

CS 315 – Intro to Human Computer Interaction (HCI)



Elevator Pitch

- A **short, simple description** of your business idea that anyone could understand by the time you ride up three floors in a typical elevator.
- Must haves:
 - **Interesting opening:** opening much immediately grab interest of recipient
 - **Passion:** if you are not excited about your idea, no one else will be
 - **Short:** you only have one minute deliver your pitch
 - **Caution:** Do not take too long to get to the pain/problem that you are solving—you could lose the listener's attention

Elevator Pitch

- Kiss of death:
 - Too much detail
 - Geek speak

Elevator Pitch

- Each team will have 1 minute to give the “elevator pitch” for your leading idea.
- Only one member of the team will give the pitch
- If time
 - Why you’re interested
 - Relevant skills

Prep for a few minutes

- I'll be timing the elevator pitch... Cut off at 1 minute!
 - Team Member Names
 - Problem
 - Idea
 - Your special skills

2 Minute Project Madness

- Names
- Problem
- Idea
- Your special skills

Working in teams

- In real project teams, the work gets done BETWEEN meetings, not during meetings. Meetings are used to review and discuss work products, to reach consensus, and to assign more tasks and deadlines.
- Assign someone to chair the meeting, someone to take notes, and someone to be timekeeper. Switch roles each meeting.
- It is not reasonable to expect that everyone will contribute exactly equally. Instead, assume different people will bring different strengths.

Working in Teams

- **COMMUNICATE!** This means LISTENING as much as TALKING.
 - Let your team members know what's going on, if you're having problems.
 - If you exchange an email with someone on your team, be sure to cc: the other team member(s).
- **Have fun!**
 - Remember - this is a learning experience. As the semester progresses, patience gets short and anxiety gets high. Understand, respect, and support each other.

Golden Rules, Heuristics, First Principles

The 8 golden rules of interface design

1. Strive for consistency
2. Cater to universal usability
3. Offer informative feedback
4. Design dialogs to yield closure
5. Prevent errors
6. Permit easy reversal of actions
7. Support internal locus of control
8. Reduce short term memory

Nielsen's Take: Ten Usability Heuristics

1. Simple and natural dialog
2. Speak the user's language
3. Minimize user memory load
4. Consistency
5. Feedback
6. Clearly-marked exits
7. Shortcuts
8. Good error messages
9. Prevent errors
10. Help and documentation

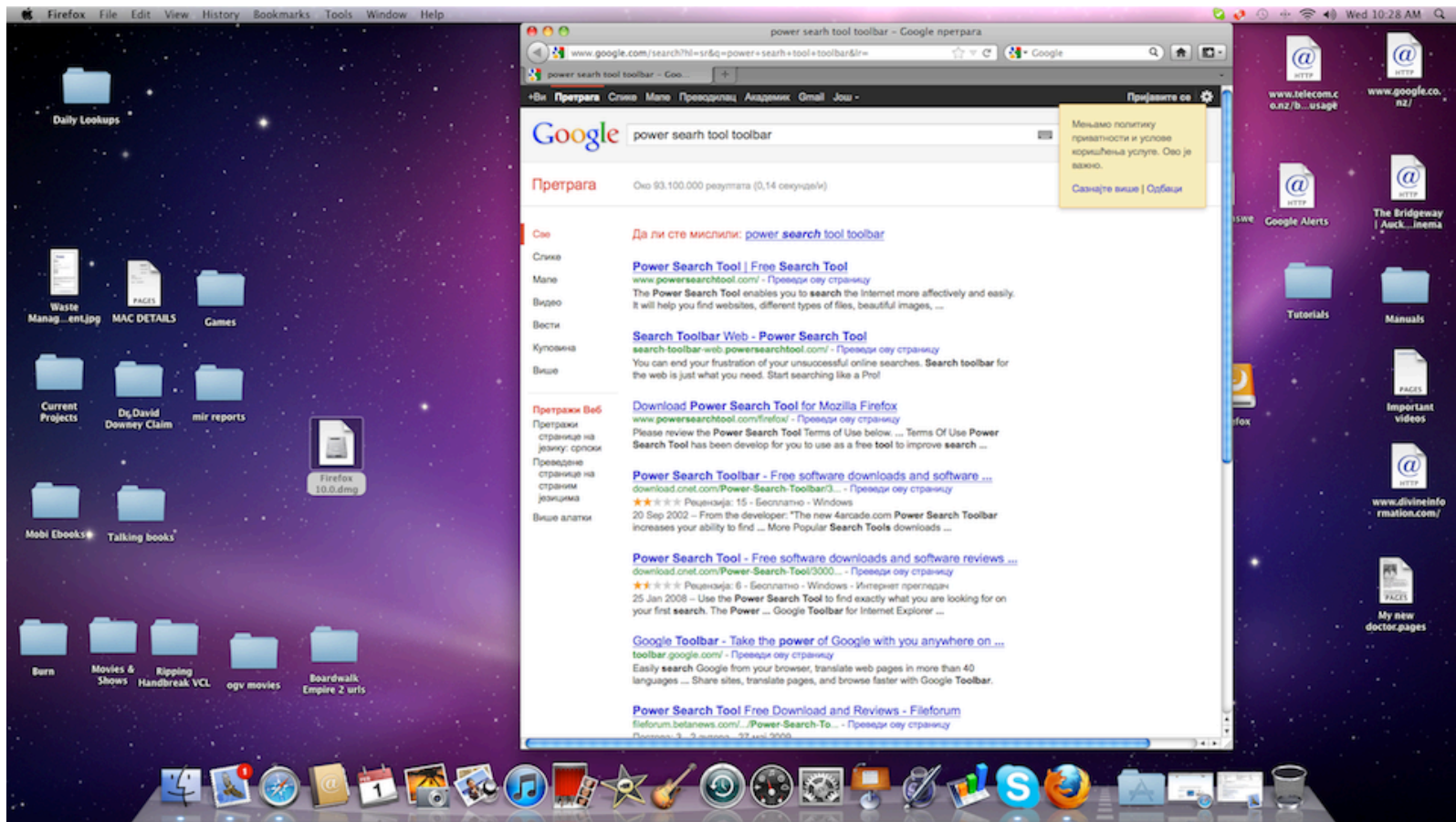
Tognazzini's Take: Sixteen First Principles

1. Anticipation
2. Defaults
3. Human Interface Objects
4. Protect the User's Work
5. Autonomy
6. Efficiency of the User
7. Latency Reduction
8. Readability
9. Color Blindness
10. Explorable Interfaces
11. Learnability — Limit Tradeoffs
12. Track State
13. Consistency
14. Fitts's Law
15. Use of Metaphors
16. Visible Navigation

Fitts' Law

- Explain why a Macintosh pull-down menu can be accessed at least five times faster than a typical Windows pull-down menu.
- Suggest at least two reasons why Microsoft made such an apparently stupid decision.

Fitts' Law



Fitts' Law

The screenshot shows a Windows XP desktop with a Start menu on the left. Two windows are open:

- WebSpeedReader - [gluconeogenesis: Definition and Much More From ...]**: A web browser window displaying the Answers.com dictionary entry for "gluconeogenesis". The entry includes:
 - Dictionary**: *glu·co·ne·o·gen·e·sis* (glū'kə-nē'ə-jen'ē-sis) *n.* The formation of glucose, especially by the liver, from noncarbohydrate sources, such as amino acids and the glycerol portion of fats.
 - Medical**: *glu·co·ne·o·gen·e·sis* (glū'kə-nē'ə-jen'ē-sis) *n.* The formation of glucose, especially by the liver, from noncarbohydrate sources, such as amino acids. Also called *glyconeogenesis*.
- Dieting.doc - Microsoft Word**: A Microsoft Word document with the following text:

There are, and have been, marketing schemes for dieting for many years. Two popular programs are the Atkins diet and the South Beach diet. While marketing schemes vary considerably, the fundamentals for losing weight have not changed, and never will. By understanding the fundamental principles for dieting, you can control your behavior to lose weight and avoid fads that don't work, or are simply variations of a theme.

To lose weight, you must burn more calories than you consume.

This most fundamental of the fundaments of dieting cannot be overcome. What it means is that you can lose weight eating bacon and ice cream as long as you burn more calories than you consume. It means that you could lose weight eating any combination of fats, protein, and carbohydrates. It means you don't have to worry about the glycemic index of foods, or any other factor. As long as you burn more calories than you consume, you will lose weight, and if you don't, you won't lose weight, and if you consume more calories than you burn, you will gain weight. However, for various reasons, you will want to consider these factors and more, for it will be much easier to control your weight.

Carbohydrates, Fat, Protein, and other Nutrients

The body is mostly water. What makes it more than water is mostly protein, fats, and carbohydrates. Carbohydrates and fats do provide some structure, but it is protein that makes up the living machine, both by providing structure and increasing the rates of chemical reactions to make life possible, a process called catalysis. All 3 of these components can provide energy, but fats and carbohydrates provide the bulk of energy that the body needs to function.

Carbohydrates and fats are stored in the body to provide the body with a continuous source of energy. Glucose is the main carbohydrate; other carbohydrates are converted into glucose. Glucose, as glycogen, the polymeric form of glucose, is stored in the liver and the muscles.

Carbohydrates, fat, and protein can be used to either provide structure or energy for the body. If they are used for structural material, then they yield no calories. If they are burned for energy, then 1 gram of carbohydrates or protein yields 4 calories, 1 gram of alcohol yields 7 calories, and 1 gram of fat yields 9 calories. Alcohol is

Discerning Patterns in the Rules

- Despite variations in phrasing and emphasis, certain common themes emerge among these (and other) sets of golden rules — this should give you an idea for prioritization and generality
- One way to reason about these rules objectively is to relate them to how they influence the five metrics of learnability, efficiency, memorability, errors, and subjective satisfaction
- It remains to be seen whether these rules will converge into the “one, true HCI rulebook”

“One Rule to Rule Them All” — Prevent Errors

- If there is any single golden rule that distinctly rises above the rest, it would be Shneiderman #5: Prevent Errors (a.k.a. Nielsen #8 and #9, Tog #4)
- Consistency and feedback also enjoy multiple appearances in these lists, but they don't have the same bang-for-the-buck as error prevention

Prevent errors

- Make error messages specific, positive in tone, and constructive
- Mistakes and slips (Norman, 1983)
- Correct actions
 - Gray out inappropriate actions
 - Selection rather than freestyle typing
 - Automatic completion
- Complete sequences
 - Single abstract commands
 - Macros and subroutines

Integrating Automation vs. Control

- Sanders and McCormick (1993) suggest that we play to a human being's strengths as opposed to a machine's:
- Avoid routine, tedious, and error-prone tasks — automation
- Focus on making decisions, dealing with the unexpected, and planning for the future — control
- A corollary to control is predictability — we generally don't want the computer to “have a mind of its own”

Integrating Automation vs. Control

- The FAA says it well: “improve system performance, without reducing human involvement” and “train users when to question automation” (2003)
- Automation vs. control grows in significance as anthropomorphic and adaptive user interfaces grow in popularity and sophistication
- Microsoft’s Office Assistants (or sometimes, Microsoft Office itself)
- Assorted “bots” and pseudo natural-language interfaces (online help, search engines)
- “Trained” spam filters
- Amazon and others’ “your store” or “your page” features

Automation and human control

Humans Generally Better

- Sense low-level stimuli
- Detect stimuli in noisy background
- Recognize constant patterns in varying situations
- Sense unusual and unexpected events
- Remember principles and strategies
- Retrieve pertinent details without a priori connection
- Draw on experience and adapt decisions to situation
- Select alternatives if original approach fails
- Reason inductively: generalize from observations
- Act in unanticipated emergencies and novel situations
- Apply principles to solve varied problems
- Make subjective evaluations
- Develop new solutions
- Concentrate on important tasks when overload occurs
- Adapt physical response to changes in situation

Machines Generally Better

- Sense stimuli outside human's range
- Count or measure physical quantities
- Store quantities of coded information accurately
- Monitor prespecified events, especially infrequent ones
- Make rapid and consistent responses to input signals
- Recall quantities of detailed information accurately
- Process quantitative data in prespecified ways
- Reason deductively: infer from a general principle
- Perform repetitive preprogrammed actions reliably
- Exert great, highly controlled physical force
- Perform several activities simultaneously
- Maintain operations under heavy information load
- Maintain performance over extended periods of time