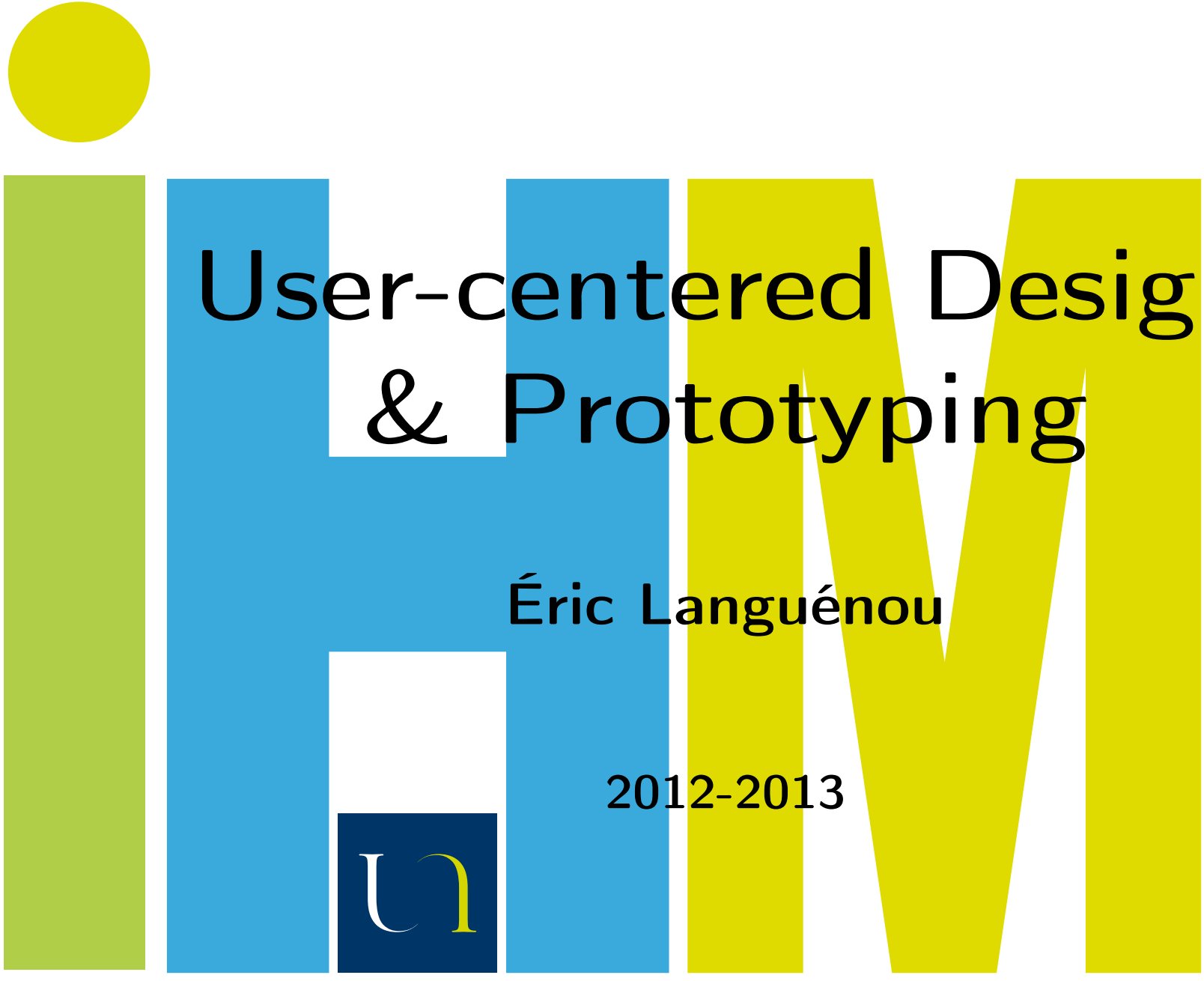


User-centered Design & Prototyping

Éric Languénou

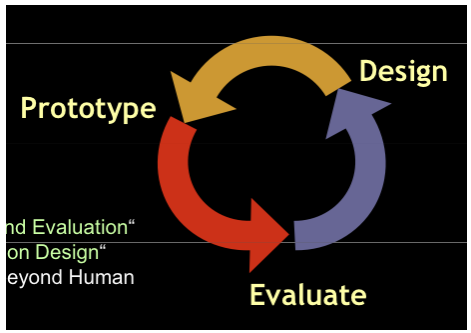
2012-2013

UNIVERSITÉ DE NANTES

User-centered Iterative Design

UNIVERSITÉ DE NANTES

- Developers working with target users
- Think of the world in users' terms
- Identify usability and user experience goals
- Understanding work process
- Not technology-centered/feature driven
- Iterate at every stage

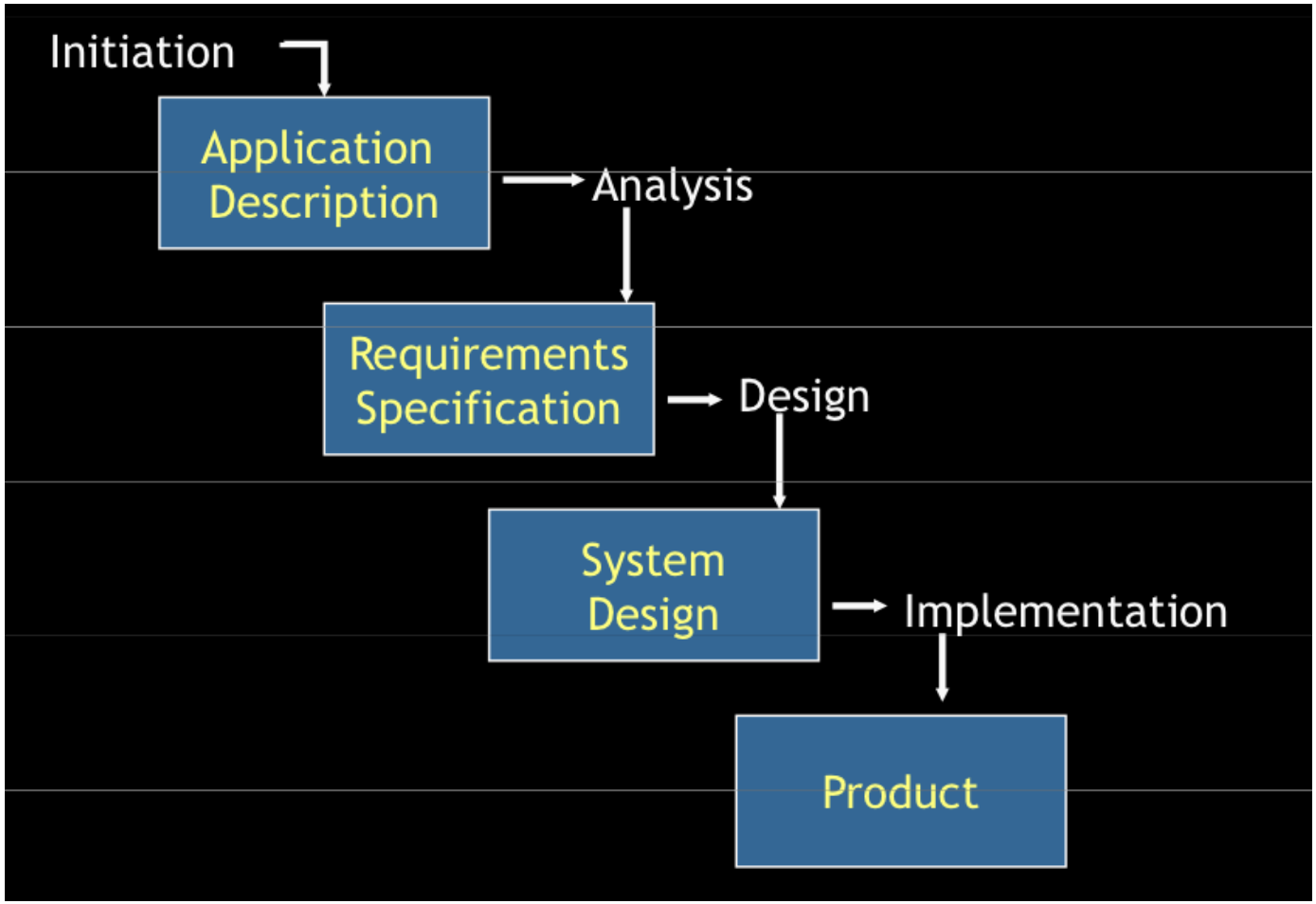


Ref:

- CS, UC Berkeley, "User Interface Design, Prototyping, and Evaluation"
- CS, Stanford, "Introduction to Human Computer Interaction Design"
- J. Preece, Y. Rogers, and H. Sharp, "Interaction Design beyond Human Computer Interaction", John Wiley & Sons, 2002.

Waterfall Model (Soft. Eng.) Initiation

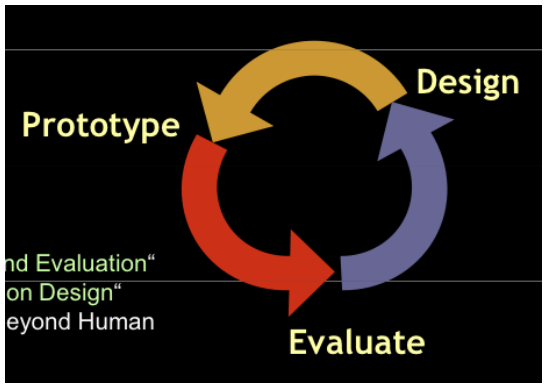
UNIVERSITÉ DE NANTES

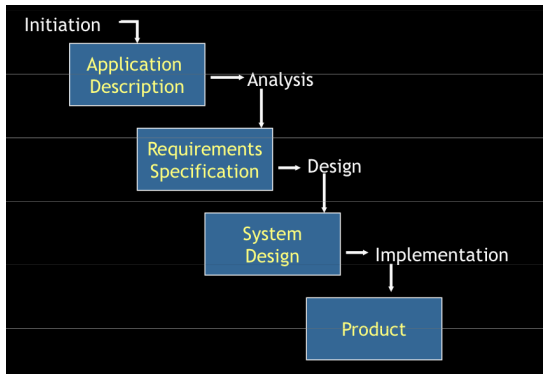


Waterfall vs. Iterative User-Centered Design

UNIVERSITÉ DE NANTES

- Focus differs
- WF lacks users' perspective
- customer is the "client"
- WF has no feedback
- high cost of fixing errors
- increases by factor of 10 at each stage
- iterative design finds these earlier





User-centered Iterative Design

UNIVERSITÉ DE NANTES

- Nearly 25% of all applications projects fail. Why?
  - overrun budgets & management pulls the plug
  - others complete, but are too hard to learn/use
- Solution is user-centered design. Why?
  - easier to learn & use products sell better
  - can help keep a product on/ahead of schedule
  - training costs reduced

Design

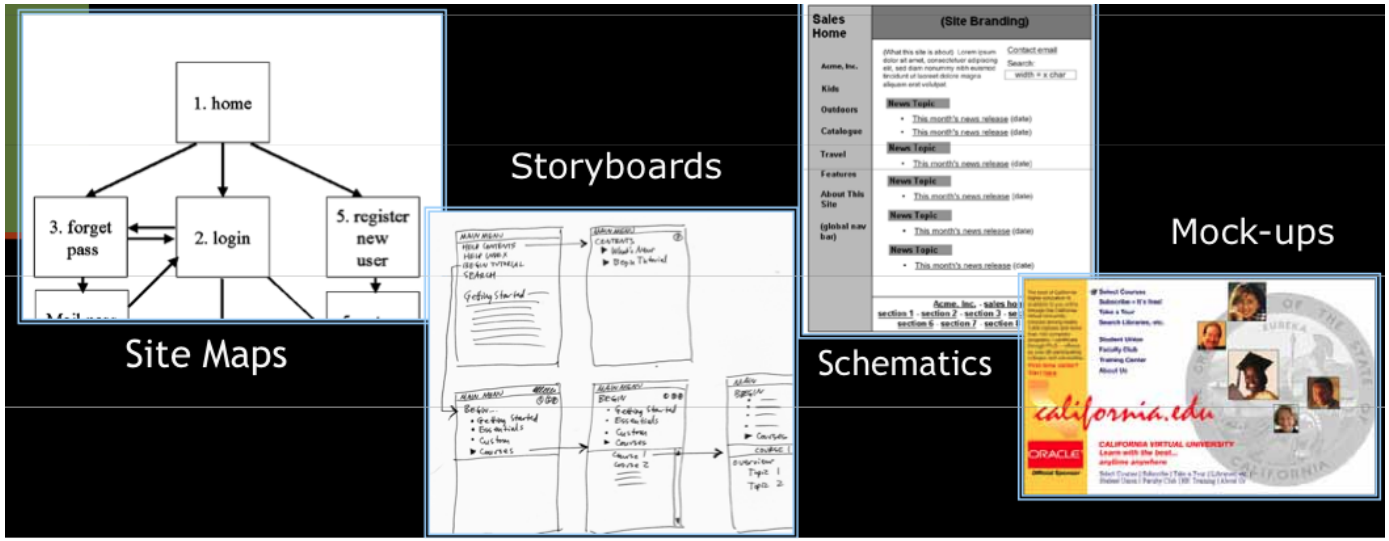
UNIVERSITÉ DE NANTES

- Design is driven by requirements
  - what the artifact is for
  - not how it is to be implemented
- A design represents the artifact
  - representations simplify
  - for UIs these include
    - screen sketches or storyboards
    - flow diagrams/outline showing task structure
    - prototypes

Web Design Representations

UNIVERSITÉ DE NANTES

- Designers create representations of sites at multiple levels of detail
- Web sites are iteratively refined at all levels of detail



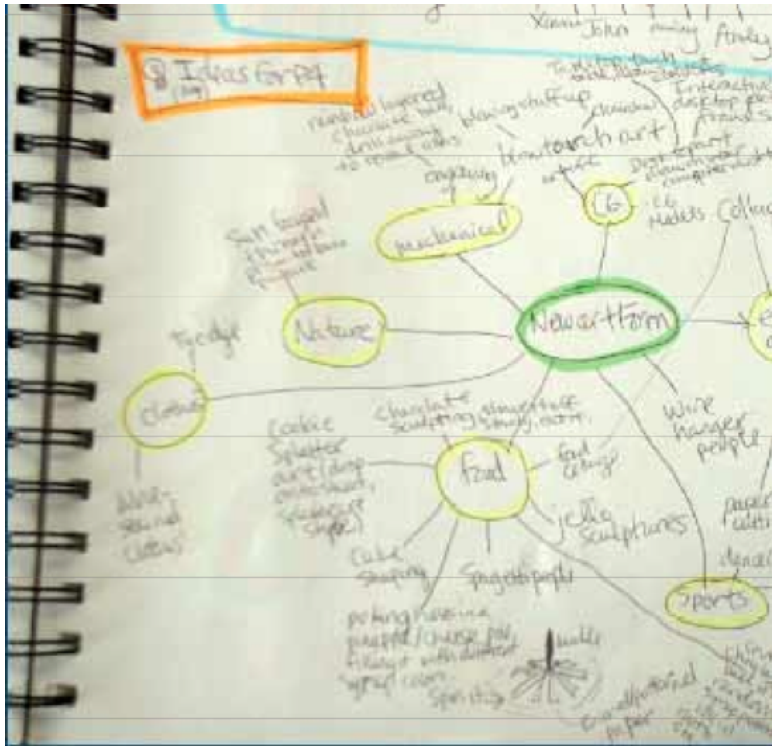
Idea Generation

UNIVERSITÉ DE NANTES

- Brainstorm
  - Group vs. Individual Creativity
  - More Ideas => More Creative => Better
  - Limited Time
  - Keep a Record
- The rules
  - Be visual.
  - Defer judgment.
  - Encourage wild ideas.
  - Build on the ideas of others.
  - Go for quantity.
  - Stay focused on the topic

Idea Logs

UNIVERSITÉ DE NANTES



CCS, Stanford, "Introduction to Human Computer Interaction Design"

Why keep an idea log?

UNIVERSITÉ DE NANTES

- To record your ideas so you won't forget them.
- To hold your ideas so you can evaluate them later .
- To help clarify, tangiblize ideas that are floating around in your head.
- To clear your mind of old ideas so there's space for new ones.
- Because "...one good idea leads to another..."
- To give your ideas the importance they're worthy of.
- For legal reasons.

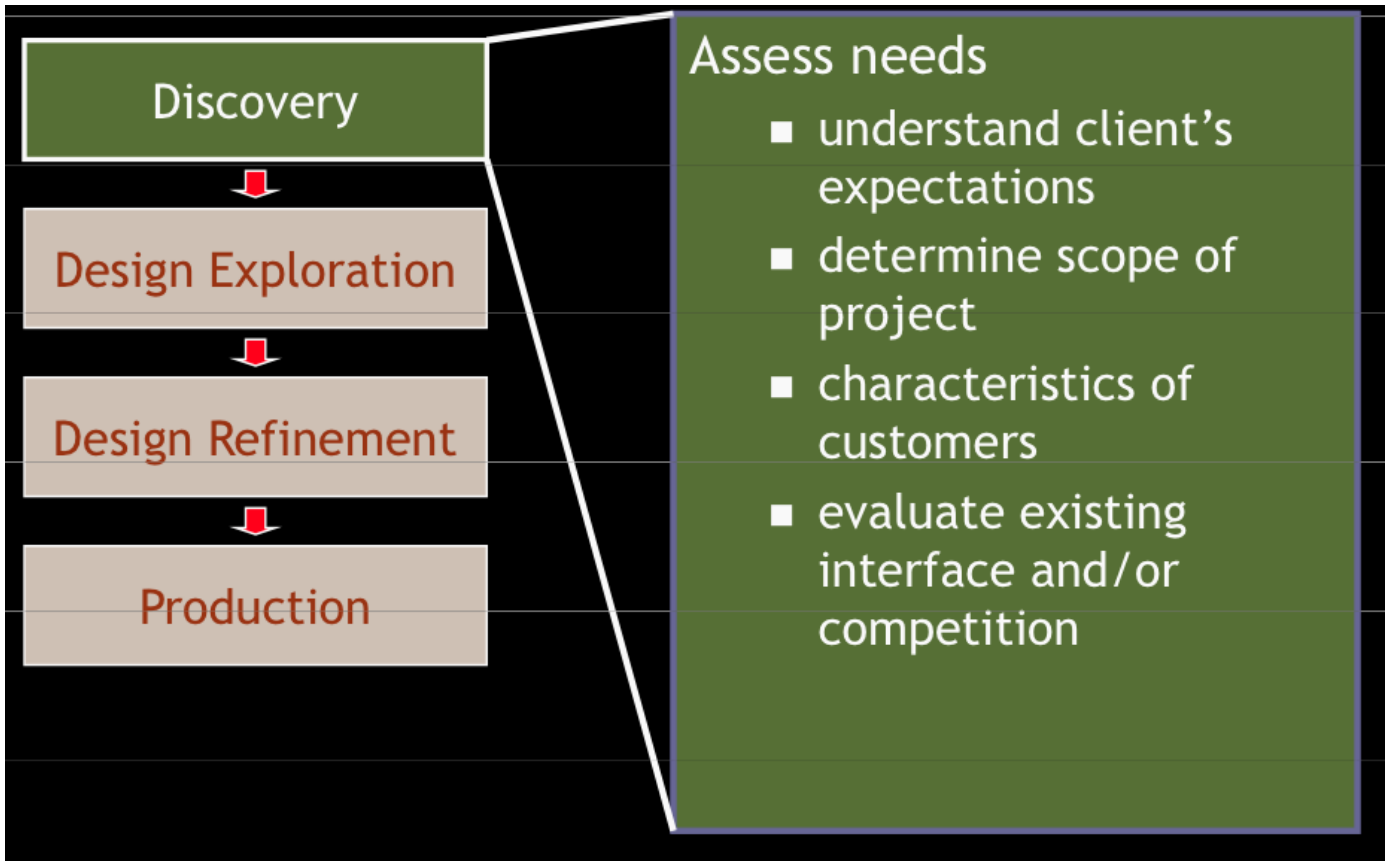
How to keep an idea log?

UNIVERSITÉ DE NANTES

- Use a form which let's you carry it around ..
- Give it some class ? respect your ideas.
- Be visual on purpose; be verbal when it makes sense.
- Use color to clarify, highlight, focus.
- Annotate, comment, editorialize, review your own ideas.
- Use arrows & bubbles to show direction and connectedness.
- Make your log your personal tool, a place you like to spend time.
- Why not initial and date every page? Make it yours!

Design Process: Discovery

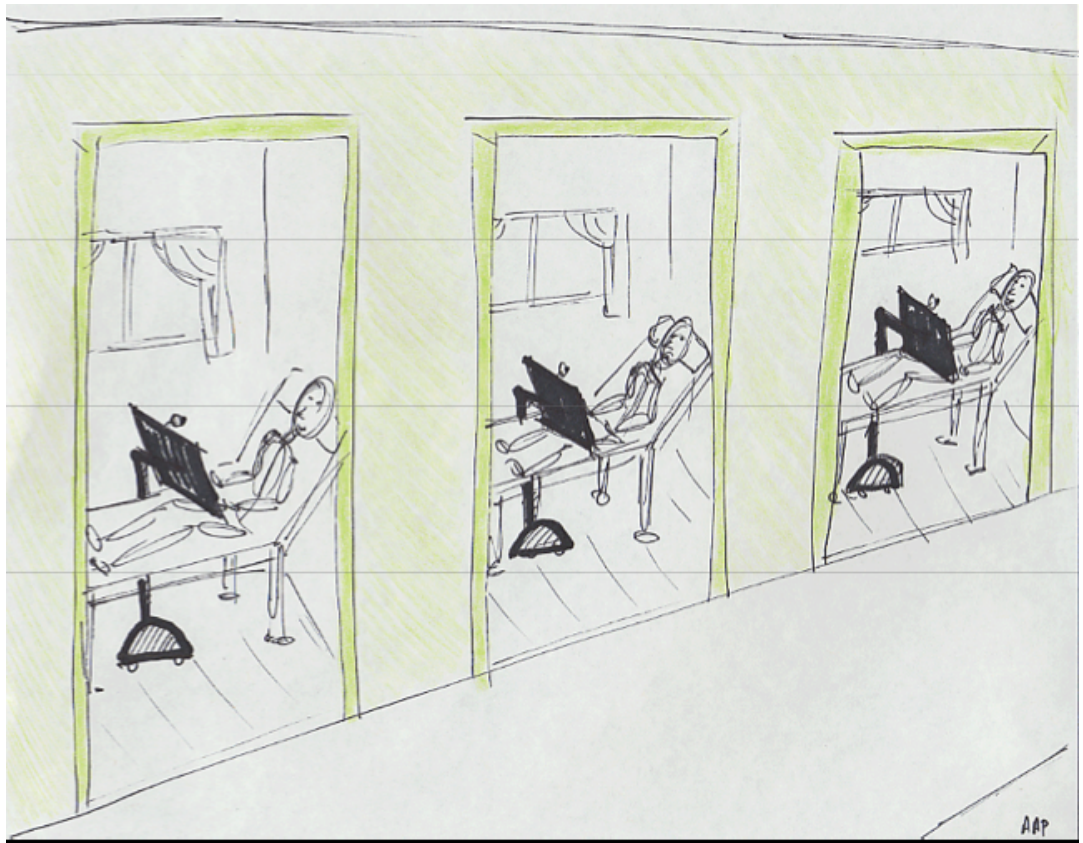
UNIVERSITÉ DE NANTES



Exploring Design Ideas

UNIVERSITÉ DE NANTES

- Sketches



CS, Stanford, "Introduction to Human Computer Interaction Design“

Exploring Design Ideas (cont.)

UNIVERSITÉ DE NANTES

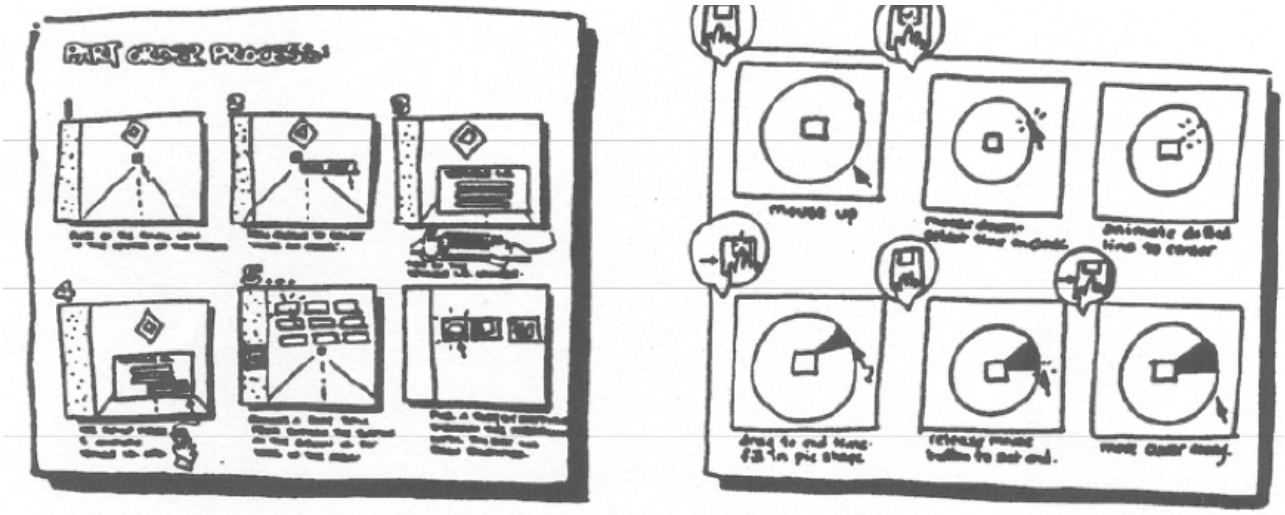
- Storyboards

see `http://www.storyboards-east.com/sb_dismoi.htm`

Exploring Design Ideas (cont.)

UNIVERSITÉ DE NANTES

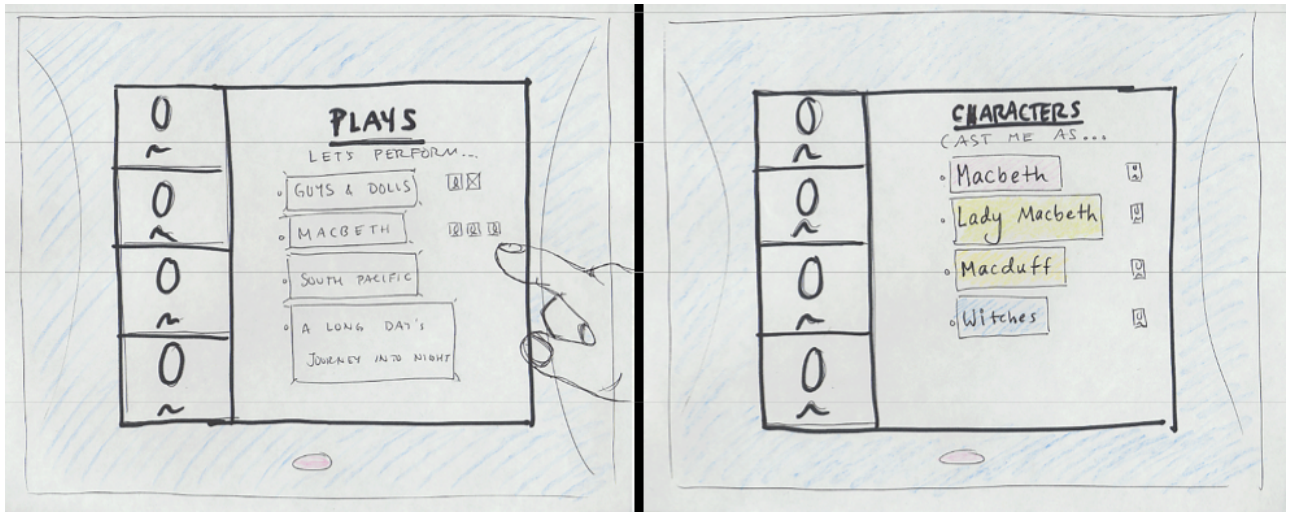
- Storyboards



Exploring Design Ideas (cont.)

UNIVERSITÉ DE NANTES

- Flipbook

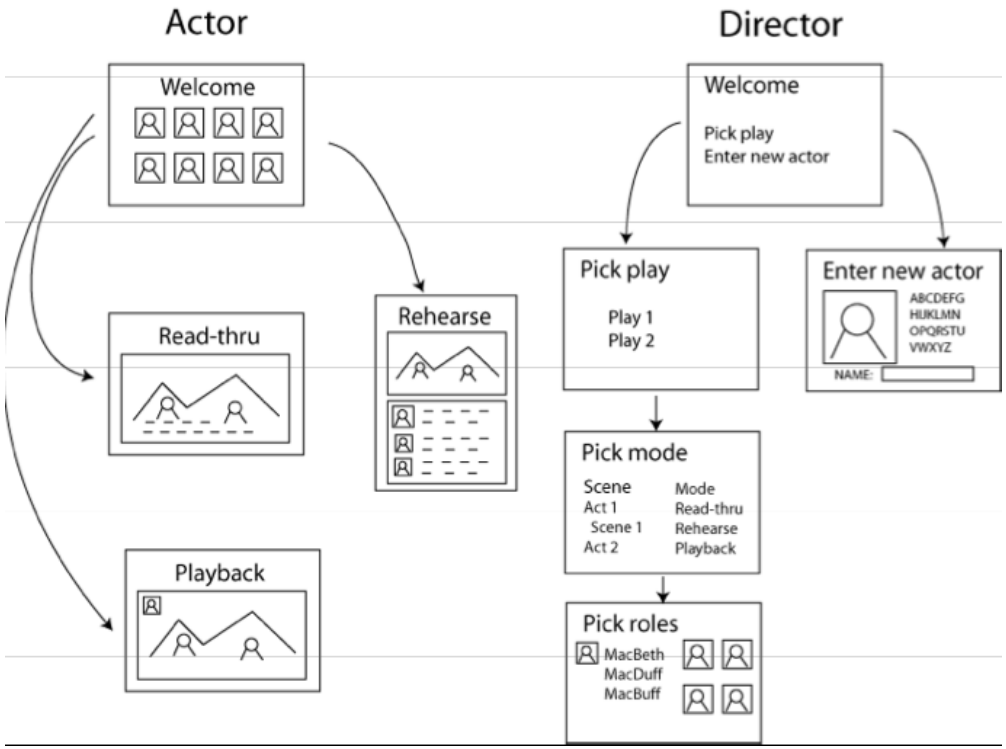


CCS, Stanford, "Introduction to Human Computer Interaction Design"

Exploring Design Ideas (cont.)

UNIVERSITÉ DE NANTES

- Flow Diagrams



Prototyping

UNIVERSITÉ DE NANTES

Refs:

- CS, UC Berkeley, "User Interface Design, Prototyping, and Evaluation"
- CS, Stanford, "Introduction to Human Computer Interaction Design"
- J. Preece, Y. Rogers, and H. Sharp, "Interaction Design beyond Human Computer Interaction", .John Wiley & Sons, 2002.

Why Do We Prototype?

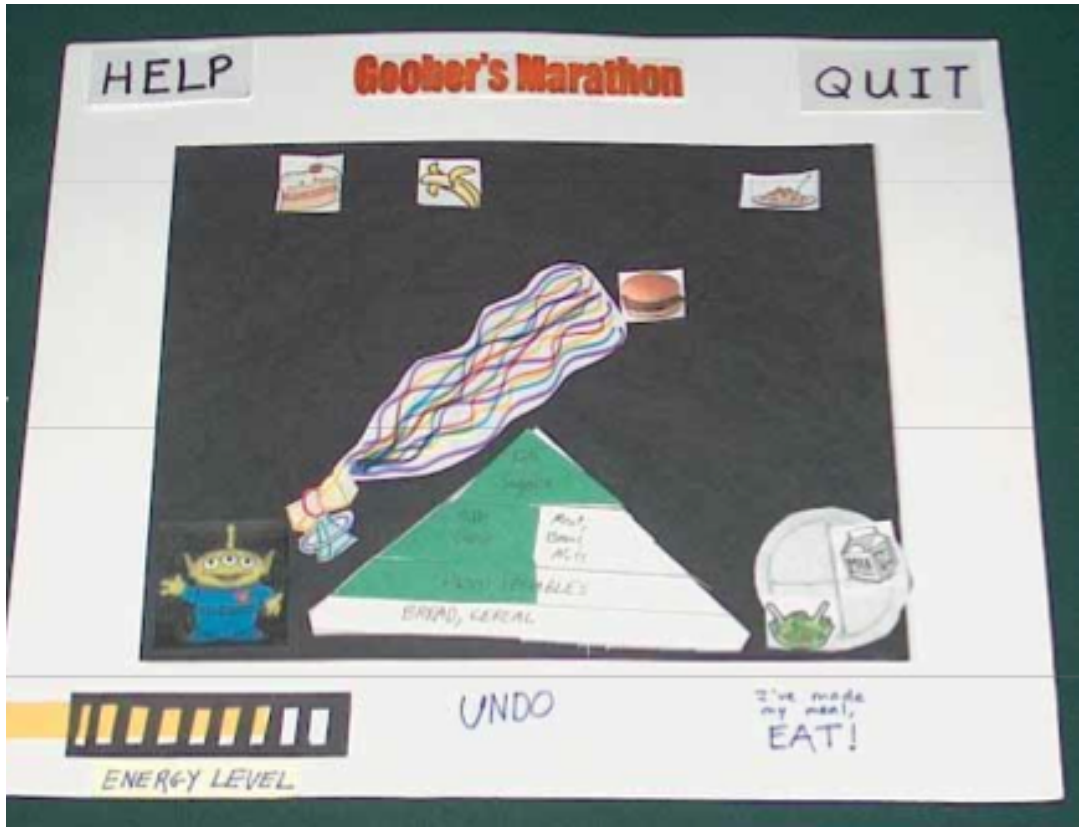
UNIVERSITÉ DE NANTES

- Get feedback on our design faster
  - saves money
- Experiment with alternative designs
- Fix problems before code is written
- Keep the design centered on the customer

Fidelity in Prototyping

UNIVERSITÉ DE NANTES

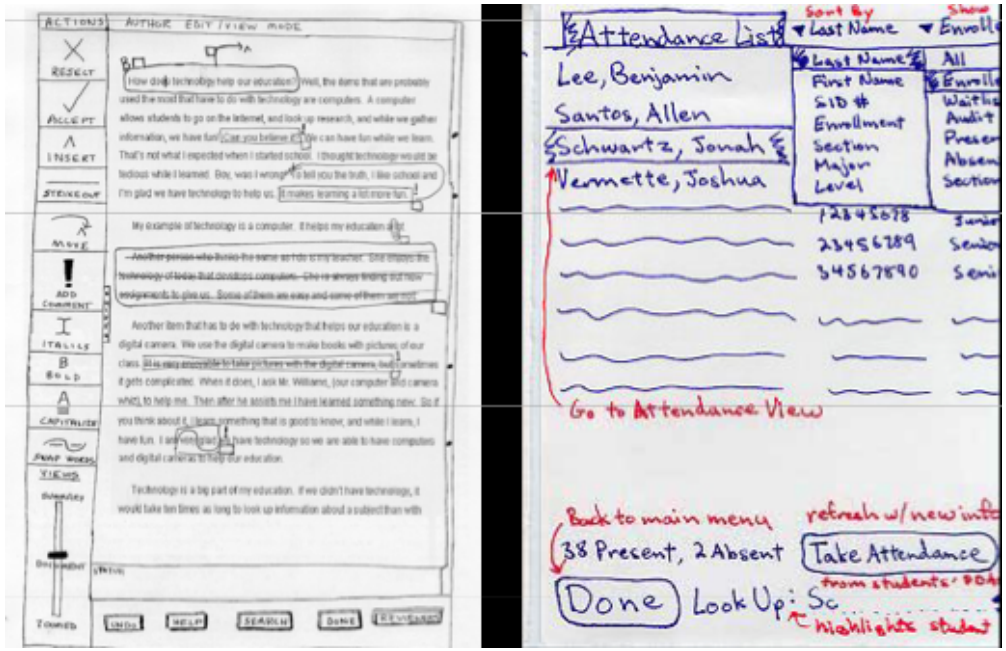
- Fidelity refers to the level of detail
- High fidelity
  - prototypes look like the final product
- Low fidelity
  - artists renditions with many details missing



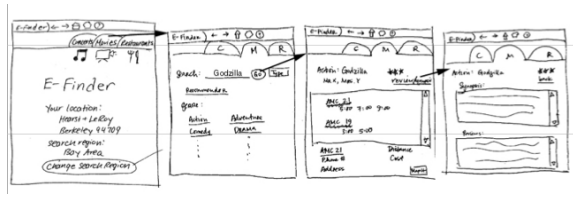
Low-fidelity Prototyping

UNIVERSITÉ DE NANTES

- Low-fidelity Sketches



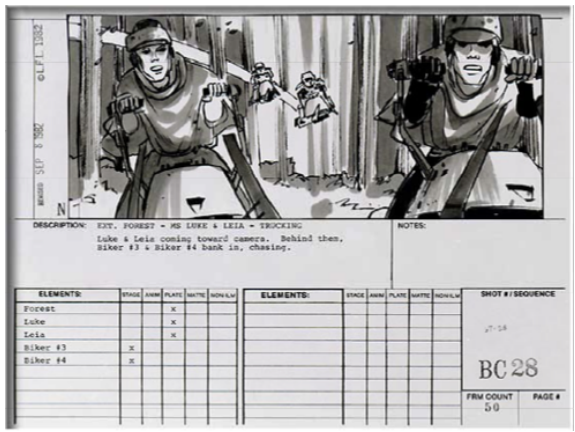
- Low-fidelity Storyboards



Low-fidelity Storyboards

UNIVERSITÉ DE NANTES

- Where do storyboards come from?
  - film & animation



From Star War VI: Return of the Jedi

- Give you a "script" of important events
  - leave out the details
  - concentrate on the important interactions

Why Use Low-fi Prototypes?

UNIVERSITÉ DE NANTES

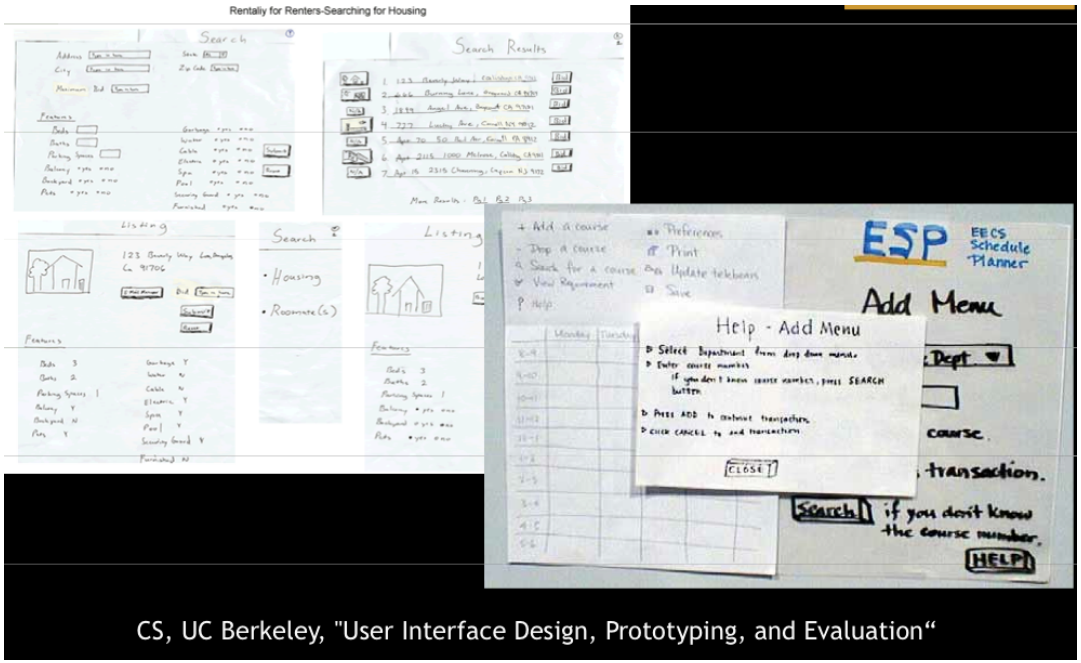
- Traditional methods take too long
  - sketches -> prototype -> evaluate -> iterate
- Can simulate the prototype
  - sketches -> evaluate -> iterate
  - sketches act as prototypes
    - designer "plays computer"
    - other design team members observe & record
- Kindergarten implementation skills
  - allows non-programmers to participate

Hi-fi Prototypes Warp

UNIVERSITÉ DE NANTES

- Perceptions of the customer/reviewer?
  - formal representation indicates "finished" nature
    - comments on color, fonts, and alignment
- Time?
  - encourage precision
    - specifying details takes more time
- Creativity?
  - lose track of the big picture

Low-fidelity Prototypes



Preparing for a Test

UNIVERSITÉ DE NANTES

- Select your customers
  - understand background of intended customers
  - use a questionnaire to get the people you need
  - don't use friends or family
- Prepare scenarios that are
  - typical of the product during actual use
  - make prototype support these (small, yet broad)

Conducting a Test

UNIVERSITÉ DE NANTES

- Four testers (minimum)
  - greeter - puts participants at ease & gets data
  - facilitator - only team member who speaks
    - gives instructions & encourages thoughts, opinions
  - computer - knows application logic & controls it
    - always simulates the response, w/o explanation
  - observers - take notes & recommendations
- Typical session is 1 hour
  - preparation, the test, debriefing

Advantages of Low-fidelity Prototyping

UNIVERSITÉ DE NANTES

- Takes only a few hours
  - no expensive equipment needed
- Can test multiple alternatives
  - fast iterations
    - number of iterations is tied to final quality
- Almost all interaction can be faked

Problems with Low-fi Prototypes?

UNIVERSITÉ DE NANTES

- Slow compared to real computer
- End-users can't do it themselves
- Sometimes hard for participants to recognize widgets
- Hard to implement interactive functionality, like "pulldowns"
- Won't look like the final product
- Not in context of user's work environment
- Doesn't map well to what will actual fit on the screen

Problems with Low-fi Prototypes?

UNIVERSITÉ DE NANTES

- Couldn't hold in your hand – different ergonomics from target device
- Some things could not be simulated
- Writing on paper not the same as writing on target device
- Appearance unrealistic
- Dynamic widgets hard to simulate ?
- Some items had to be static!
- .....

High Fidelity Tools

UNIVERSITÉ DE NANTES

- Web
  - FrontPage, Dreamweaver,...
- Screen mockups
  - Illustrator, Photoshop, inkscape
- Clickthroughs
  - Flash
- Graphic interface builders
  - Qtcreator, Interface Builder (Apple)
- .....

Qt creator

UNIVERSITÉ DE NANTES