the real world**
- The system should speak the user's 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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[Your Orders](#)

Search Orders

Title, Department, Recipient...

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[Leave Seller Feedback](#)

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You are signed in as:

**Michael Kölling**

[Sign out](#)

## Your Other Accounts

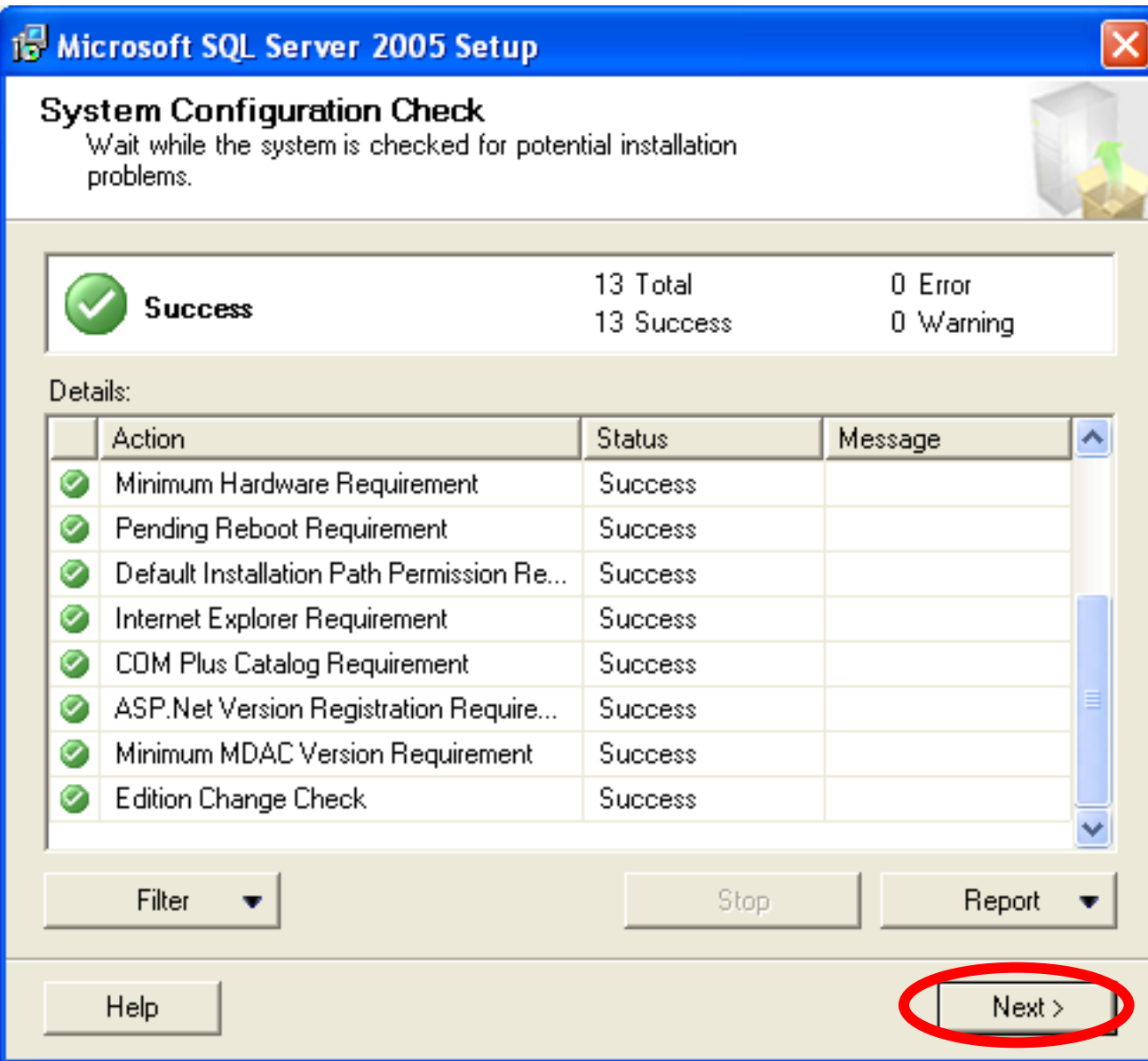
[Your Seller Account](#)

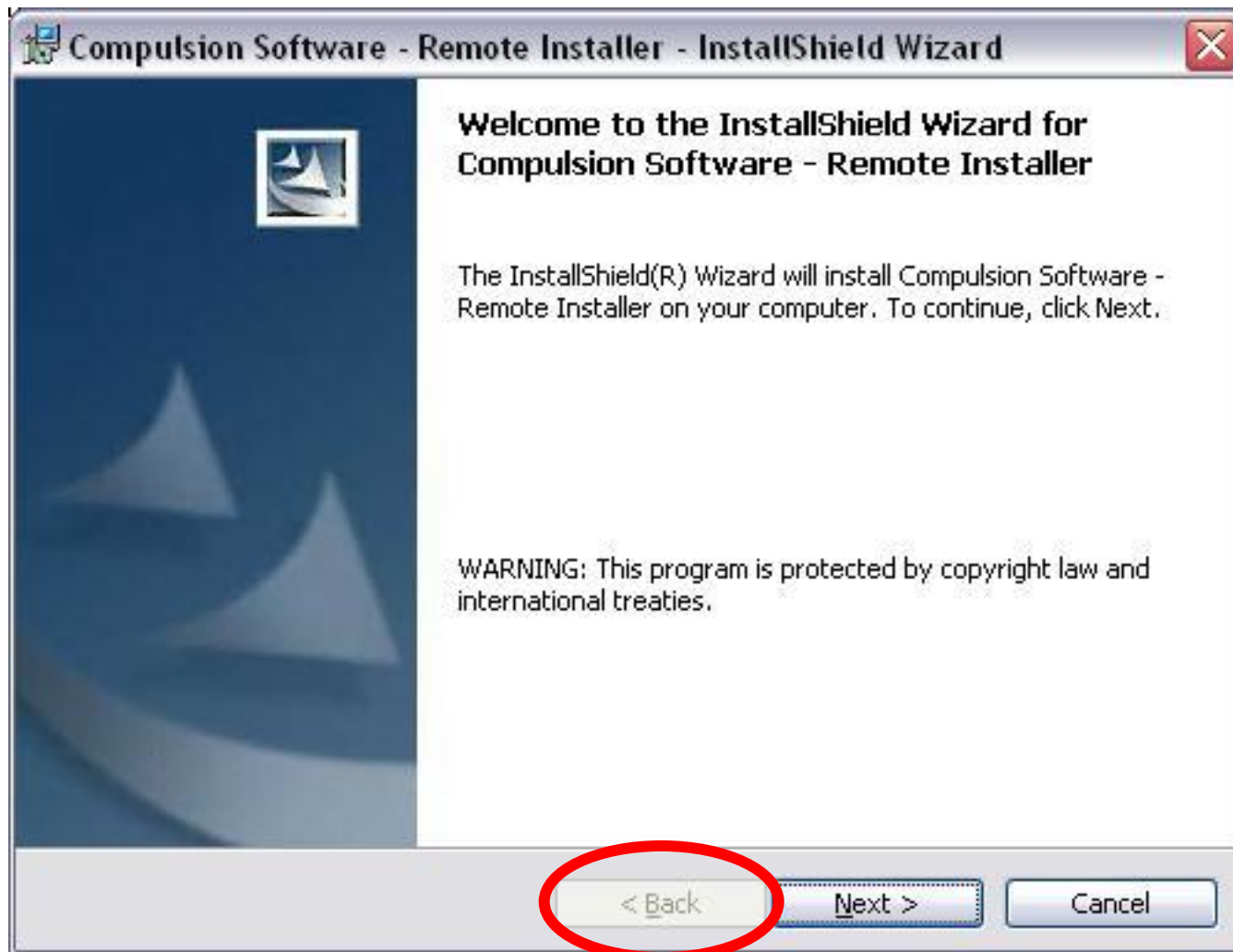
[Your Trade-In Account](#)

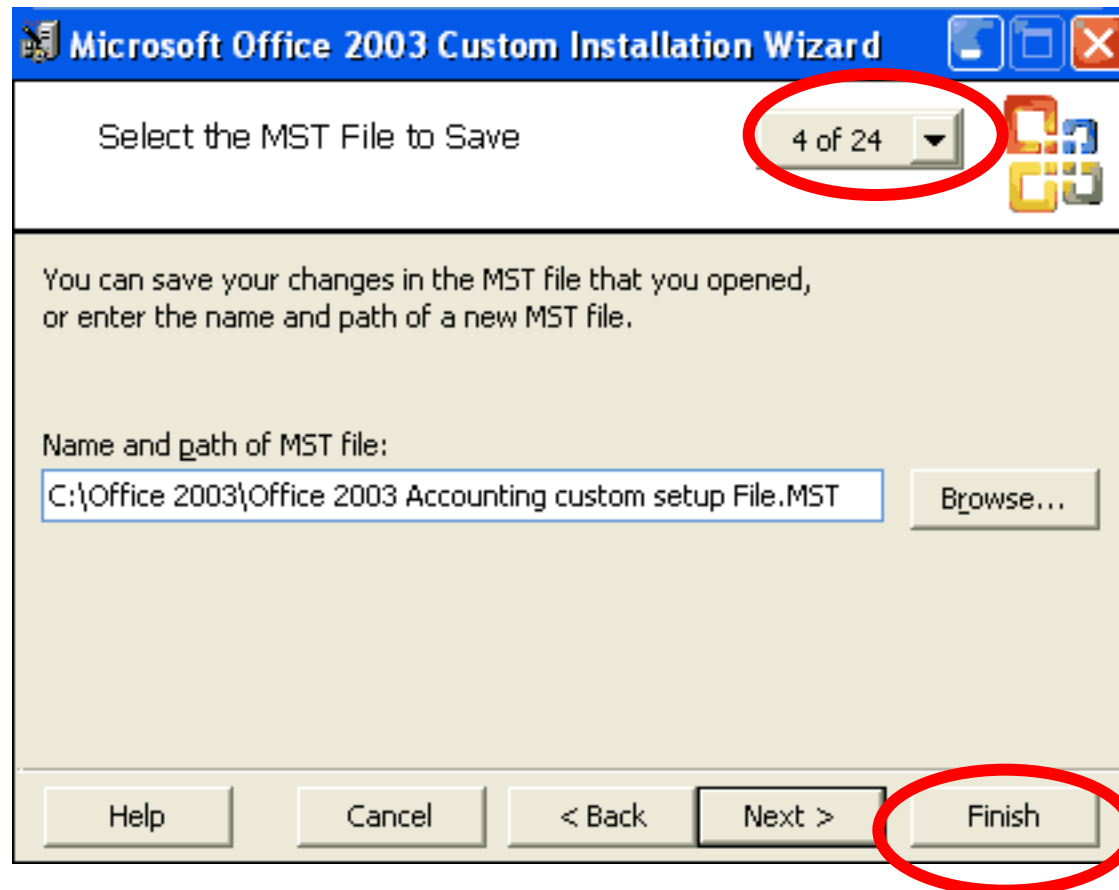
[Sell Your Stuff](#)



- **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.

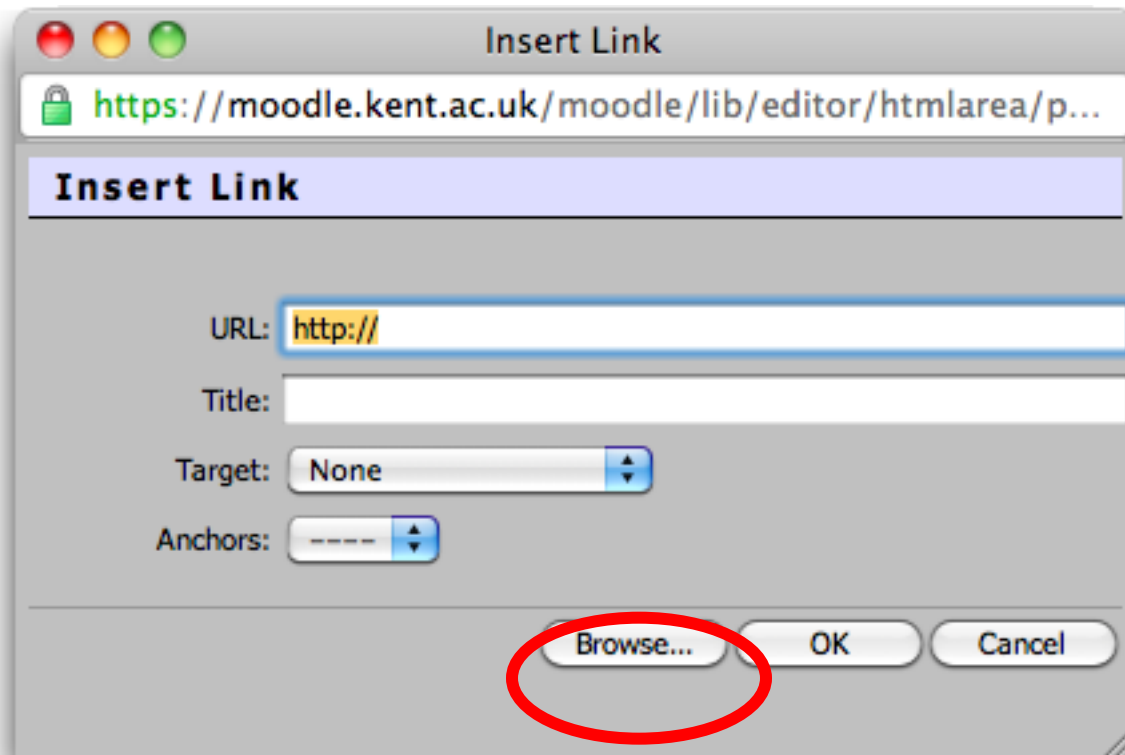


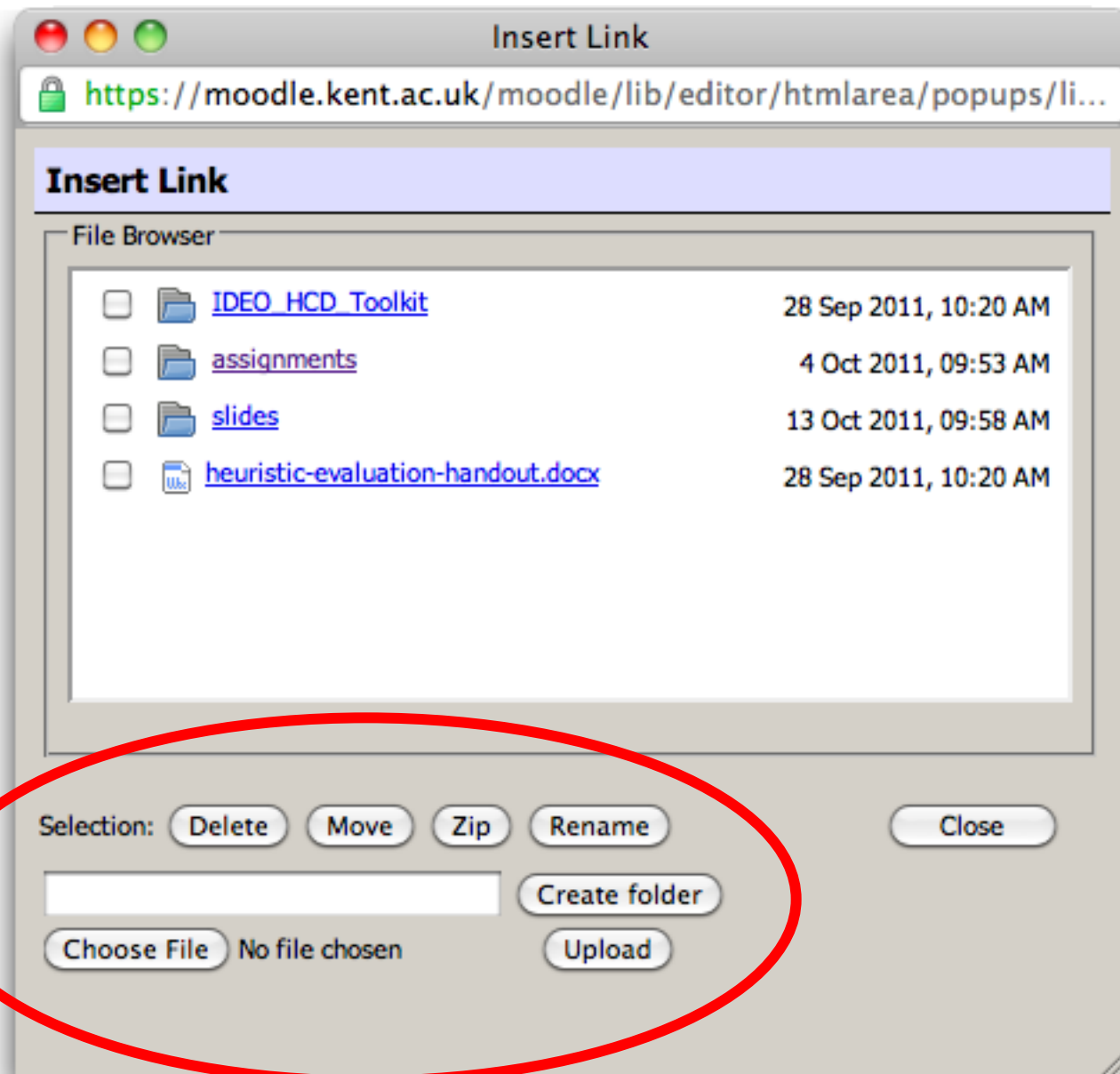


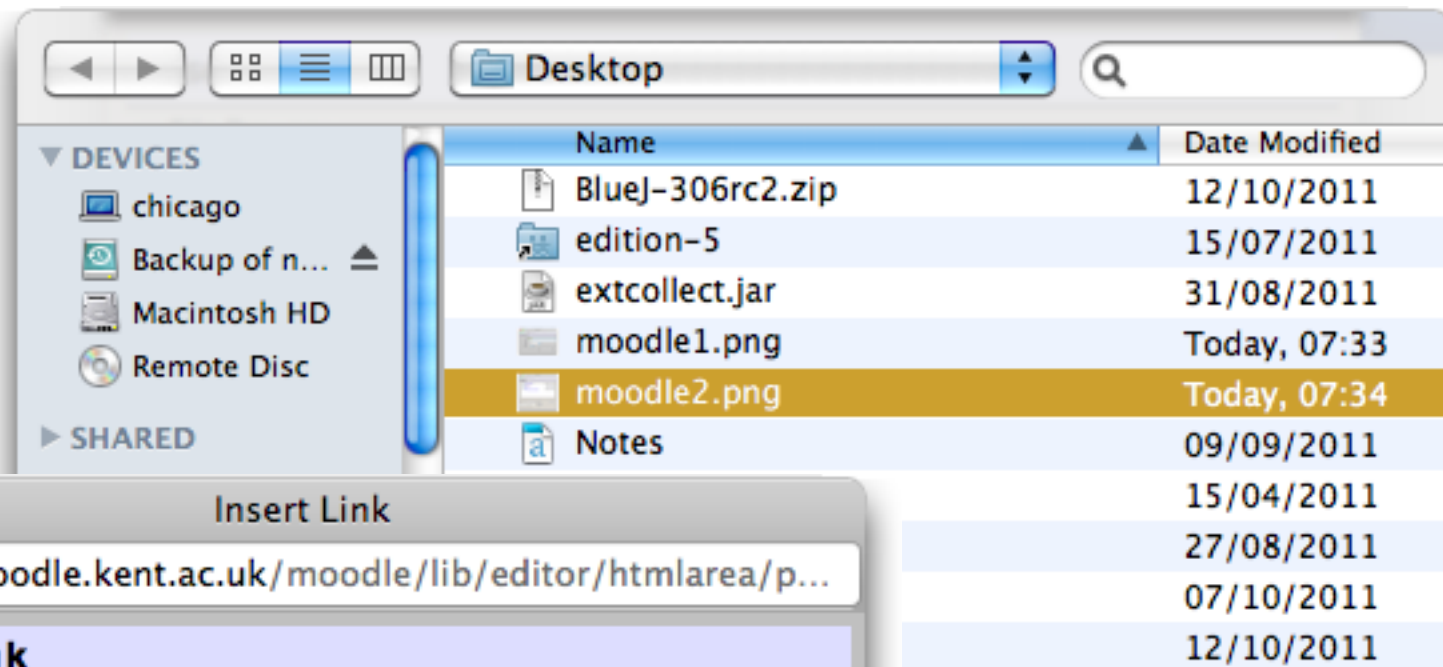


Generally, wizards are good for beginners, bad for experts

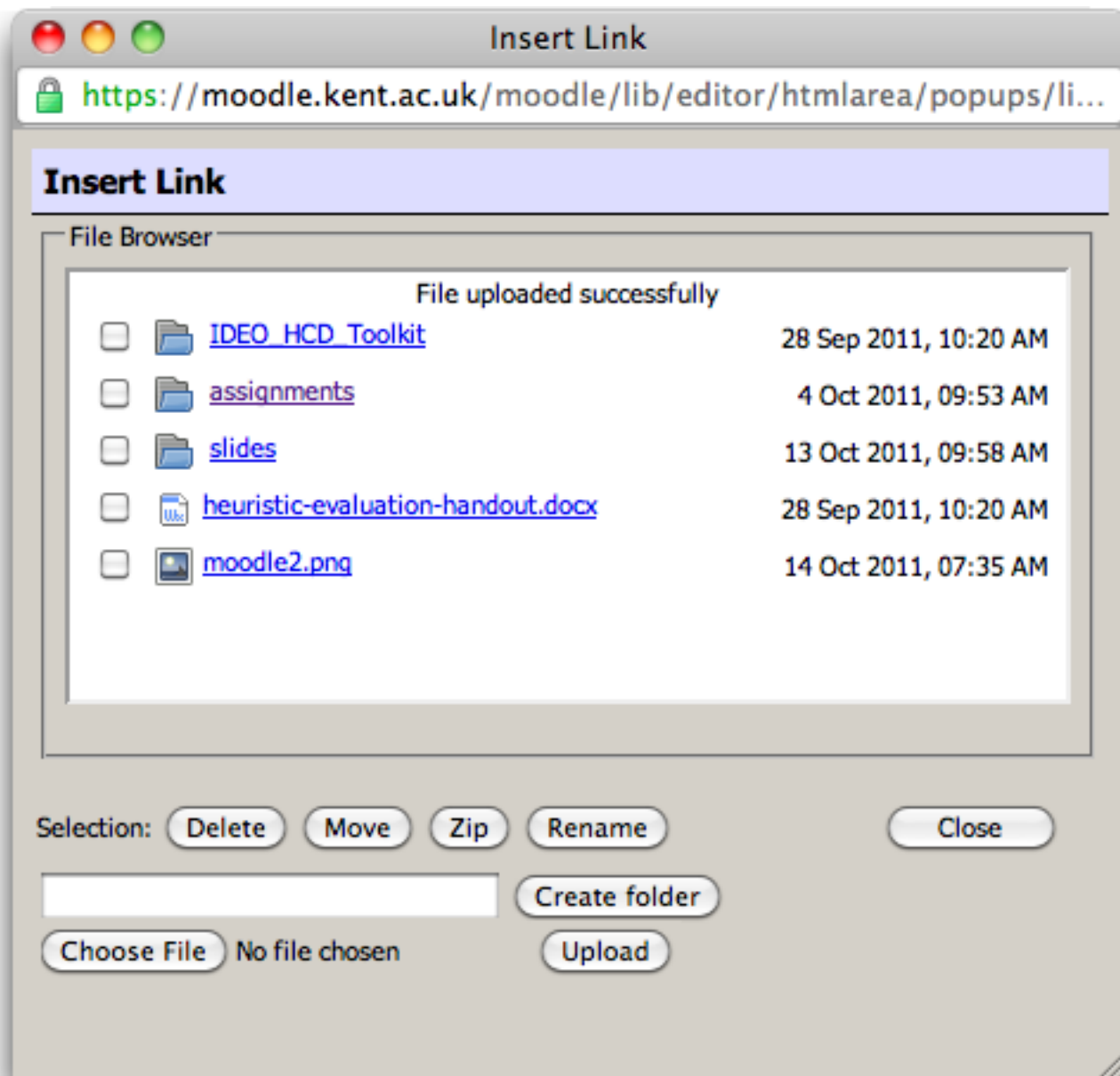
- **4: Consistency and standards**
- Users should not have to wonder whether different words, situations, or actions mean the same thing. Follow platform conventions.

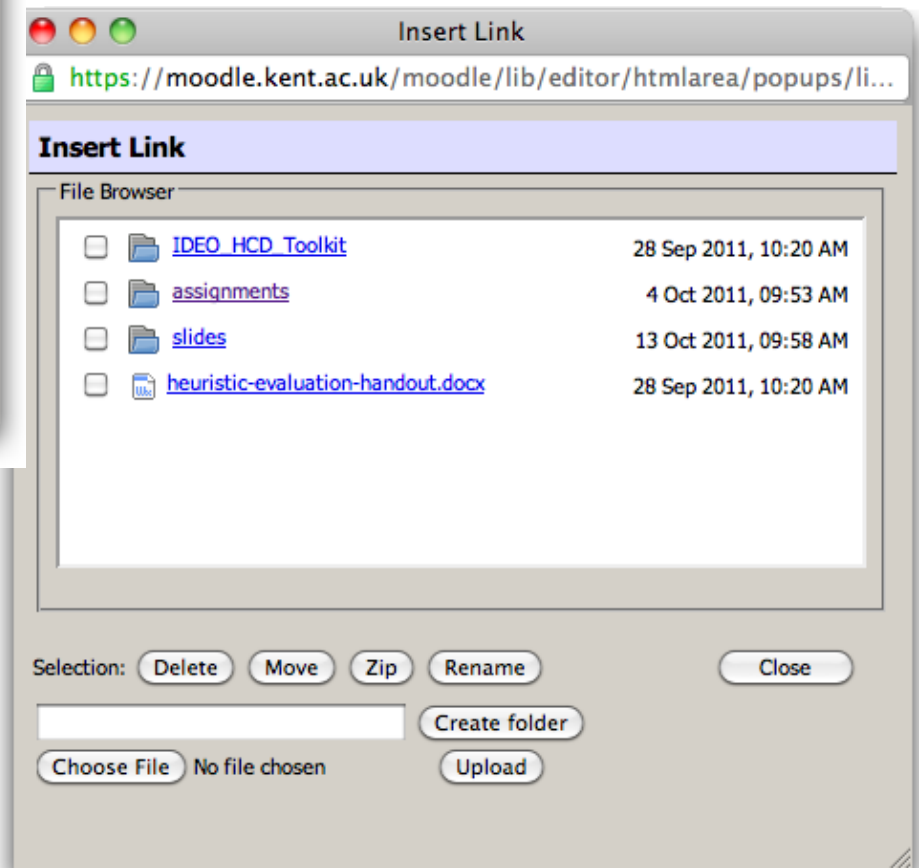
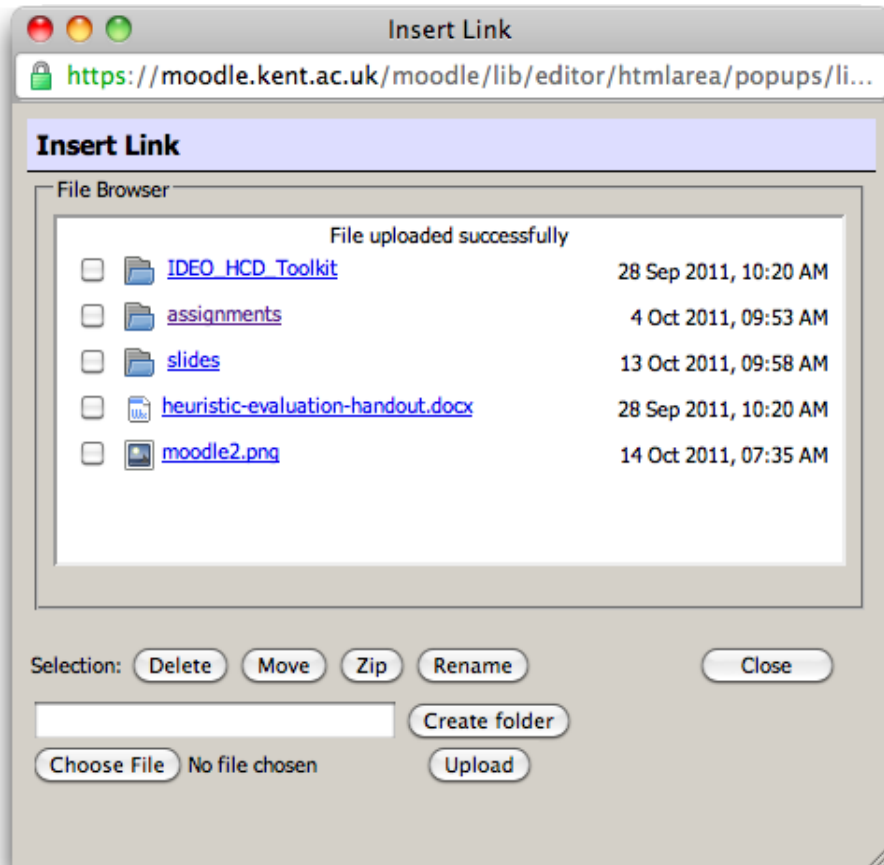


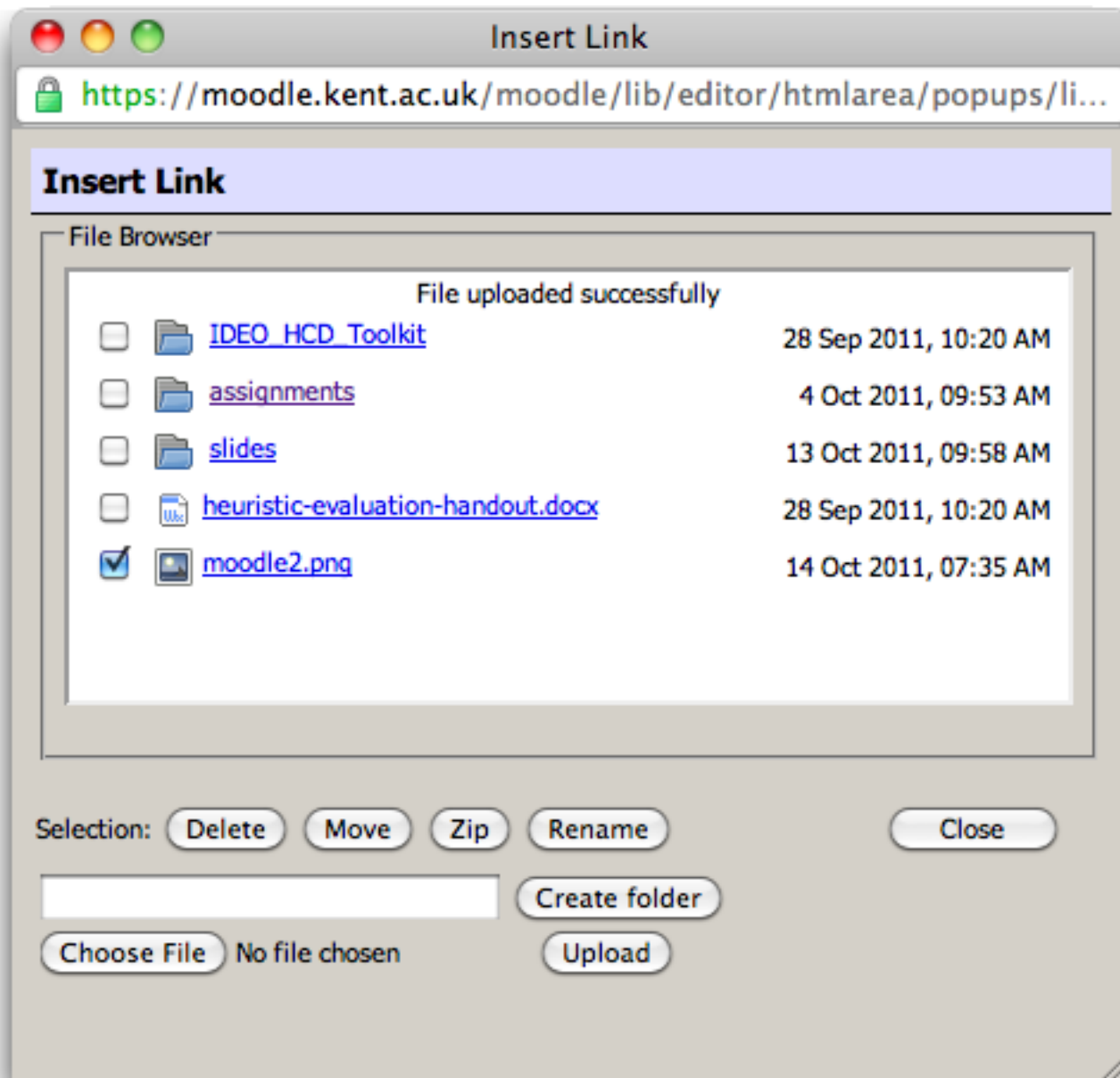


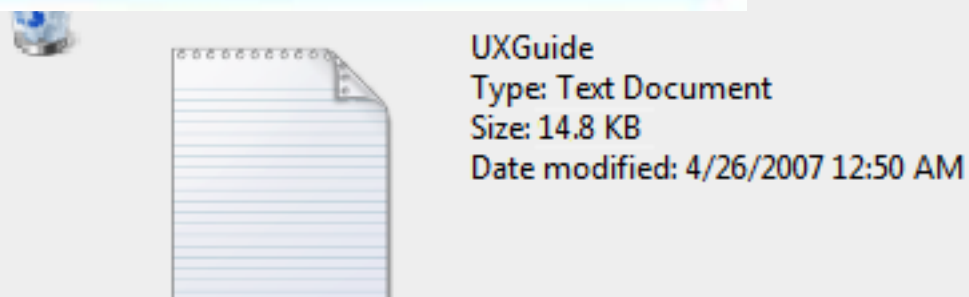
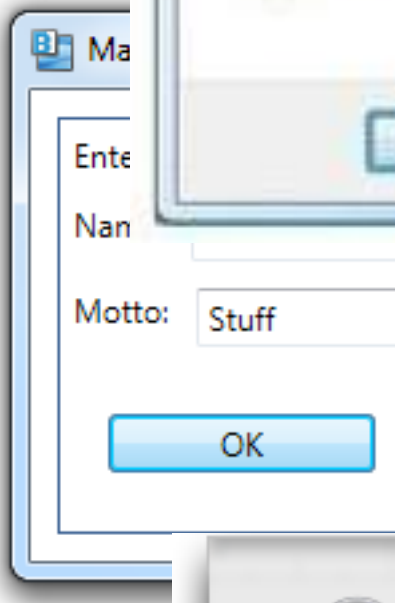
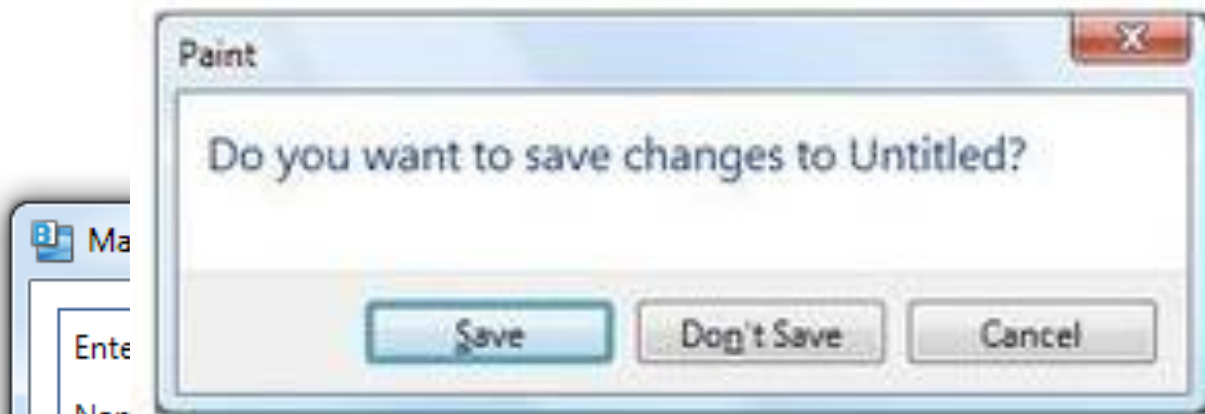




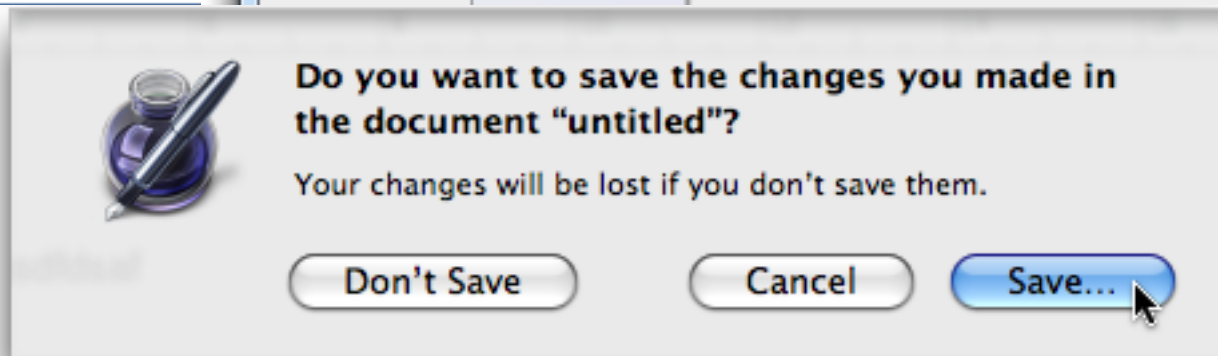
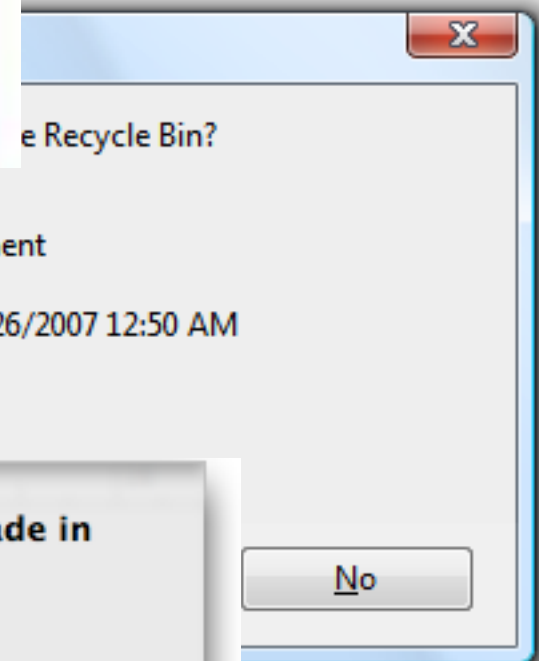








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nt to leave this page?  
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ow, then 'Save' to save them.





# Install Wizard



SOFTPEDIA™

[www.softpedia.com](http://www.softpedia.com)

## Welcome to 'Softpedia' Install Wizard.

Please close any other Applications before proceeding.

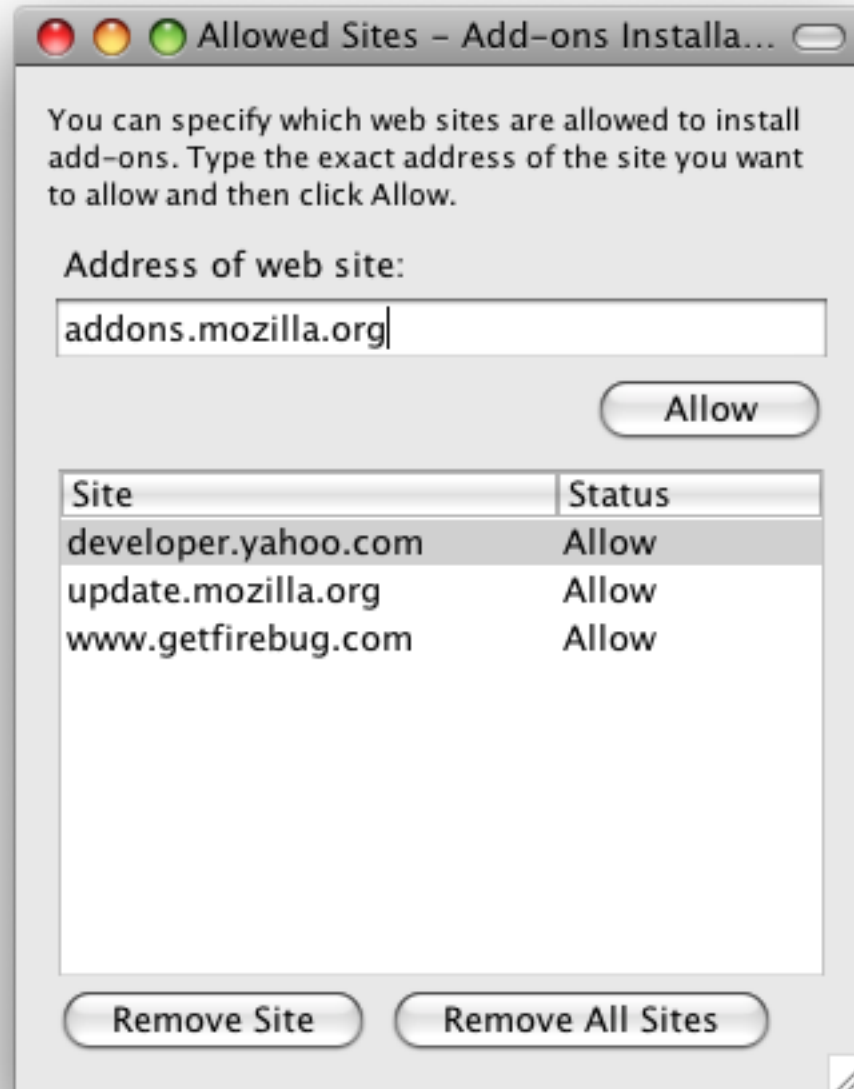
'Softpedia' Install Wizard will now begin to install this program to your computer.

Click 'Next' to proceed.

You may Exit this program at any time by clicking the 'Quit' Button.

Next -->

Quit



- **5: Error prevention**
- Even better than good error messages is a careful design which prevents a problem from occurring in the first place. Either eliminate error-prone conditions or check for them and present users with a confirmation option before they commit to the action.

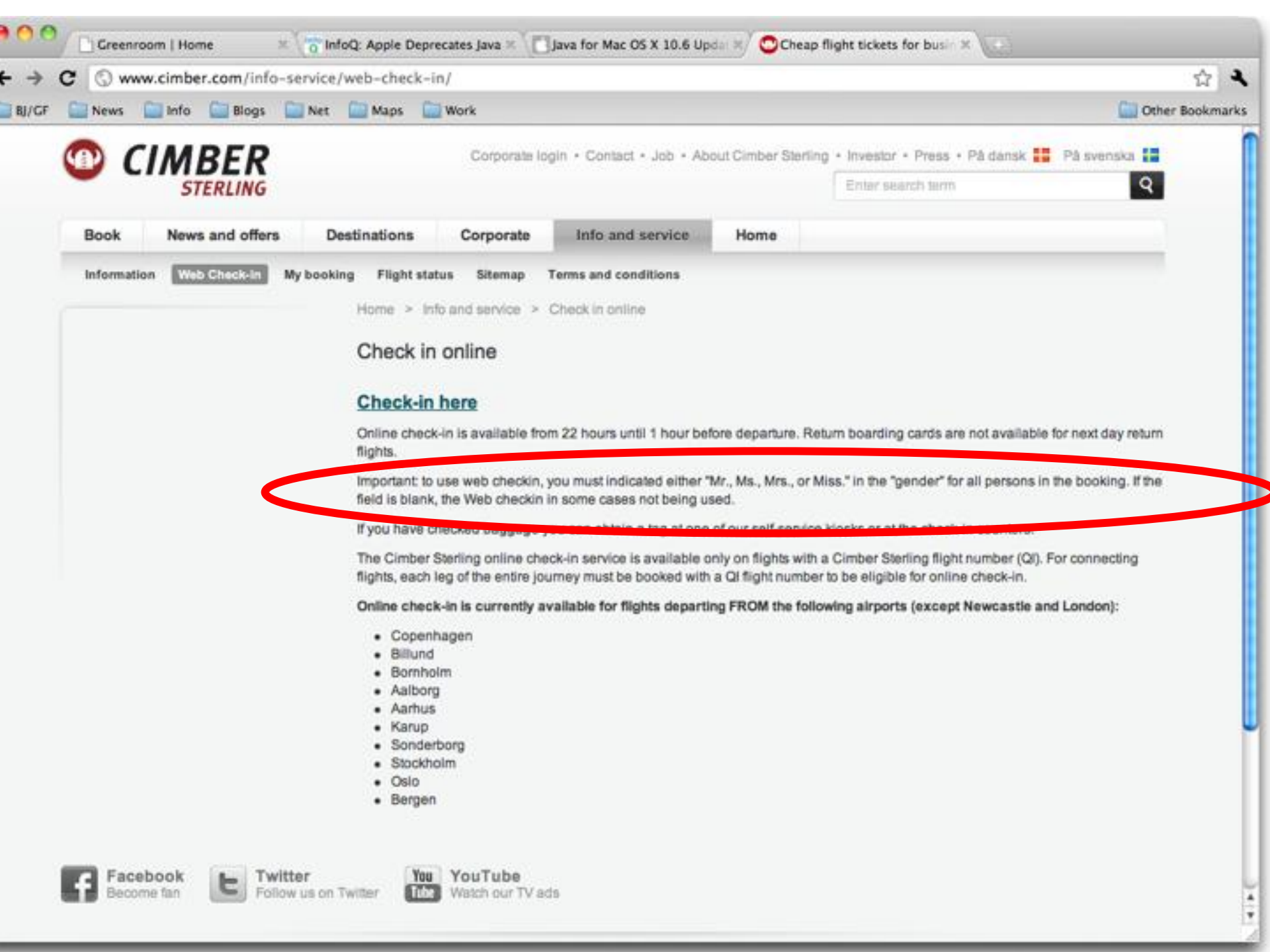








Photo: Neil Brown



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## Check in online

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Online check-in is available from 22 hours until 1 hour before departure. Return boarding cards are not available for next day return flights.

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The Cimber Sterling online check-in service is available only on flights with a Cimber Sterling flight number (QI). For connecting flights, each leg of the entire journey must be booked with a QI flight number to be eligible for online check-in.

Online check-in is currently available for flights departing FROM the following airports (except Newcastle and London):

- Copenhagen
- Billund
- Bornholm
- Aalborg
- Aarhus
- Karup
- Sonderborg
- Stockholm
- Oslo
- Bergen



- **6: Recognition rather than recall**
- Minimise the user's memory load by making objects, actions, and options visible. The user should not have to remember information from one part of the dialogue to another. Instructions for use of the system should be visible or easily retrievable whenever appropriate.

- Make objects and actions visible on screen
- Based on Don Norman:  
“Knowledge in the head versus knowledge in the world”
- Recognition replaces learning

Don't need to remember it, but recognize it.

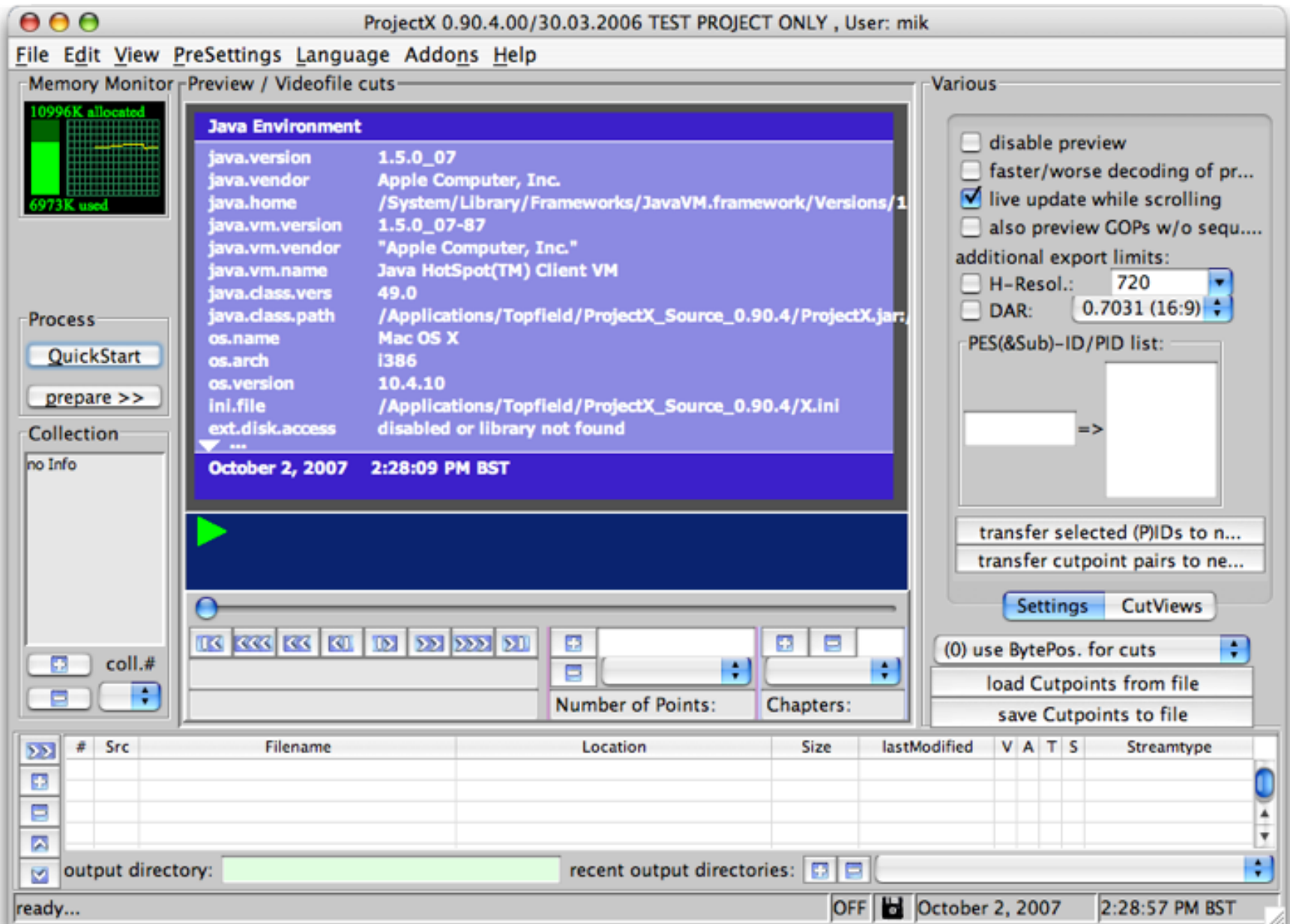


- **7: Flexibility and efficiency of use**
- Accelerators—unseen by the novice user—may often speed up the interaction for the expert user such that the system can cater to both inexperienced and experienced users. Allow users to tailor frequent actions.

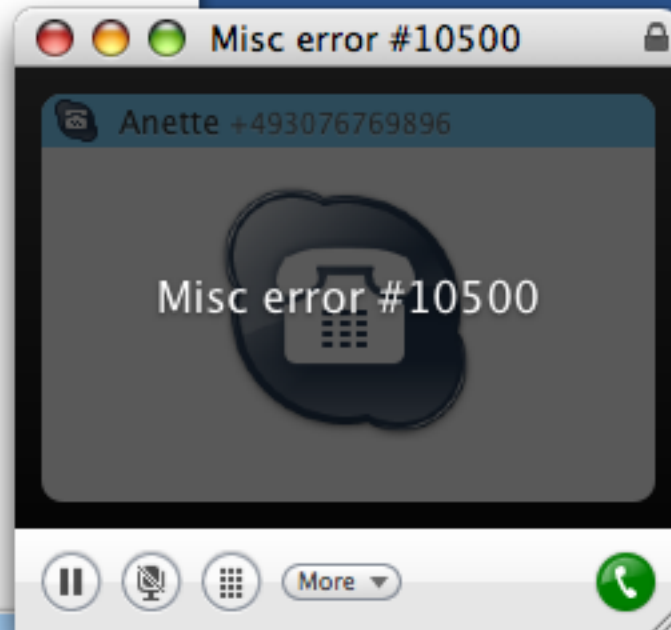
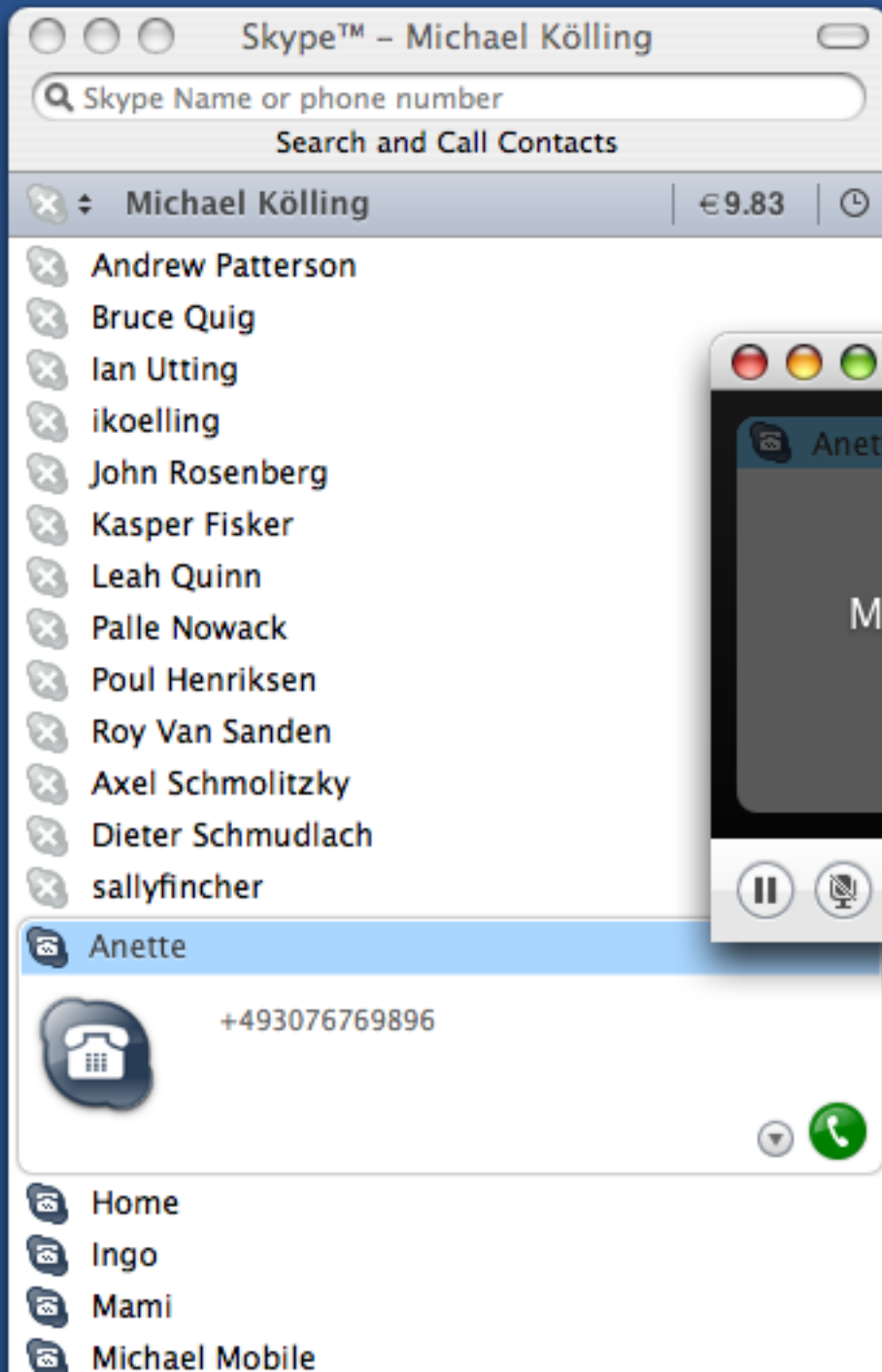
- Give users options of interaction styles
- Example: Copy URL from web browser

- **8: Aesthetic and minimalist design**
- Dialogues should not contain information which is irrelevant or rarely needed. Every extra unit of information in a dialogue competes with the relevant units of information and diminishes their relative visibility.





- **9: Help users recognise, diagnose, and recover from errors**
- Error messages should be expressed in plain language (no codes), precisely indicate the problem, and constructively suggest a solution.





- **10: Help and documentation**
- 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.

- Searchable
- When you want it!
- Task oriented (possible in user context)
- Concrete advice and instructions
- Concise!