

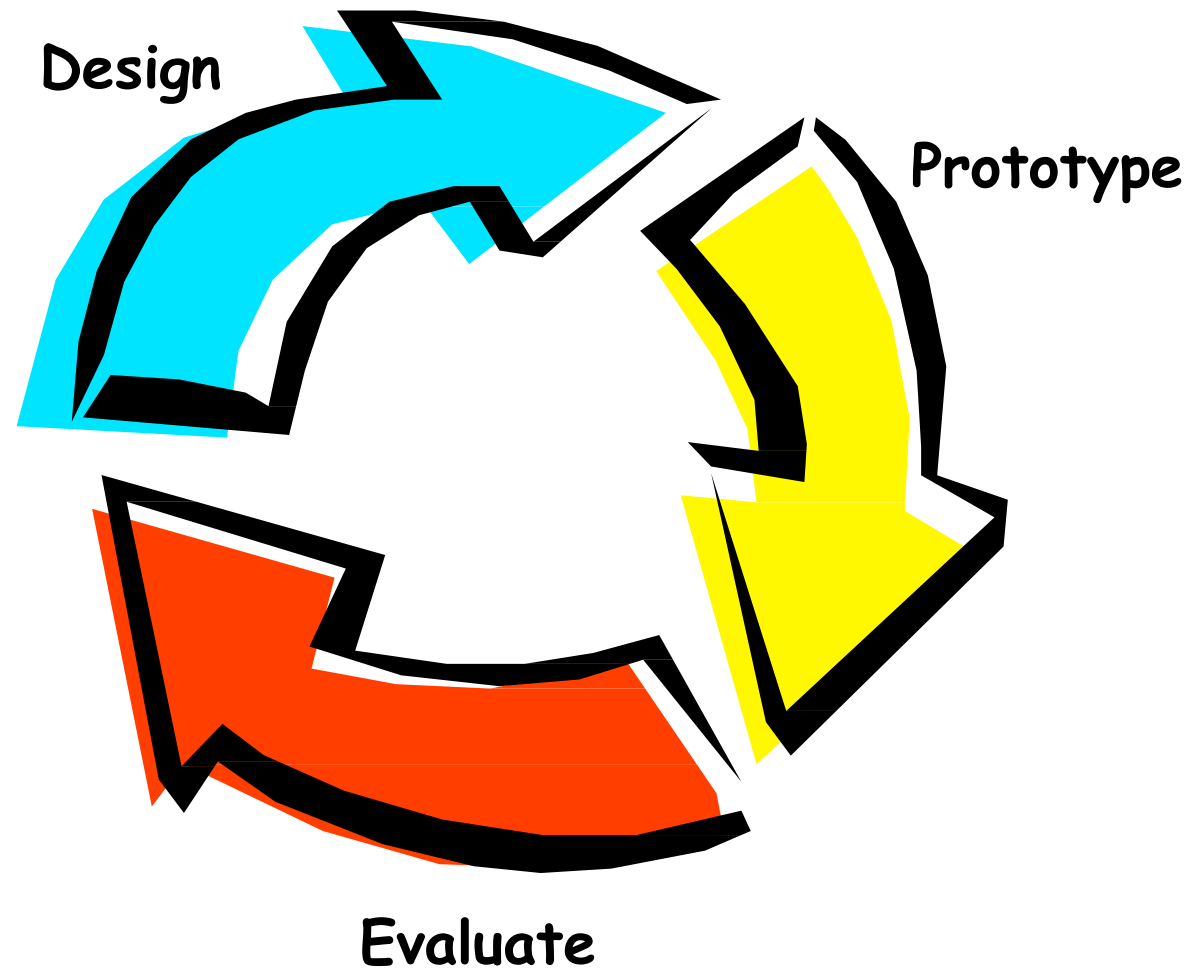
Introduction to HCI

Methods for Design, Prototyping and Evaluating User Interaction

Spring 2019

Lecture 5

The Design Cycle



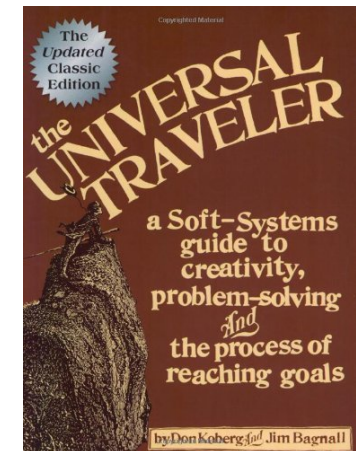
The Art of UI Design



A soufflé is eggs, butter, milk & flour, but the difference between soaring and sinking is in the execution.

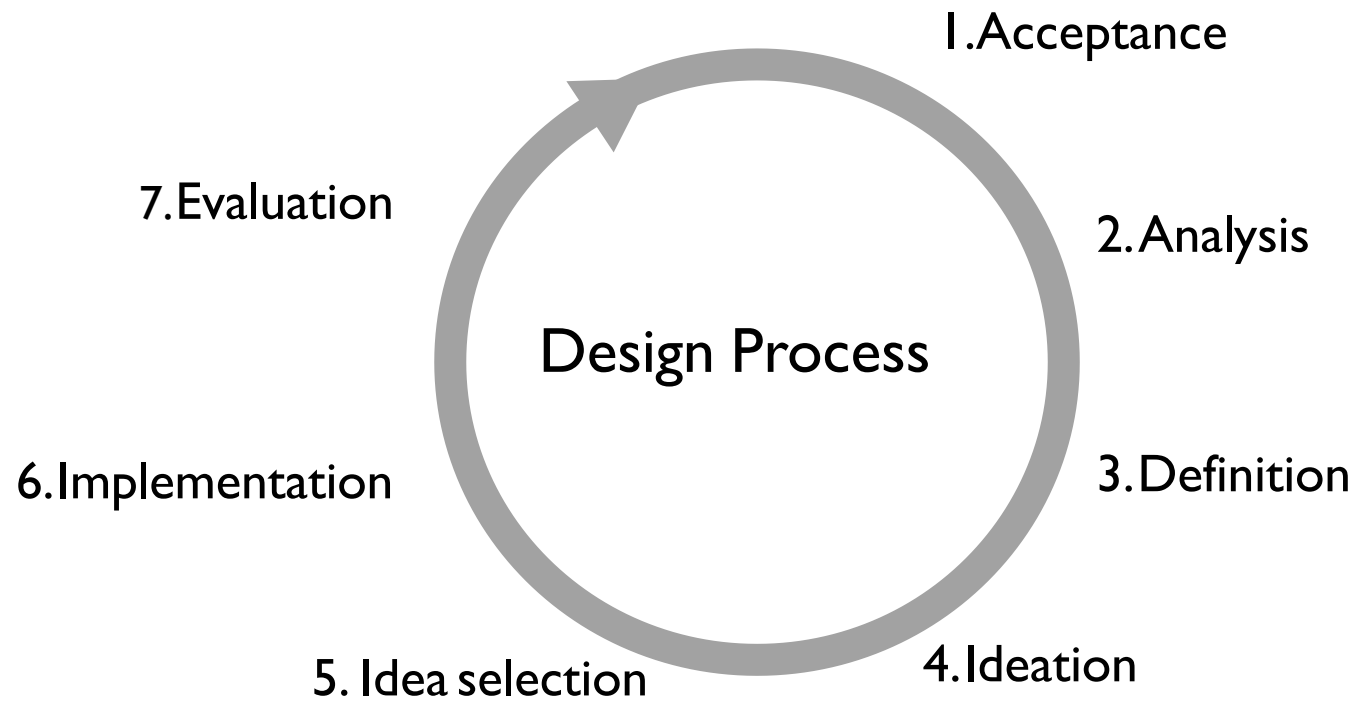
The Design Process

[KOBBERG & BAGNALL]



The Design Process

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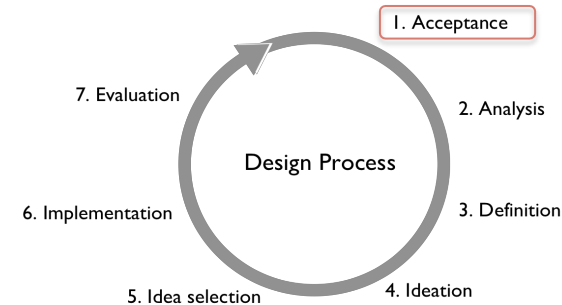
I. Acceptance

Getting started

Because of a deadline

Because of possible reward

Because you are forced to



Commitment

Time Resources

Responsibility

Key is to set motivation

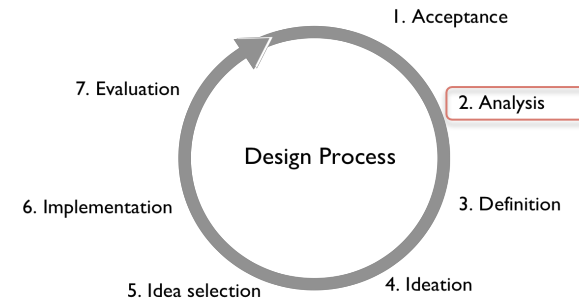
2. Analysis

Understand Users and Tasks

Who are the users?

What are their tasks?

Observe and test, don't guess



Tools

Notebook

Smartphone:

- audio + video recorder

- still camera



Understand Users

User-centered design starts
and ends with real users.

Observation, surveys, interviews

Two ways to summarize traits:

- Abstraction
- Archetypes

Persona



Persona Examples



Brad Colbow

(<http://carsonified.com/blog/design/how-to-understand-your-users-with-personas/>)

Tasks



What are the tasks?

Observe and test, don't guess

Tasks:

- Finding a point-of-interest
- Sending a message
- Taking/sharing a photo

Mixture of easy/hard

- Browse for a contact
- : : :
- Create a location-based reminder

Support strange paths..

3. Definition

Focus on the problem

Choose appropriate level of detail

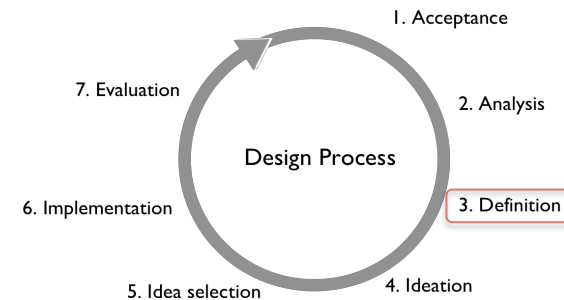
Not “bicycle cup-holders”

...but

“helping cyclists to drink coffee without accidents”

Or, helping users work out more regularly

Or, helping users learn during their commute



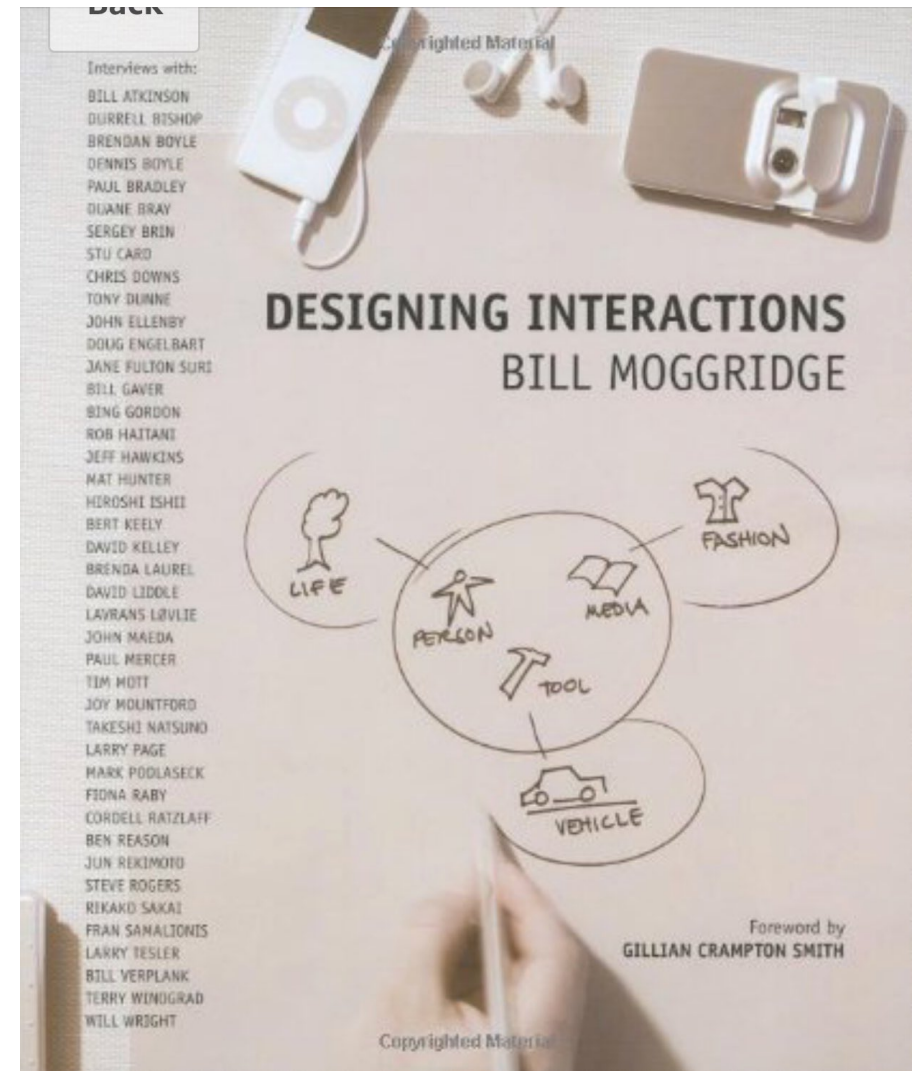


4. Ideation

Brainstorming

- Stretch mental muscles
 - Loosen up with simple games
 - Do homework
 - Seed with related ideas/objects
- Get physical
 - Sketch
 - Make models
 - Act out
- IDEO rules
 - One conversation at a time
 - Stay focused
 - Encourage wild ideas
 - Defer judgment
 - Build upon idea from others

Aim for quantity!



5. Idea Selection

Define importance of each idea

- Does it address problem
- Will target users like it
- Is hardware available
- Is software available
- What is the cost
- Market window

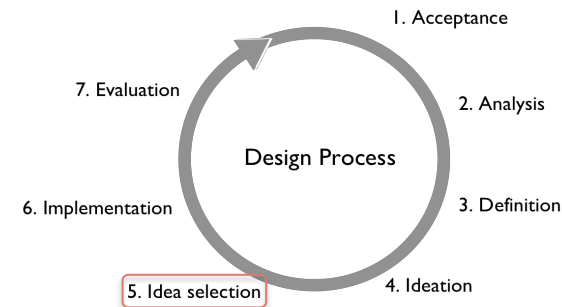
...

Rank ideas according to your criteria

- don't kill ideas with "fatal flaws" too early

Pick top N

- Choices depend on resources and stage of the project

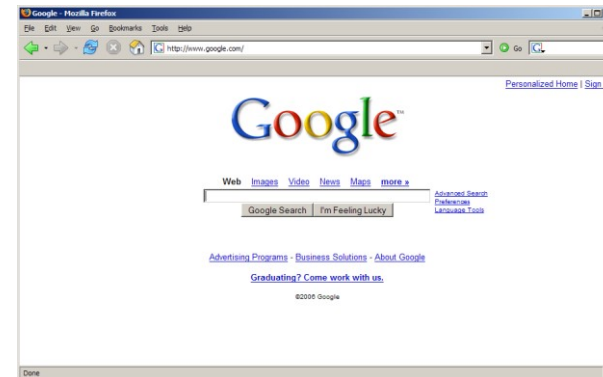


Design Discipline

Great design is about choosing what to leave out.

Takes a clear understanding of users' needs.

SIMPLIFY whenever possible.



Rough it out

Sketch

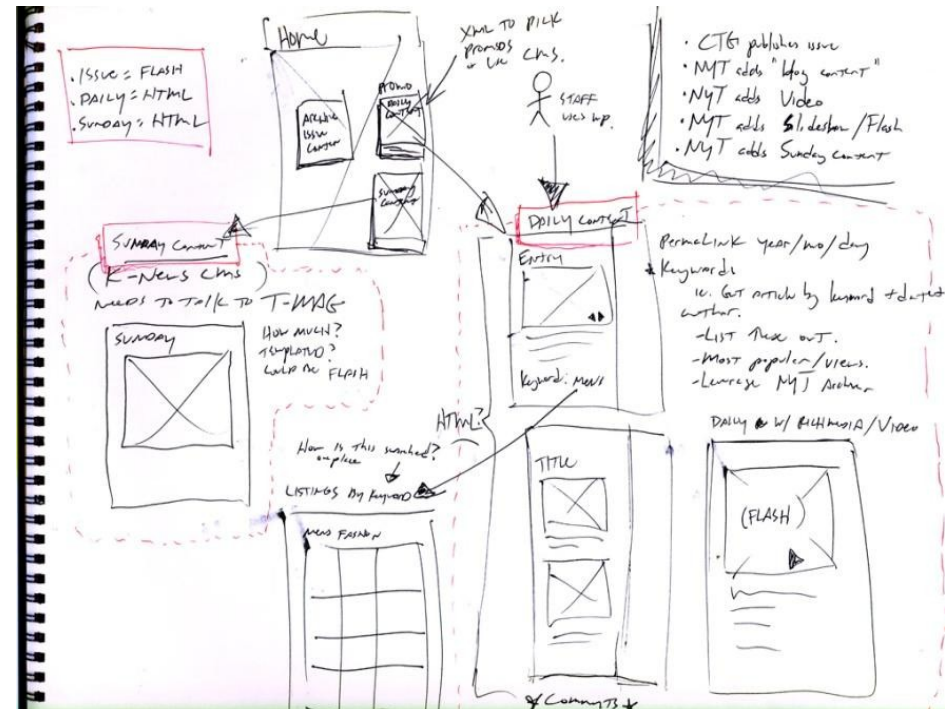
Argue

Get criticism from others

- Seeing through many eyes

Studio model

- The space is a cognitive extension



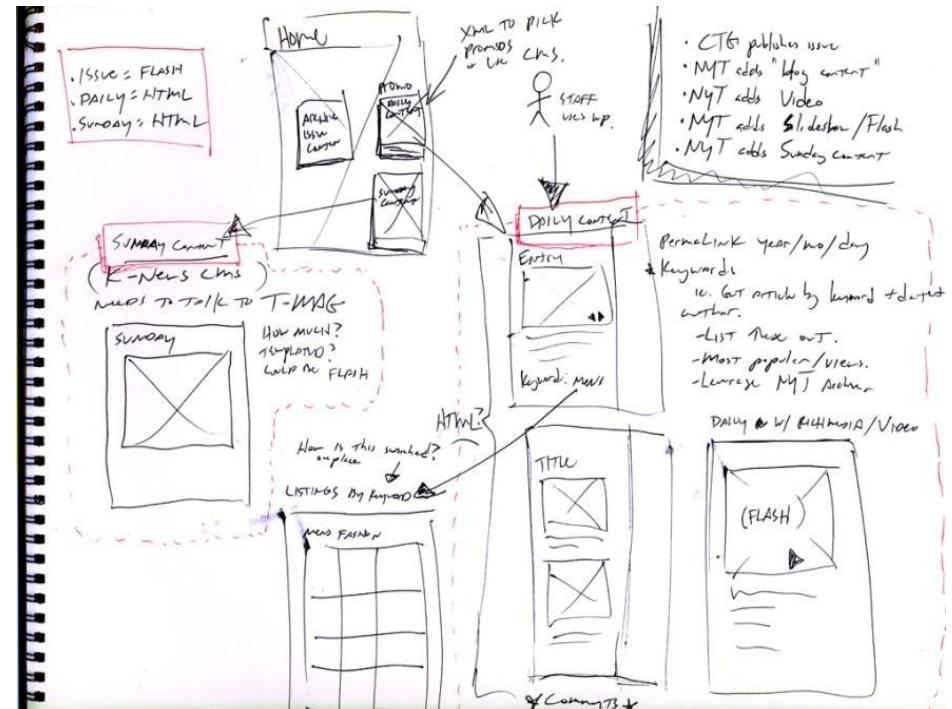
Think

Step back...

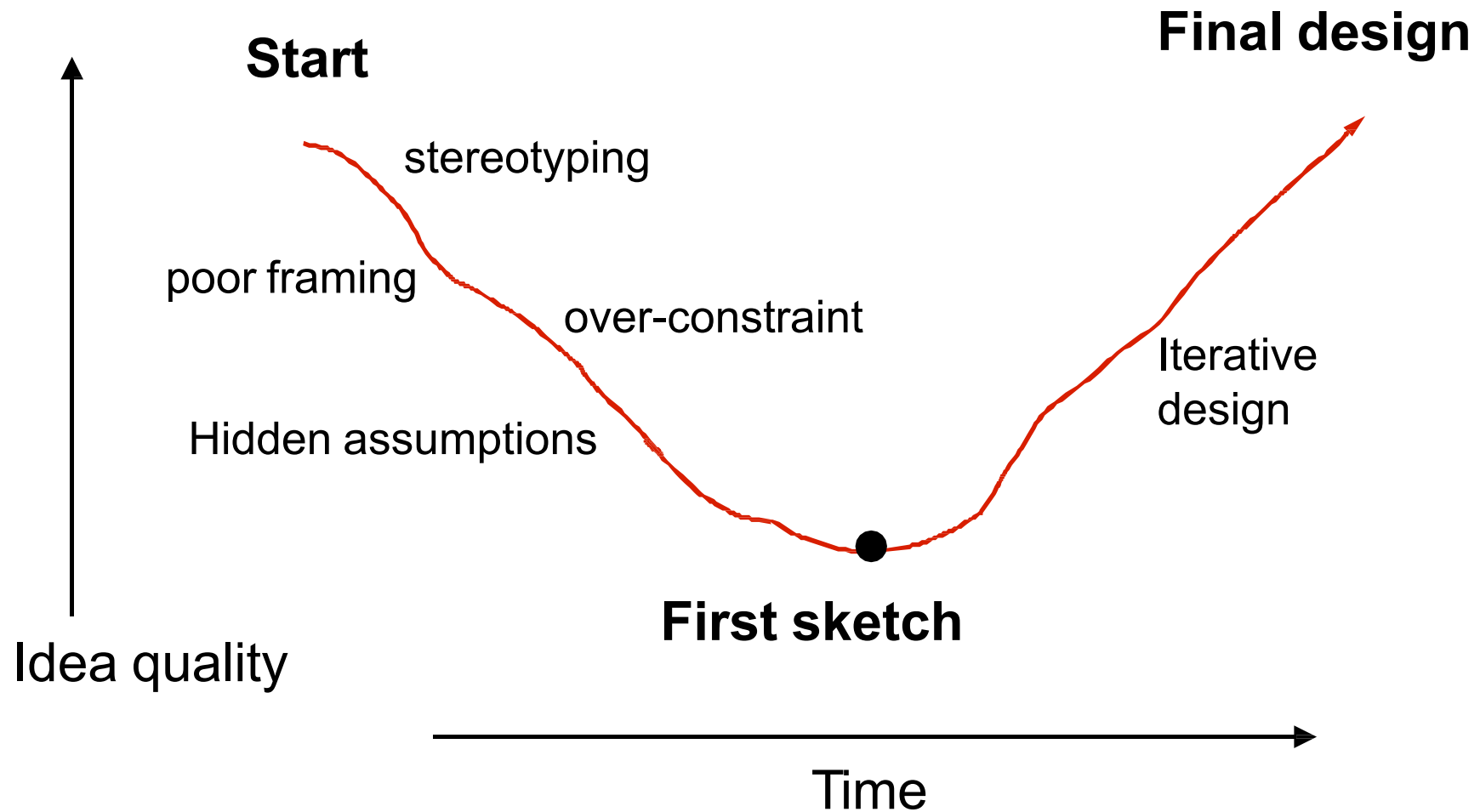
Critique your own design

Why did you make the choices you did?

What is the real design space you are working in?



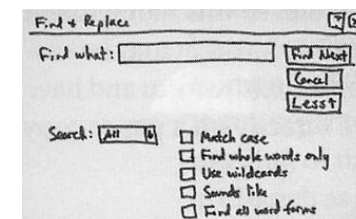
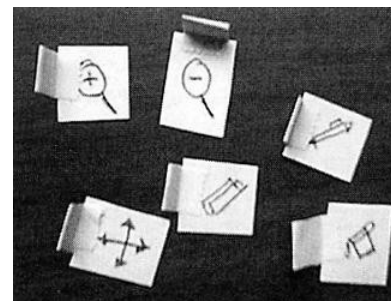
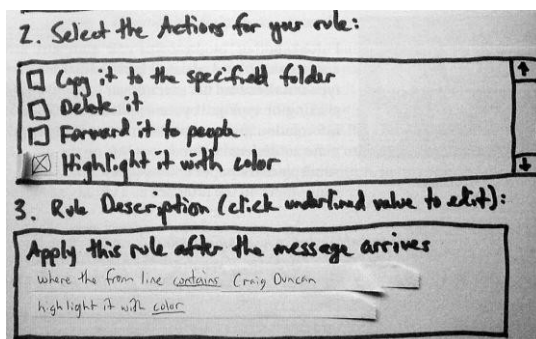
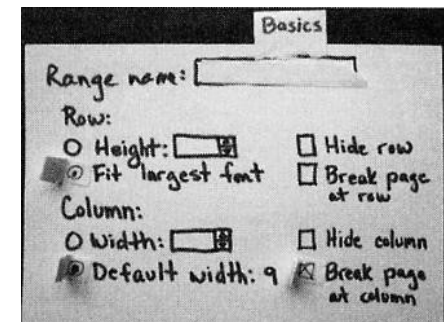
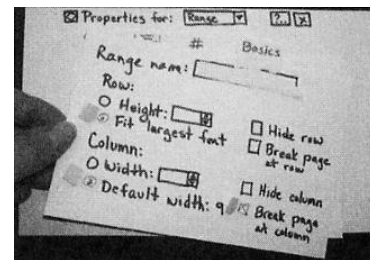
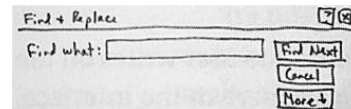
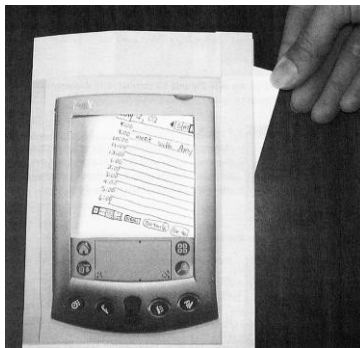
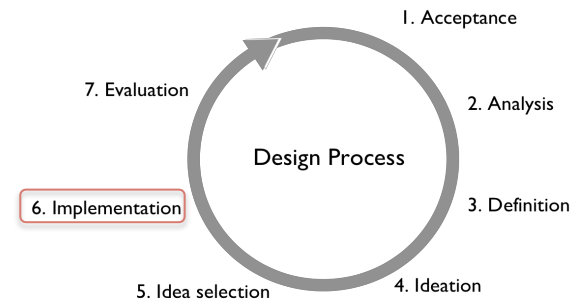
Try to avoid “overthinking” before your first sketch



6. Implementation

Scale up low → high fidelity

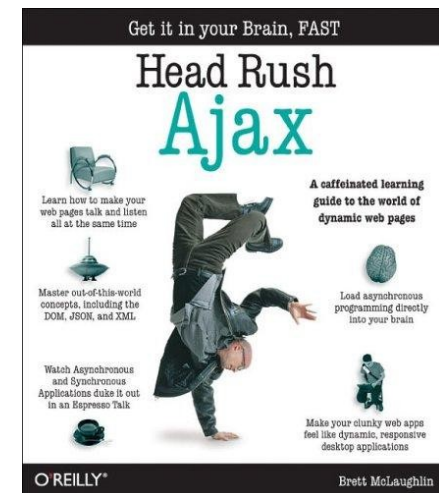
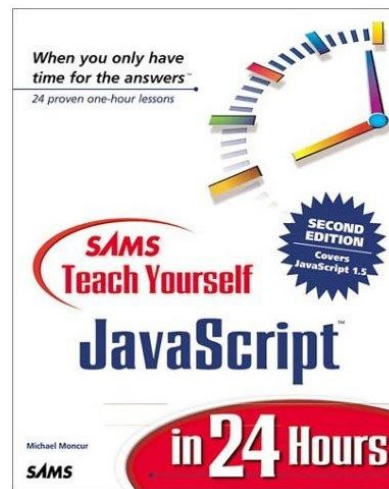
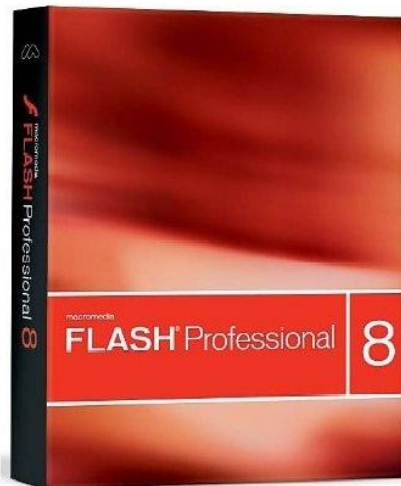
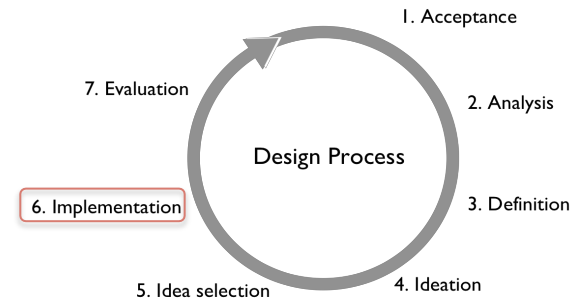
- Low-fidelity (quick, cheap, dirty)
sketches, paper models, foam core, ...



6. Implementation

Scale up low → high fidelity

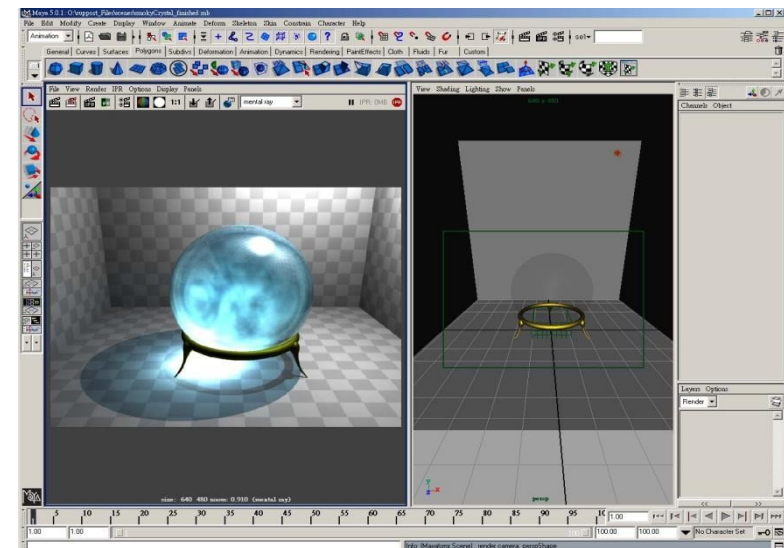
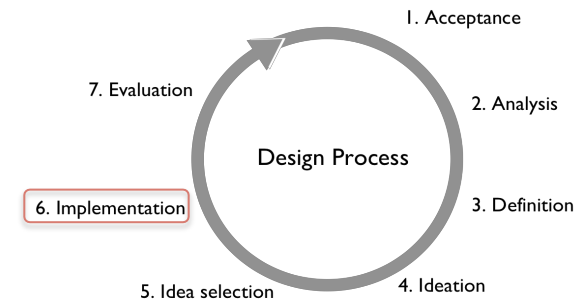
- Low-fidelity (quick, cheap, dirty)
sketches, paper models, foam core, ...
- Medium fidelity (slower, more expensive)
Flash, JavaScript, AJAX, ...



6. Implementation

Scale up low → high fidelity

- Low-fidelity (quick, cheap, dirty)
sketches, paper models, foam core, ...
- Medium fidelity (slower, more expensive)
Flash, JavaScript, AJAX, ...
- High fidelity (slowest, most expensive)
The full interface

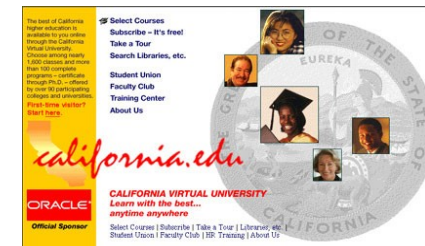
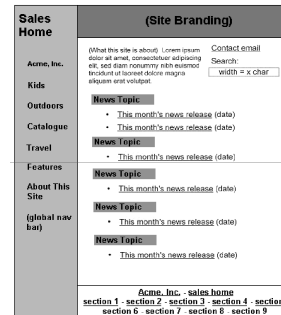
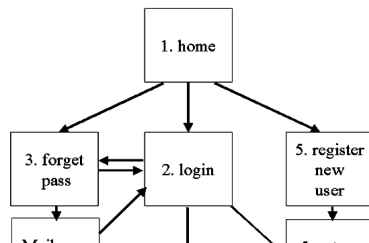


Implementation

Web design

- Sites *created* at multiple levels of detail
- Sites iteratively *refined* at all levels of detail
- Iterate quickly to see what works
- Mock up tools (Denim...)

Site Maps → Storyboards → Schematics → Mock-ups

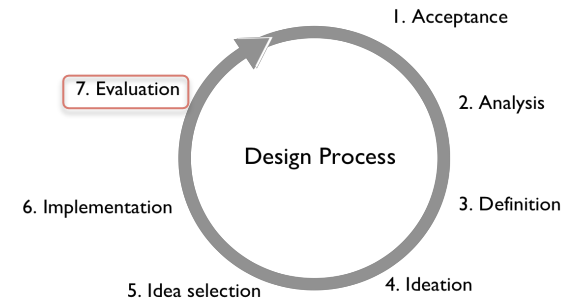


7. Evaluation

Many types of evaluation:

- Prototype walkthroughs
- Think-aloud studies
- Wizard-of-Oz
- Performance comparisons

Type of evaluation chosen depends on the level of implementation, etc.



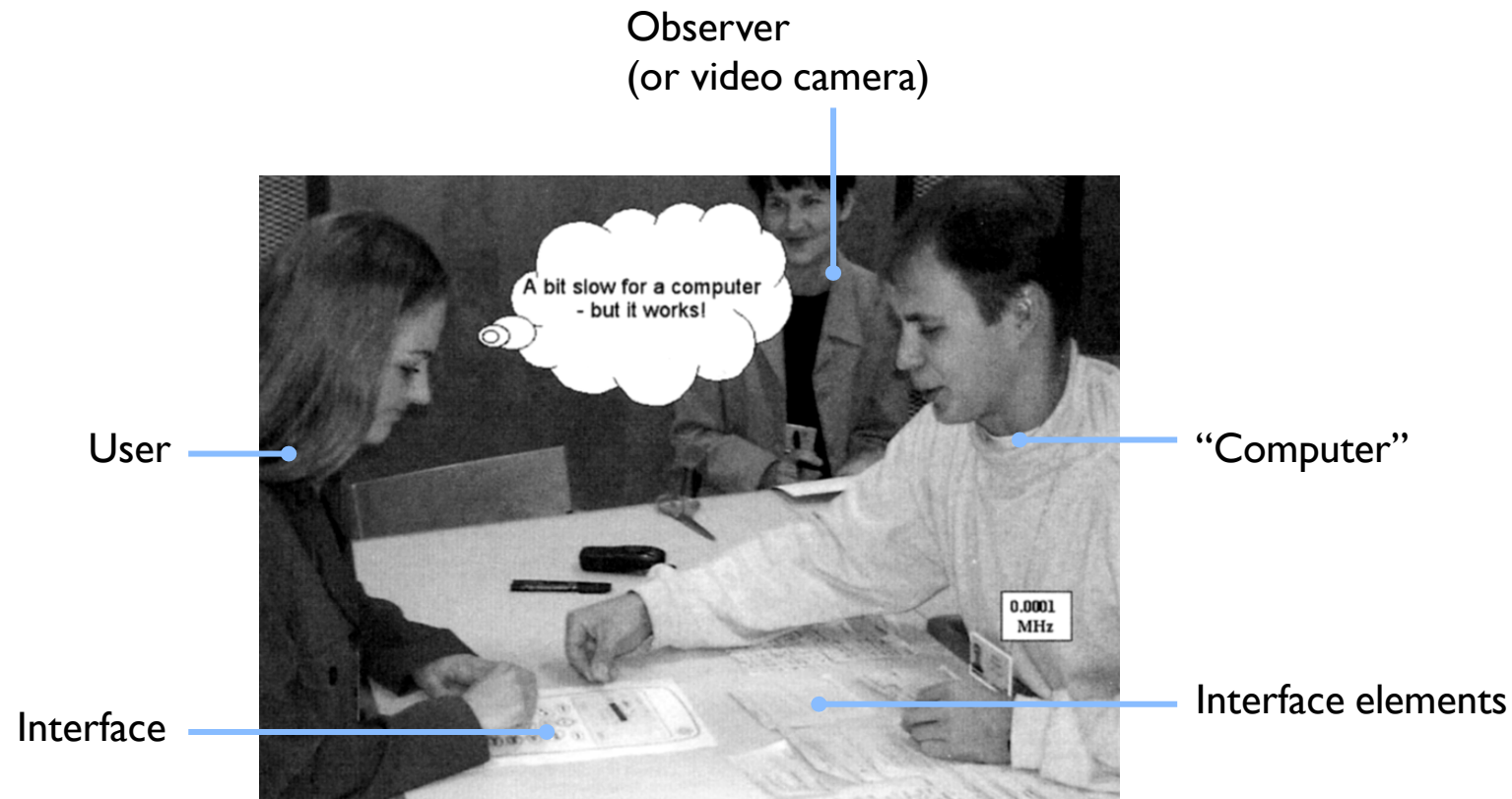
Evaluation

Early tests - Wizard of Oz approach

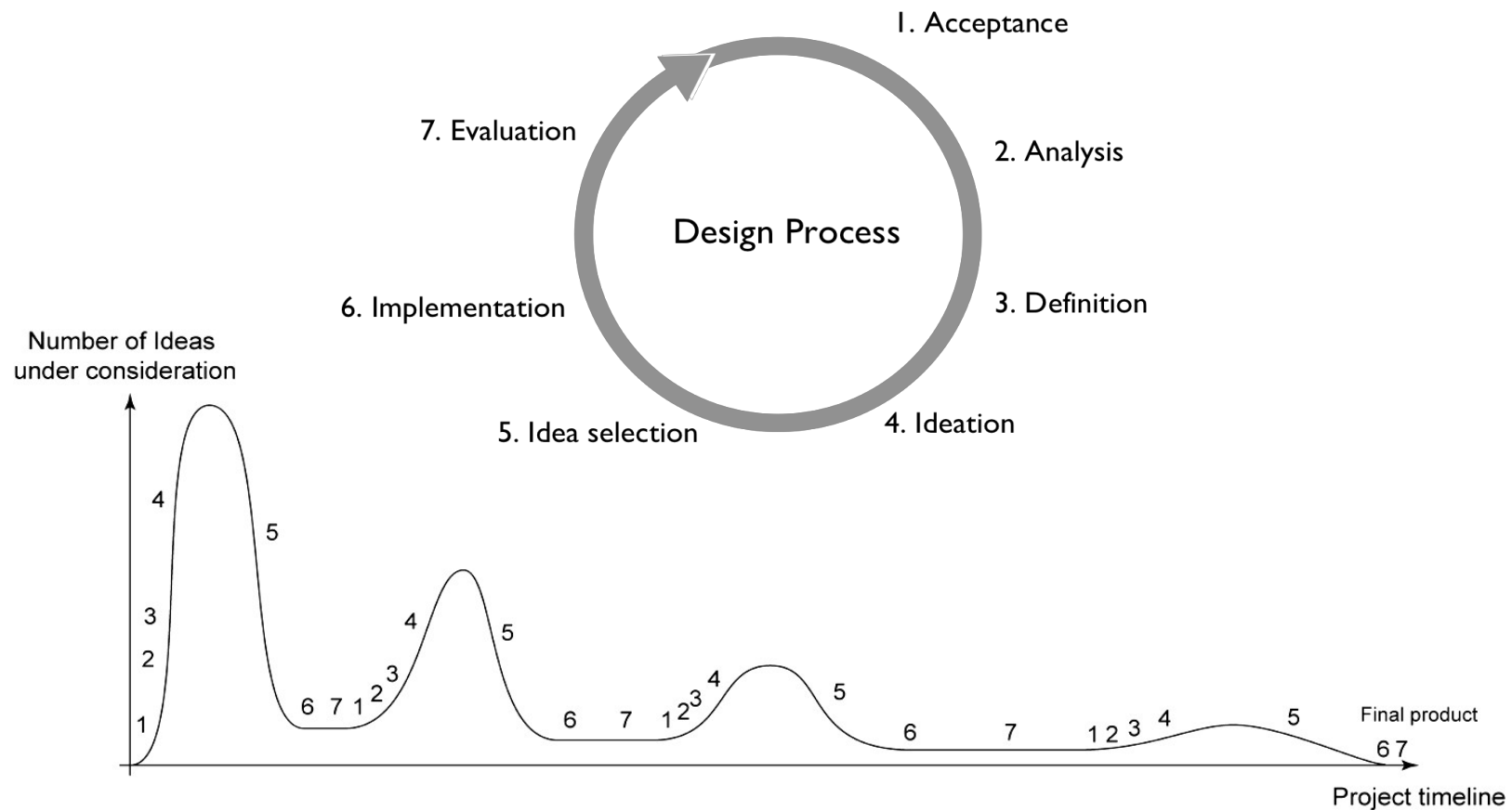


Evaluation

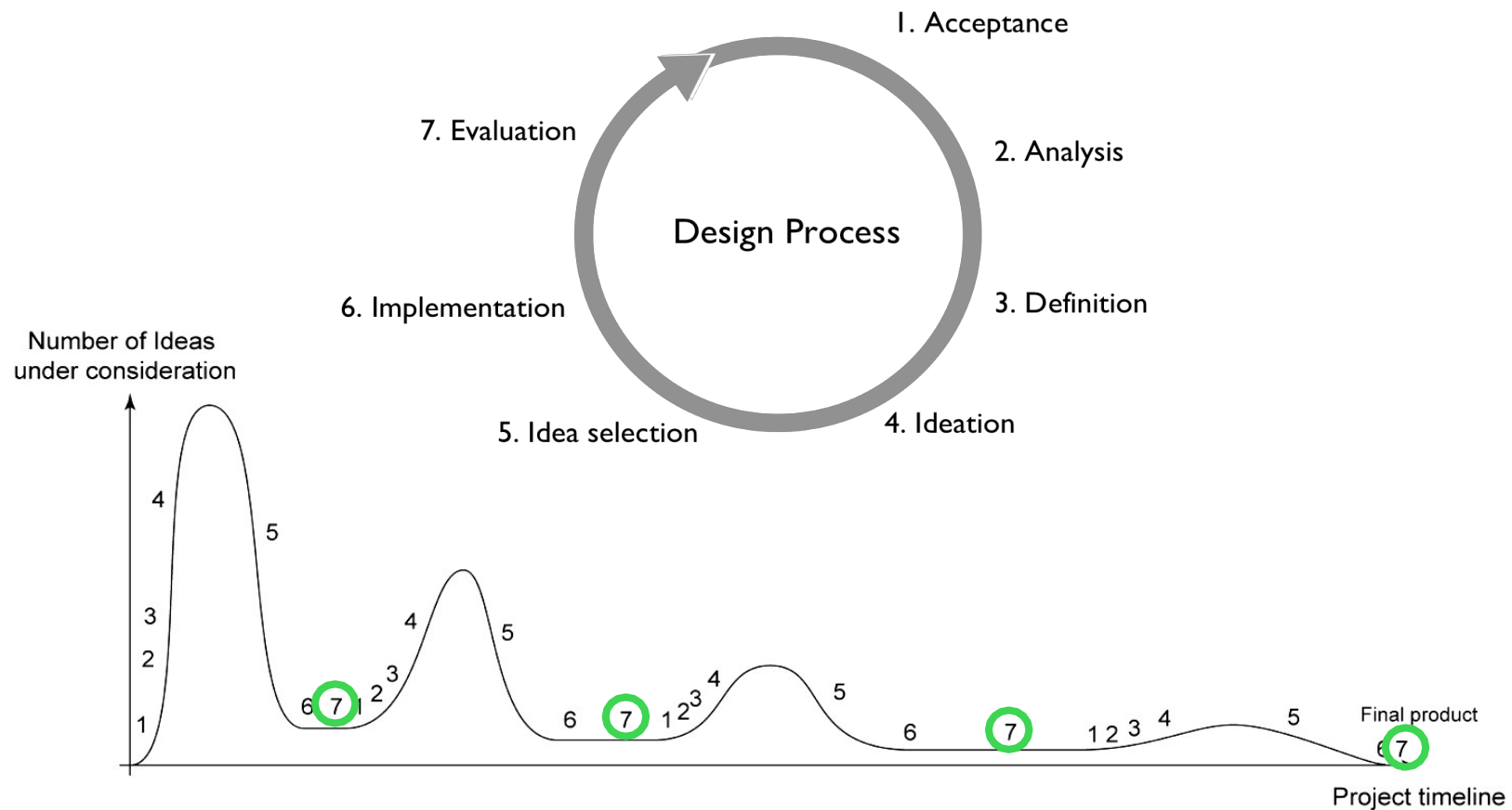
Walk-through prototype design



Design Cycle Over Project Lifespan

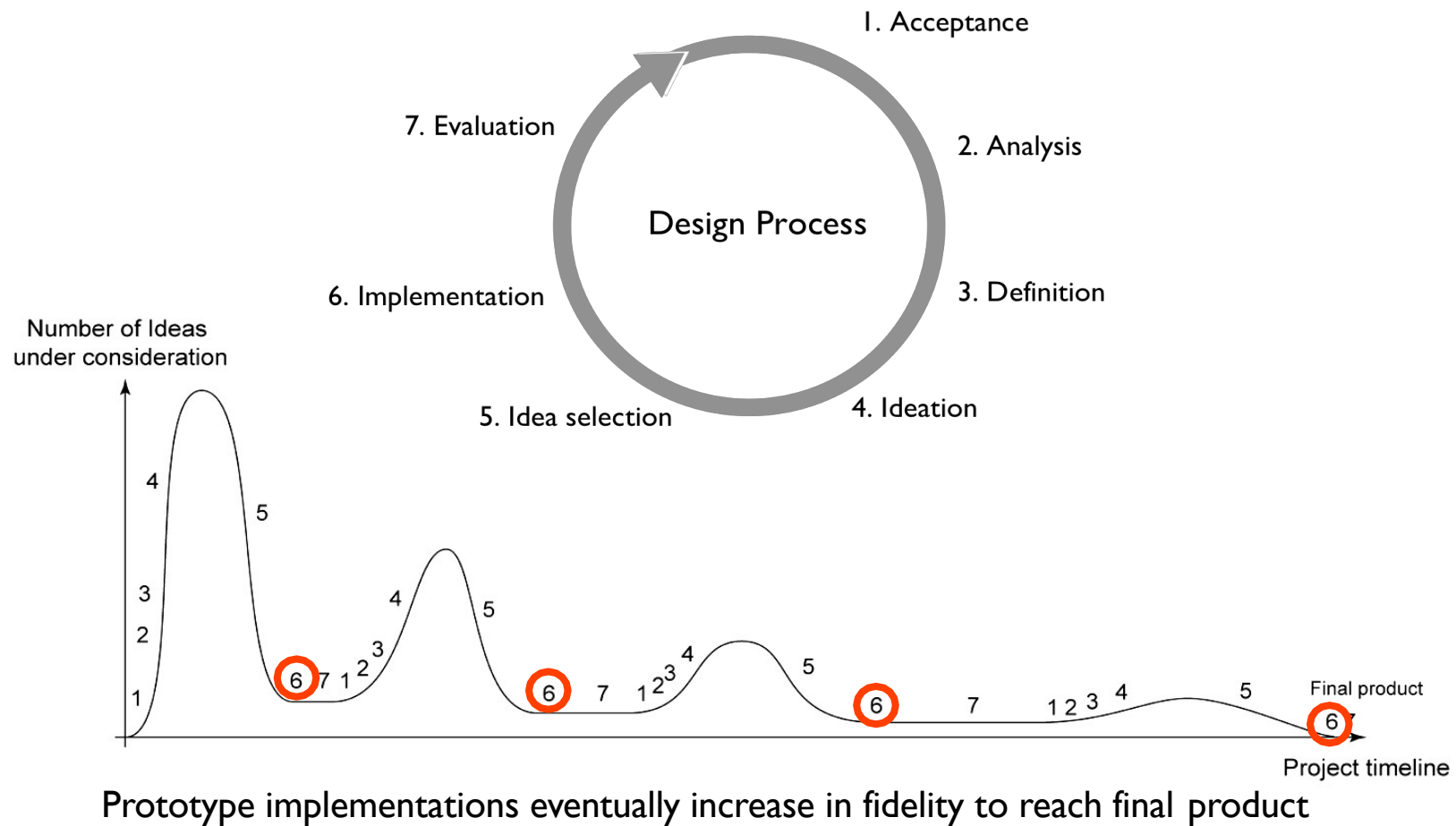


Design Cycle Over Project Lifespan



Evaluation reveals problems with design. Re-design requires cycling the process.

Design Cycle Over Project Lifespan

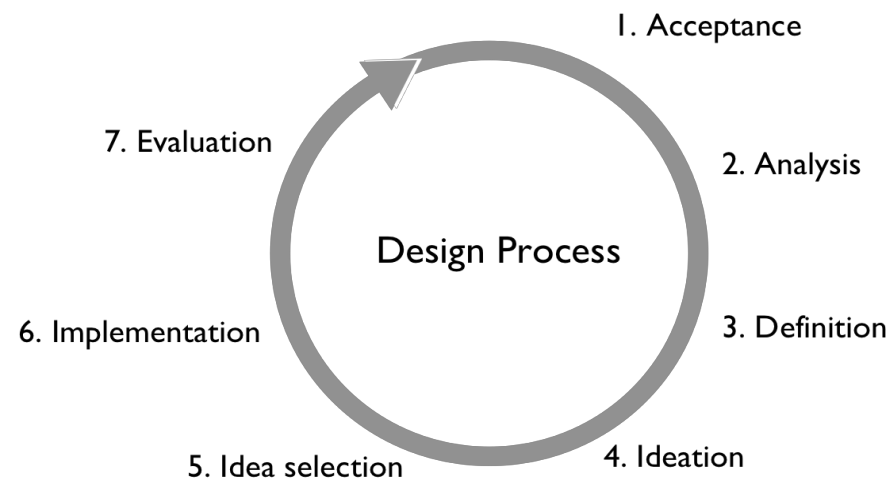


Comparison

[Lewis & Rieman]

1. Who will use?
2. What are their tasks?
3. Plagiarize
4. Rough out a design
5. Think about design
6. Create a prototype
7. Test it with users
8. Iterate
9. Build a production version
10. Track use
11. Evolve the design

[Koberg & Bagnall]

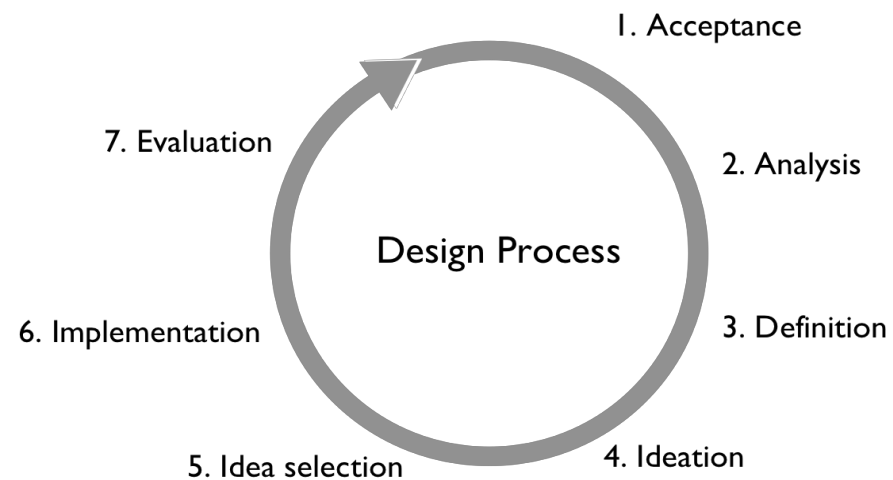


Comparison

[Lewis & Rieman]

1. Who will use? [2]
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4. Rough out a design [4, 6]
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6. Create a prototype [6]
7. Test it with users [7]
8. Iterate [7→1]
9. Build a production version [6]
10. Track use [7]
11. Evolve the design [7→1]

[Koberg & Bagnall]



Build, Track, Change

Design continues after the product ships.

Quality – bug fixes.

Track usage, seek user feedback (support!).

Do something about the problems you find.

