Today's Agenda

- What is HCI (continued)
- Goals of HCI
- Interactive design process

Reminder

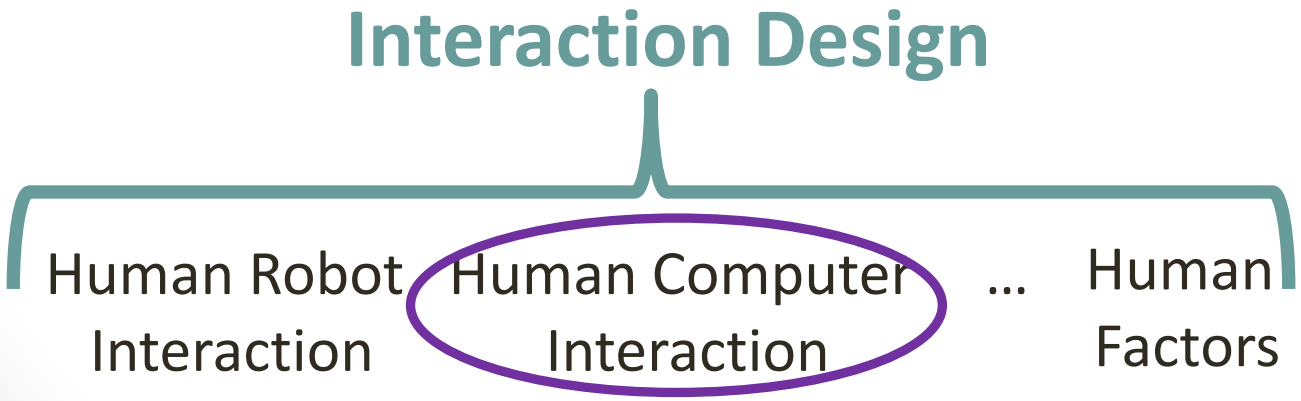
Self Essay

Due in Blackboard: 11:59pm EST, Friday, Sep. 1

Review: What is HCI?

- **Interaction Design** focuses on designing **interactive products** to support the way **people communicate and interact** in their everyday and working lives

- **HCI** "concerned with the design, evaluation, and implementation of **interactive computing systems for human use".**"



Why do You Think HCI Matters?

- Good designs
  - What do you like
- Bad designs
  - What's wrong with them
  - How can we improve them

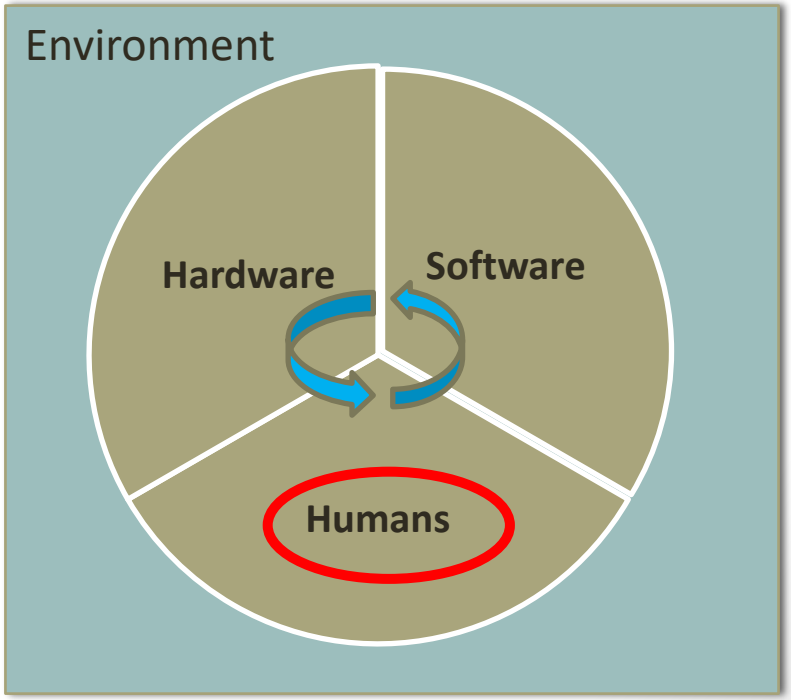
Why do You Think HCI Matters?

Common features of good designs

- Easy to learn
- Effective to use
- Enjoyable user experience
  - Reduce negative aspects: frustration, annoyance, boredom
  - Improve positive aspects: enjoyment, engagement, etc.

HCI: Approach to Understanding a System

- ***A system*** is a collection of entities that interact to accomplish a goal/task which could not be obtained independently
- System optimization of HCI should include all elements:
  - Hardware
  - Software
  - Humans
  - Environment



Human-Computer Interaction

- Investigate the entire system
  - Environment variables (e.g., context)
  - Person variables (e.g., physical, sensory, cognitive)
  - Technology variables (e.g., software/hardware)
- Propose user-friendly design
- **<u>Question</u>: How do we know if a design is "user friendly"?**

Human-Computer Interaction

Designing for human use

Enhance user experience (UX or UXD)

Understanding Users

- Who is going to use
- How the systems are going to be used
- Where/when the systems are going to be used

Understanding Users (ID p.7)

Consider

- Users' capabilities and limitations
- How to help people with the way they currently do things
- How to provide quality user experience
- How to involve users into design
- Using tried and tested user-based technologies in design process

Potential solutions

- Design
- Training
- Technology development

Goals of HCI

- Usability goals
- User experience goals (UX goals)

Goals of HCI – Usability Goals (ID p. 19)

Usability ensures that interactive products are:

1. Easy to use (effectiveness)
2. Efficient to use (efficiency)
3. Safe to use (safety)
4. Having good utility (utility)
5. Easy to learn (learnability)
6. Easy to remember how to use (memorability)

Fundamental to the quality of UX

Easier Said Than Done…

- Why is asking “is it easy to learn” not a helpful question?
  - Can you think of more specific questions about learnability you could ask?

- This is what you will learn in this class. HOW to ask the right questions (and investigate the answers)

Goals of HCI – UX Goals (Table 1.1 ID)

UX goals cover a range of emotions and felt experience

Related to usability

- Desirable aspects
  - Satisfying, enjoyable, exciting,
  - Helpful, engaging, …
- Undesirable aspects
  - Boring, frustrating, unpleasant, …

Beyond usability - Persuasion or influence

Most of them are subjective

Goals for This Class

- Learn about **people** (perception, thinking, deciding, moving, doing)
- Learn how to **apply that knowledge** to the design of interfaces, systems, products, processes
- Learn how to **assess** a system for human factors
- Learn how to **fix** human factor problems
- Learn how to **design** for the user

Questions thus far?

Fundamental Beliefs

Things are built to serve people

- NOT vice versa
- Avoid demanding that the user change for the technology

Fundamental Beliefs

Individual differences exist

- *Appreciate* the design implications of these differences

Fundamental Beliefs

For whom do you design?

- Everyone? Impossible
- Average? Exclude half of audience
- 95%? Still may miss a lot

Can't accommodate everyone

- So we do our best and try to make INFORMED design decisions
  - e.g., "who would benefit the most?"

Fundamental Beliefs

Design influences behavior and well being

- E.g., procedure for walking through doors

Fundamental Beliefs

Empirical data will provide the answers!!

- Reliance on scientific method, testing hypotheses, collecting data on human behavior

What HCI is Not

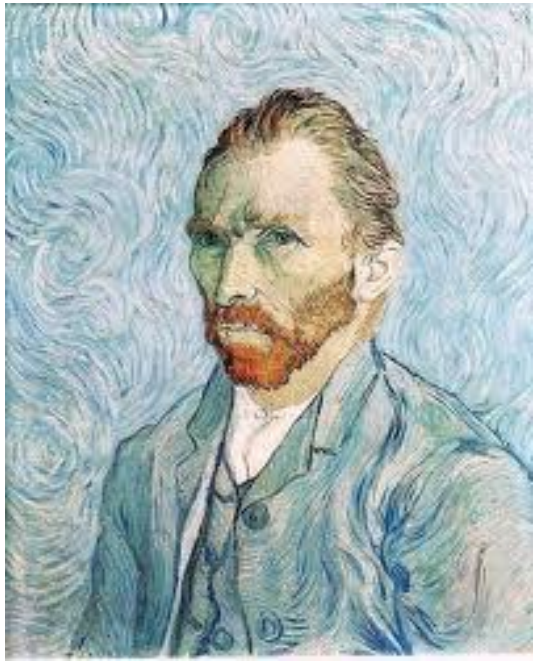
Not just applying checklists and guidelines

- Can help, but not the whole story

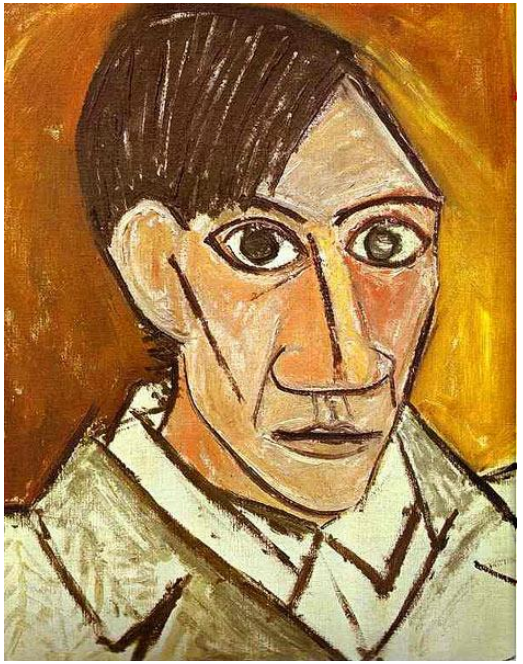
What HCI is Not

Not using oneself as the model for designing things

- Know your real users, focus on variation in humans



Van Gogh



Picasso

What HCI is Not

Not using oneself as the model for designing things

- Designers are NOT representative of the user population for whom they are designing
- Don’t expect users to think or act like you
- People vary in both physical attributes and mental/cognitive attributes

What HCI is Not

Not just common sense

- If it was, every product would be easy to use!

Questions thus far?

Okay…. Okay…

- Now you know what HCI is and is not.

- How do you APPLY HCI?
  - First step is understanding the design process

Interactive Design Process

Four basic activities:

- Establish requirements
- Design alternatives
- Make prototype
- Evaluate

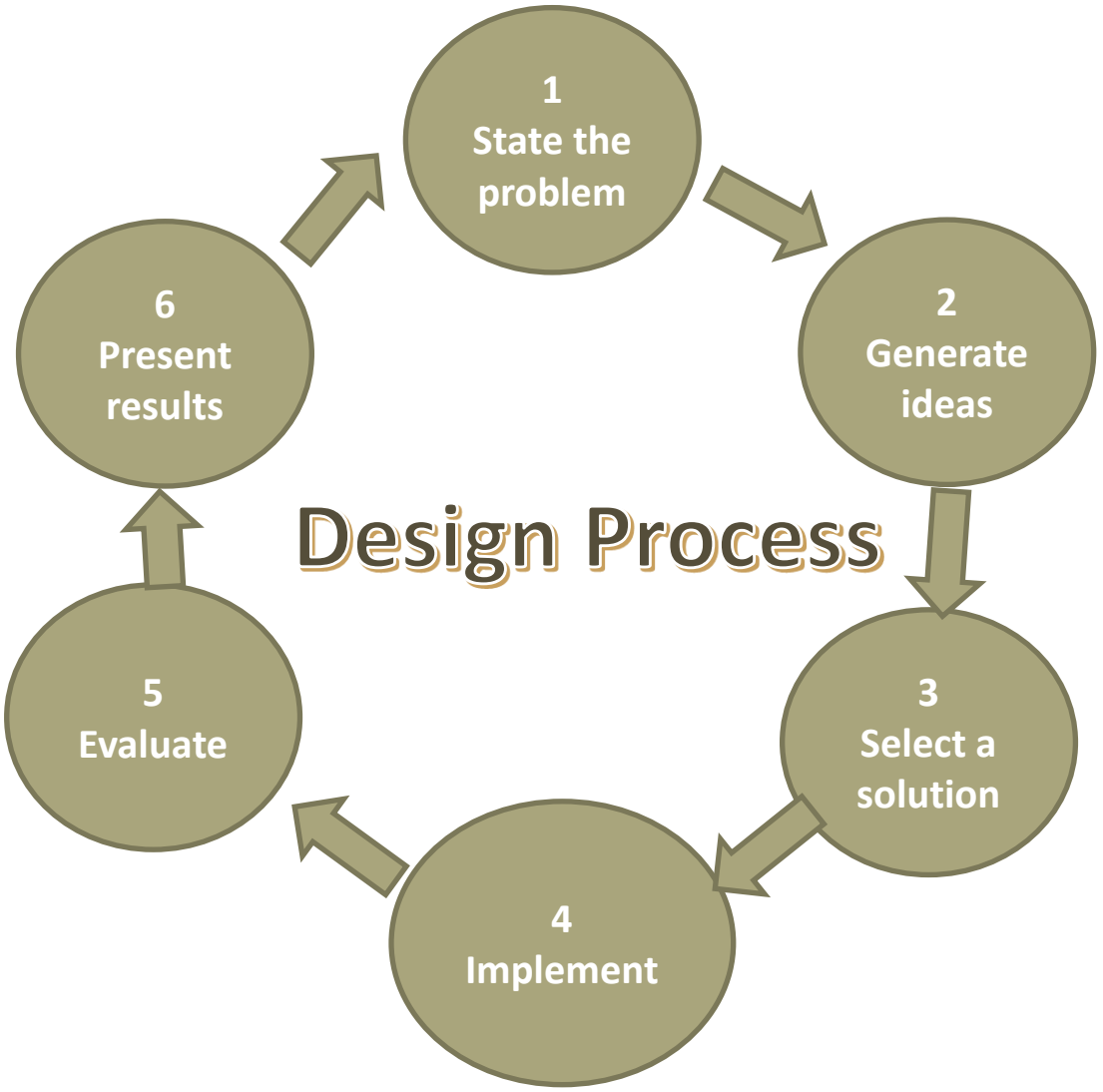
The process is executed iteratively

System Design Process

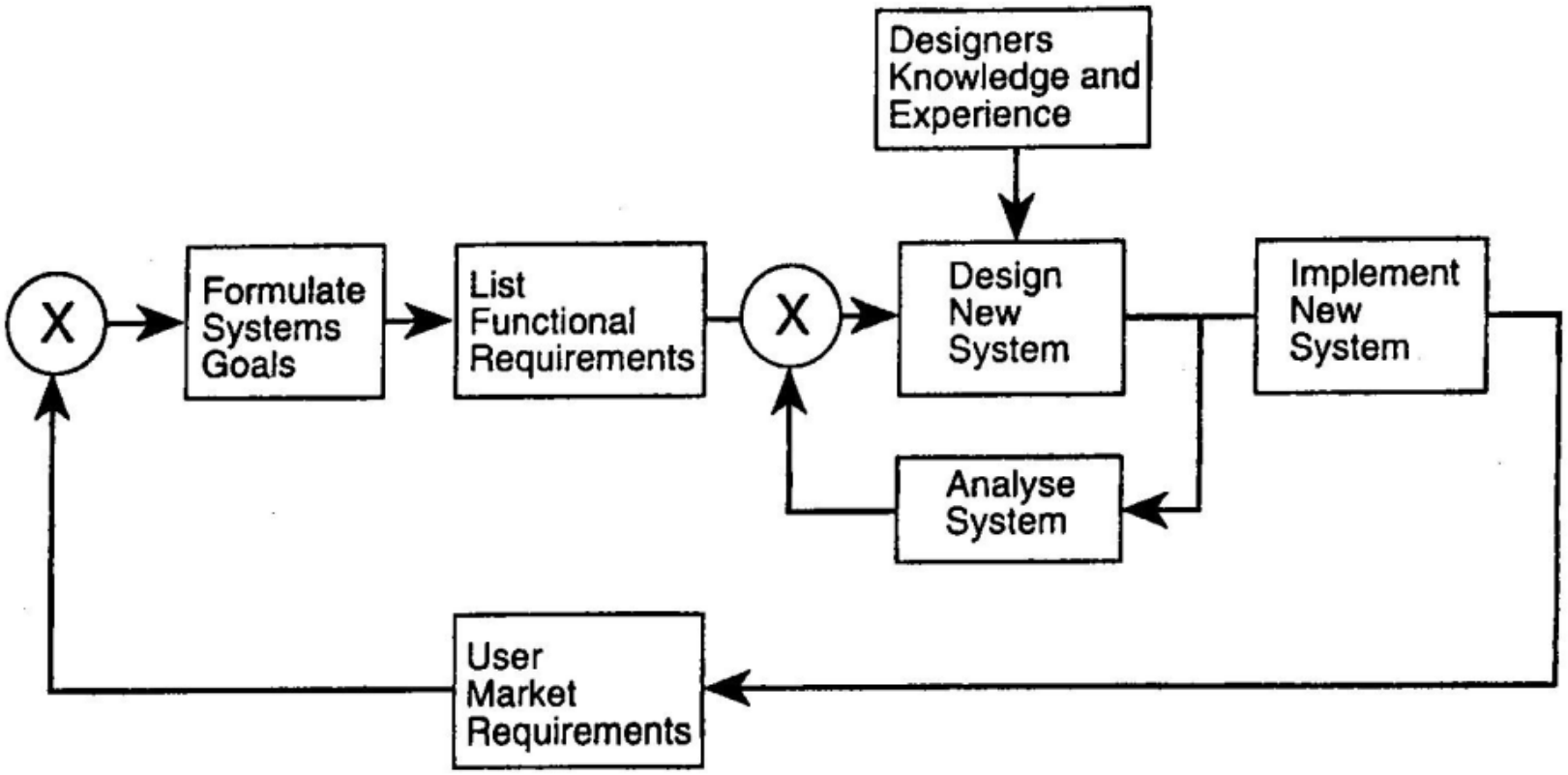
Characteristics of the process

- Work from general to specific
- Design options have to satisfy system requirements
- Constraints (space, time, & cost)
- Iteration

Process Cycle

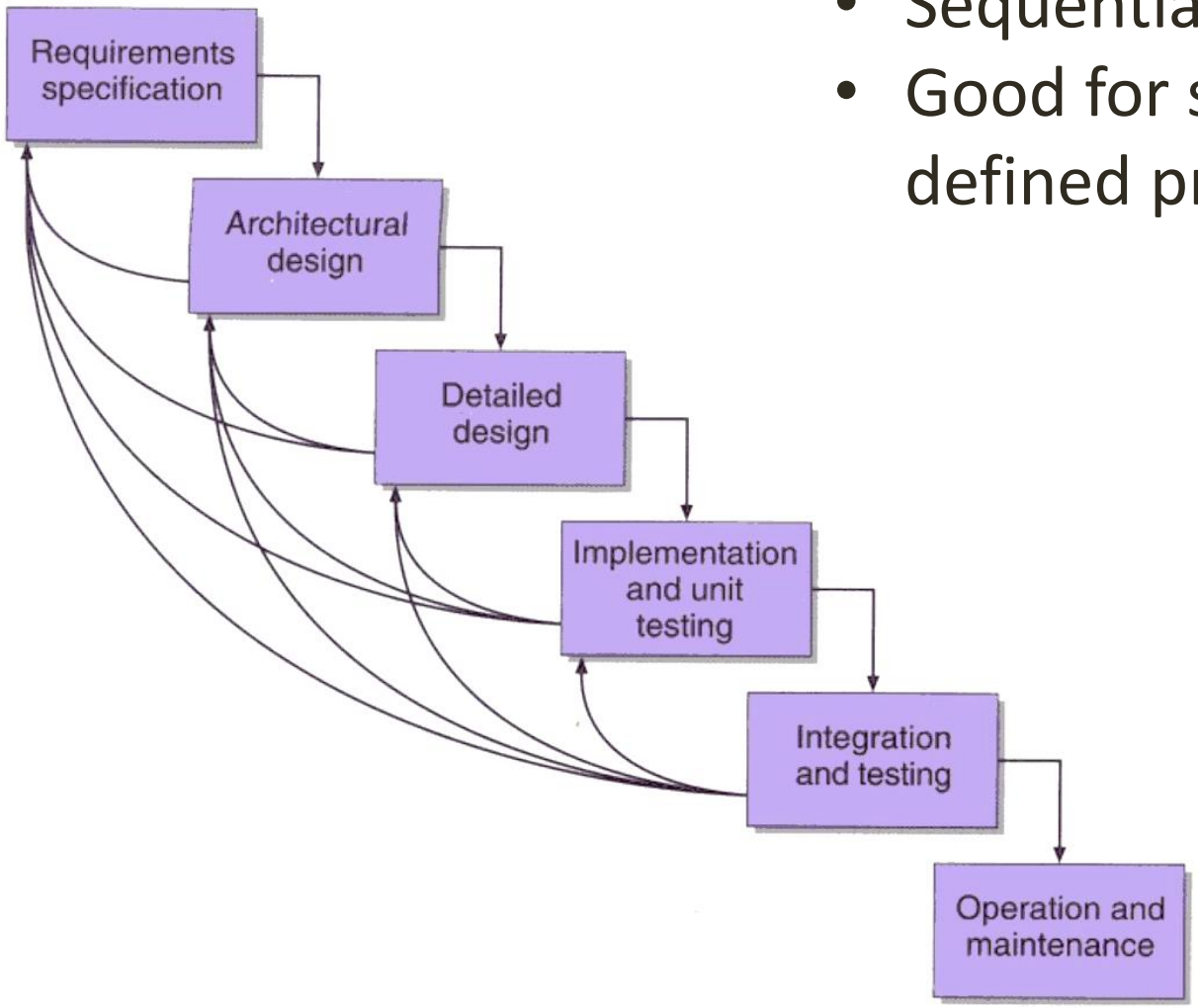


Simple Model of the Design Process



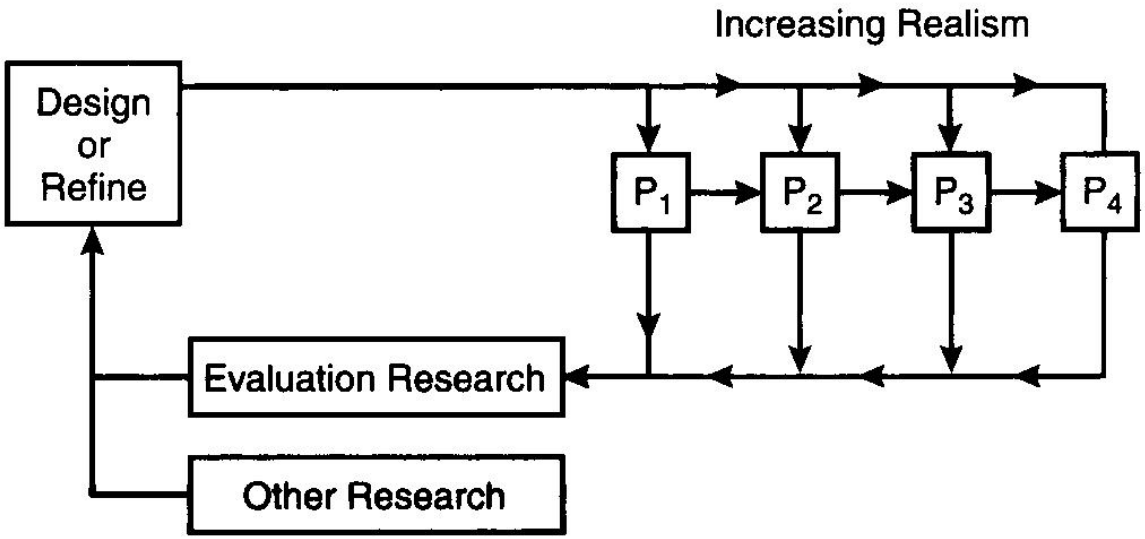
Procedure for design and redesign of a system.

Waterfall Model



- Sequential
- Good for small, well defined problems

Model with Iteration



Iteration cycles of design and evaluation. P represents different phases of a product design.

Process Cycle

The Design Cycle

- The details of these different design cycle examples are less important than the idea that design is **ITERATIVE**!

- How do you begin?
  - Each design starts with identifying the system's purpose and system requirements…

Let's think a little more about this….

Identify User Requirements

Who are the users?

- For each user, what is his/her….
  - Age?
  - Gender?
  - Education?
  - Reading ability?
  - Capabilities and limitations?
  - Preferences?

Identify Functions (Purpose)?

What are the major **functions** to be performed by the **system**?

- General (not technology)
  - Example: ATM
    - Deposit money into bank account
    - Withdraw money from bank account

Identify Functions (Purpose)?

What are the major **functions** to be performed by the **system**?

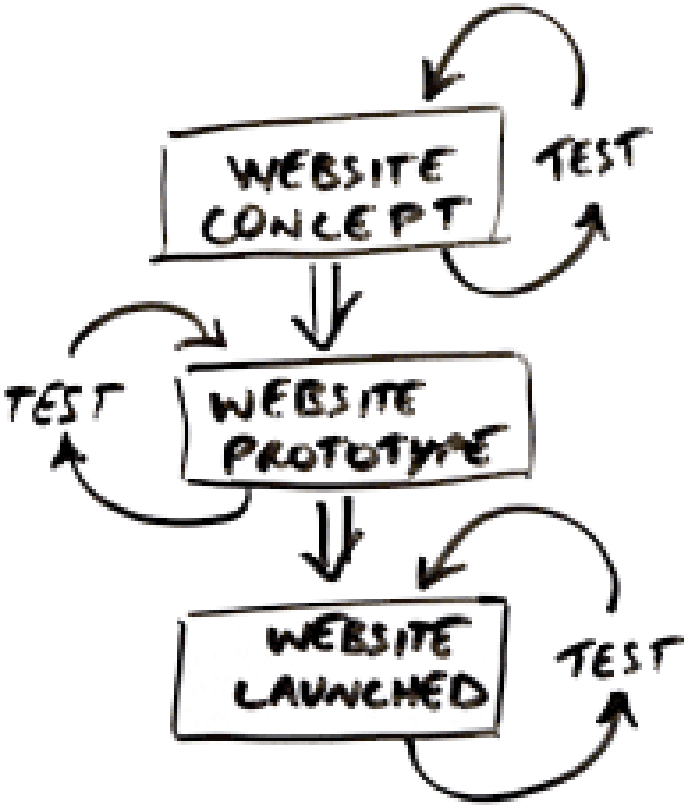
- General categories (not technology)

Identify Environment

- In what environmental conditions will the system be used?
- Any existing constraints?
  - Size, access, time, etc.
- What additional demands does the environment place on the design requirements?

After You Identify System Requirements….

- Develop concept, prototype, launch, and evaluate!!



Questions thus far?

Testing Oftentimes Includes Users!

- Yes, real live people!
- Testing human subjects
  - requires ethical considerations

Developer watching videotape of usability test.