What The Digerati Know
Or,
Becoming an Intuitive Tools User

FIT 100

FIT 100 People And Technology

- Human beings are natural tool users
  - From the first use of animal bones as weapons thousands of years ago to present day - we have been innate tool users
  - We invent tools all the time (e.g., using a shoe to hold open a door)
  - Some tools seem perfectly designed for their purpose
- Complicated tools may require training
  - We must be taught how to ride a bicycle, drive a car, ski, ... (of course, some people don’t seem to even need that!)
  - Appliances and tools come with an owner’s manual

How Do We Learn to Use Complicated Tools?

- People accumulate experience, develop intuitions, learn, and reason, so we can “figure out” how to use some tools without reading the owner’s manual (e.g. portable CD player)
- Product designers – including software designers -- try to make technology so simple that members of a technological society can guess its operation using only their experience, intuition, prior knowledge, and reasoning
- Well-designed tools can be said to be “intuitive-use” tools. They play off of the intuition and experience of their audience.

What Makes Learning Software Intuitive?

- For someone to figure out software, the operation must be consistent with their experience and the task they wish to do. The software should have:
  - Consistent interface
  - Standard metaphors
  - Features conveyed by analogies
  - A full complement of basic features (standard)
  - Intuitive consistency
  - Rational defaults
- Software designers know that success of the product depends on how intuitive its use is. Can the software's basic operation be determined without consulting a manual?
- With well-designed software, you should be able to figure out a good deal about how the software works on your own

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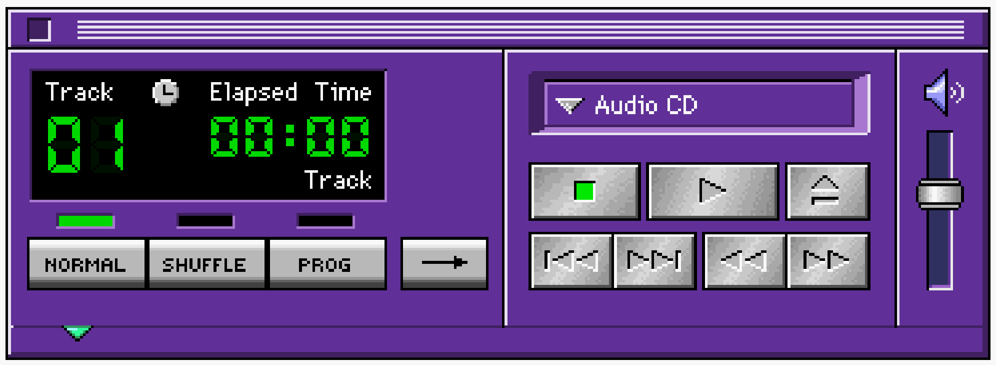
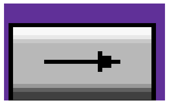
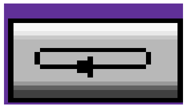
The Perfect User Interface?

- Most interactive software today uses a Graphic User Interface (GUI), pronounced GOO·ey
- Consider this GUI interface:



- Can you guess what this software does? And how to use it?

Analyzing the CD Player Interface

- The visual analogy is obvious if you're already familiar with a physical CD player
  - "Metallic" buttons
  - CD "slot"
  - Slider for volume
- The icons (images) on the control buttons are familiar (standard)
- The names on the "mode" buttons are suggestive of the capabilities of an audio CD, and can be guessed
- As the slider moves up and down, the volume of sound provides immediate feedback
- The "single-pass"  icon changes to a continuous loop icon  when clicked, suggesting its meaning

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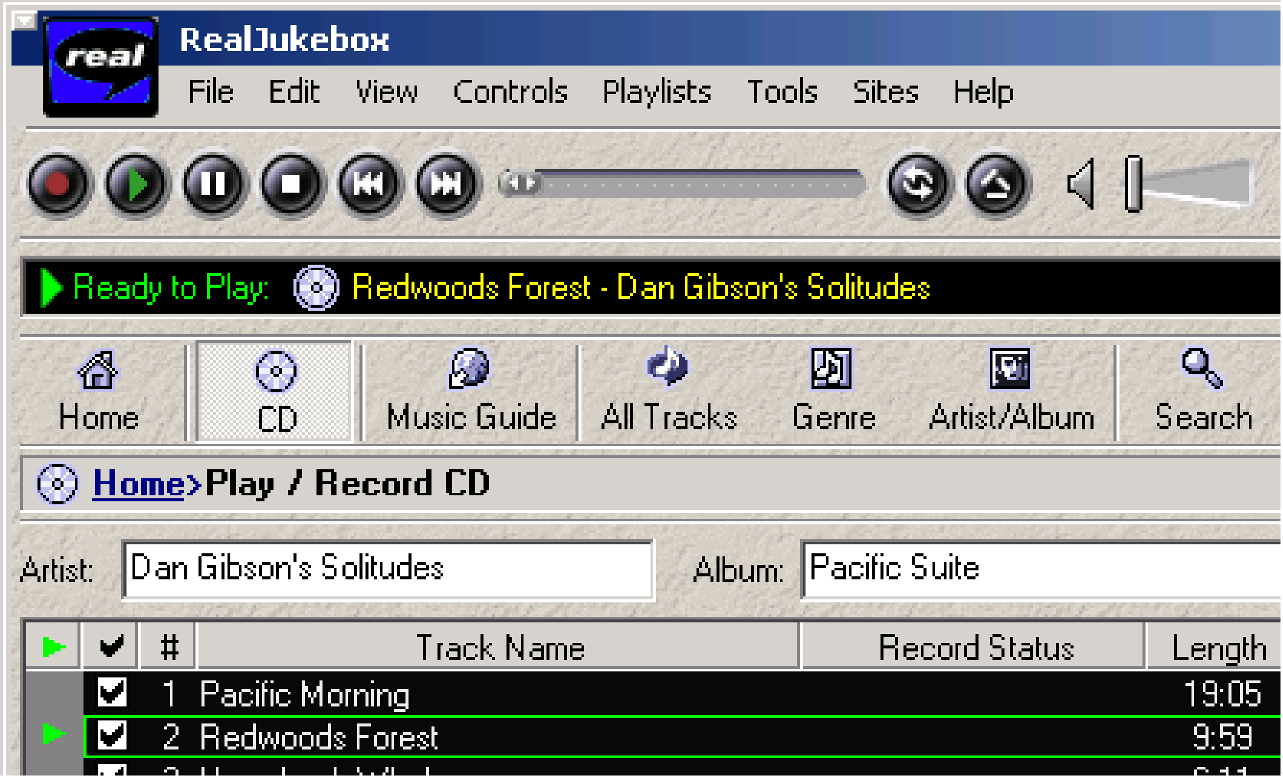
Good design lives on…?

- Good interface design is interface immortality (so to speak). The design will be mirrored and become part of the fabric of software design – for as long as it matches something innate to human experience – but there is always an urge to add more…



Ready to Play: Redwoods Forest - Dan Gibson's Solitudes

Home>Play / Record CD

Artist: Dan Gibson's Solitudes

Album: Pacific Suite

▶	✔	#	Track Name	Record Status	Length
	☑	1	Pacific Morning		19:05
▶	☑	2	Redwoods Forest		9:59

Real Jukebox has added more features, but notice the basic design (from a previous slide) remains

Criteria for Well-designed Interfaces …

- Familiarity: reflects relevant non-computer experience

- Well-chosen metaphors and analogies: the metaphors and analogies make sense and suggest important relationships

- Expected functionality: the software does the things one would expect given the task at hand

- Consistency: the operations work together as whole

More Criteria…

- Simplicity: keep it simple; avoid too many features
- Feedback: let the user know what the machine is doing
- Transparency: using the tool should not take too much conscious attention, so the user can concentrate on the task at hand
- Rational defaults: the defaults should reflect what a typical user would want to do

Feedback

- How can you distinguish between a case when the computer is busy working on your task and the case when it is patiently idling, waiting for you to give it another command?

Well-designed computers will always give you feedback indicating their state of activity, the task they are performing, alternatives, spatial precision, etc.

- Watch for color or shadow change, icon change, title change, motion, etc.

Standardized Metaphors (Widgets)

- Current GUIs are built using standard widgets
- MS Word illustrates many of these features

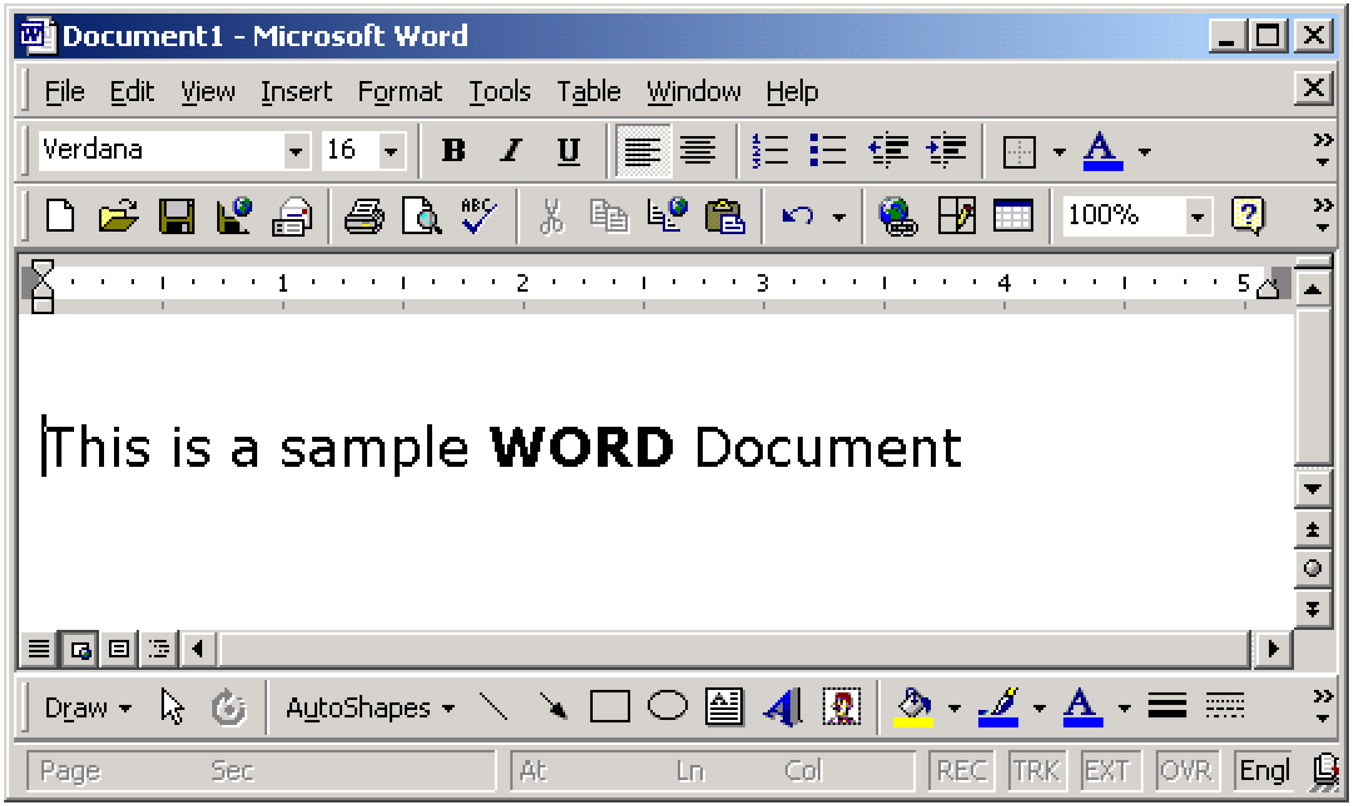
Buttons

Sliders

Arrows

Icons

Close


Document1 - Microsoft Word
File Edit View Insert Format Tools Table Window Help
Verdana
16
B I U
100%
Draw
AutoShapes
Page
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OVR
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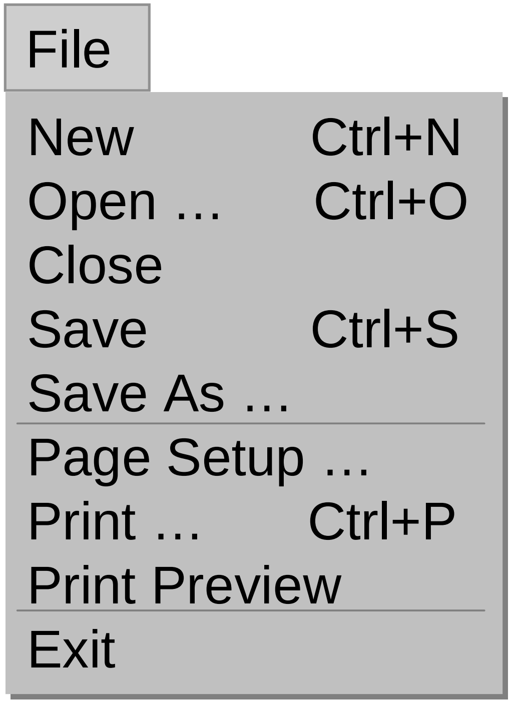
This is a sample **WORD** Document

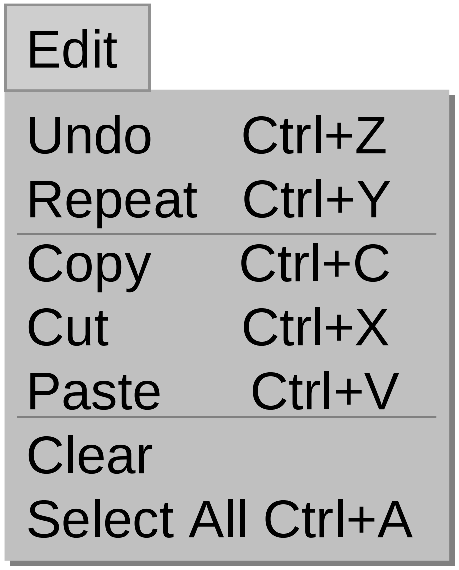
FIT 100 More Standardized Widgets…

- Menus present the functionality of an application
- There are pull-down menus and pop-up menus
- There are standard operations that should always be applicable in an information processing activity



File

New	Ctrl+N
Open …	Ctrl+O
Close	
Save	Ctrl+S
Save As …	
Page Setup …	
Print …	Ctrl+P
Print Preview	
Exit	



Edit

Undo	Ctrl+Z
Repeat	Ctrl+Y
Copy	Ctrl+C
Cut	Ctrl+X
Paste	Ctrl+V
Clear	
Select All	Ctrl+A

Notice the ellipsis (…) and the shortcut (Ctrl+X)

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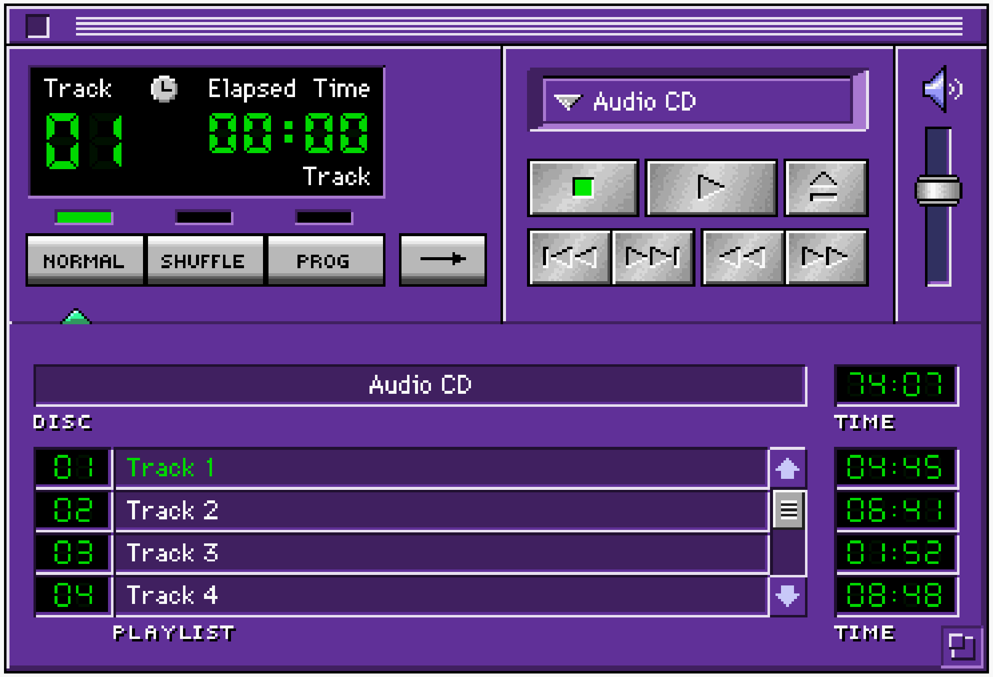
“Clicking Around”

- When starting to use a new piece of software, take a moment to look at each menu and icon
- With the expectation that much of the application can be scoped out, “Click Around” to discover what’s there



01	Track 1	04:45
02	Track 2	06:41
03	Track 3	01:52
04	Track 4	08:48

Ironically, though most beginners think they should read the manual, it’s most useful to an expert

FIT 100 "Blazing Away" – Explore your IT world!

- Fundamental Rule of IT:
  You can't break the computer unless you drop it out the window!!!!
- The way to learn the operation of an application is to try it out, so blaze away..in other words - **EXPLORE!**
- Though nothing will break, things can get into a horrendous mess -- beginners and experts alike can really screw up software!
- There is no value in the mess, so it doesn't have to be undone … Throw the mess away
- Be prepared to throw work out
  - Work on copies
  - Don't expect to do it all right the first time, work in stages
  - Go out, and come back in

However….. Some cautions and tips

- While exploration and use is the best way to learn a tool, here are a few good tips:
  - Your motto when working on any application should be:

    Save early, Save often, and create a backup!

- A “Hard Reboot” solves most problems when the program acts up
  - Start, Shutdown, Power Off, Power On

- Practice safe computing: There is a lot of “buggy” software out there, available free on the Internet and a great many viruses that are sent in email.

Sad Fact of Life

- Computer interfaces are *not* always well-designed
  - May be inconsistent, confusing, contradictory, hard to use, etc.
- When you get frustrated...
  - It might be the designer’s fault, not yours
  - It may be that the product was targeted at users with a different background from your own
- Nevertheless, you have to be able to cope with bad design
  - and hopefully still keep your sanity

The dilemma of design…

- Are intuitive tools always better?
- Are standardized tools always better?

FIT 100 Are Intuitive Tools Always Better?

- Consider GUIs vs. Command Line interfaces (e.g., SSH vs. command line ftp)

- On the surface, the GUI looks more intuitive than command line interface
  - Visual
  - Spatial
  - Less to remember

- But, it depends on what you mean by better…

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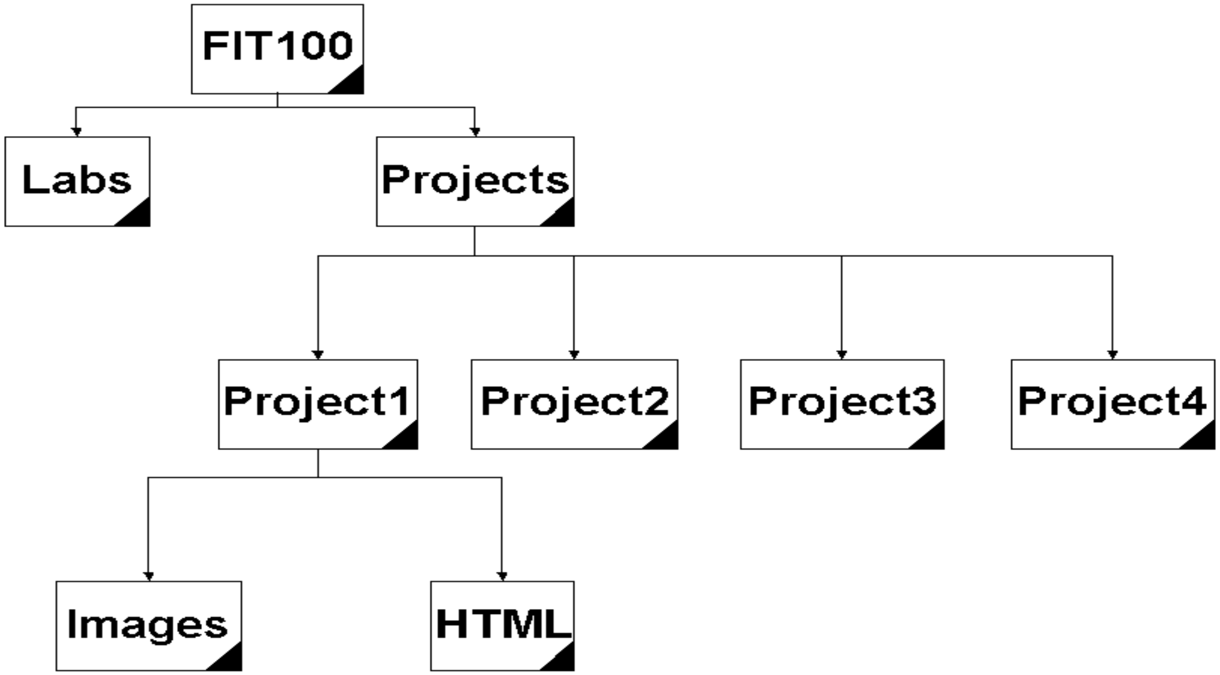
GUI vs. Command Line Interface?



With a GUI, how many mouse clicks?

With a command line interface, how many commands?

FIT 100 Which Interface is More Efficient?

- GUI: 4 clicks
  - Click FIT100
  - Click Projects
  - Click Project1
  - Click HTML

- Command line interface: 1 command
  - cd FIT100/Projects/Project1/HTML

- If you do this same action again and again and again, which interface would you rather use? Why?

Is Standardization Always Good?

- After all, with standardization of software:
  - You know what to expect
  - Easy to learn
  - More intuitive
  - You’ll find the same software where ever you go
- But what about personalization?
  - Individual differences
  - Learning styles
  - Working styles
  - Taste
  - Autonomy

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Standardization vs. Personalization?

- There’s an inherent tension between standardization and personalization.
- With total standardization, we’d feel oppressed
- With rampant personalization the effort to learn each new tool would be staggering…
- The bottom line: Be aware of the trade-offs and strike a meaningful balance