HUMAN-COMPUTER INTERACTION

Scott Klemmer
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Human Computer Interaction

Human
Computer
Interaction

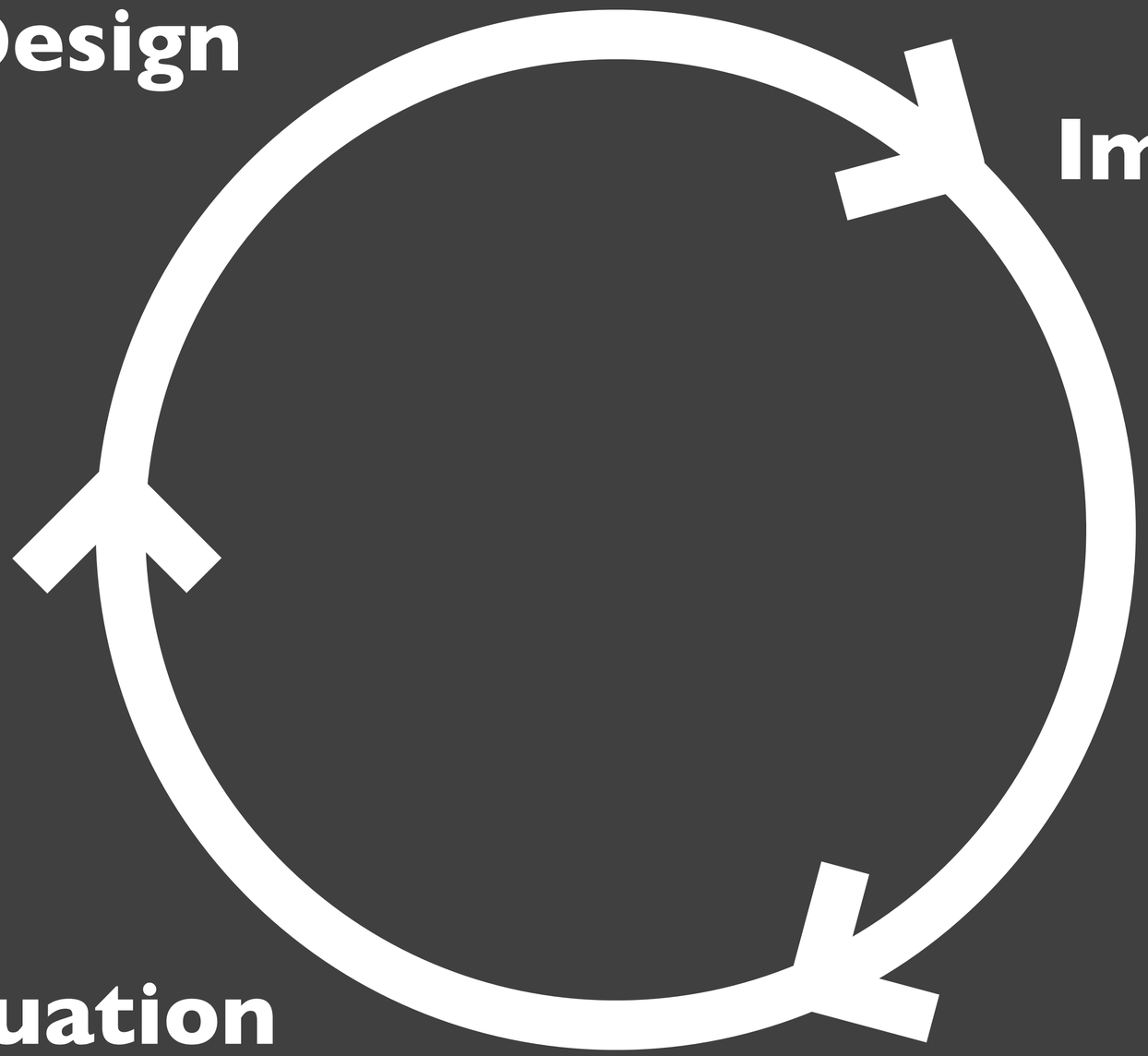
Human

Computer

Interaction

Human Computer **Interaction**

Design



Implementation

Evaluation

Good Design

Bad Design costs lives, money, & time

Do the calculation.

The Joy of Good Design

Pretty good is pretty easy

I'll show you how

Design for People

- People's tasks, goals, and values drive development
- Work with users throughout the process
- Assess decisions from the vantage point of users, their work, and their environment
- Pay attention to people's abilities and situation
- Talk to the *actual* experts

To learn more...

- HCI Classes
- Don Norman, The Design of Everyday Things
- Annual ACM CHI Conference

THE BIRTH OF HCI

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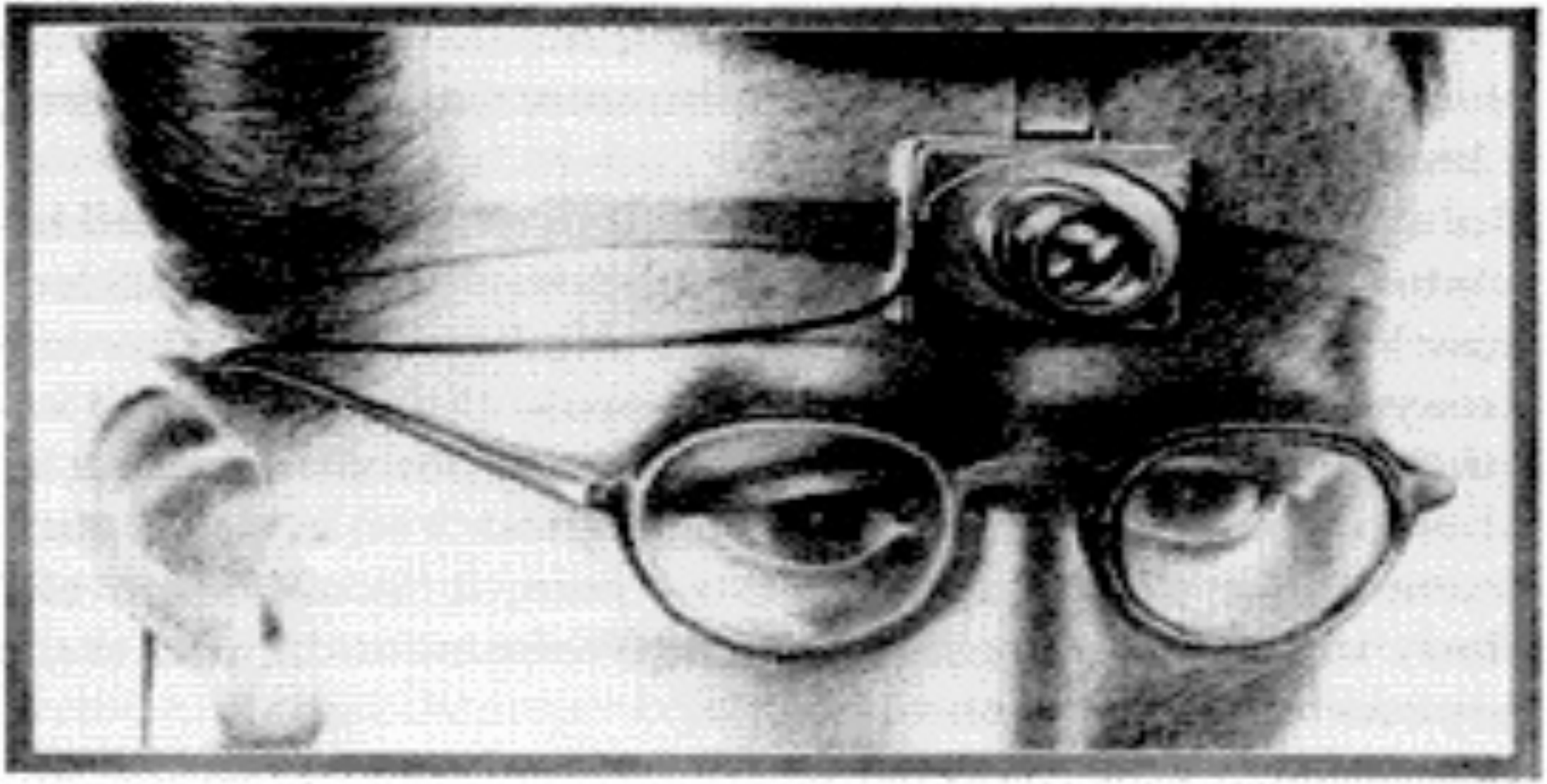
Image Courtesy of Wikipedia: http://en.wikipedia.org/wiki/File:Vannevar_Bush_portrait.jpg

Memex



A scientist of the future records experiments with a tiny camera fitted with universal-focus lens. The small square in the eyeglass at the left sights the object (*LIFE* 19(11), p. 112).

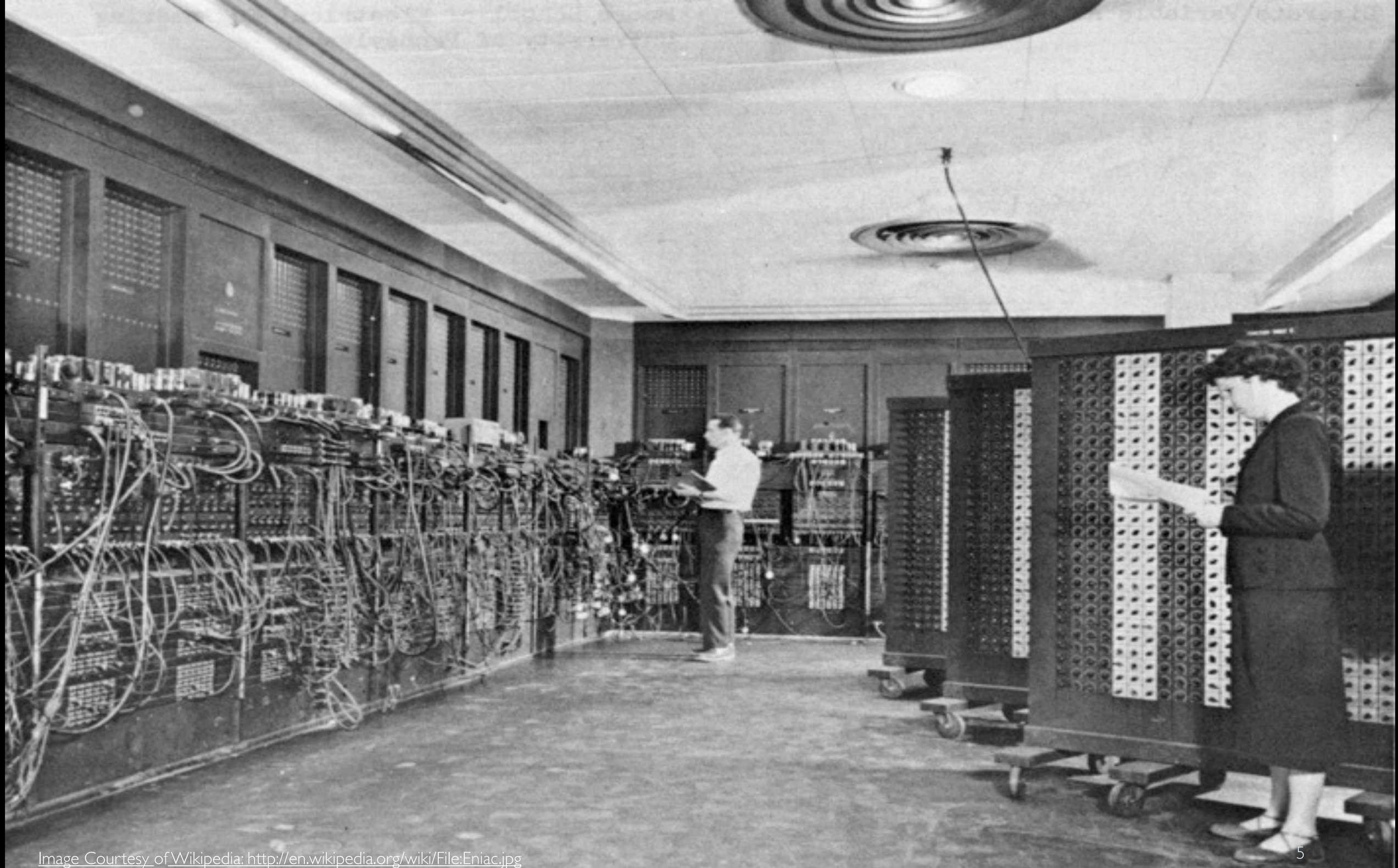


Image Courtesy of Wikipedia: http://en.wikipedia.org/wiki/File:Eniac.jpg

The Graphical User Interface

Courtesy of MIT Lincoln Laboratory, Lexington Massachusetts

The Mouse and Hypertext

Doug Engelbart. Video Courtesy of SRI International

Image Courtesy of Wikipedia: http://en.wikipedia.org/wiki/File:Firstmouseundersidejpg

Inspires Alan Kay

“The best way to predict the future is to invent it”

The "Long Nose" of Innovation *(Buxton)*

To learn more about this history...

- Fred Turner, From Counterculture to Cyberculture
- John Markoff, What the Dormouse Said
- Bill Buxton, Sketching User Experiences
- Johnny Lee, Interface Technologies That Have Not Yet Left The Lab

EVALUATING DESIGNS

motivation and menu

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How can we measure success?

How do we know?

Why Evaluate Designs with People?

What are some things you might want to learn about an interface?

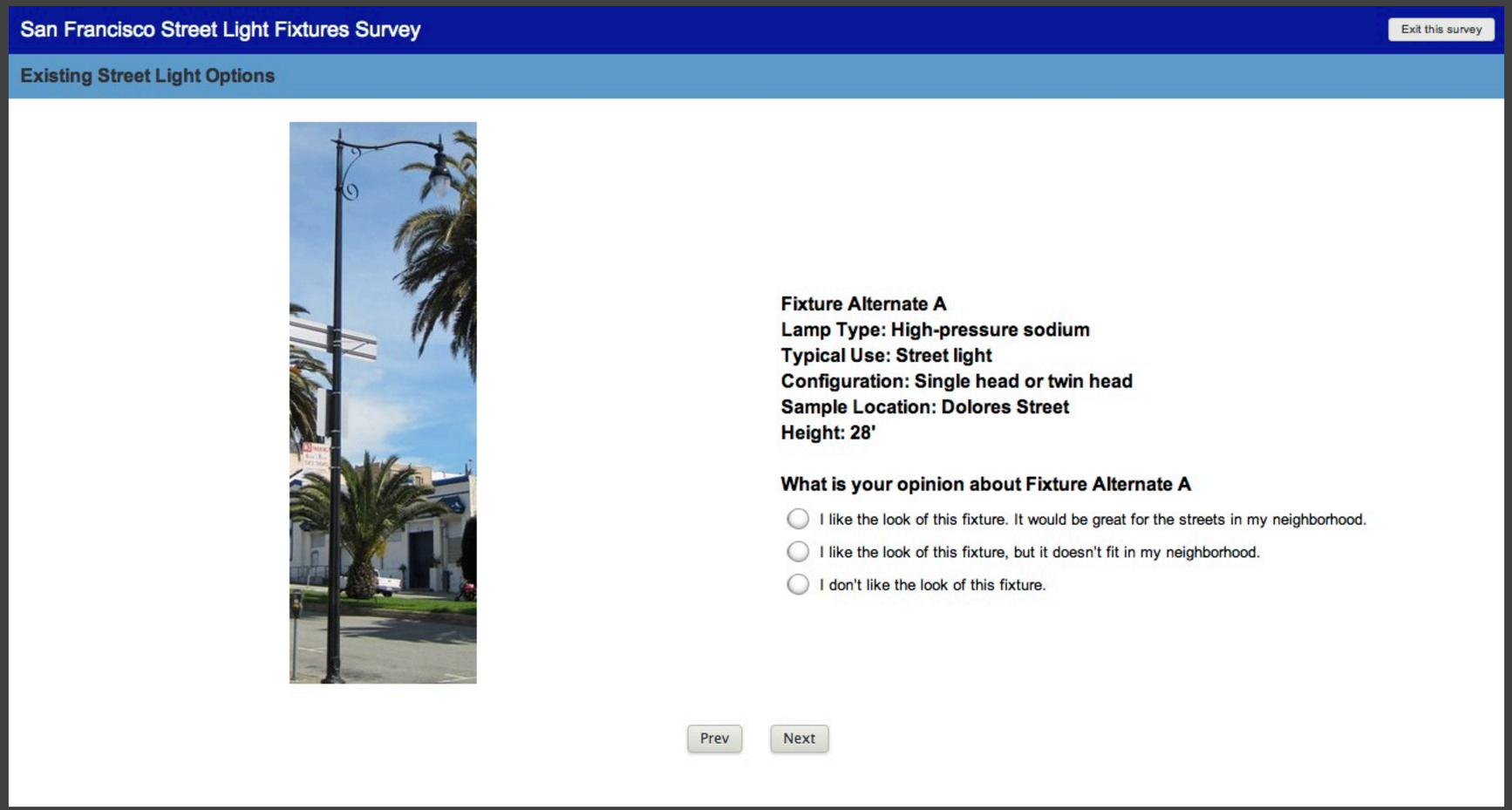
How would you find them out?

Different Methods Achieve Different Goals

Some Examples...

Usability Studies

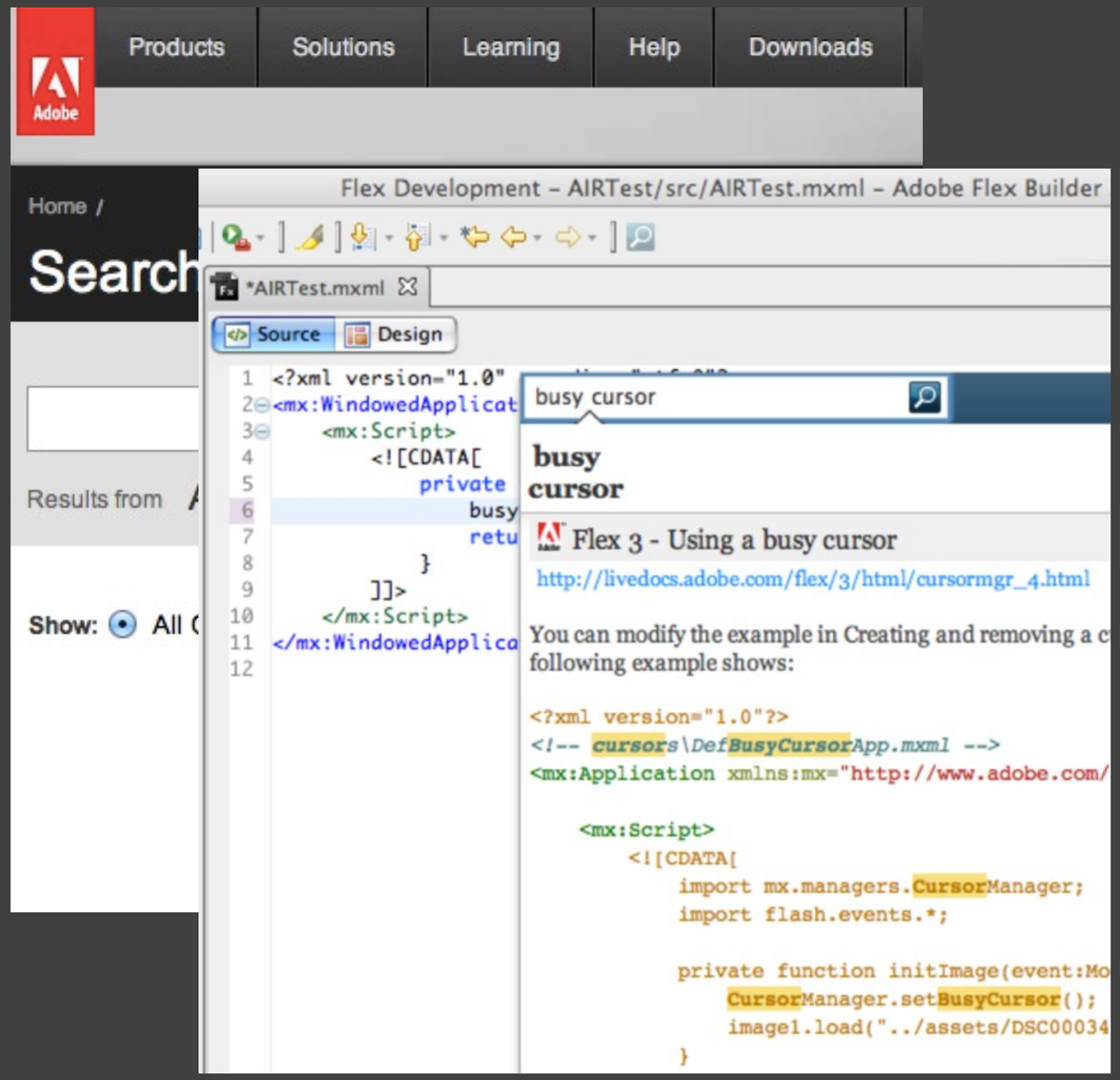
Surveys & Focus Groups



http://sfpuc.c.topica.com/maapeWDab5NjaaU3oZpeaeQK6z/

Feedback from Experts

Comparative Experiments




```
1  <?xml version="1.0"
2  <mx:WindowedApplicat
3      <mx:Script>
4          <![CDATA[
5              private
6                  busy
7                  retu
8              }
9          ]]>
10     </mx:Script>
11 </mx:WindowedApplica
12
```

```
<?xml version="1.0"?>
<!-- cursors\DefBusyCursorApp.mxml -->
<mx:Application xmlns:mx="http://www.adobe.com/

    <mx:Script>
        <![CDATA[
            import mx.managers.CursorManager;
            import flash.events.*;

            private function initImage(event:Mo
                CursorManager.setBusyCursor();
                image1.load("../assets/DSC00034
            }
```

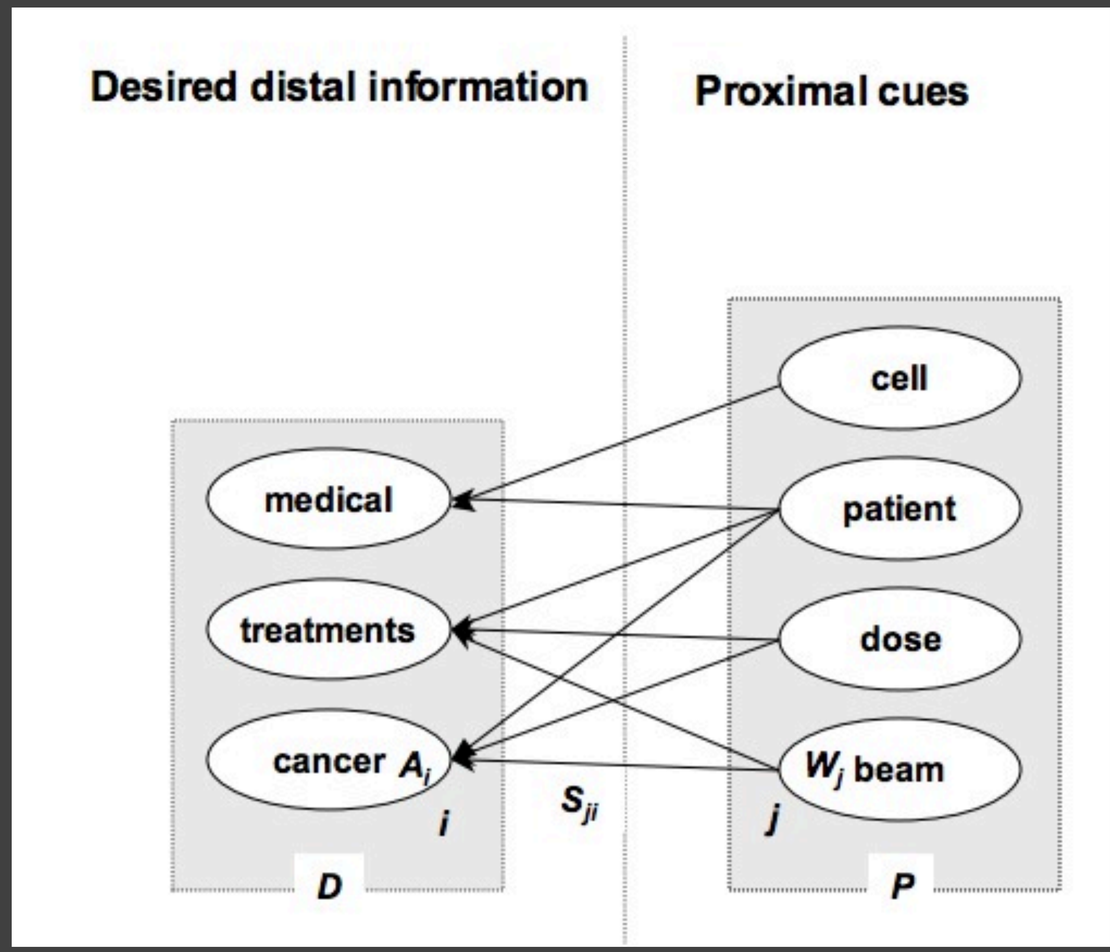
Joel Brandt et al., comparing Community Help and Blueprint

Participant Observation

e.g., Sutton & Hargadon, brainstorming groups

Simulation & Formal Models

courtesy Shumin Zhai



courtesy Peter Pirolli

Issues to Consider

- Reliability/Precision
- Generalizability
- Realism
- Comparison
- Work Involved

What do you want to learn?

THE POWER OF PROTOTYPING

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Prototyping Grounds Communication

Images Courtesy Bjoern Hartmann

Image Courtesy IDEO

Prototyping is a strategy for efficiently dealing with things that are hard to predict

Focus on Goals

Evolve the Designs

inspired by Buxton, *Sketching User Experiences*

SANTA CLARA, California -- People thought Jeff Hawkins was crazy when they saw him taking notes, checking appointments, and synchronizing a small block of wood with his PC, pretending all the while that the block was a handheld computer.

"If I wanted to check the calendar I'd take it out and press the wooden button."

Source: "The Philosophy of the Handheld." Wired Magazine, October 1999.

Image Courtesy http://en.wikipedia.org/wiki/PalmPilot

The rights of a prototype

- Should not be *required to be* complete
- Should be easy to change
- Gets to retire

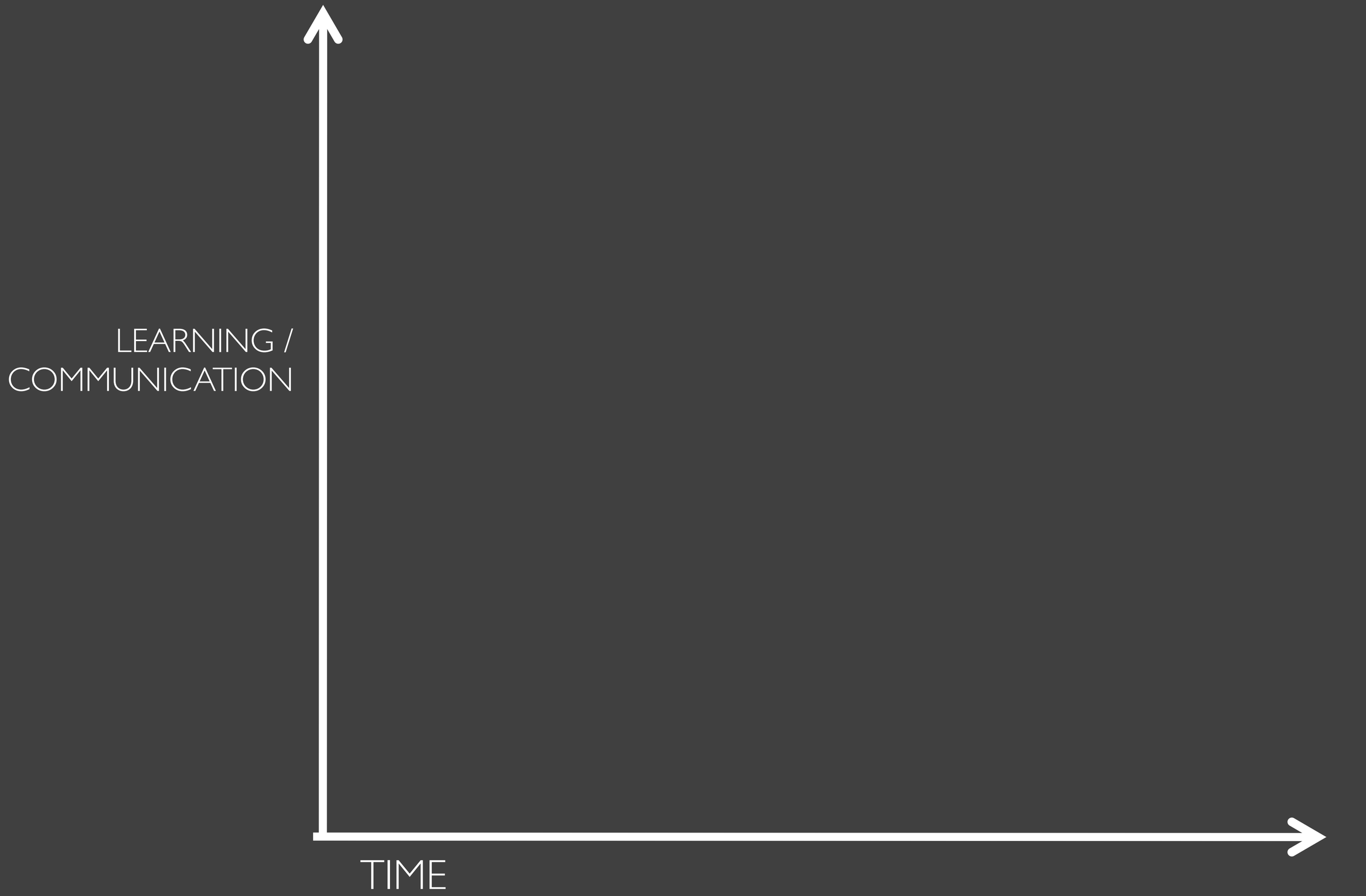
What Do Prototypes Prototype?

Feel *What might it look like?*

Implementation *What might it work like?*

Role *What might the experience be like?*

Houde & Hill


LEARNING /
COMMUNICATION
TIME

"The best way to have a good idea is to have lots of ideas."

-Linus Pauling

Image Courtesy Wikipedia: http://en.wikipedia.org/wiki/File:L_Pauling.jpg

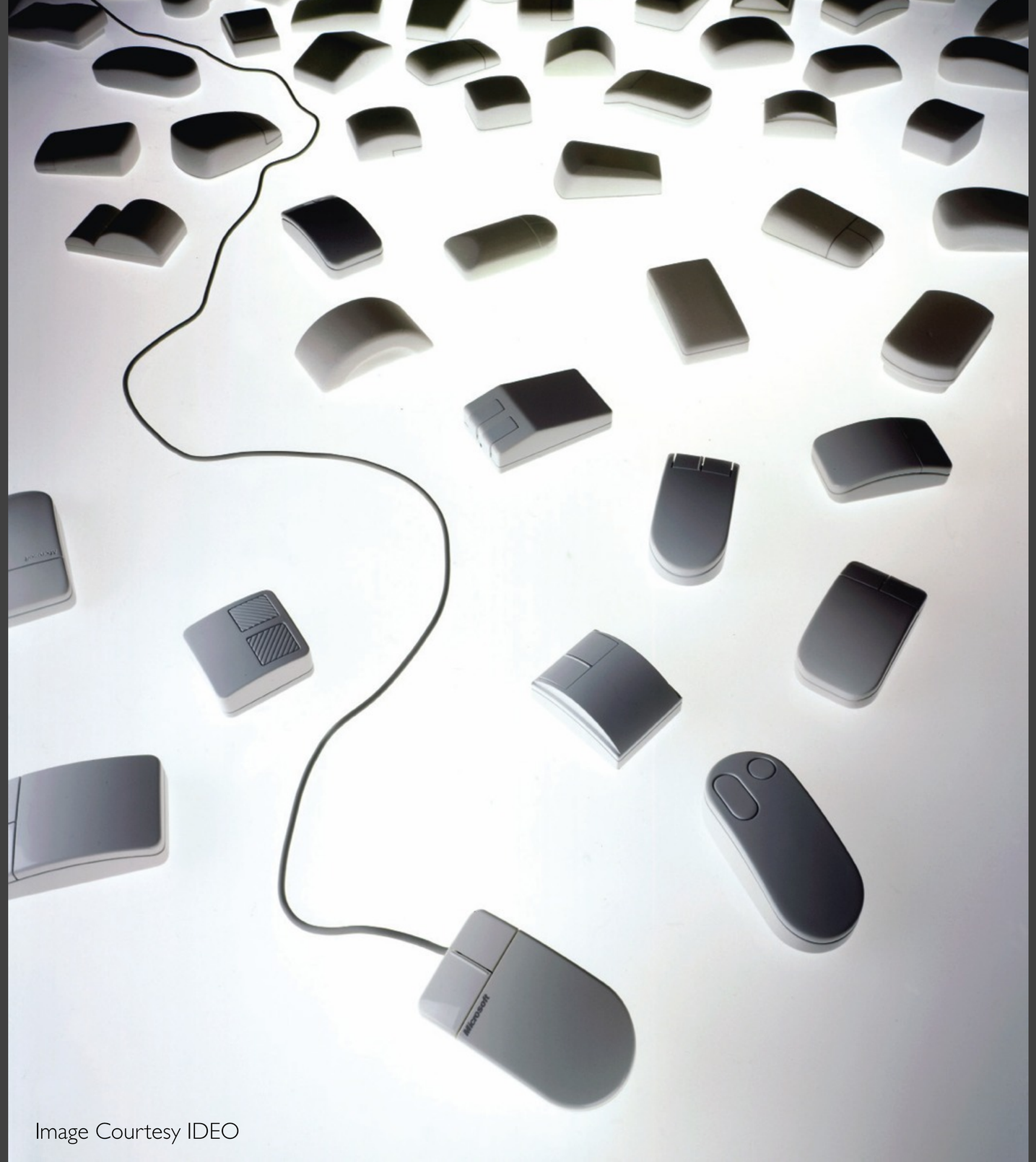
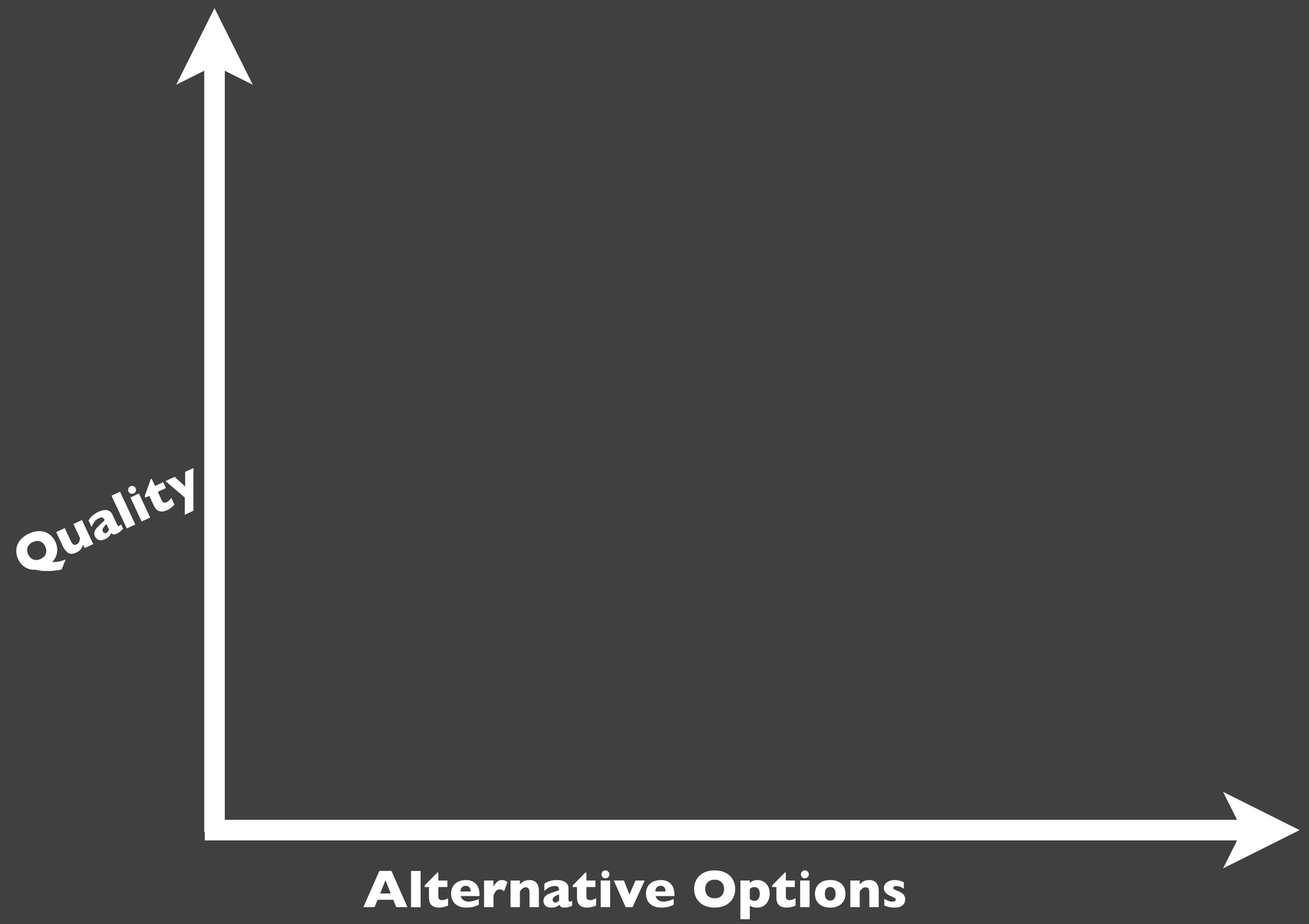
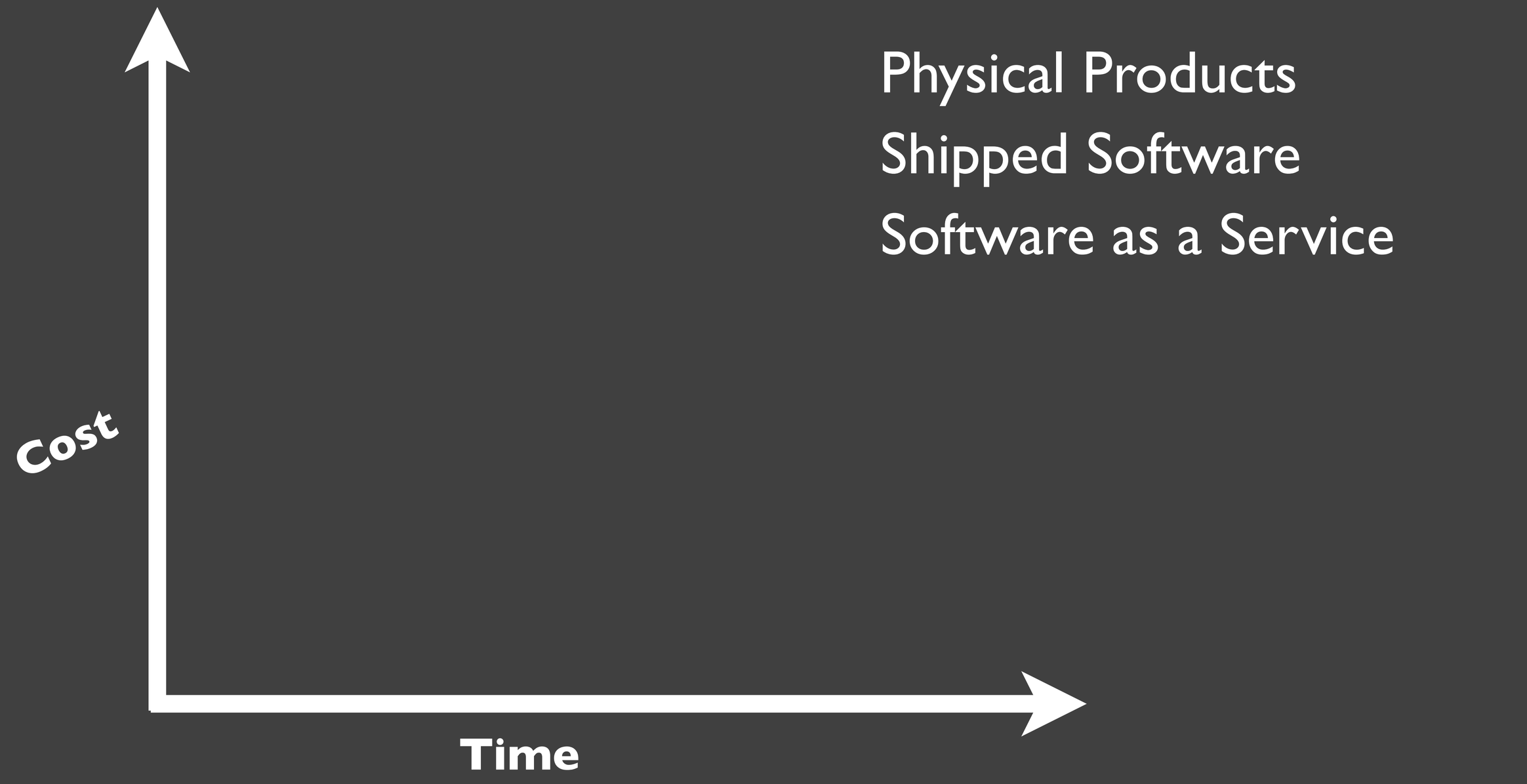


Image Courtesy IDEO

Rapid Prototyping as Simulated Annealing



Cost of change over time?



Physical Products
Shipped Software
Software as a Service

- Prototypes
- Are questions
- Ask lots of them

Further Reading

- Bill Buxton, *Sketching User Experiences*