Windowing and Window Behaviors

Lecture 14

Outline

- Brief History of Windows
- Designing with Windows
  - Window Characteristics

Exercise

1. What is the first "window" system you used?
   - Name it – approximate year you used it
2. How many "window" systems have you used?
   - List the names – approximate year
3. What are some important aspects of "windows"?
4. Put your name on the card

- 5 minutes

Windows

- How would you describe a computer "window"?

Windows

- How would you describe a computer "window"?
- What are some "window" characteristics?

Windows

- How would you describe a computer "window"?
- What are some "window" characteristics?
  - Title bar
  - Viewport
  - Sizable (change the size)
  - Overlapping
  - What you see is what you get (WYSIWYG)

Windows

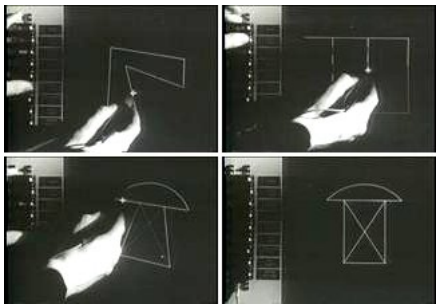
- How would you describe a computer "window"?
- What are some "window" characteristics?
  - Title bar
  - Viewport
  - Sizable (change the size)
  - Overlapping
  - What you see is what you get (WYSIWYG)
- Could you build applications without "windows"?

Windows

- How would you describe a computer "window"?
- What are some "window" characteristics?
  - Title bar
  - Viewport
  - Sizable (change the size)
  - Overlapping
  - What you see is what you get (WYSIWYG)
- Could you build applications without "windows"?
- Where did "windows" come from?

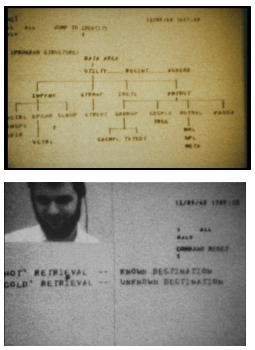
Sketchpad

- Ivan Sutherland, 1963
- Direct drawing on screen with a light pen
- Selecting, moving, editing drawn objects
- Early version of direct manipulation
- On screen menus



NLS (oN-Line System)

- Doug Englebart
- "Mother of all demos" 1968
  - Real-time video conferencing
  - Mouse control
  - Live graphics and text
  - Early windowing
  - Much more …
- See it http://www.dougengelbart.org/firsts/dougs-1968-demo.html

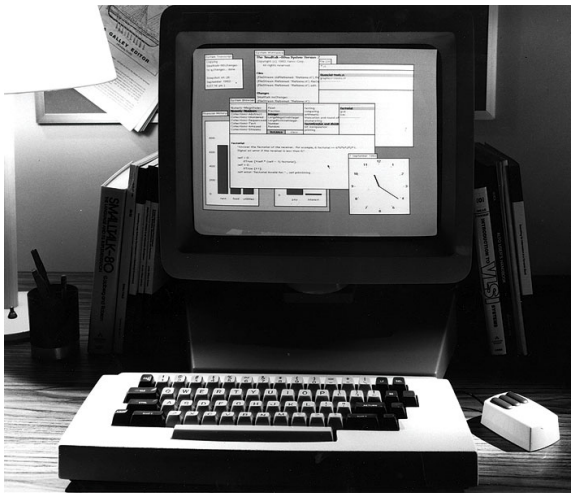


http://www.dougengelbart.org/

Xerox Alto

Many of the characteristics that we think necessary for windows of today.

When?

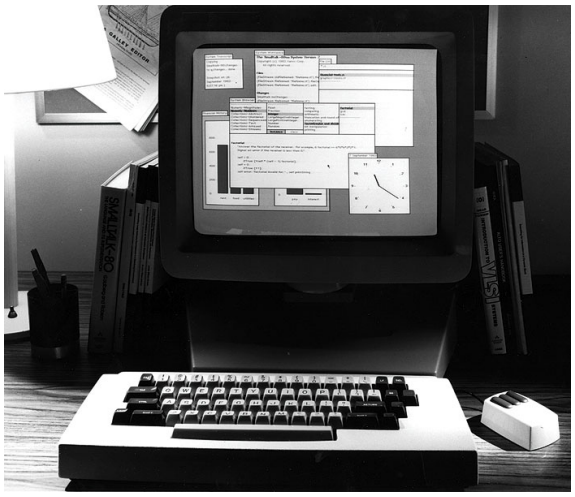


http://www.digibarn.com/collections/software/alto/index.html

Xerox Alto

Many of the characteristics that we think necessary for windows of today.

When?
1973



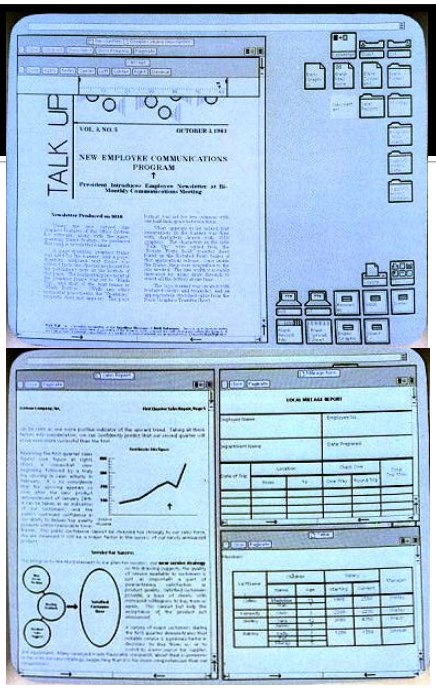
http://www.digibarn.com/collections/software/alto/index.html

Xerox Star

Commercial enhancement of a windowing environment.

More user apps, laser printing, networking

When?



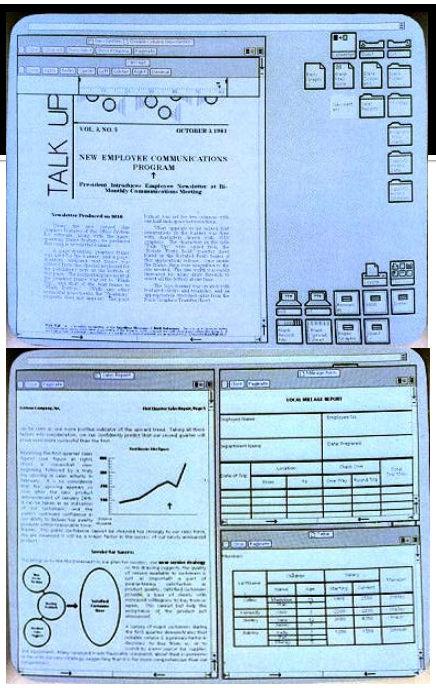
http://toastytech.com/guis/star.html

Xerox Star

Commercial enhancement of a windowing environment.

More user apps, laser printing, networking

When?
1981

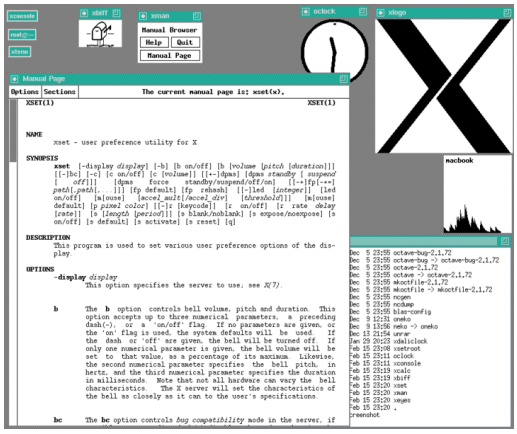


http://toastytech.com/guis/star.html

X Windows (MIT)

Academic effort to make networked windowing efficient and portable

About 1984

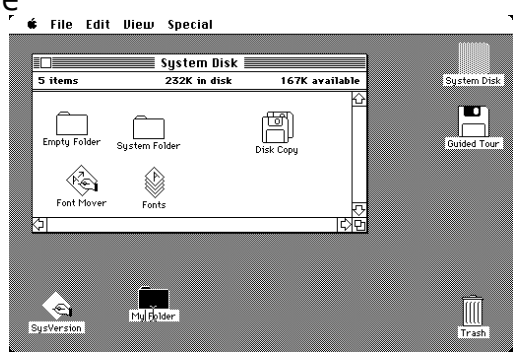


http://en.wikipedia.org/wiki/X_Window_System

Macintosh GUI

Commercial personal computer GUI. Xerox Star was a big influence

When?

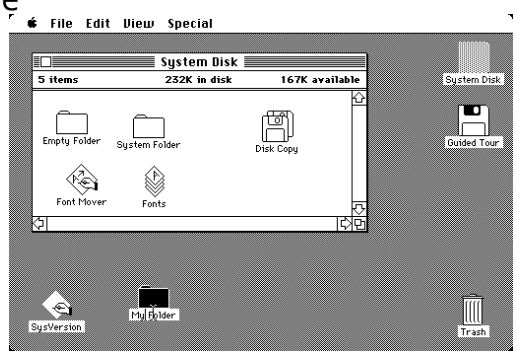


http://en.wikipedia.org/wiki/File:Apple_Macintosh_Desktop.png

Macintosh GUI

Commercial personal computer GUI. Xerox Star was a big influence

When?
1984

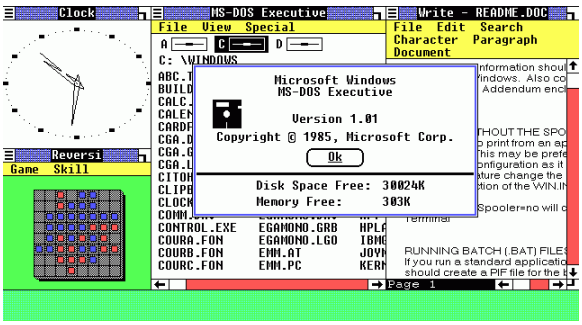


http://en.wikipedia.org/wiki/File:Apple_Macintosh_Desktop.png

MS Windows 1.0

Microsoft Windows, mostly developed to have a windowing product. Different, tiled windows, not overlapping.

When?

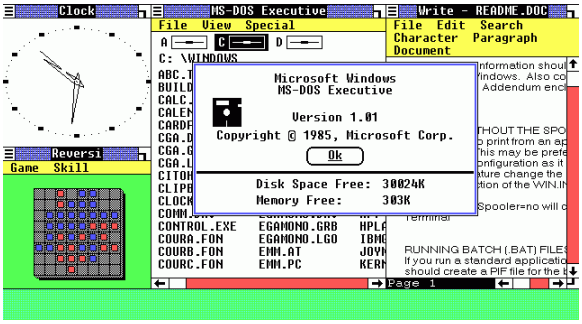


http://en.wikipedia.org/wiki/Windows_1.0 Copyright, Microsoft Corp.

MS Windows 1.0

Microsoft Windows, mostly developed to have a windowing product. Different, tiled windows, not overlapping.

When?
1985

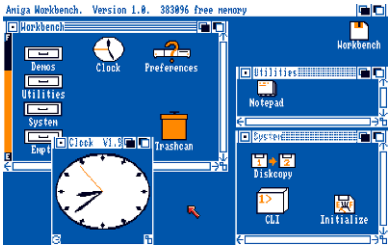


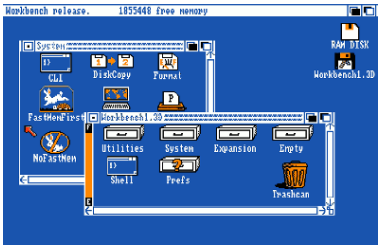
http://en.wikipedia.org/wiki/Windows_1.0 Copyright, Microsoft Corp.

Amiga Workbench

Amiga built as a 'graphics' machine. GUI developed for machine/OS before being bought by Commodore.

When?



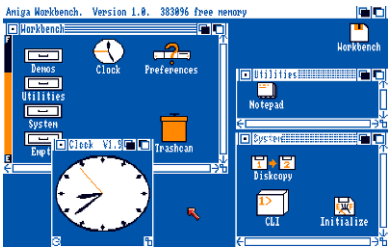


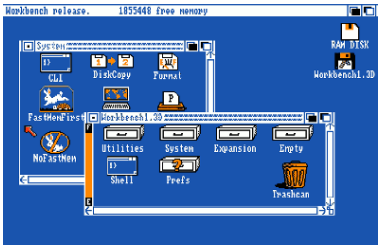
http://en.wikipedia.org/wiki/Workbench_(AmigaOS)

Amiga Workbench

Amiga built as a 'graphics' machine. GUI developed for machine/OS before being bought by Commodore.

When?
1985



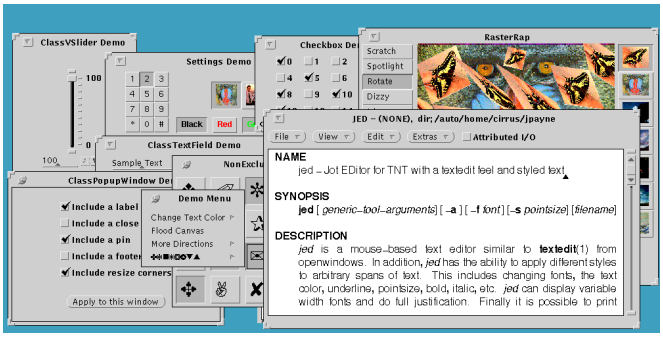


http://en.wikipedia.org/wiki/Workbench_(AmigaOS)

Sun Microsystems
NeWS (Network extensible Window System)

Sun Workstations were popular, expensive. Drawing relied on a local rendering engine like PostScript

About
1985, 1986

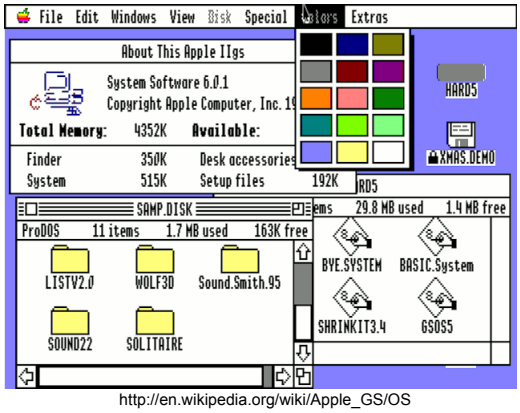


http://en.wikipedia.org/wiki/NeWS

Apple II GS/OS

Apple builds a completely new Apple II – the Apple IIgs – with a new graphic interface GS/OS.

When?

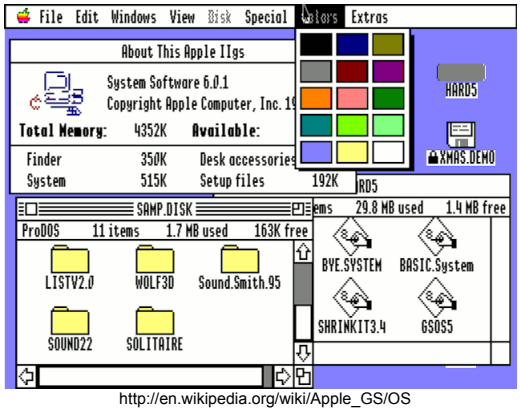


http://en.wikipedia.org/wiki/Apple_GS/OS

Apple II GS/OS

Apple builds a completely new Apple II – the Apple IIgs – with a new graphic interface GS/OS.

When?
1986

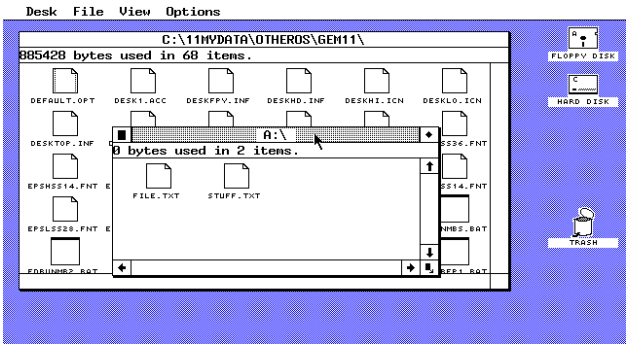


http://en.wikipedia.org/wiki/Apple_GS/OS

GEM (Graphical Environment Manager) Digital Research, Inc. (DRI)

GEM and GEM Desktop, an alternative GUI that would run on top of MS-DOS and MS-DOS variants.

When?

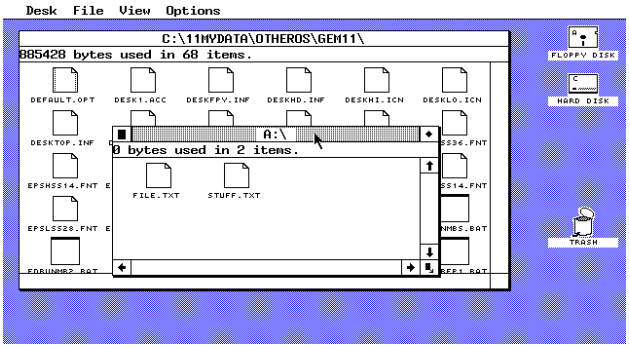


http://en.wikipedia.org/wiki/Graphical_Environment_Manager

GEM (Graphical Environment Manager) Digital Research, Inc. (DRI)

GEM and GEM Desktop, an alternative GUI that would run on top of MS-DOS and MS-DOS variants.

When?
1988



http://en.wikipedia.org/wiki/Graphical_Environment_Manager

NeXTSTEP

NeXT, formed after Jobs was ousted from Apple. A new windowing system based on Display PostScript. Detractors say it would be too slow to work.

When?

http://en.wikipedia.org/wiki/NEXTSTEP

NeXTSTEP

NeXT, formed after Jobs was ousted from Apple. A new windowing system based on Display PostScript. Detractors say it would be too slow to work.

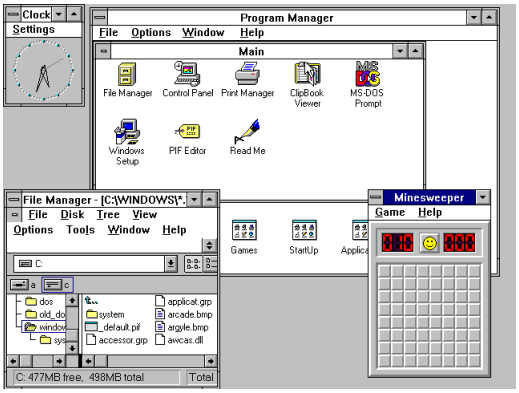
When?
1989

http://en.wikipedia.org/wiki/NEXTSTEP

MS Windows 3.0

Microsoft wakes up to GUI and makes a solid effort. Most windowing features one expects are finally in the product.
Windows 3.11 a "hit"

When?

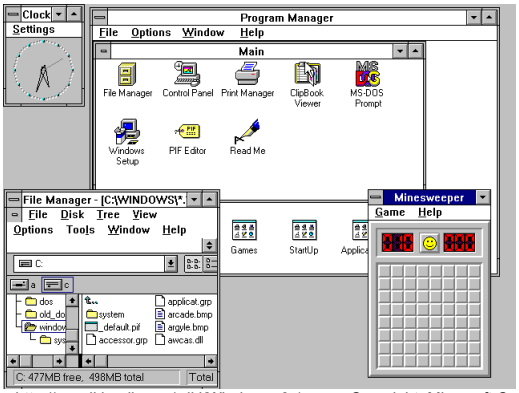


http://en.wikipedia.org/wiki/Windows_3.1x Copyright, Microsoft Corp.

MS Windows 3.0

Microsoft wakes up to GUI and makes a solid effort. Most windowing features one expects are finally in the product.
Windows 3.11 a "hit"

When?
1990

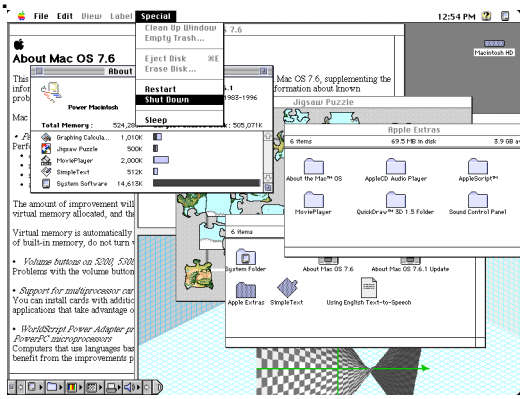


http://en.wikipedia.org/wiki/Windows_3.1x Copyright, Microsoft Corp.

Mac OS System 7

Small refinements through the 1980's. Major GUI overhaul was System 7.

When?

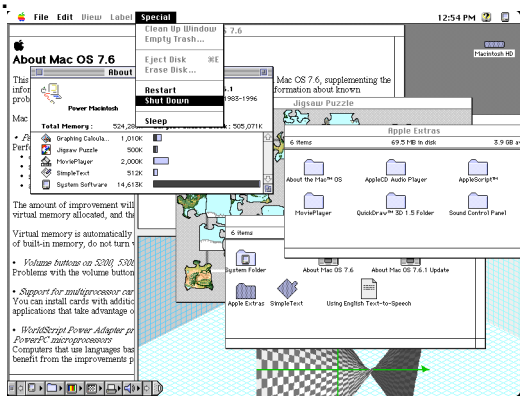


http://en.wikipedia.org/wiki/System_7_(Macintosh)

Mac OS System 7

Small refinements through the 1980's. Major GUI overhaul was System 7.

When?
1991

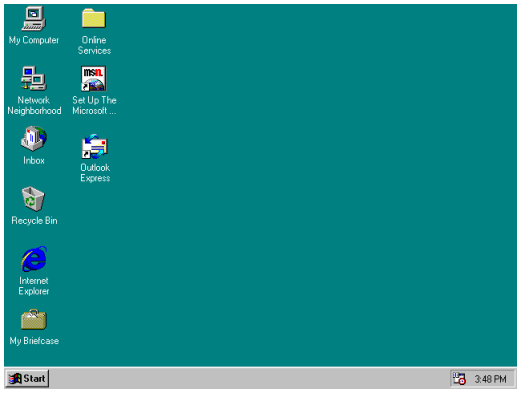


http://en.wikipedia.org/wiki/System_7_(Macintosh)

Windows 95

The masses now get windows.

When?

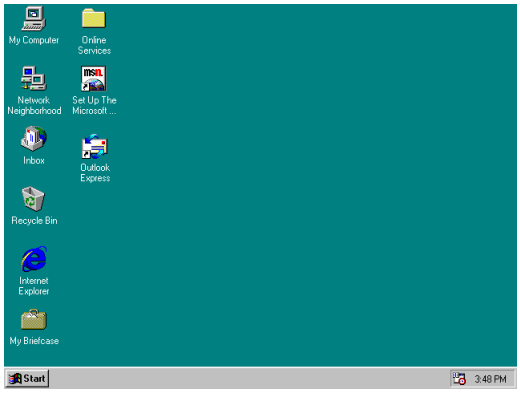


http://en.wikipedia.org/wiki/Windows_95 Copyright, Microsoft Corp.

Windows 95

The masses now get windows.

When?
1995



http://en.wikipedia.org/wiki/Windows_95 Copyright, Microsoft Corp.

OS X - Aqua

Apple has a major OS overhaul, complete rework of the GUI as "Aqua"
Based on many components from NeXTSTEP.

When?

http://en.wikipedia.org/wiki/Aqua_(user_interface)

OS X - Aqua

Apple has a major OS overhaul, complete rework of the GUI as "Aqua"
Based on many components from NeXTSTEP.

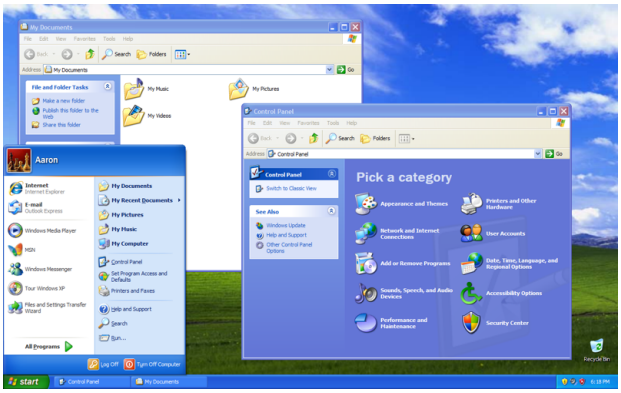
When?
2000

http://en.wikipedia.org/wiki/Aqua_(user_interface)

Windows XP

About the time of OS X and Aqua, Microsoft does a major GUI overhaul too. Windows XP is the result.

When?

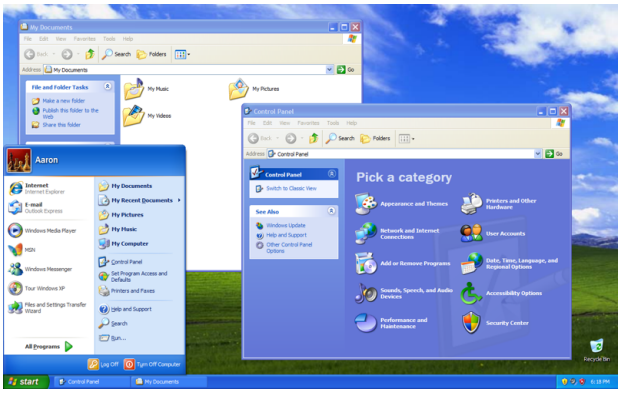


http://en.wikipedia.org/wiki/Windows_XP Copyright, Microsoft Corp.

Windows XP

About the time of OS X and Aqua, Microsoft does a major GUI overhaul too. Windows XP is the result.

When?
2001



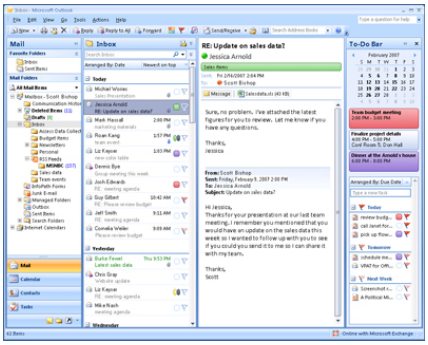
http://en.wikipedia.org/wiki/Windows_XP Copyright, Microsoft Corp.

Designing with Windows

- Overlapping Windows vs. Tiled Windows
  - Which is better?

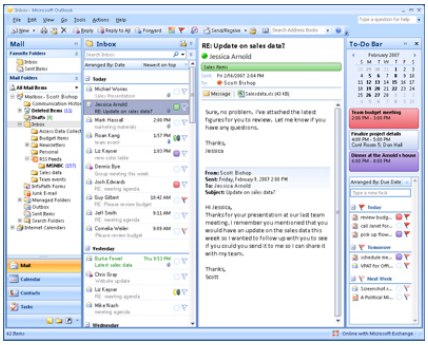
Designing with Windows

- Overlapping Windows vs. Tiled Windows
  - Which is better?
  - Consider a complex app like Outlook



Designing with Windows

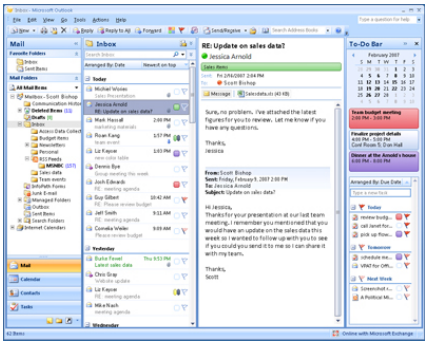
- Overlapping Windows vs. Tiled Windows
  - Which is better?
  - Consider a complex app like Outlook
    - Panes are tiled
    - What if this were windows?



Designing with Windows

- Overlapping Windows vs. Tiled Windows
  - Which is better?
  - Consider a complex app like Outlook
    - Panes are tiled
    - What if this were windows?

- Window pollution



Panes, Frames & Tabs

- Multi-Paned applications to show related information
  - How do we control panes?
    - What is the technique?

Panes, Frames & Tabs

- Multi-Paned applications to show related information
  - How do we control panes?
    - What is the technique?
- Web and Web applications adopted Frames
- Window Tabs are a form of pane

Window States

- Main window, top-level window
- Windows have few controls, few states
  - Minimized
  - Iconized
  - Maximized
  - Zoom