

Human Computer Interaction (HCI, HCC)

THE PROCESS

A solid orange horizontal bar at the bottom of the slide.

HCI Design

It is a process

- Goal-directed
- Problem solving
- Informed by:
 - Intended use
 - Target domain
 - Materials
 - Cost
 - Feasibility

Generating alternatives and choosing among them is paramount

HCI Design

Many roles (HCI designers, graphic designers/artists, tech writers, user reps, management reps, programmers)

Determining users' needs, requirements

Must precede coding

Adhere to standard, accepted guidelines (for process, not necessarily design)

Evaluation throughout process

HCI Design

Reinforcing the role of the user

- Importance of involving users
- Degrees of user involvement
- What is a user-centered approach?
- Four basic activities

Importance of involving users

Expectation management

- Realistic expectations from the beginning, on both parts
- No surprises, and therefore no disappointments
- Timely training
- Communication, but no hype

Ownership

- The users become active stakeholders
- More likely to forgive or accept problems and limitations
- Can make or break the acceptance, use and success of a product

Degrees of user involvement

Member of the design team

- Full-time: constant input, but lose touch with actual / all users
- Part-time: intermittent input, and stressful to the user
- Short term: Inconsistent during project duration
- Long term: Consistent, but can also lose touch with actual / all users

Project updates and announcements

- Reach a wider cross-section of users
- Can be too one-way, need to ensure bi-directional flow of info

User involvement after product is released

Combination of these approaches

What is a user-centered approach?

Based on:

- Early focus on users and tasks:
 - Cognitive
 - Behavioral
 - Anthropomorphic
 - Attitude
- Empirical measurement
 - Observe, record, and analyze user reactions and performance to metrics (Scenarios, manuals, simulations, prototypes)
- Iterative design
 - During user testing, find and fix issues, then re-test

Four basic activities

Establish requirements

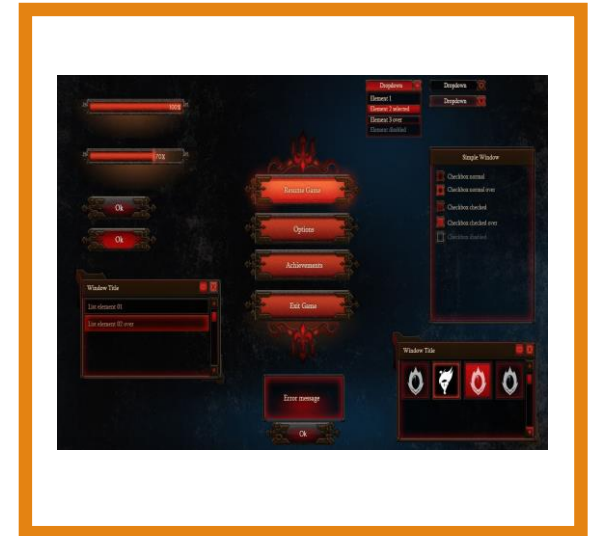
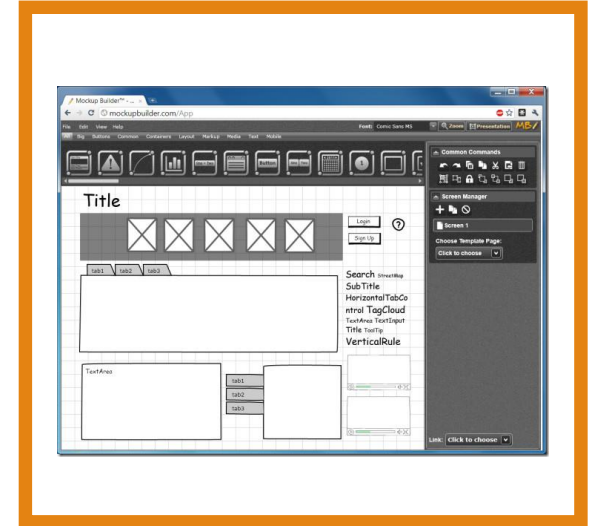
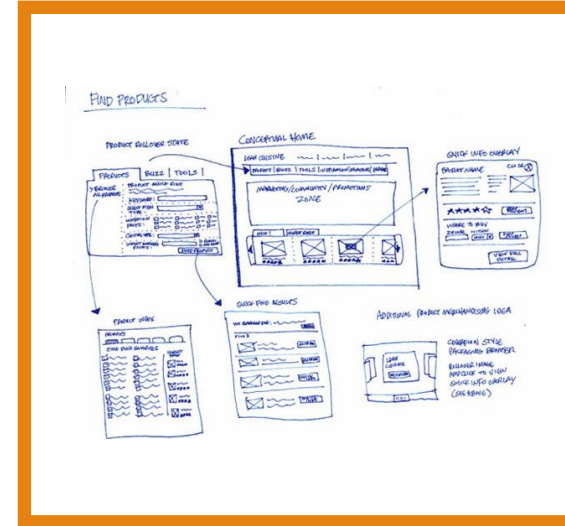
Design alternatives

- Design Jam
- Brainstorm
- Sketch (maybe)

Develop prototypes

- Sketch
- Wireframe
- Mockup
- Prototype

Evaluate



Four basic activities

Establish requirements

- What are you doing
- Why are you doing it
- Who are you doing it for
 - What is their goal
 - What are their wants
 - What are their needs

Four basic activities

Design alternatives

- Based on previous activity
- Two distinct yet related sub-activities
 - Conceptual design
 - Concrete design
- Alternatives are always considered, all the time
- How do you create these alternatives? Where do you begin?
 - Brainstorm (Group / Individual)
 - Random sketches
 - The Drawer / Inspirations
 - Design Jam

Four basic activities

Prototyping

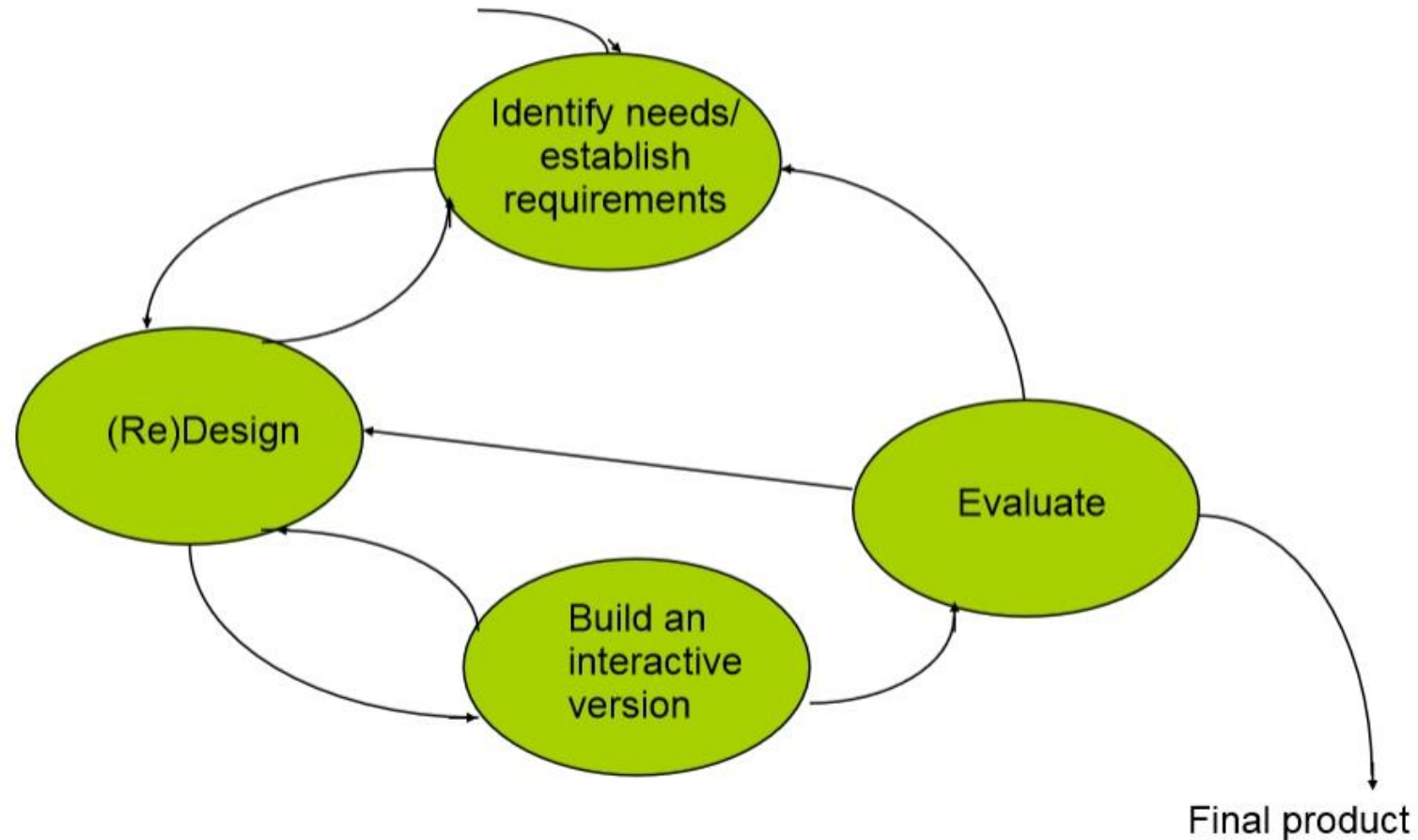
- Very powerful method of user feedback
- Many different types
 - Functionality is not always necessary
 - Can be conceptual or concrete
- Can be done at various stages

Four basic activities

Evaluating

- Different types of evaluation
- Can take place at different times, with different people

Interaction design lifecycle (Preece)



HCI Design process (McCracken)

Needs analysis

User and task analysis

Functional analysis

Requirements analysis

Setting usability specifications

Design

Prototyping

Evaluation

HCI Design

Some practical issues

- Who are the users?
- What are 'needs'?
- Where do we find alternatives?
- How to choose among alternatives
- How to integrate interaction design activities in other lifecycle models?

Who are the users and stakeholders?

Not as obvious as it might seem

- Those who interact directly with the product
- Those who manage direct users
- Those who receive output from the product
- Those who make decisions involving, or because of, the product
- Those who make the purchasing decisions
- Those who use competitor's products

Three categories of user (Eason, 1987)

- Primary
- Secondary
- Tertiary

Who are the users and stakeholders?

Consider who the users and stakeholders might be for a:

- Grocery store
- Movie theater
- Commercial airline
- Concert hall
- Funeral parlor
- Hotel

- How can you vest them?

What are user needs?

Users don't always know what is possible

- Sometimes, not often

They often can't tell you what they need to achieve their goal

- Back to goal and task analysis

So look at existing tasks

- The context
- Required information
- Who collaborates to achieve the goal?
- Why is the task achieved the way it is?

Envisioned tasks

- Can be rooted in existing behavior
- Can be described as future scenarios

Generating alternatives

Humans normally stick to what works / what's familiar

- Previous experience
- Familiarity
- Brand loyalty
- Social adherence

Considering alternatives is very important

- This is true in all aspects of design

The designer's job, in part, is to think creatively

How?

- Many ways
- Many sources of inspiration

How to select among alternatives

Evaluation of prototypes with users and peers

In some cases, feasibility may not be there

Evaluate in terms of usability goals (which should be monitored throughout the process)

- Effectiveness
- Efficiency
- Safety
- Utility
- Learnability
- Memorability

So:

Four basic activities in the design process:

- Establishing requirements
- Designing alternatives
- Prototyping
- Evaluating

User-centered design is founded on three principles

- Early focus on users and tasks
 - Empirical measurement using quantifiable and measurable usability criteria
 - Iterative design
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