Prototyping Design Clinics

Prototyping Theory, *Björn Hartmann, 1/22/2013*

Berkeley
UNIVERSITY OF CALIFORNIA

Prototype: ?

Prototypes:
the means by which designers organically
and evolutionarily learn, discover, generate, and refine designs.
(Lim & Stolterman)

Prototype:
a representation of a design, made before the final solution exists.
(Moggridge, Designing Interactions)

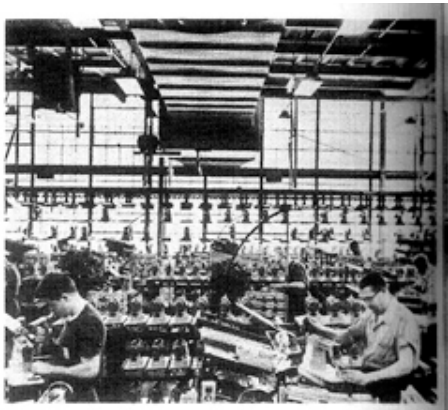
Prototyping:
producing early working versions of the future application system and experimenting with them.

(Lichter)

Industrial Design Process, ca. 1940 (Dreyfuss)

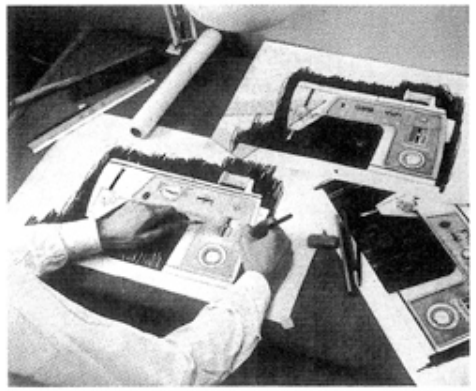
The distance between drawing board and assembly line is not one inspired leap for the industrial designer but rather a series of careful and patient steps. Our development of Singer's Model 600 sewing machine is typical. Although there is an infinity of steps in between, the eight shown here are fundamental to our approach to a client's problem.

1 We start by studying the competition. We analyze models and illustrations of other companies' merchandise, both here and from abroad.

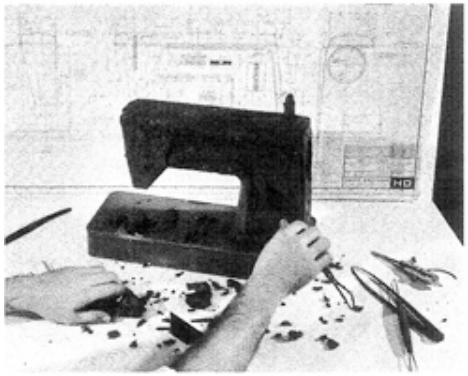


2 We familiarize ourselves with the client's manufacturing facilities. We like to know the limitations as well as the potentials of his plants.

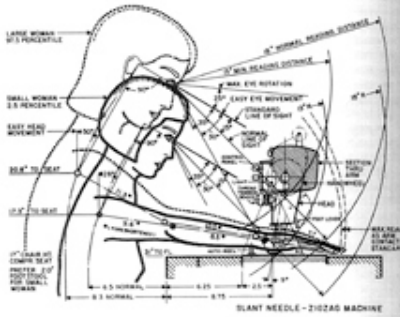
3 We learn how the product will be used. In developing Model 600, our designers took a Singer sewing course, Singer zig-zag stitching and all.



4 After consultations with top management, sales executives and engineers, we develop a variety of idea sketches.

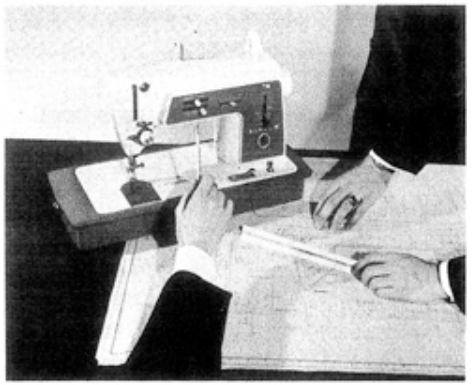


5 Now we're ready to study the design in three dimensions. We start this phase of the work with a rough clay model.



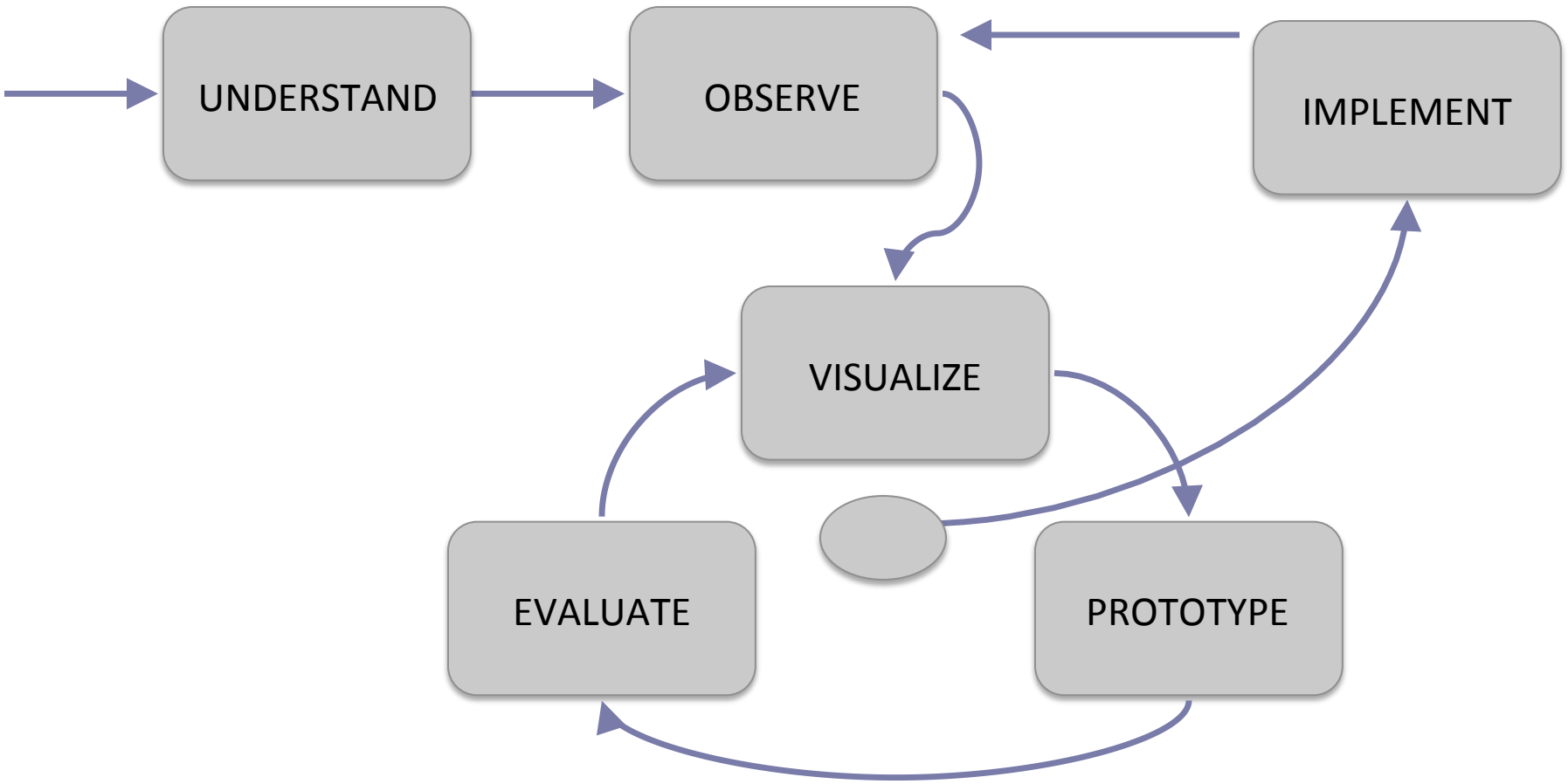
6 Using the anthropometric techniques we originated, we turn to human engineering. We see how a mother and daughter will use the machine.

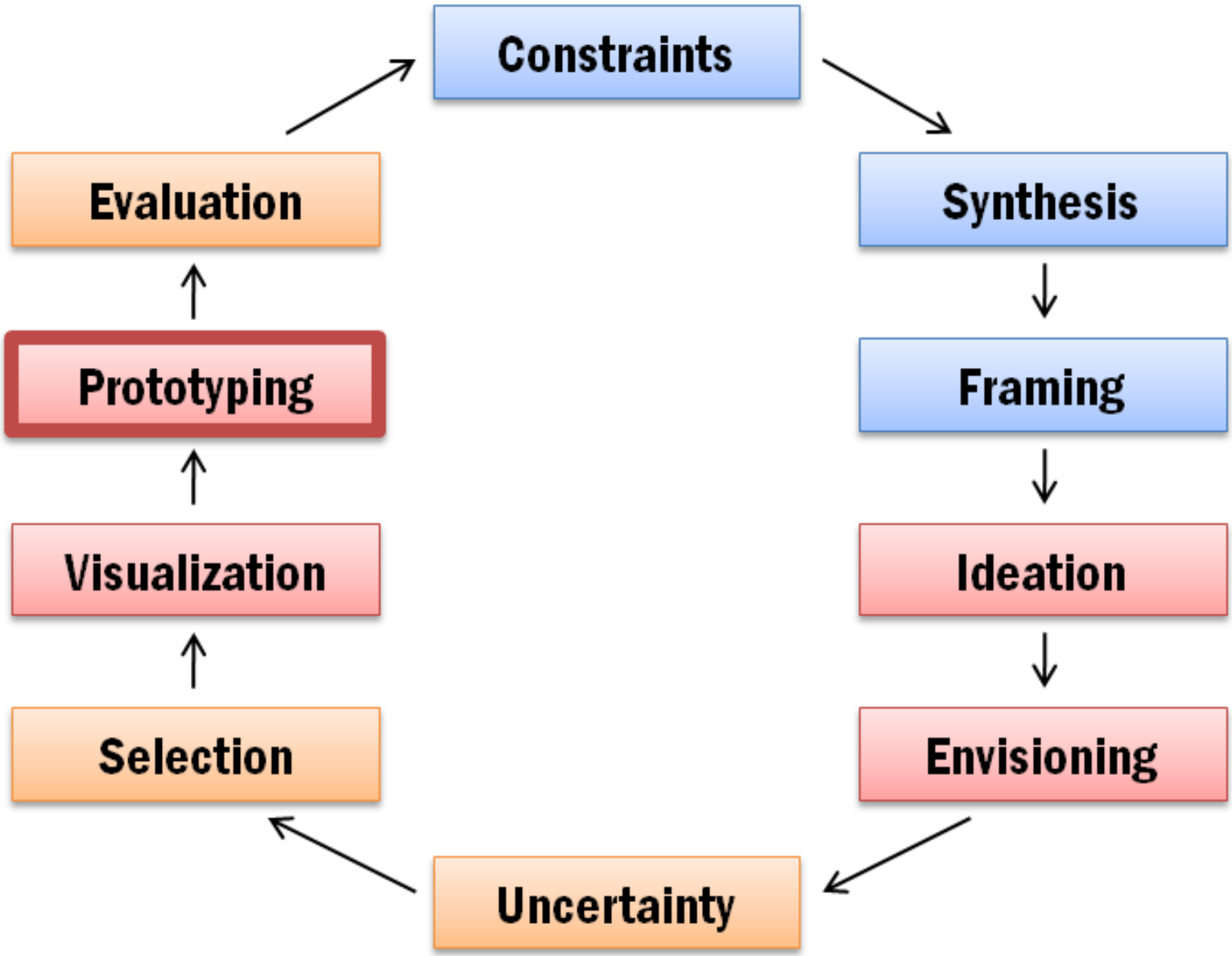
7 Through each step there is close collaboration with our client's engineers. Working drawings are made and checked against their pilot model.

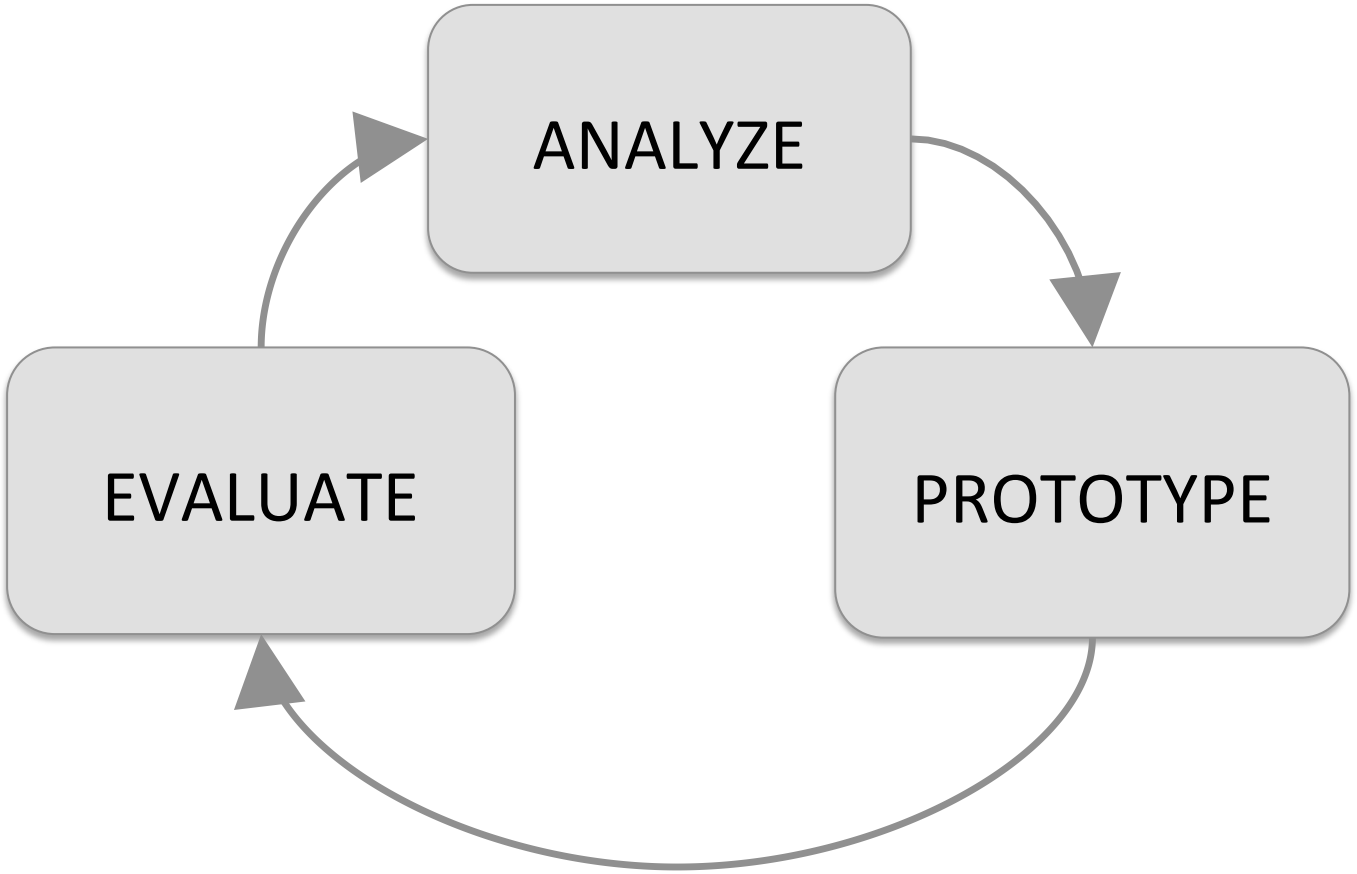


8 A prototype model—identical to the production-line product in every detail—completes the project. Exit designer. Enter sales team.

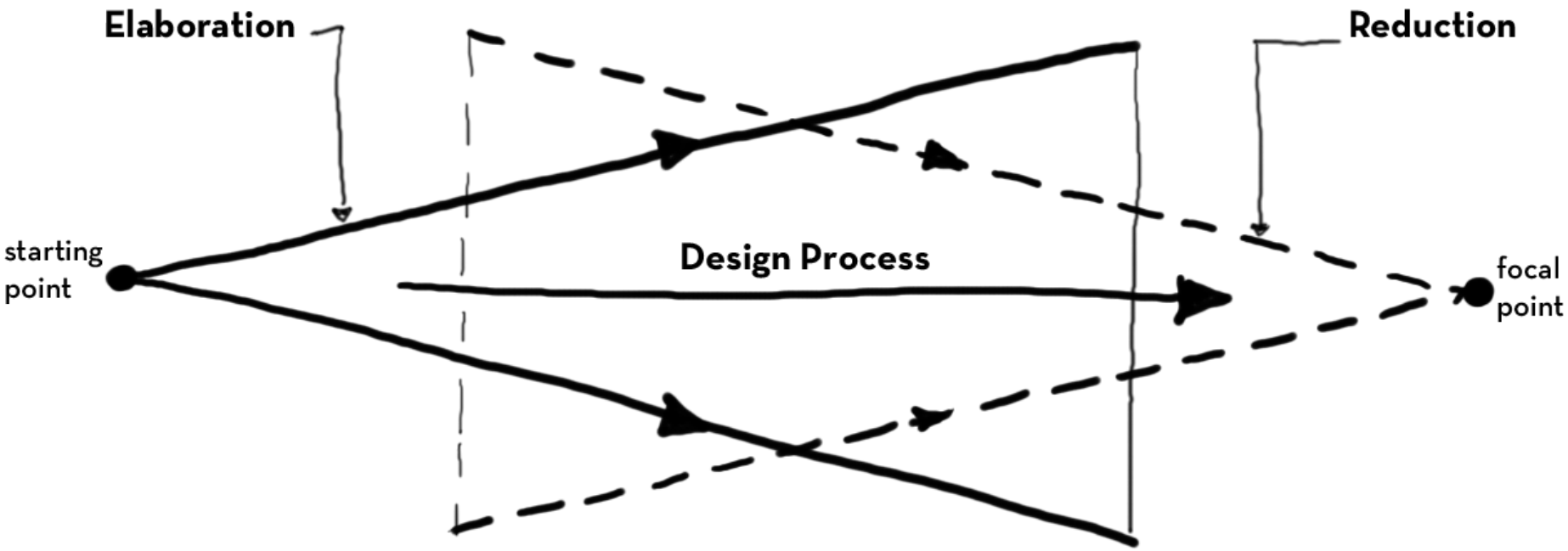
d.school design process




Constraints
Synthesis
Framing
Ideation
Envisioning
Uncertainty
Selection
Visualization
Prototyping
Evaluation



Dreyfuss, Designing for People, 1955;
Lawson, How Designers Think, 1997;
Cross, Designerly Ways of Knowing, 2005

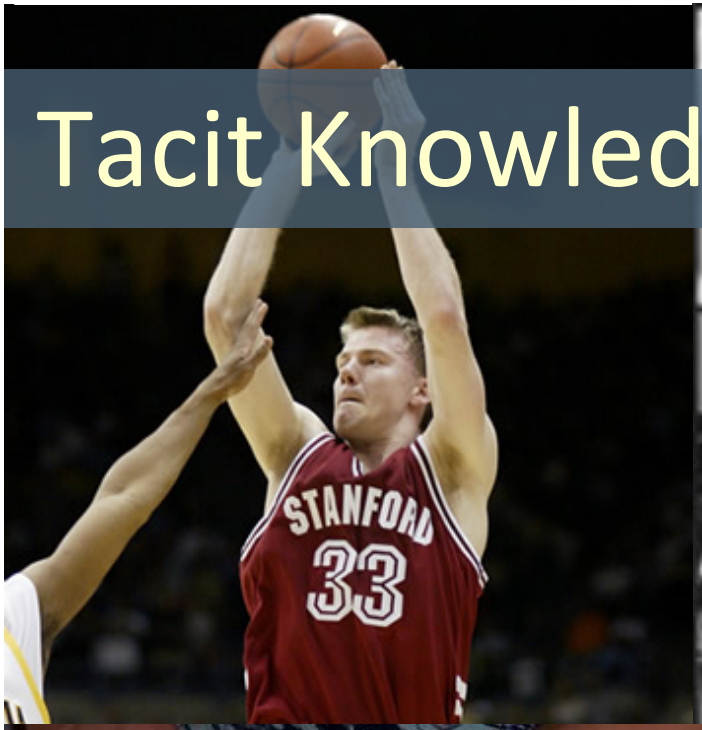

Elaboration
Reduction
starting point
Design Process
focal point

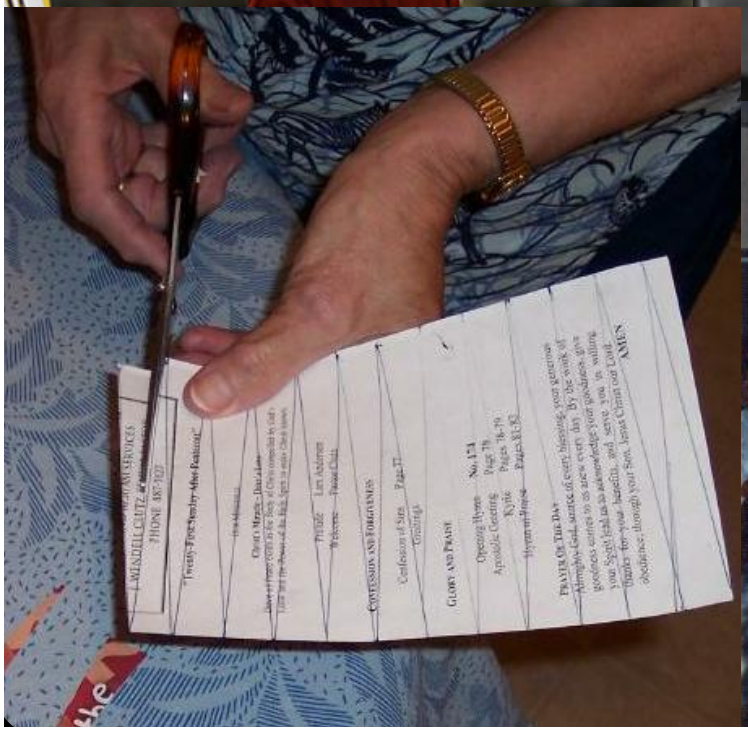
The Value of Prototyping

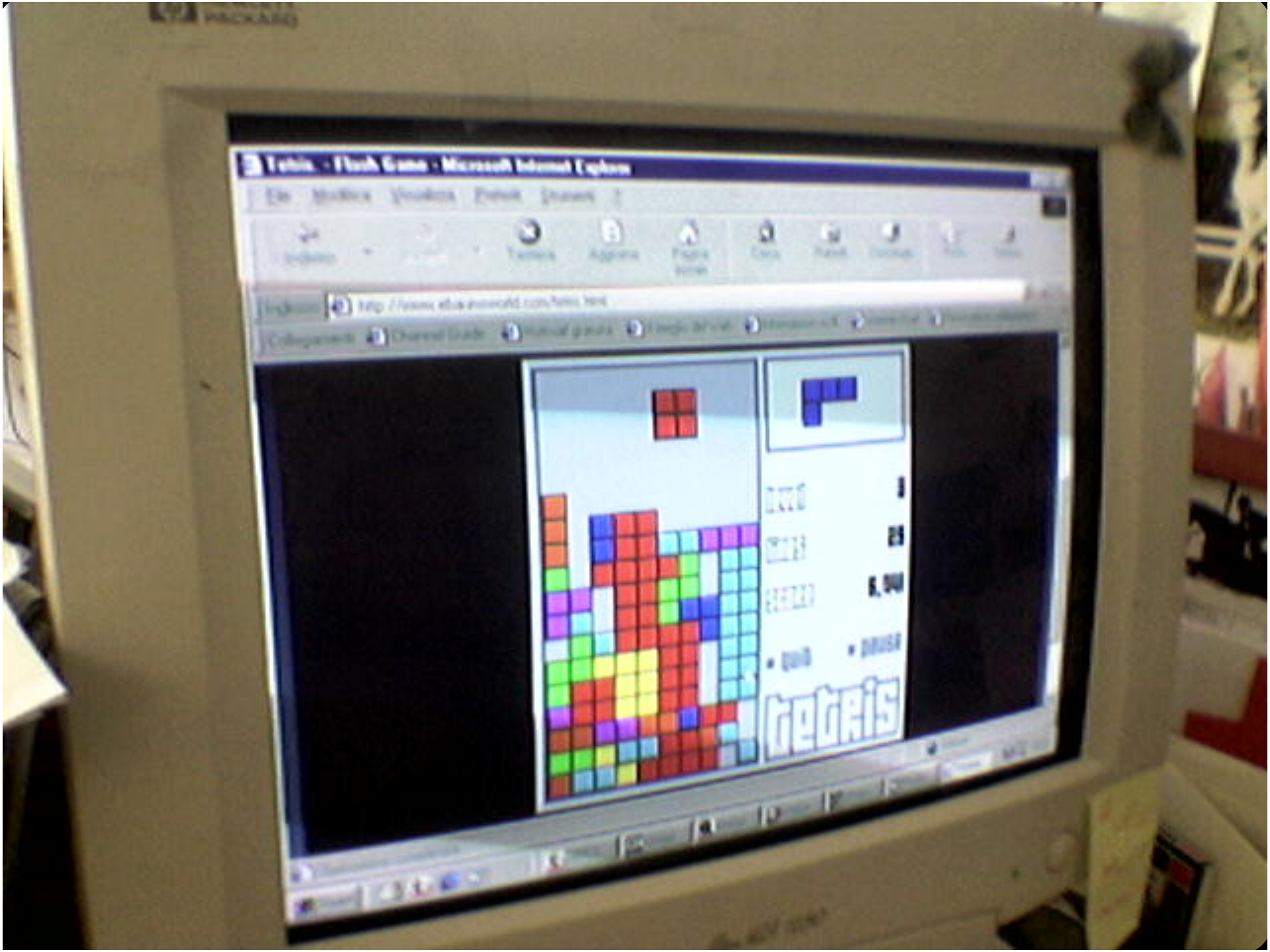
Benefits of Prototyping

1. We know more than we can tell
2. Actions in the world outperform mental operations
3. The value of surprise

Tacit Knowledge






tetris

The Purpose of Prototyping

What questions do prototypes answer?
When and how should they be constructed?

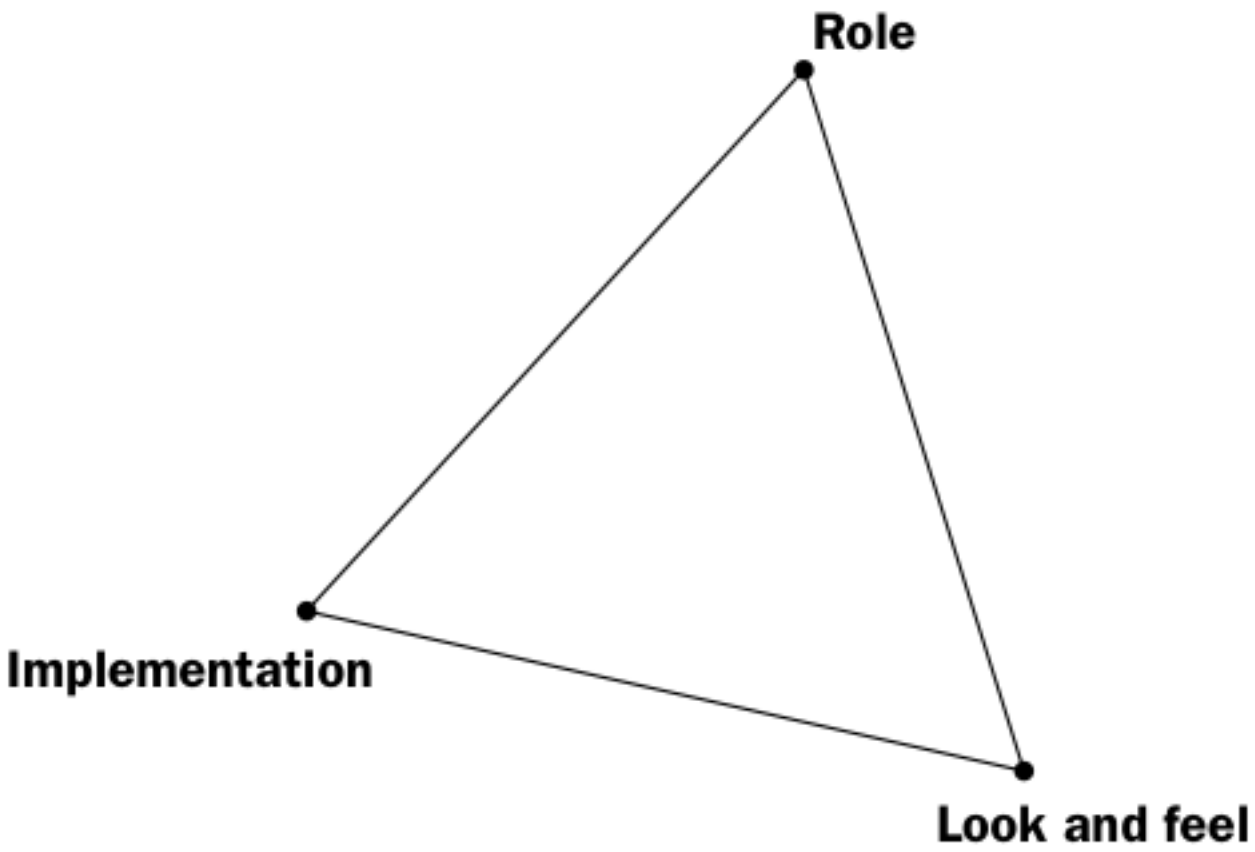
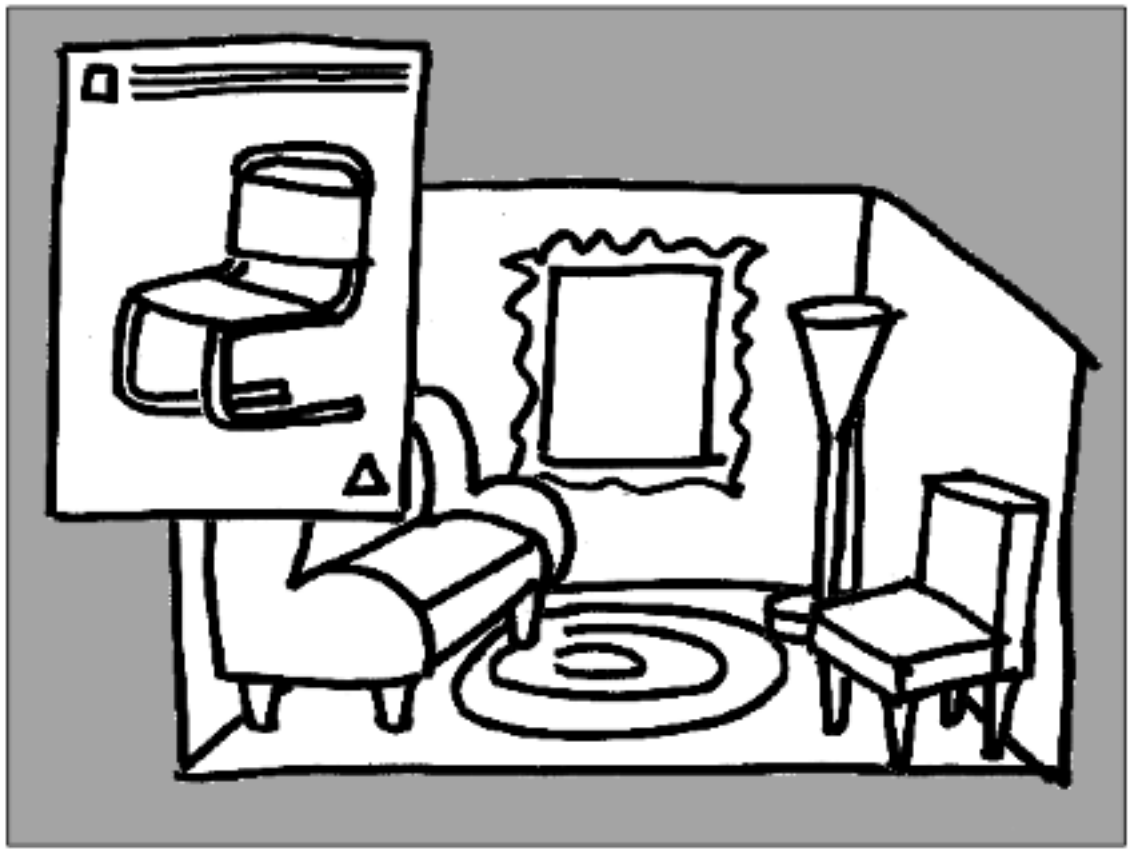
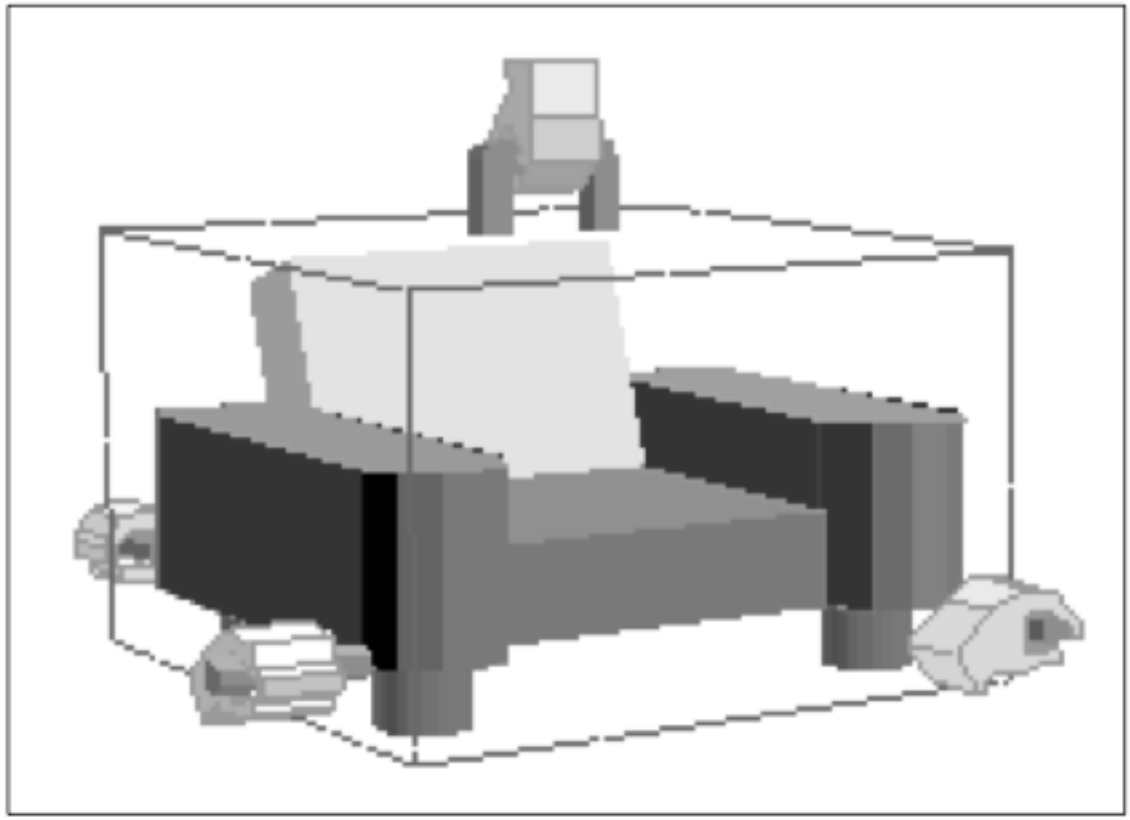


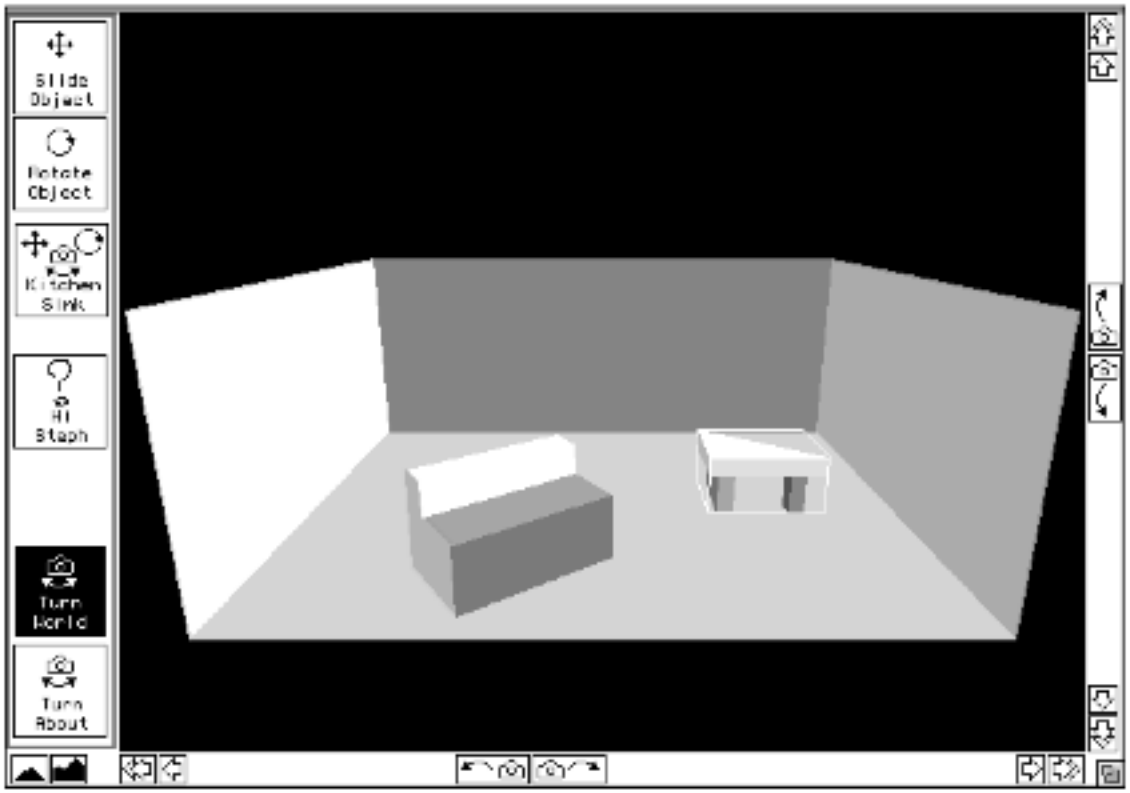
Figure 1. A model of what prototypes prototype.



Example 1. Role prototype for 3D space-planning application [E1 Houde 1990].



Example 2. Look-and-feel prototype for 3D space-planning application [E2 Houde 1990].



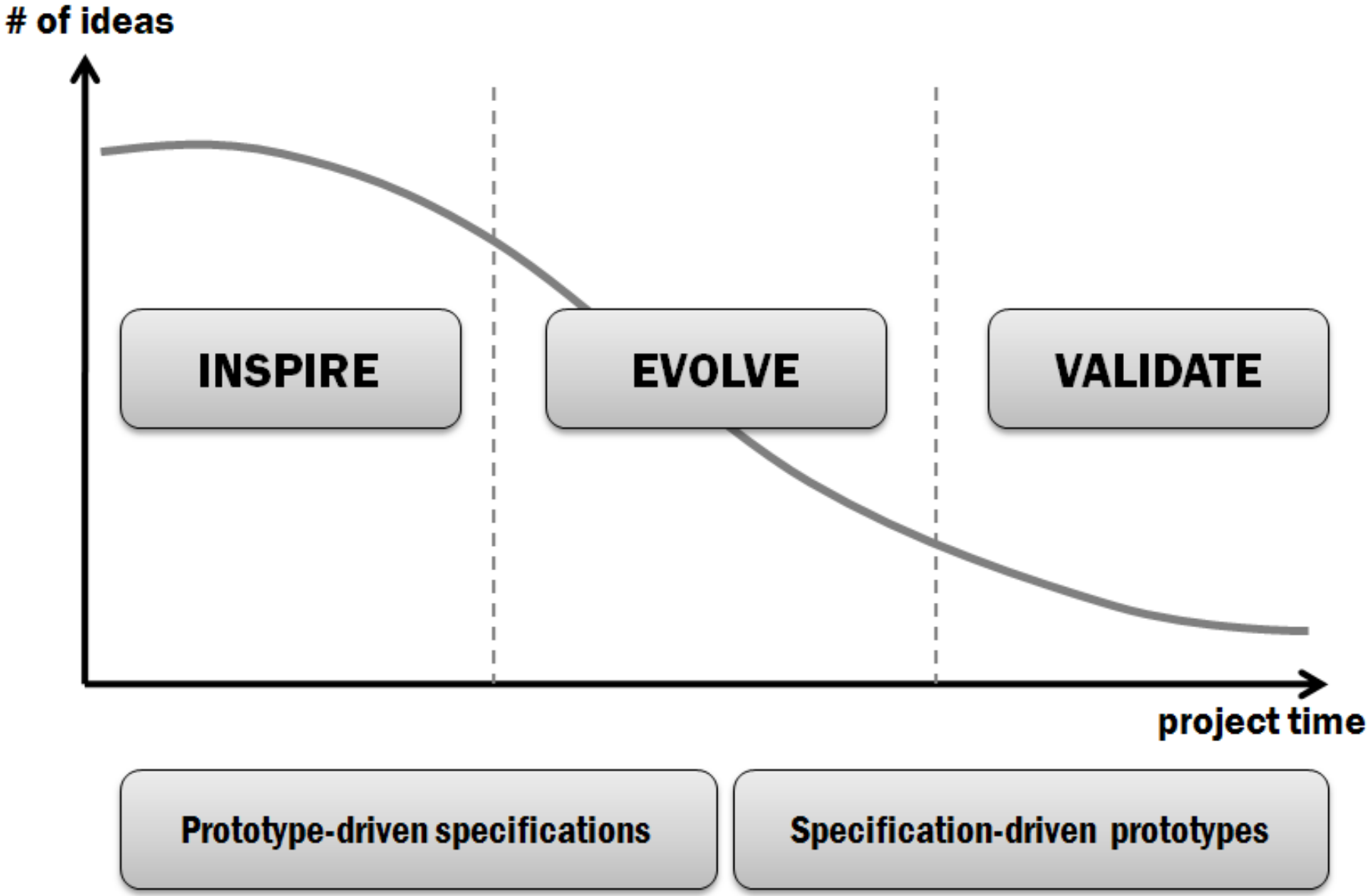
Example 3. Implementation prototype for 3D space-planning application [E3 Chen 1990].

Experience Prototype:
"[A]n Experience Prototype is any kind of representation, in any medium, that is designed to understand, explore or communicate what it might be like to engage with the product, space or system we are designing".

(Buchenau & Suri)

Figure 2: Experiencing a train journey.

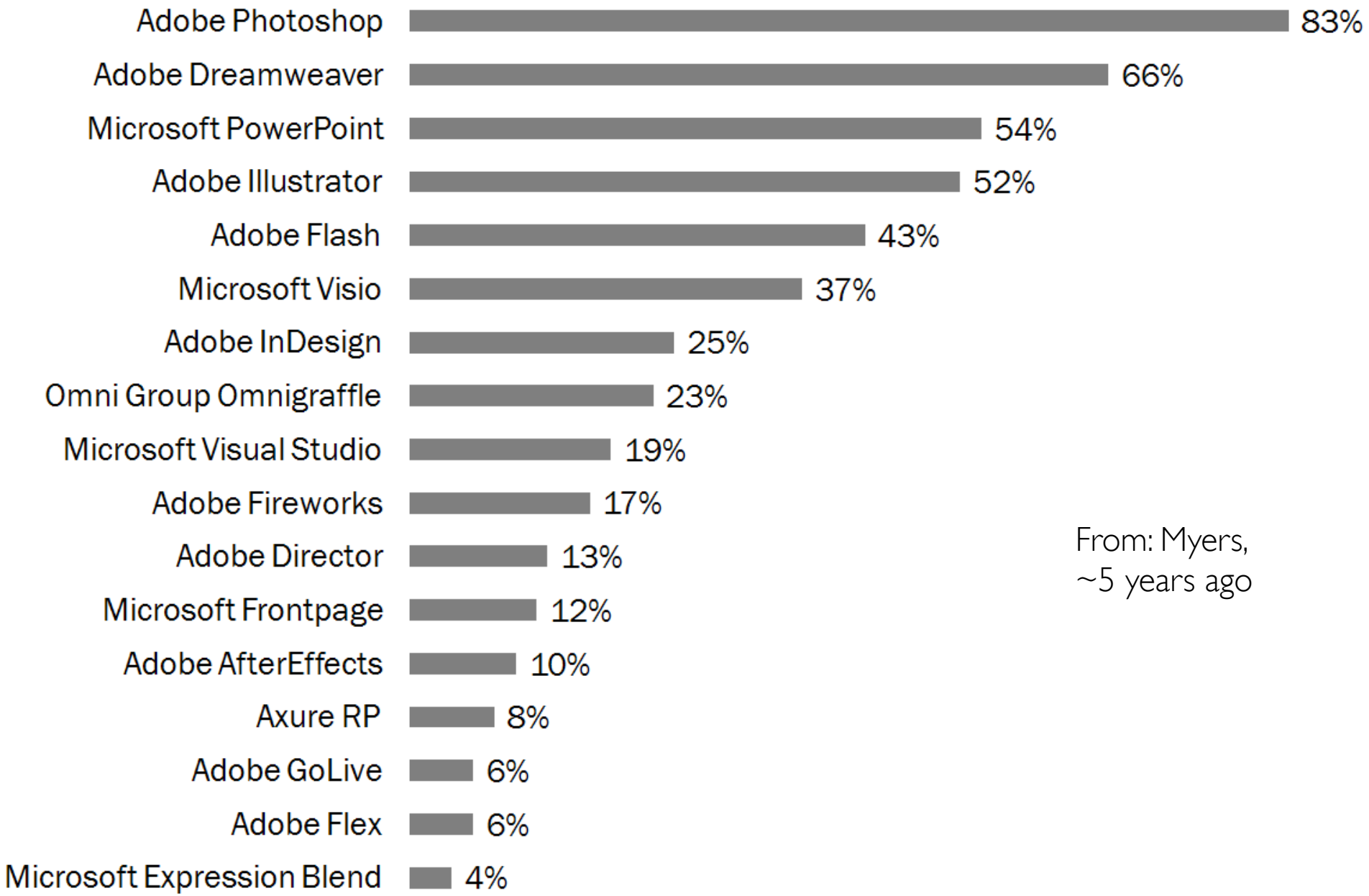
Three Stages of Prototyping (IDEO)



Exploration
vs.
Communication

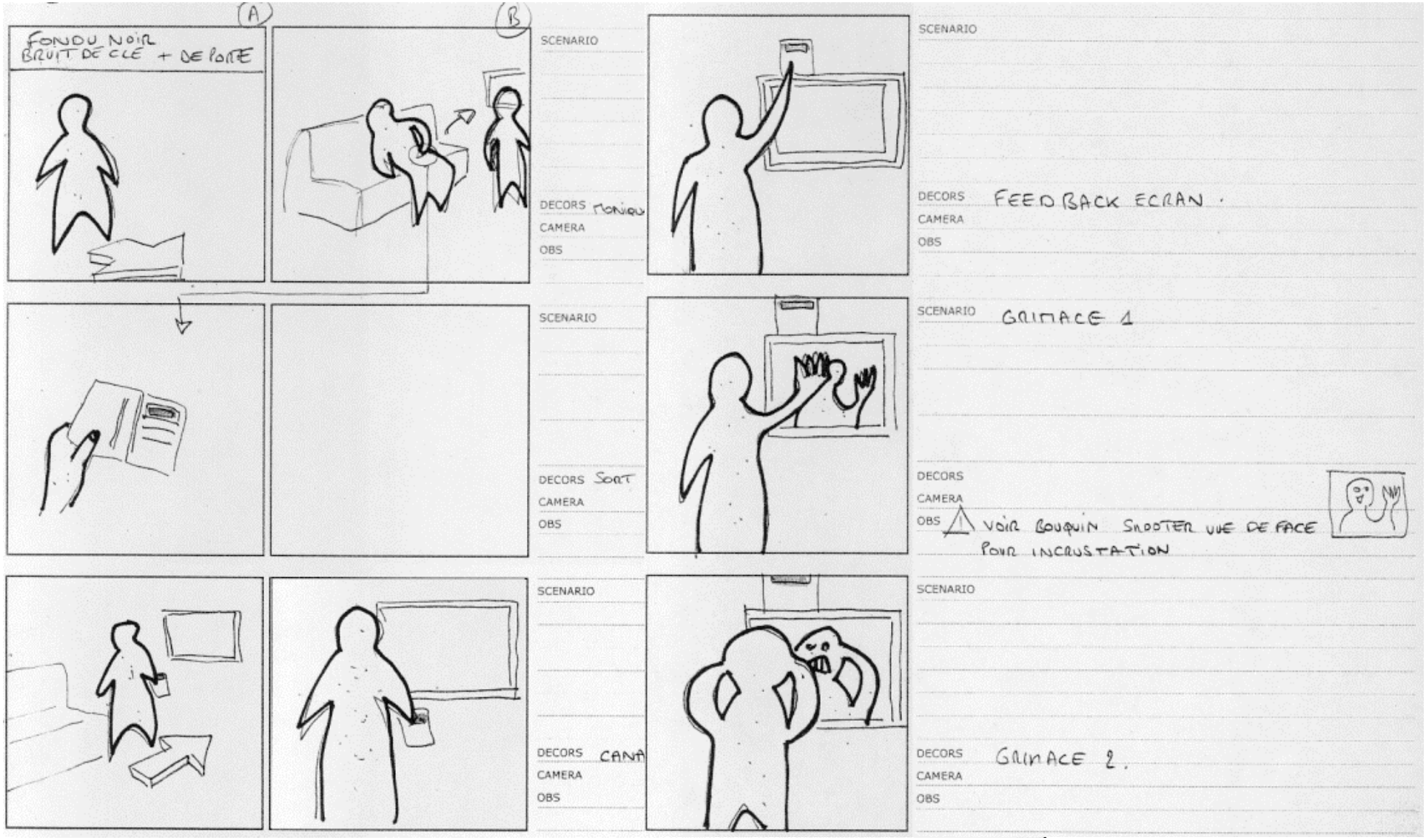
What tools do designers in industry use to prototype?

Professional Use of Prototyping Tools Reported by Myers



From: Myers,
~5 years ago

Examples


A
B
FONDU NOIR
BRUIT DE CLÉ + DE PORTE
SCENARIO
DECORS Monieu
CAMERA
OBS
SCENARIO
DECORS FEEDBACK ECRAN.
CAMERA
OBS
SCENARIO
DECORS Sort
CAMERA
OBS
SCENARIO GRIMACE 1
DECORS
CAMERA
OBS VOIR BOUQUIN SHOOTER UNE DE FACE POUR INCRUSTATION
SCENARIO
DECORS CANA
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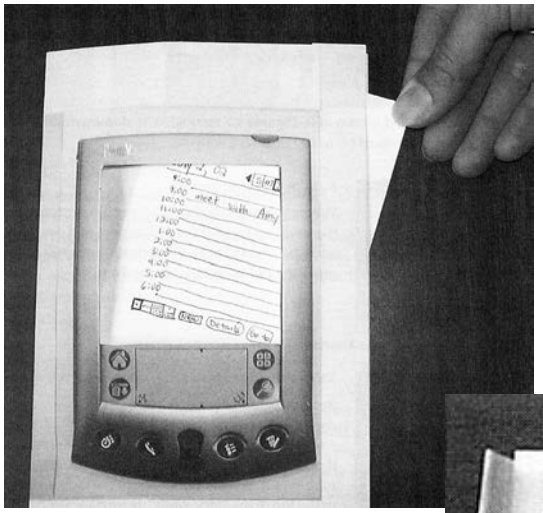
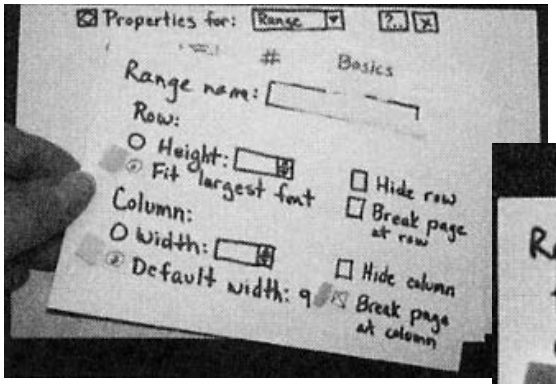
OBS
SCENARIO
DECORS GRIMACE 2.
CAMERA
OBS

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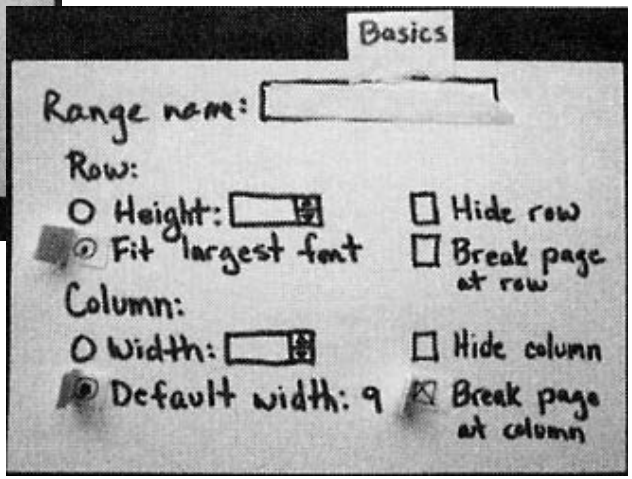
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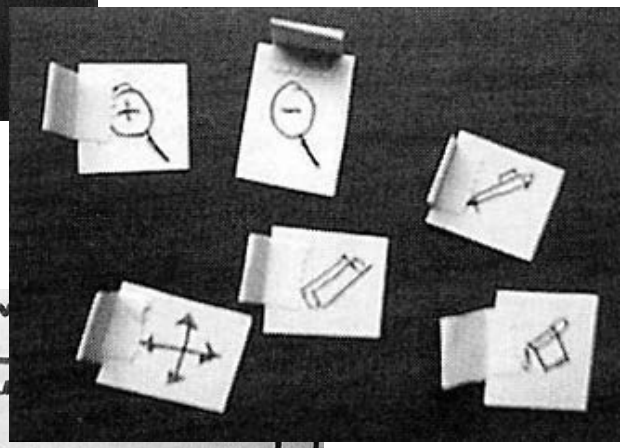
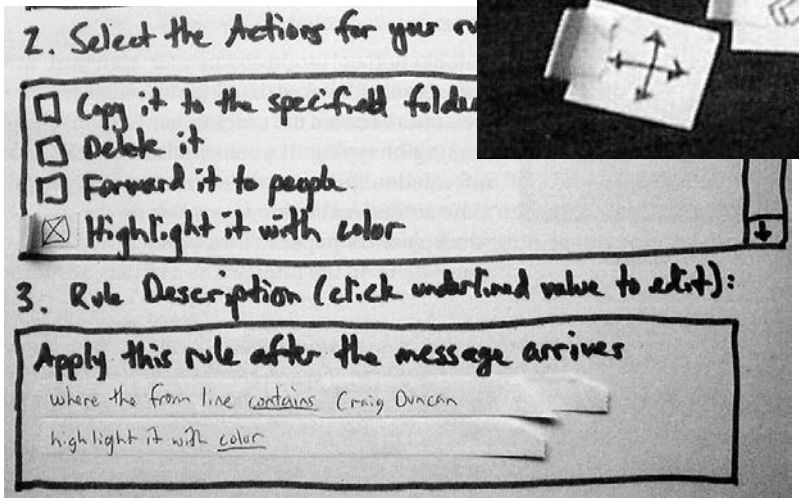
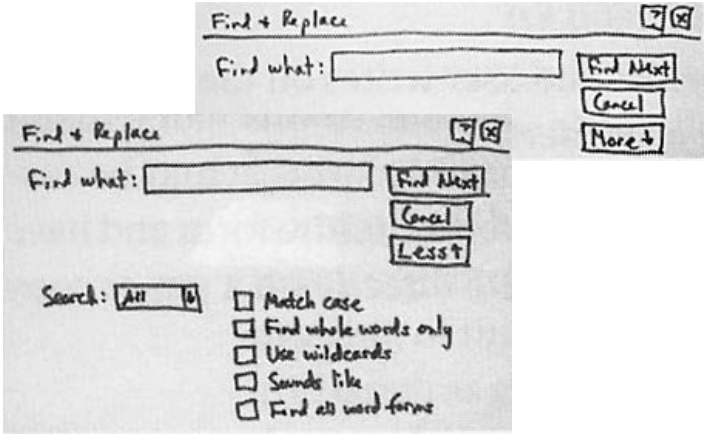
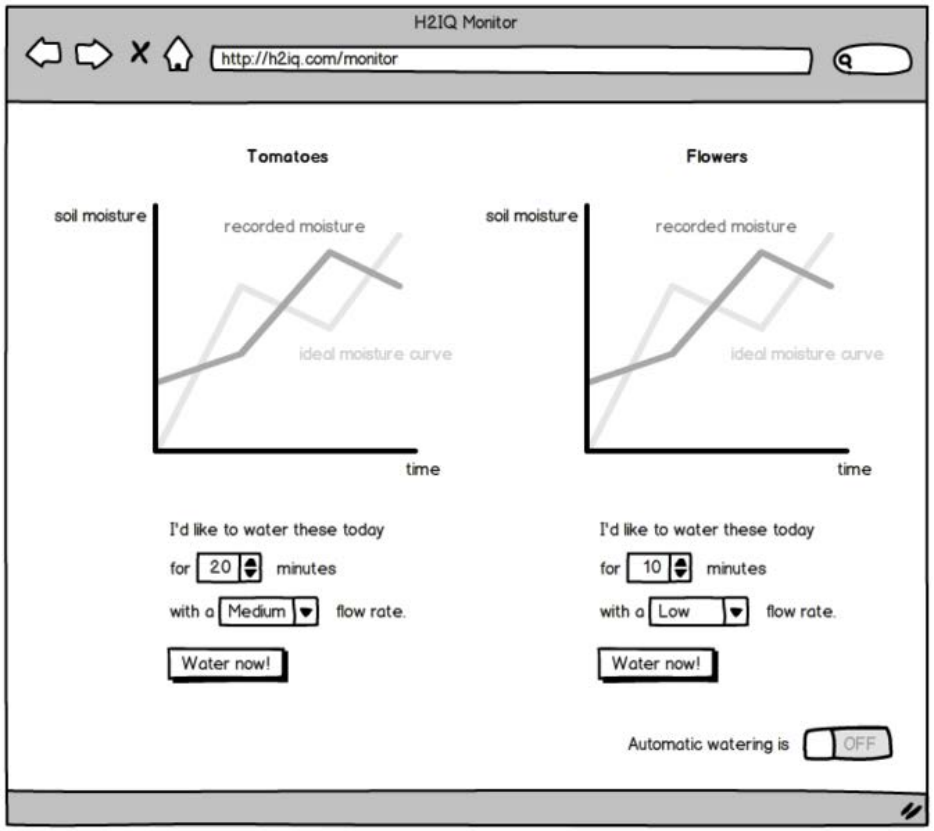


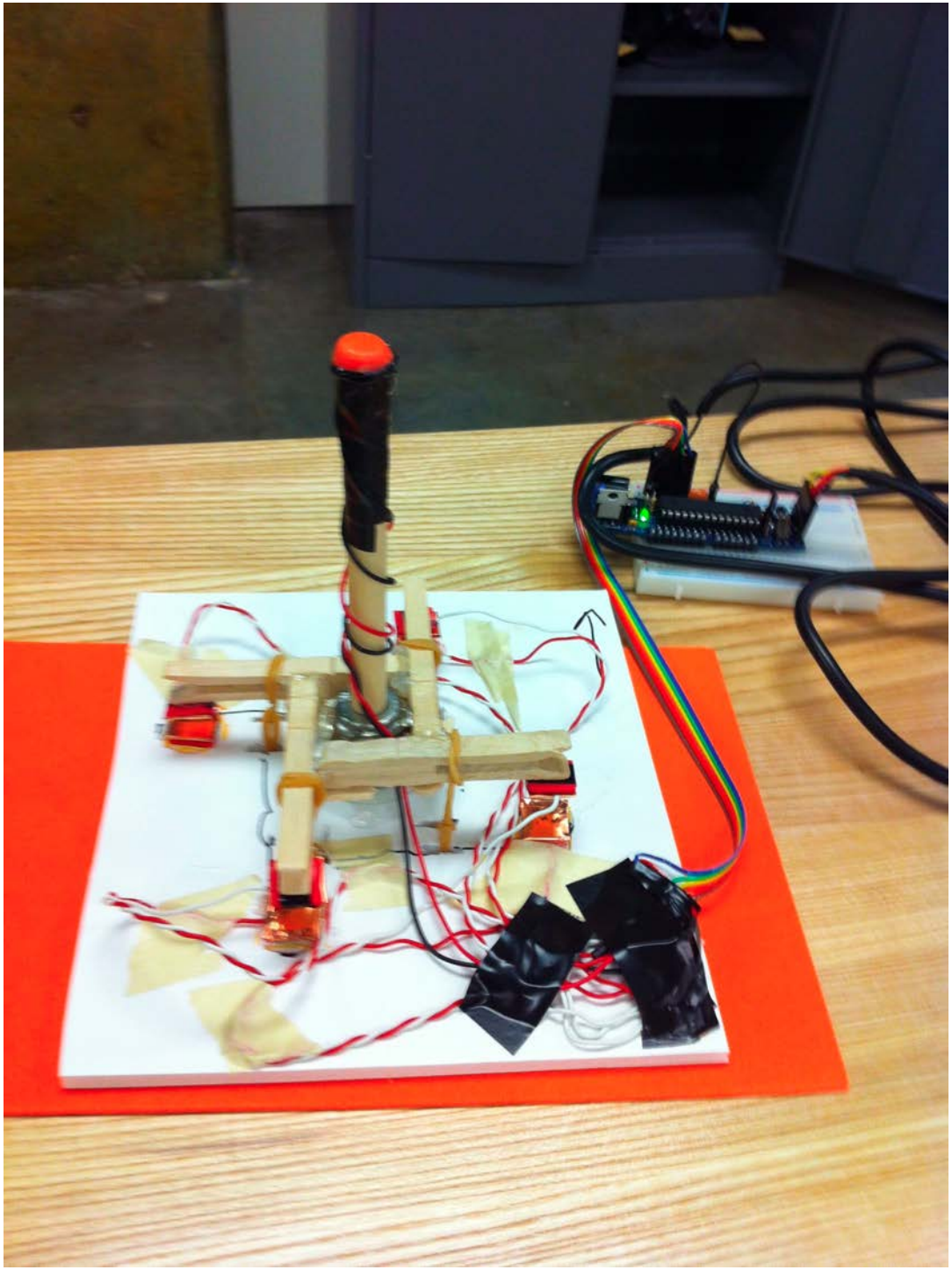

2. Select the Actions for your
Copy it to the specified folder
Delete it
Forward it to people
Highlight it with color
3. Rule Description (click underlined value to edit):
Apply this rule after the message arrives
where the from line contains Craig Duncan
highlight it with color


Find + Replace
Find what:
Find Next
Cancel
More
Find + Replace
Find what:
Find Next
Cancel
Less
Search: All
Match case
Find whole words only
Use wildcards
Sounds like
Find all word forms

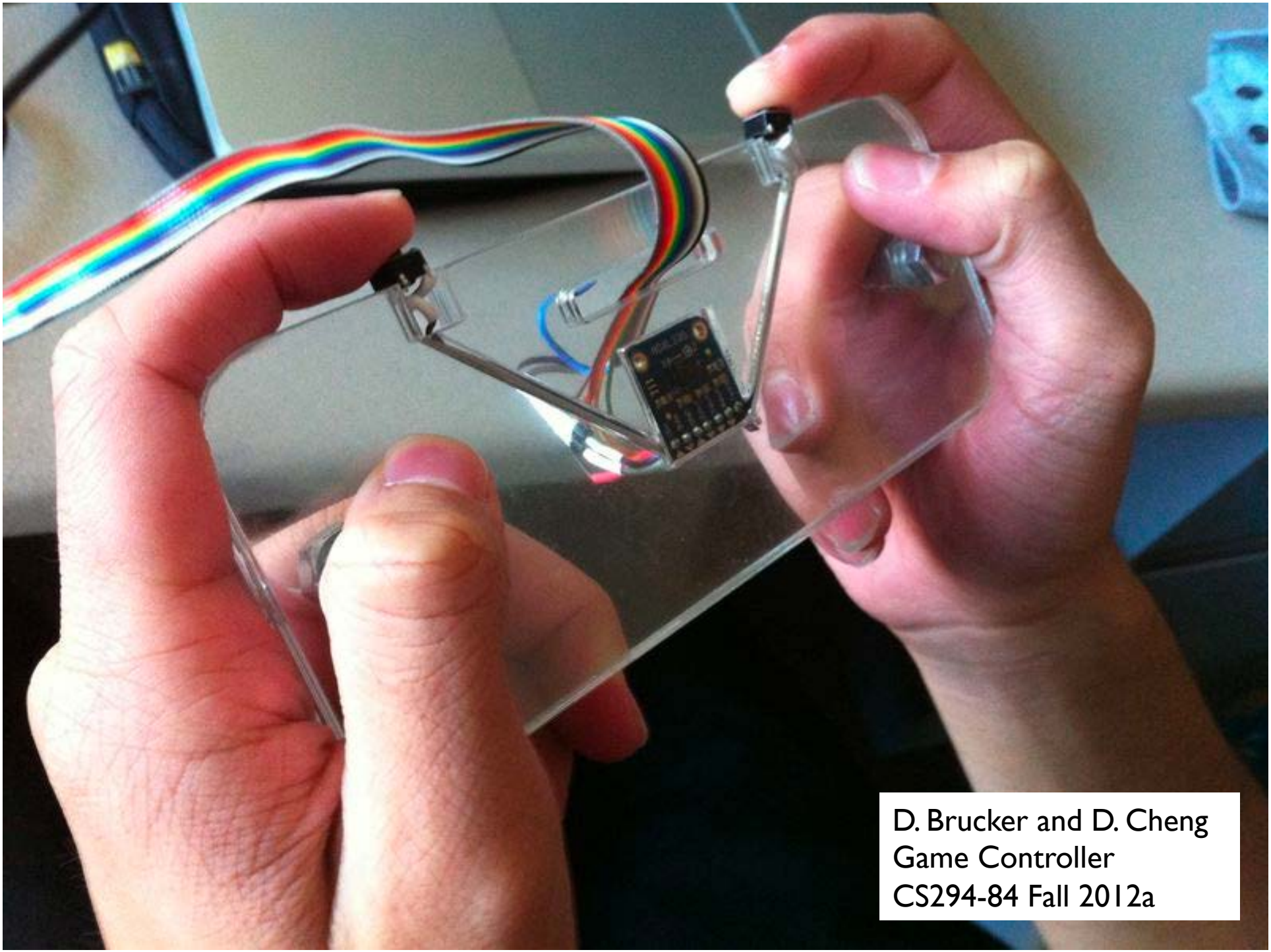
Drinke Team
Smart Cup
CS294-84
Fall 2012



M. Fuge, V. Savage, S. Ginosar
H2Q IQ Prototype
Balsamiq Mockups, Foam
CS294-84 Fall'12



Text Entry Device
Daniel Bruckner
CS294-84, Fall 2012
http://husk.eecs.berkeley.edu/courses/cs294-84-fall12/index.php/Homework2-DanielBruckner


D. Brucker and D. Cheng
Game Controller
CS294-84 Fall 2012a

VeriFun:
IQ and Causality Games for Software Verification

Demonstration of the CrowdMine Game

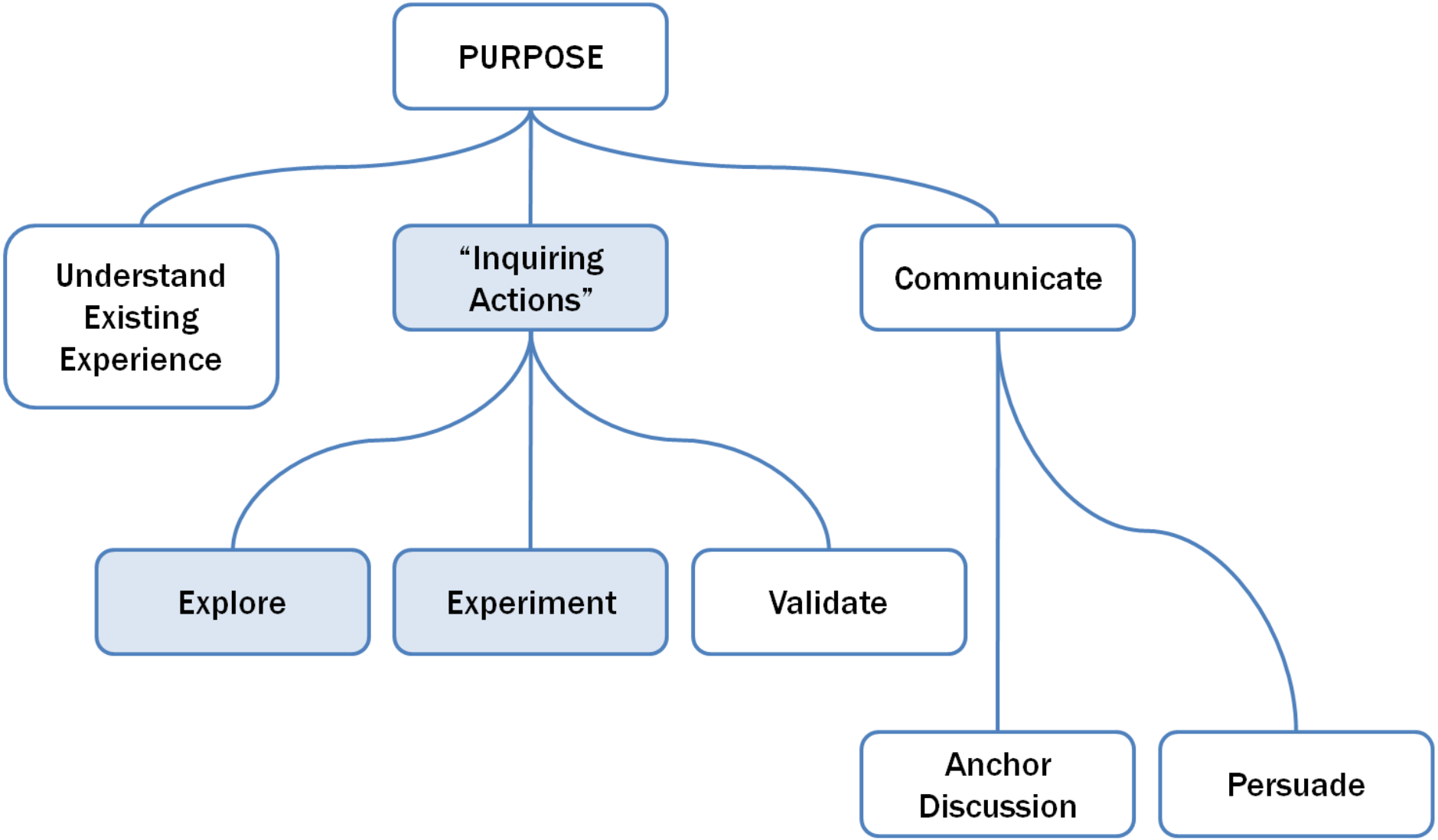
WINEM

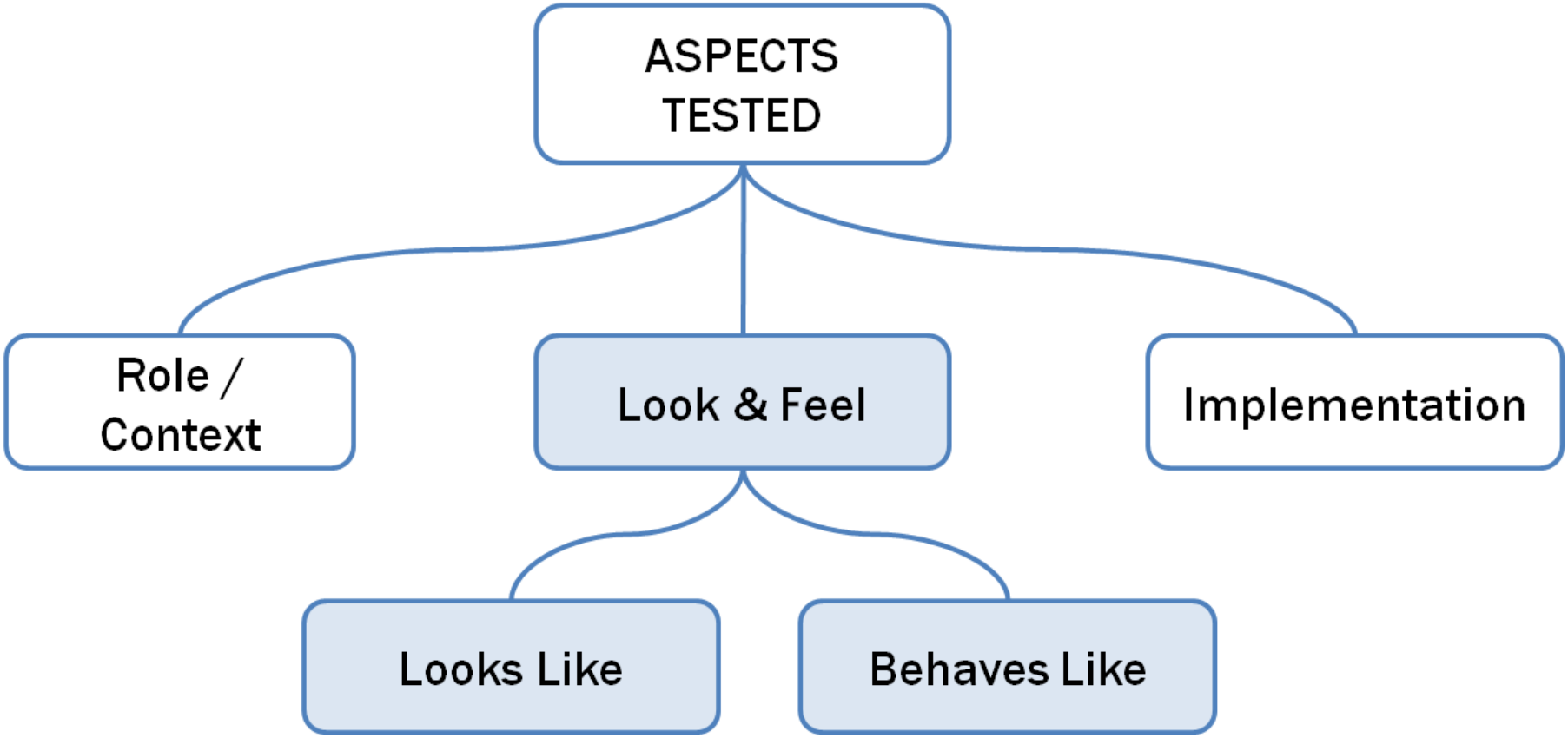
THE RFID WINE RACK

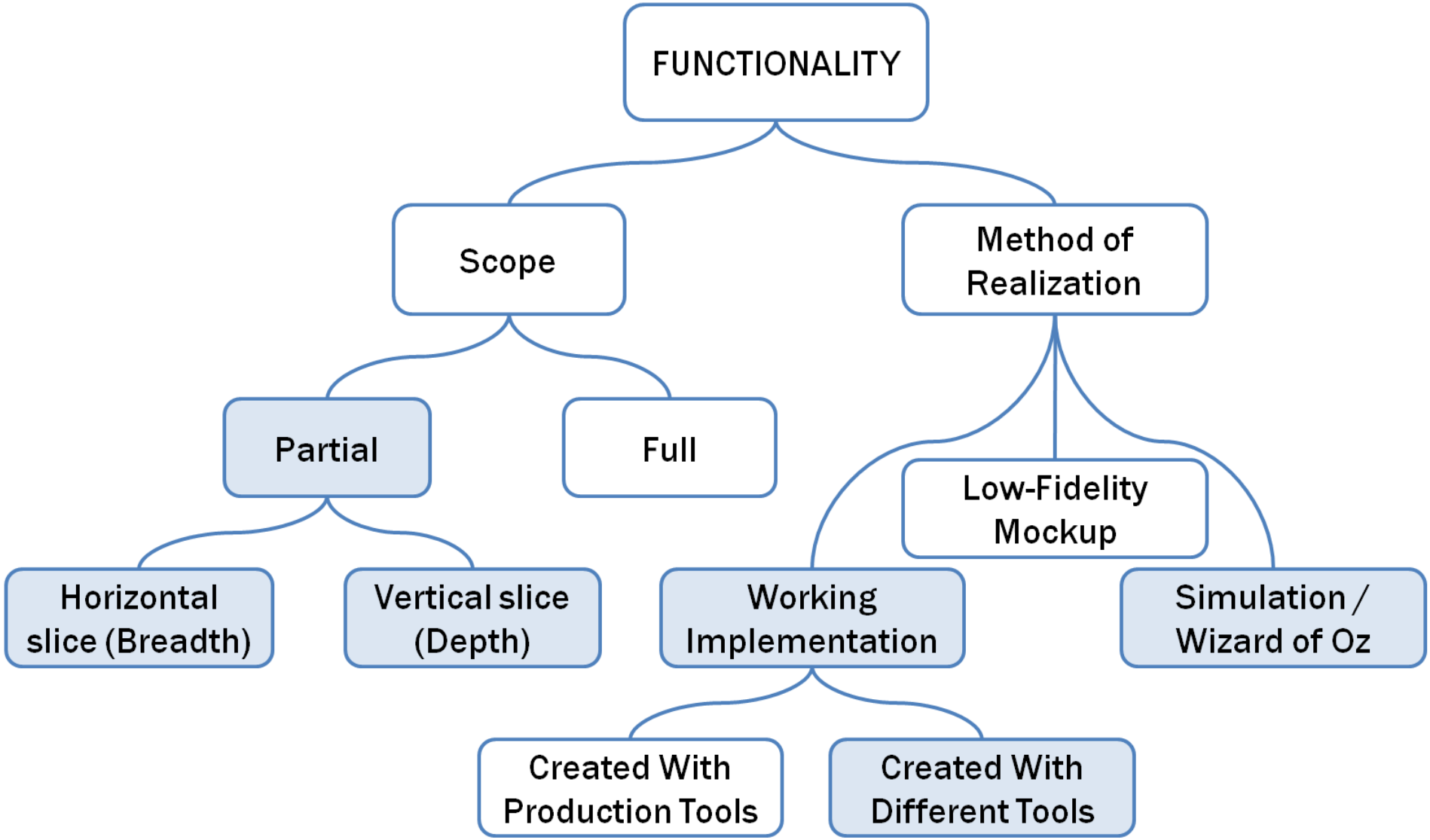
A TECHNOLOGY SKETCH FROM

thingm.com

Summary


PURPOSE
Understand Existing Experience
“Inquiring Actions”
Communicate
Explore
Experiment
Validate
Anchor Discussion
Persuade


ASPECTS TESTED
Role / Context
Look & Feel
Implementation
Looks Like
Behaves Like


FUNCTIONALITY
Scope
Method of Realization
Partial
Full
Low-Fidelity Mockup
Horizontal slice (Breadth)
Vertical slice (Depth)
Working Implementation
Simulation / Wizard of Oz
Created With Production Tools
Created With Different Tools