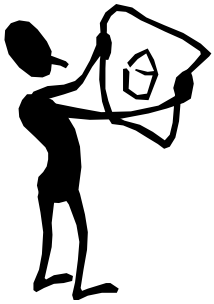
Graphical User Interfaces

Design and usability



Saul Greenberg

Professor
University of Calgary

Moore's Law

Computer abilities

transistors
speed
discs
cost

1950 1990 2030

Slide idea by Bill Buxton Saul Greenberg

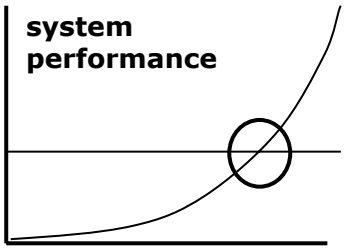
Psychology

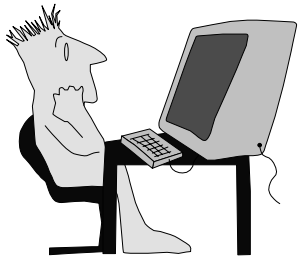
human abilities

2000BC 1950 1990 2030

Slide idea by Bill Buxton Saul Greenberg

Where is the bottleneck?





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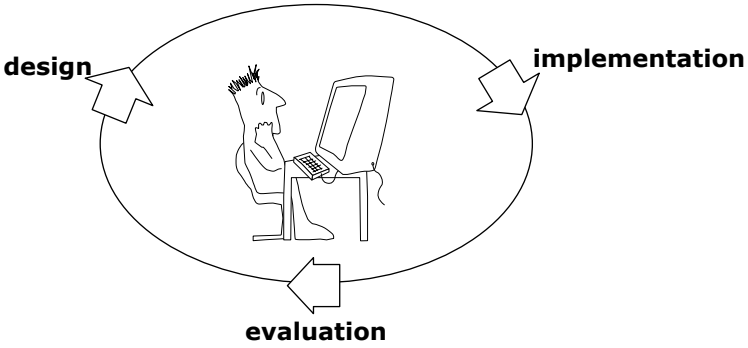
Human Computer Interaction

A discipline concerned with the



of interactive computing systems for human use

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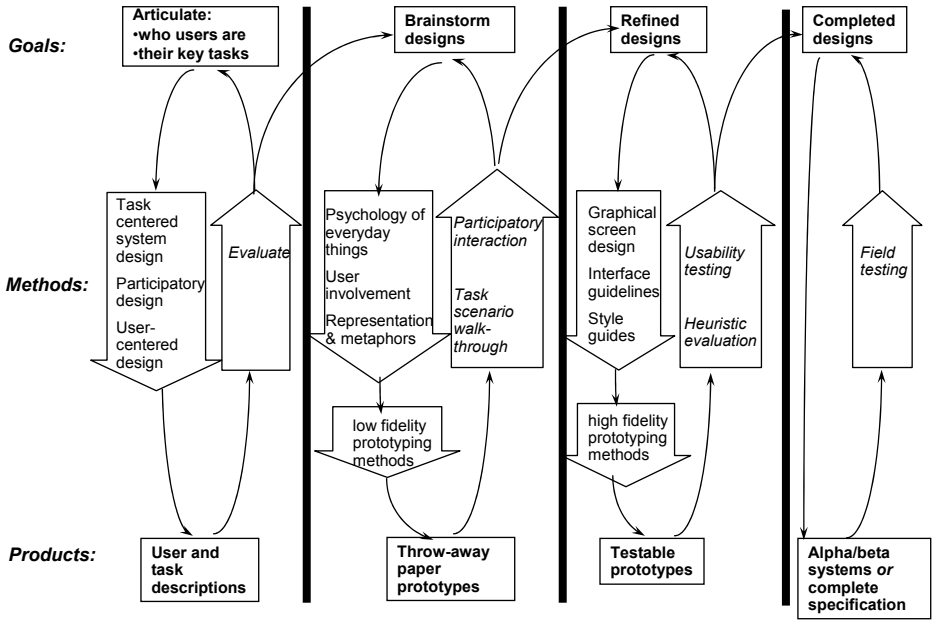
An interface design process



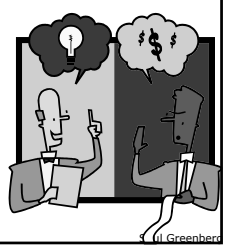
Why an interface design process?

63% of large software projects go over cost

- managers gave four usability-related reasons
  - users requested changes
  - overlooked tasks
  - users did not understand their own requirements
  - insufficient user-developer communication and understanding

Usability engineering *is* software engineering

- pay a little now, or pay a lot later!
- far too easy to jump into detailed design that is:
  - founded on incorrect requirements
  - has inappropriate dialogue flow
  - is not easily used
  - is never tested until it is too late



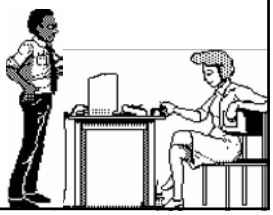
Day 1: The Interface Design Process

Understanding users and their tasks

- Task-centered system design
  - how to develop task examples
  - how to evaluate designs through a task-centered walk-through

Designing with the user

- User centered design and prototyping
  - methods for designing with the user
  - low and medium fidelity prototyping
- Evaluating interfaces with users
  - the role of evaluation in interface design
  - how to observe people using systems to detect interface problems



Day 2: Graphical Design Foundations

Designing visual interfaces

- Psychopathology/psychology of everyday things
  - what makes visual design work?
- Beyond screen design
  - representations and metaphors
- Graphical screen design
  - the placement of interface components on a screen

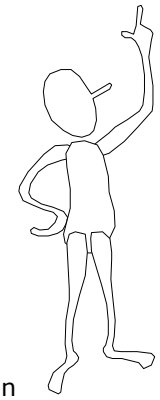
Principles for design (optional)

- Design principles, guidelines, and usability heuristics
  - using guidelines to design and discover usability problems

Objectives

At the end of this course, you will know

- methods for grounding your design in reality
- methods for prototyping visual applications
- methods for evaluating interface quality
- fundamentals of screen design and representations
- how to apply guidelines to interface design
- have sufficient background to continue your education



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How you can evaluate yourselves

On your next project involving interface design...

- create a user- and task-centered requirements document
- follow iterative interface design with the end user's involvement through paper, screen and system prototypes
- apply guidelines to nuances of design
- evaluate design throughout the entire process

Saul Greenberg

Excellent Books on Gui Design

Understanding design

- Norman (1988): The Design of Everyday Things

Texts

- Baecker, Grudin, Buxton, and Greenberg (1995): Readings in HCI
- Preece (1994): Human Computer Interaction

Usability engineering

- Nielsen (1993): Usability Engineering
- Lewis & Reiman (1993): Task Centered User Interface Design

Graphical screen design

- Mullet and Sano: Designing visual interfaces
- Tufte (1983): Visual display of quantitative information
- Cooper (1994): About face
- Norman: Things that make us smart