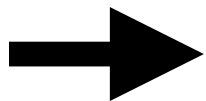


# Examples of (Mostly Bad) Interaction Design

Anthony Hornof  
October 22, 2014

# Three main points on the design of visual information

- Make sure the information that the user will need is readily available.
- Organize the information so that it is presented in a manner that is easy for the user to access (given fundamental perceptual-cognitive-motor abilities).
- Always keep in mind what is the user's task, and how it will unfold over time.





Reserve Orders

UO Faculty and GTFs: If the library does not own an item you need for your course reserves one will be ordered for you from the information using the following form. Books will be rush-ordered, but please plan on 60-90 days for delivery.

The Library does not add course textbooks to the Library Collection. If you'd like to place a copy of your course textbook on reserve you may personal copy.

Notes:

- If you are requesting a videocassette or film, please use the [Acquisition Request Form for Videos or Films](#).
- Please contact [Leslie Bennett](#), (lbennett@oregon.uoregon.edu, (541)346-1930) for requests to purchase music or materials for the Do Room, and [Christine Sundt](#), (csundt@oregon.uoregon.edu, (541)346-2209) to obtain slides for use in the image reserve at the Visual Collection.

Order one item per form. Items shown below in red font are required. Items listed in black font will help us process your order more quickly.

**Instructor:**  **Office phone:**

**Email address:**

**Dept/Course:**  **Term/Year:**

**Course title:**  **# students:**

**Location for this reserve material:**  **Loan Period:**

**Title:**

**Author/Editor:**

**Publisher:**

(& date & location):

If you are ordering from a catalog, please provide the name and date of the catalog. Please include the catalog item number.

**Catalog:**  **Item #:**

To send your request click the "submit" button below. To make another request after submitting the first, return to this page, click the "clear form" button. Do not use this form to provide information for the next order request.

Task: Put a textbook on reserve. Fill out all the red blanks.

# Thank you

Your email address or comments appear to be blank, and thus were not sent to *knires@oregon.uoregon.edu* . Please re-enter your comments, You can return to the form using your browser's BACK command or button (or return to [http://libweb.uoregon.edu/wacs\\_svc/reserveorders.html](http://libweb.uoregon.edu/wacs_svc/reserveorders.html) if you want.).



### Reserve Orders

UO Faculty and GTFs: If the library does not own an item you need for your course reserves one will be ordered for you from the information using the following form. Books will be rush-ordered, but please plan on 60-90 days for delivery.

The Library does not add course textbooks to the Library Collection. If you'd like to place a copy of your course textbook on reserve you may personal copy.

#### Notes:

- If you are requesting a videocassette or film, please use the [Acquisition Request Form for Videos or Films](#).
- Please contact [Leslie Bennett](mailto:lbennett@oregon.uoregon.edu), (lbennett@oregon.uoregon.edu, (541)346-1930) for requests to purchase music or materials for the Do Room, and [Christine Sundt](mailto:csundt@oregon.uoregon.edu), (csundt@oregon.uoregon.edu, (541)346-2209) to obtain slides for use in the image reserve at the Visual Collection.

Order one item per form. Items shown below in **red font** are required. Items listed in black font will help us process your order more quickly.

**Instructor:**

**Office phone:**

**Email address:**

**Dept/Course:**

**Term/Year:**

**Course title:**

**# students:**

**Location for this reserve material:**

**Loan Period:**

**Title:**

**Author/Editor:**

**Publisher:**  
(& date & location):

**Series:**

**ISBN/ISSN/Music#:**

# Ten Guidelines for Interaction Design

(from the “heuristic evaluation” method) (Nielsen, 1994)

- Use simple and natural dialog.
- Speak the users’ language.
- Minimize memory load.
- Be consistent.
- Provide feedback.
- Provide clearly marked exits.
- Provide shortcuts.
- Provide good error messages.
- Prevent errors.
- Include good help and documentation

# Conducting a “Cognitive Walkthrough”

Wharton, Rieman, Lewis, & Polson (1994)

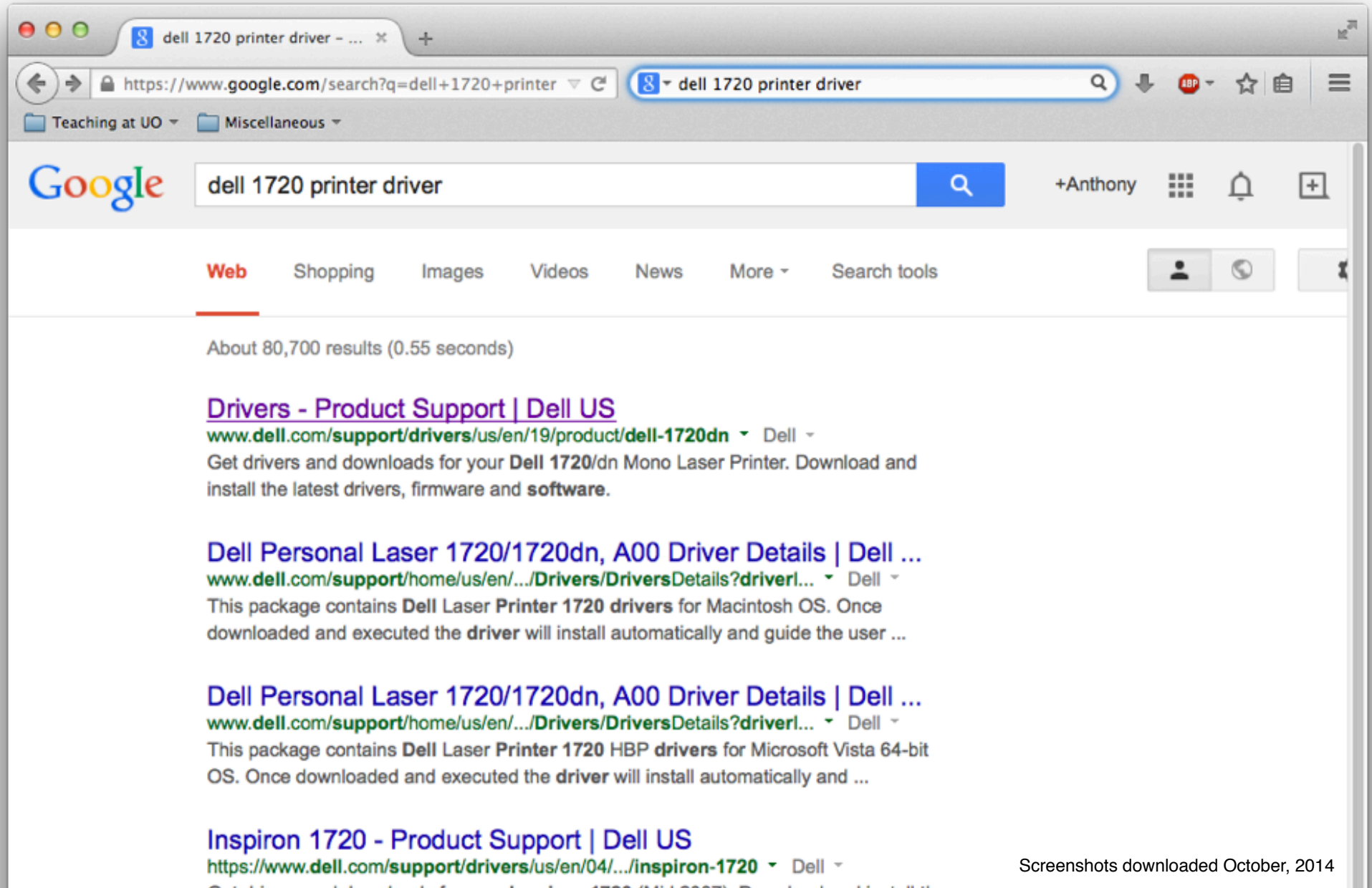
## Can Reveal Some Interaction Problems

- Part of a “cognitive walkthrough” includes “walking” through the interface to pursue a specific goal.
- At every step or prompt, stop and consider:
  - 1. Will the user know the correct subgoal or subtask?** Example: Print or select printer first?
  - 2. Will the user know that the correct action is available?** Example: Any clues for how to print?
  - 3. Will the user associate the correct action with the subgoal?** E.g.: Type “lp” or find in menu?
  - 4. If the correct action is performed, will the user know that progress is being made toward the goal?** Example: Is it being printed?

**Example:  
Downloading a  
Printer Driver**



The task: Download a printer driver for the Dell 1720 laserprinter. First Step 1: Find the driver on the internet. Google “dell 1720 printer driver”. Click on the first link.



The screenshot shows a web browser window with a Google search for "dell 1720 printer driver". The search results page displays "About 80,700 results (0.55 seconds)". The top result is "Drivers - Product Support | Dell US" with the URL [www.dell.com/support/drivers/us/en/19/product/dell-1720dn](http://www.dell.com/support/drivers/us/en/19/product/dell-1720dn). The description for this result is "Get drivers and downloads for your Dell 1720/dn Mono Laser Printer. Download and install the latest drivers, firmware and software." Below this are two more results for "Dell Personal Laser 1720/1720dn, A00 Driver Details | Dell ...", one for Macintosh OS and one for Microsoft Vista 64-bit OS. The bottom result is "Inspiron 1720 - Product Support | Dell US" with the URL <https://www.dell.com/support/drivers/us/en/04/.../inspiron-1720>.

It appears that progress has been made, but...

The screenshot shows a web browser window with the URL [www.dell.com/support/home/us/en/19/product-support/](http://www.dell.com/support/home/us/en/19/product-support/) and a search query for "dell 1720 printer driver". The page features a blue navigation bar with the Dell logo and links for Shop, Support, Community, and My Account. Below the navigation bar, there are links for Order Status and Feedback, and a breadcrumb trail: Home > Support > Product Support. The main heading is "Product Support".

The product section displays a photo of a Dell 1720/dn Mono Laser Printer, the product name "Dell 1720/dn Mono Laser Printer", and a link to "View a different product". Below this, there are three expandable sections: Manuals, Warranty, and System configuration.

On the left side, there is a vertical sidebar with three sections: "Support topics & articles", "Drivers & downloads" (highlighted in blue), and "Getting started".

The main content area contains the text "Keep drivers up to date for optimal performance." followed by an information icon. Below this text are four filter dropdown menus: Operating System (set to Apple Mac OS), Category (set to All), Importance (set to All), and Release Date (set to All).



[View a different product](#)

[Manuals](#)

[Warranty](#)

[System configuration](#)

Support topics & articles

Drivers & downloads

Getting started

Parts & accessories

**Welcome to the Dell website.**  
We value your feedback!

Would you help us make our website better?



The power to do more

**Yes, I'd like to**  
provide feedback after my visit

**No, thanks**  
I don't want to provide feedback

*A second browser window will open on your desktop if you click "Yes".  
Please make sure not to close this window if you wish to participate in the questionnaire.*

Powered by  
**perceptions**

[My download lists](#)

[Sign In](#)

[Driver update notification](#)



[View a different product](#)

[Manuals](#)

[Warranty](#)

[System configuration](#)

Support topics & articles

Drivers & downloads

Welcome to the Dell website.  
We value your feedback!

Would you help us make our website better?

These intrusions asking for feedback violate all interface design guidelines, and represent a major problem in any analysis of usability. (They do not relate to the user's task. They are "modal". They cannot be dismissed with a single keystroke.) If you think that interfaces have gotten better over the last ten or twenty years, I present this as yet another piece of evidence to the contrary. Furthermore, these intrusions represent a tendency to over-rely on "big data", and are also yet another example of people using computers to coerce other people into doing their bidding.

Okay, where were we? Reload the goals and subtask goals:  
Download the driver for a Dell 1720 laserprinter. What do I do next?

The screenshot shows a web browser window with the URL [www.dell.com/support/home/us/en/19/product-support/](http://www.dell.com/support/home/us/en/19/product-support/) and a search bar containing "dell 1720 printer driver". The page features a blue navigation bar with the Dell logo and links for Shop, Support, Community, and My Account. Below the navigation bar, there are links for Order Status and Feedback, and a breadcrumb trail: Home > Support > Product Support. The main heading is "Product Support".

The primary content area displays a product card for the "Dell 1720/dn Mono Laser Printer" with a product image and a link to "View a different product". Below this, there are three expandable sections: "Manuals", "Warranty", and "System configuration".

On the left side, there is a vertical sidebar with the following sections: "Support topics & articles", "Drivers & downloads" (highlighted in blue), and "Getting started".

The main content area below the sidebar contains the text: "Keep drivers up to date for optimal performance." followed by an information icon. Below this text are two dropdown menus: "Operating System" (set to "Apple Mac OS") and "Category" (set to "All"). At the bottom, the labels "Importance" and "Release Date" are partially visible.

downloads

Getting started

Parts & accessories

Operating System

Apple Mac OS

Category

All

Importance

All

Release Date

All

[More filters](#)

These drivers match your selections

View by: **Category** Importance Release Date

[Show All](#) | [Hide All](#)

Printers (2 files)

Systems Management (1 file)

My download lists [i](#)

[Sign In](#)

Driver update notification

Dell Download Center

Drivers help and tutorials

[Driver Help and Tutorials](#)

It is not entirely clear what the user should do next. It's not entirely clear what is clickable, and there is nothing that clearly indicates "click here for your printer driver." I do see that Mac OS is indicated, so that seems good, though.



Getting started

Parts & accessories

Importance

All

Release Date

All

[More filters](#)

These drivers match your selections

View by: **Category** Importance Release Date

[Show All](#) | [Hide All](#)

 [Printers \(2 files\)](#)

**Dell Personal Laser 1720/1720dn, A03** [View details](#)

DELL\_PERSONAL-LASER-1720-172\_A03\_R255696.exe | Hard-Drive (10 MB)

Printers | Release date 19 Jan 2010 | Last Updated 03 Nov 2011 | Recommended

Version A03,A03

 [Download](#)

 [Add to download list](#)

File

**Dell Personal Laser 1720/1720dn, A01** [View details](#)

R249481.zip | Hard-Drive (449 KB)

Printers | Release date 19 Nov 2009 | Last Updated 03 Nov 2011 | Optional

Version A01,A01

 [Download](#)

 [Add to download list](#)

File

 [Systems Management \(1 file\)](#)

Okay, click on “Printers (2 files)” or the widget to its left.  
Okay, progress is being made. But two files. Which one?

## These drivers match your selections

View by: **Category** **Importance** **Release Date**

[Show All](#) | [Hide All](#)

---

### Printers (2 files)

#### Dell Personal Laser 1720/1720dn, **A03** [View details](#)

DELL\_PERSONAL-LASER-1720-172\_A03\_R255696.exe | Hard-Drive (10 MB)

Printers | Release date 19 Jan 2010 | Last Updated 03 Nov 2011 | Recommended

Version A03,A03

 [Download](#)  [Add to download list](#)

File

#### Dell Personal Laser 1720/1720dn, **A01** [View details](#)

R249481.zip | Hard-Drive (449 KB)

Printers | Release date 19 Nov 2009 | Last Updated 03 Nov 2011 | Optional

Version A01,A01

 [Download](#)  [Add to download list](#)

File

In general, you should take the higher version number, right?



Keep drivers up to date for optimal performance. [i](#)

Operating System

Apple Mac OS

Category

All

Importance

All

Release Date

All

[More filters](#)

These drivers match your selections

View by: **Category** [Importance](#) [Release Date](#)

[Show All](#) | [Hide All](#)

[↑](#) Printers (2 files)

**Dell Personal Laser 1720/1720dn, A03** [View details](#)

DELL\_PERSONAL-LASER-1720-172\_A03\_R255696.exe | Hard-Drive (10 MB)

Printers | Release date 19 Jan 2010 | Last Updated 03 Nov 2011 | Recommended

Version A03,A03

[↓](#) Download

[+](#) Add to download list

File

**Dell Personal Laser 1720/1720dn, A01** [View details](#)

R249481.zip | Hard-Drive (449 KB)

Printers | Release date 19 Nov 2009 | Last Updated 03 Nov 2011 | Optional

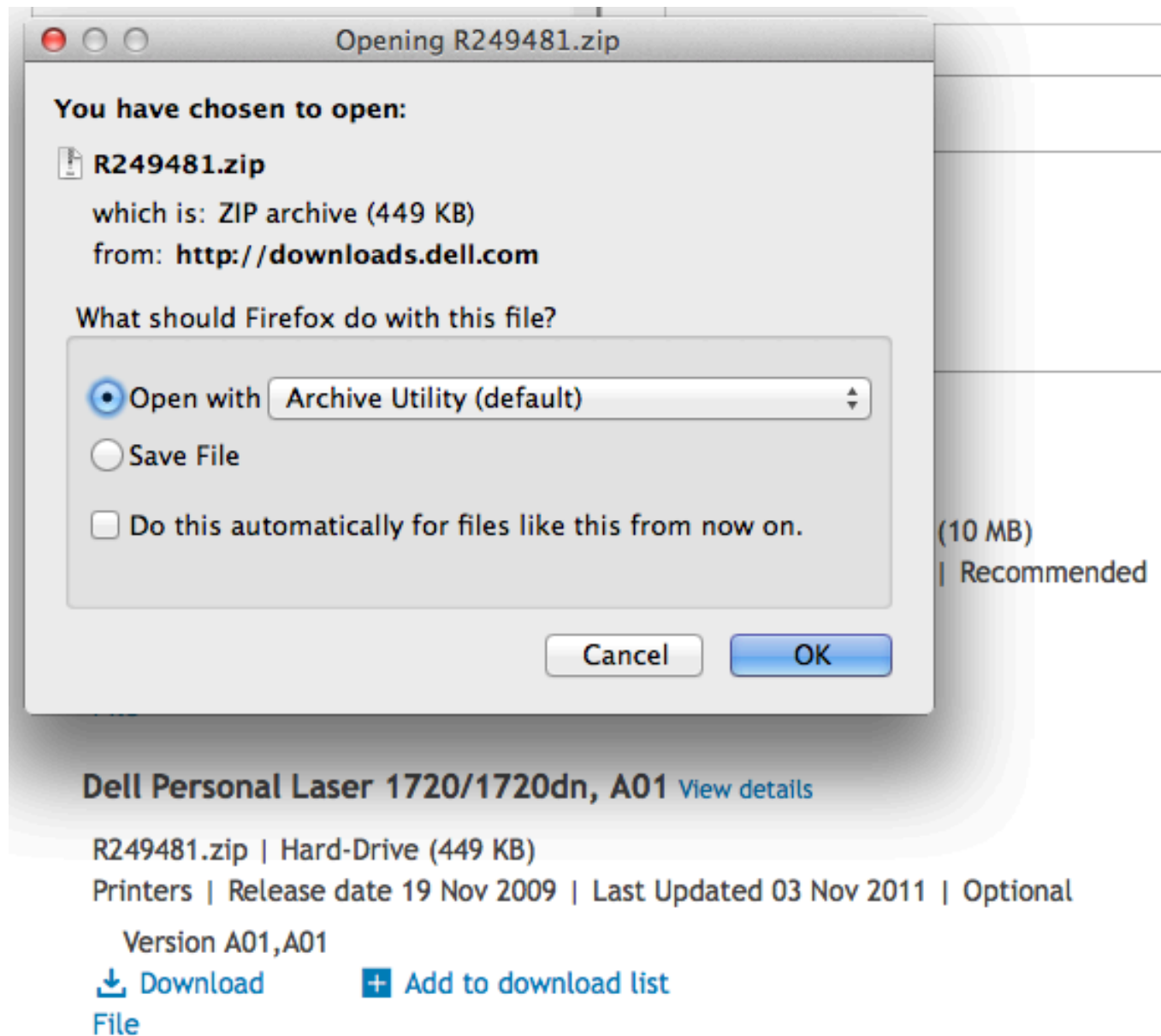
Version A01,A01

[↓](#) Download

[+](#) Add to download list

File

But wait. One is a “.exe” file and the other is “.zip” file. A Mac user with adequate “how it works” knowledge will know that “.exe” file extensions are used on Windows programs but not on Macintosh programs. But this is not really the common “user’s language”.



Click on “Download” for the “.zip” file and you see evidence of progress that your driver is being downloaded. Done.

An easier-to-use website for downloading a printer driver, for the Xerox Phaser 5550. Google "Phaser 5550" and...

The screenshot shows a web browser window with the URL [www.support.xerox.com/support/phaser-5550/downloads/enus.html?operatingSystem](http://www.support.xerox.com/support/phaser-5550/downloads/enus.html?operatingSystem). The browser's address bar also shows a search for "Phaser 5550". The page features the Xerox logo and a navigation menu with options: Services, Products, Supplies, Support & Drivers, and Contact. The "Support & Drivers" section is active, displaying "Phaser 5550 Support & Drivers". A sub-menu includes Support, Drivers & Downloads (highlighted), Documentation, Videos, and Contact. On the left, a "Refine Results" sidebar shows 2 total results, with 1 recommended, 1 driver, and 1 firmware. A "Windows XP End of Support" warning is present. The main content area shows a driver titled "Print Driver Installer for Mac 10.6 through 10.9" with a date of August 24, 2012, version 2.0.13, size of 28.9 MB, and format of File. A "Customer Technical Support" box provides contact information: 1-800-835-6100, Mon-Fri 8AM-8PM ET. A "Show Descriptions" button is located at the bottom right of the driver list.

Phaser 5550 Drivers & Do... x

www.support.xerox.com/support/phaser-5550/downloads/enus.html?operatingSystem

Phaser 5550

Teaching at UO | IHE Essay on how coll... | Miscellaneous

xerox

United States | Account | Log In | Search Xerox

Services | Products | Supplies | Support & Drivers | Contact

> Support & Drivers

Phaser 5550 Support & Drivers

Customer Technical Support  
Fast Track to the Expert >  
1-800-835-6100 U.S. & Canada  
Mon - Fri 8AM-8PM ET

Support | Drivers & Downloads | Documentation | Videos | Contact

Refine Results  
All (2)  
Recommended (1)  
Drivers (1)  
Firmware (1)

Windows XP End of Support  
>What you need to know (PDF)

Product Resources

Operating System: Mac OS X 10.9 - Mavericks  
Language: English (N. America)

Drivers

Date: Aug 24, 2012  
Version: 2.0.13  
Size: 28.9 MB  
Format: File

Print Driver Installer for Mac 10.6 through 10.9  
Recommended  
Description

Show Descriptions

# Conducting a “Cognitive Walkthrough”

Wharton, Rieman, Lewis, & Polson (1994)

## Can Reveal Some Interaction Problems

- Part of a “cognitive walkthrough” includes “walking” through the interface to pursue a specific goal.
- At every step or prompt, stop and consider:
  - 1. Will the user know the correct subgoal or subtask?** Example: Print or select printer first?
  - 2. Will the user know that the correct action is available?** Example: Any clues for how to print?
  - 3. Will the user associate the correct action with the subgoal?** E.g.: Type “lp” or find in menu?
  - 4. If the correct action is performed, will the user know that progress is being made toward the goal?** Example: Is it being printed?

# Ten Guidelines for Interaction Design

(from the “heuristic evaluation” method) (Nielsen, 1994)

- Use simple and natural dialog.
- Speak the users’ language.
- Minimize memory load.
- Be consistent.
- Provide feedback.
- Provide clearly marked exits.
- Provide shortcuts.
- Provide good error messages.
- Prevent errors.
- Include good help and documentation

# **The Critical Role of Human Cognitive Strategy in User Interfaces**

Cognitive strategies – the conscious or subconscious procedures that people execute to determine how to recruit their perceptual, cognitive, memory, and motor processes to accomplish mental and physical tasks – are a crucial and yet under-appreciated component of cognitive modeling and of human-computer interaction in general.

*What is a cognitive strategy?*

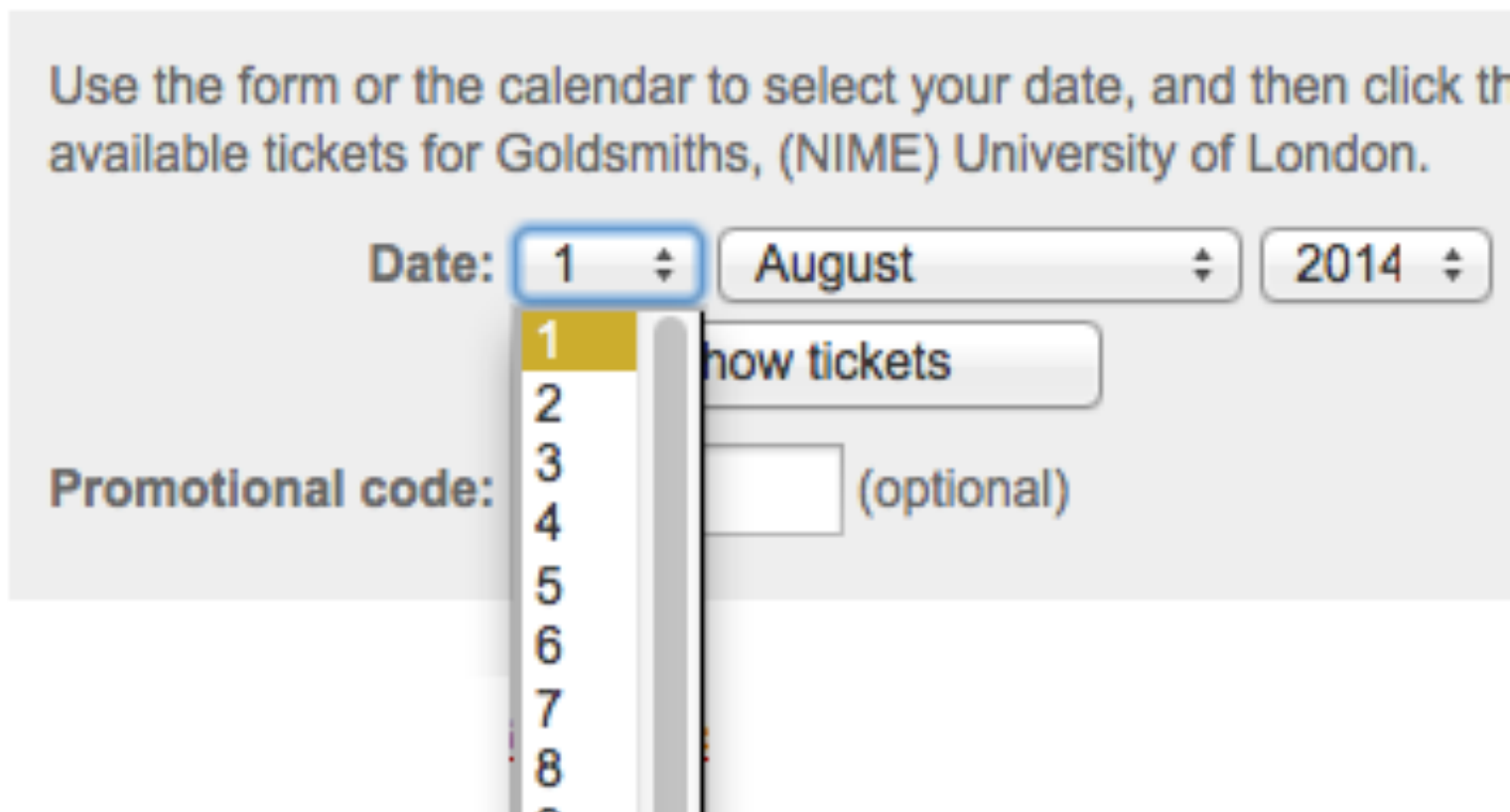
I would distinguish a *cognitive* strategy from a *task* strategy in that task strategies are much more directly observable and describable than cognitive strategies. Cognitive task strategies include mental activities that are not directly observable such as: motor planning and preparation, decision-making, decisions to move things in and out of long term memory, deciding what to say in your phonological loop, and the loading of task strategies into short term memory.

For example: The *task strategy* for using the picklist below might be to select the 29th day. (Assume an expert touch typist.) The *cognitive strategy* could include (a) weighing of the likelihood that pressing the keys “2” and “9” in quick succession could obviate moving the hand from the keyboard to the mouse to scroll through the list, and (b) attempting to predict the future value of having the hand on the mouse to interact with the month and year picklists, which would increase the motivation to move the hand to the mouse for the day.

Use the form or the calendar to select your date, and then click the available tickets for Goldsmiths, (NIME) University of London.

Date:

Promotional code:  (optional)

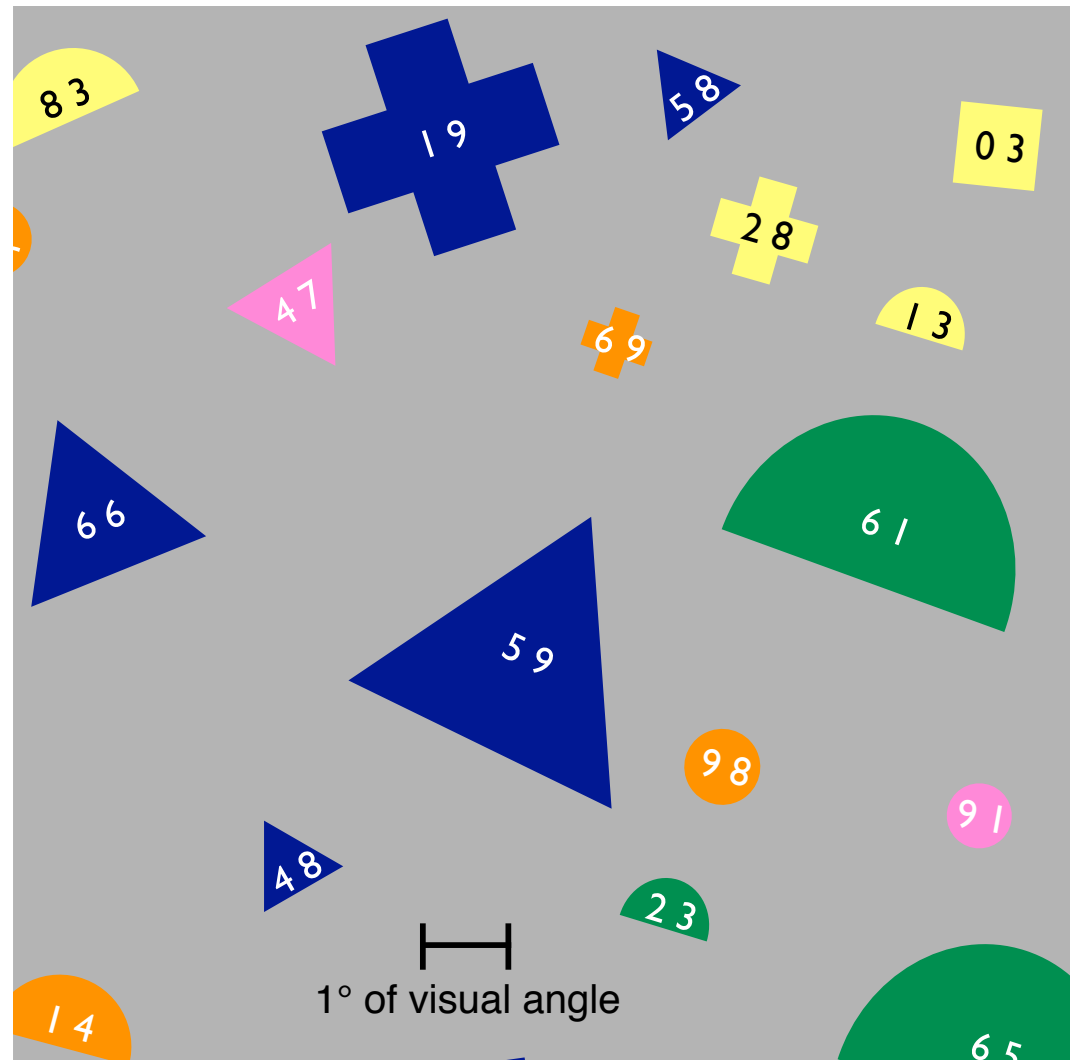
A screenshot of a web form for selecting a date. The form has three dropdown menus for 'Date', 'Month', and 'Year'. The 'Date' dropdown is currently open, showing a list of numbers from 1 to 9. The number '1' is highlighted in yellow. The 'Month' dropdown is set to 'August' and the 'Year' dropdown is set to '2014'. Below the date fields is a 'Show tickets' button and a text input field for a 'Promotional code' with '(optional)' text next to it.



In visual search, the *task strategy* is to find an object. The *cognitive strategy* would include decisions such as to only look at objects with known target features.

Task: Find the small orange circle that is labeled “98”.

The cognitive strategy would include moving the eyes to each of the orange objects (and to none of the non-orange objects), and stopping when you see the label “98”.

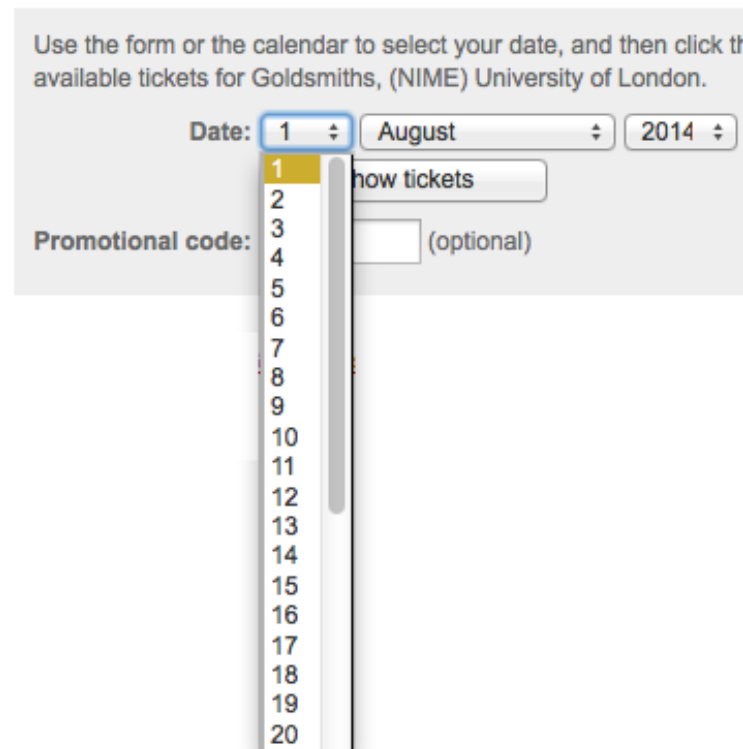
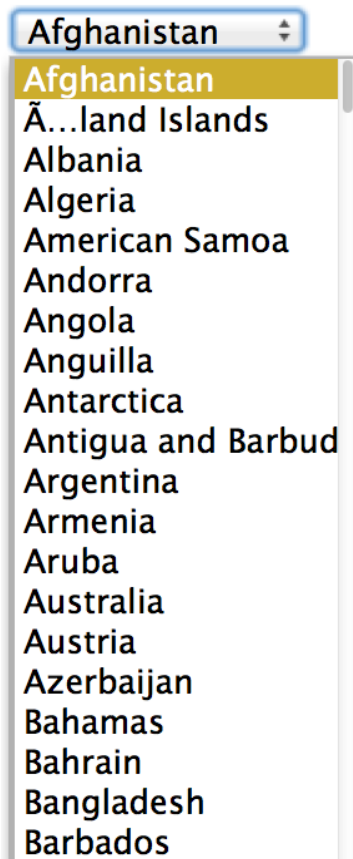


# How can you identify task strategies?

In general, they cannot be directly observed and must instead be inferred through analyses such as:

- Cognitive task analysis.
- Mental chronometry.
- Eye movement analysis.
- Brain imaging analysis.
- By encoding competing strategies into a computational cognitive architecture that lends itself to broad exploration of different strategies for a task, and promoting cognitive strategies that are plausible, comparably parsimonious, and that explain the human data, and demoting those that do not do these things.

It would seem that many user interface problems can be traced to inadequate consideration of how an interface will support the execution of concise and accurate cognitive strategies, or inadequate programming options to support effective task strategies.



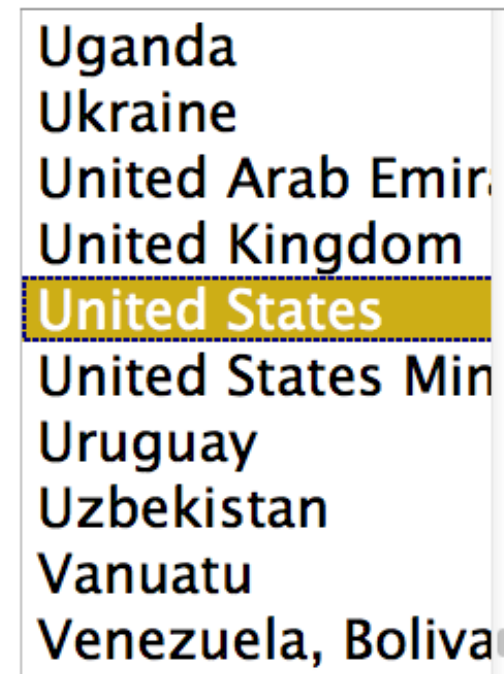
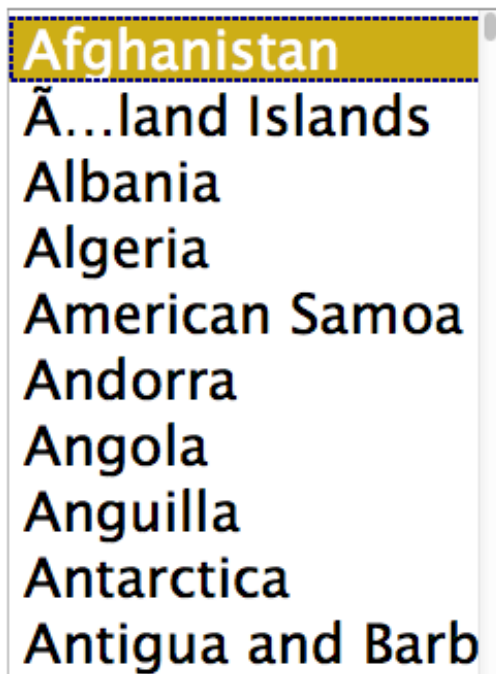
# Task: Enter the country “U.S.A.” into a web form.

The expert user sees the country picklist and wants to enter “U.S.A.” The user first sees that “U.S.A.” is not the default or near the top of the list. The user knows that different country picklists behave differently, and so it is difficult or impossible to predict a task strategy that will get him or her through the list with as minimal ocular and manual motor processing.

The user might determine the list is alphabetical, and scroll to the bottom of the list with an <End> keystroke, hoping that “U” countries might appear, scan the first letters, and see that they do not appear close enough to the bottom of the list to be visible.

The user might try typing “USA” or “U.S.A.” The user visually inspects the alphabetical list as it changes and determines that “U.S.A.” is not in the list, but does see “United States”.

The user can move their hand to their mouse to click on “United States”, thus slowing performance, or might start typing “United States” while visually monitoring the progress of the highlighted country as it moves down the list (thus yoking their eyes to their hands).



Relatively simple tasks end up requiring somewhat complex highly-interactive task strategies.

Partly because it is easy to program.

```
<select style="width: 100px;" size=10>
  <option value="AF">Afghanistan</option>
  <option value="AX">Åland Islands</option>
  <option value="AL">Albania</option>
  ...
</select>
```

But partly because it is much easier to see and analyze a visual display than it is an interactive task, and thus to articulate the task strategy required.

Partly of course because of a profit motive.

# Task: Speak to a travel or ticket agent.

- Automated telephone systems are especially bad at supporting the development of effective cognitive strategies. Rather than improve the ability of users to develop and execute effective cognitive task strategies, system designers actively prevent it, such as by disabling the option of pressing “0” to speak to a human.
- System designers do everything they can to require the user to listen to long, slow text before selecting a menu item, and creating tricks and roadblocks to force compliance. “Be sure to listen to the the entire message because our options have changed.”
- The NSF travel agent requires us to listen to 35 seconds of recorded text before telling the caller to press “2” if this is an emergency. Pressing “0” causes the system to hang up on the caller.

# Supporting effective cognitive strategies will help people with computer tasks, whether your task is to:

- Register for a conference.
  - ▶ Enter your country of residence while registering.
- Figure out on what day flights are cheapest.
  - ▶ Select a range of dates as part of looking at fares.
- Any number of travel-related tasks that require you to speak to a human ticket or travel agent
  
- Recommend a therapy to a patient with cancer.
  - ▶ Confirm that the AI agent understands the case.





# Still to add to this slide deck:

- add “adding keynote to ipad”
- add examples of putting a book on reserve.  
Search on “UO Library - Reserve Order 1”
- add “dominion electric”
- add centurylink
- add occu credit card payment flaws
- add walgreens



# Xcode

Create great apps for Mac, iPhone, and iPad.



Free ▾

**Xcode** 4+

Xcode provides everything developers need to create great applications for Mac, iPhone, and iPad. Xcode has unified user interface design, coding, testing, and debugging all within a single window. The Xcode IDE analyzes the details of your project to identify mistakes in both syntax and logic, it can even help fix your code for you.

...

- [Apple Web Site](#) ▶
- [Xcode Support](#) ▶
- [App License Agreement](#) ▶
- [Privacy Policy](#) ▶

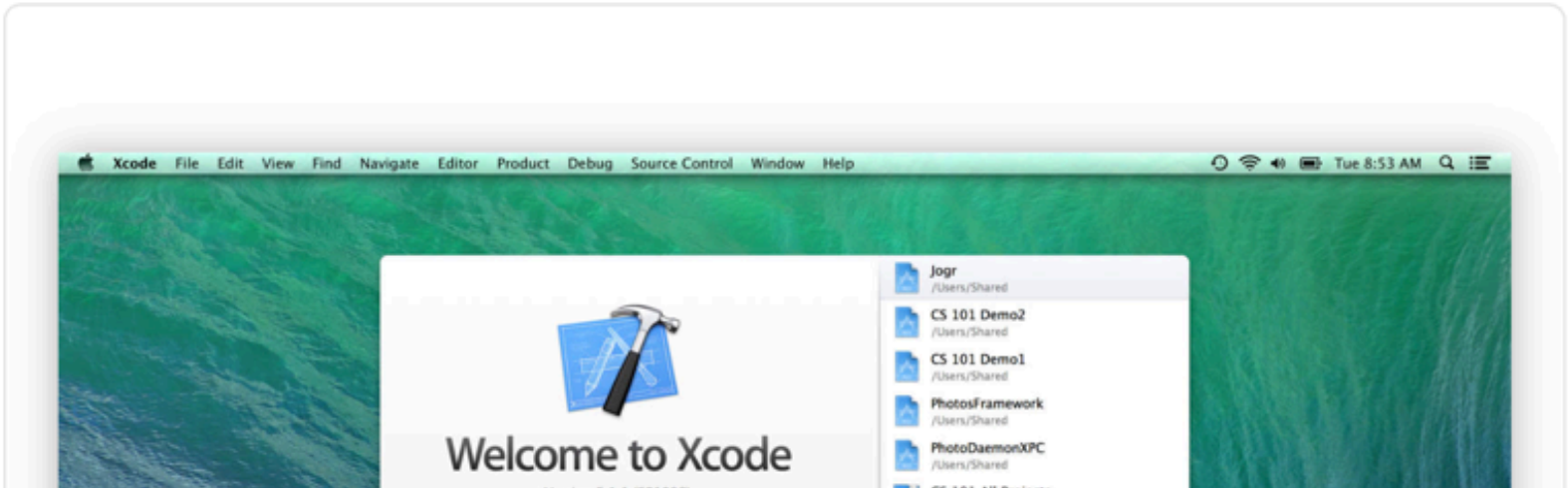
## What's New in Version 5.1.1

Includes SDKs for OS X 10.9 Mavericks, OS X 10.8 Mountain Lion, and iOS 7.1.

...

...More

...More



**Information**

Category: Developer Tools

Updated: Apr 10, 2014

Version: 5.1.1

Price: Free

Size: 2.18 GB

Language: English

Seller: Apple Inc.

© 1999–2013 Apple Inc.

---

Rated 4+

Compatibility: OS X 10.8.4 or later