Prototyping

ID 405: Human-Computer Interaction
Spring 2015

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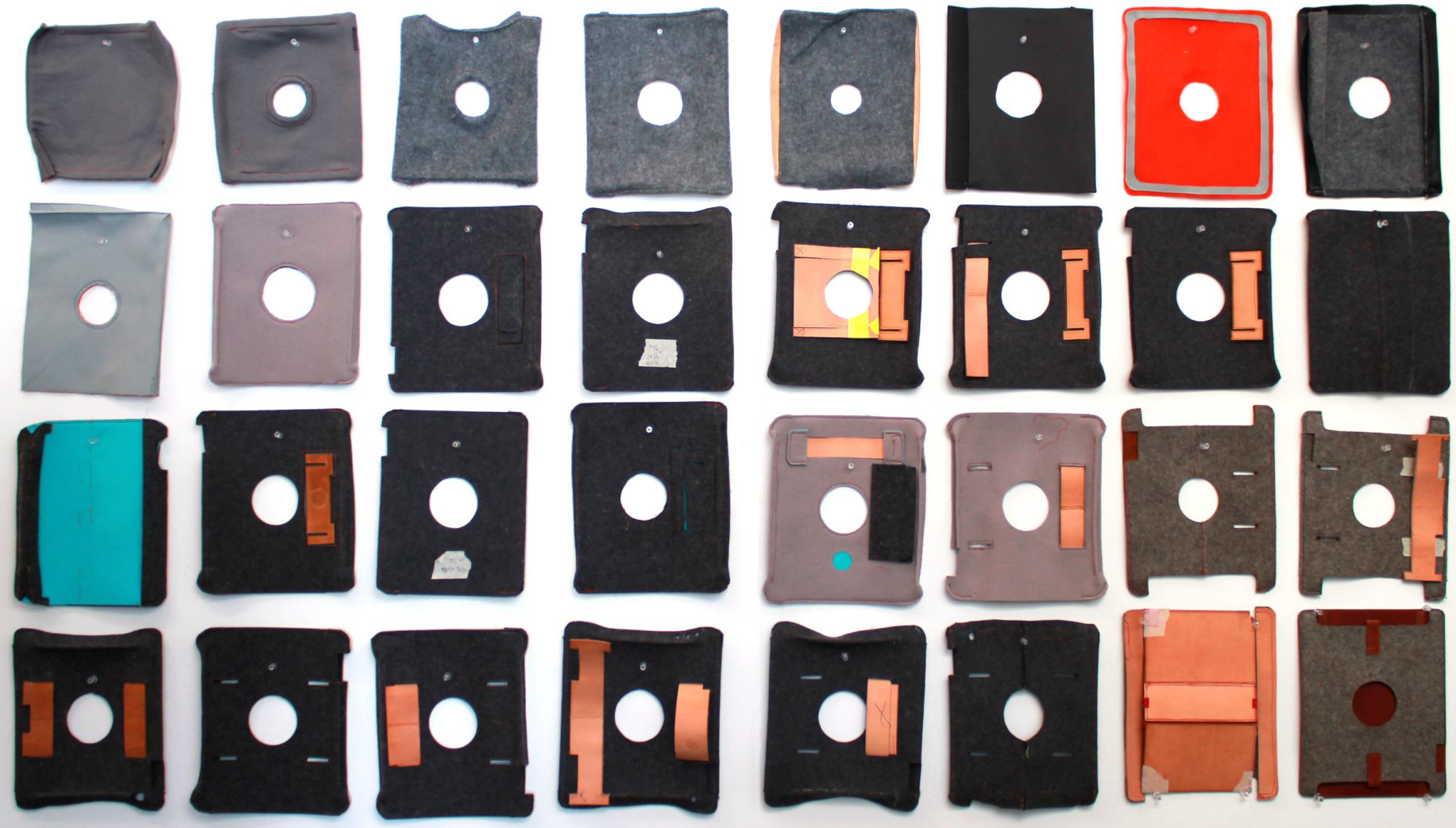
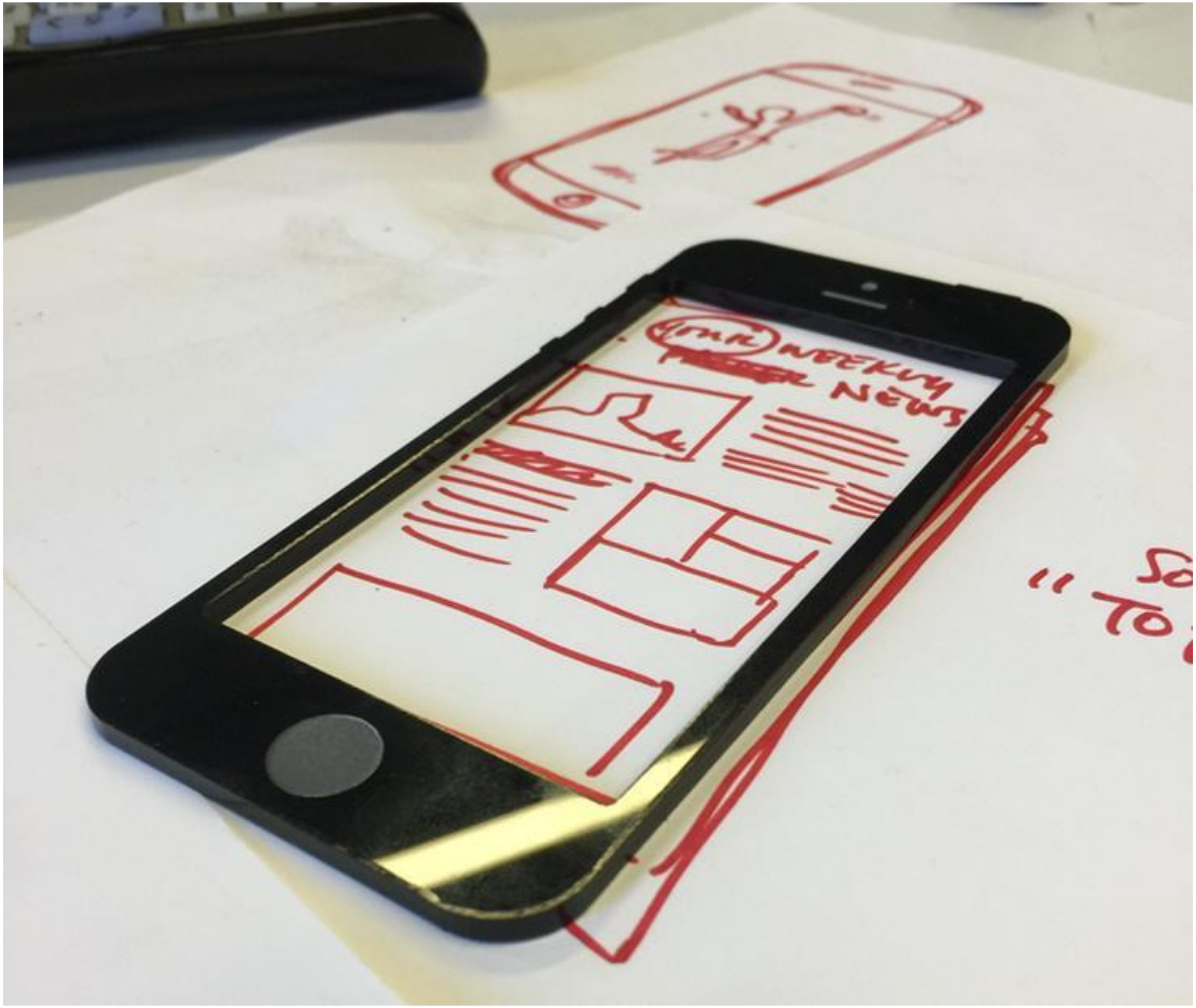
http://info-design-lab.github.io/ID405-HCI/

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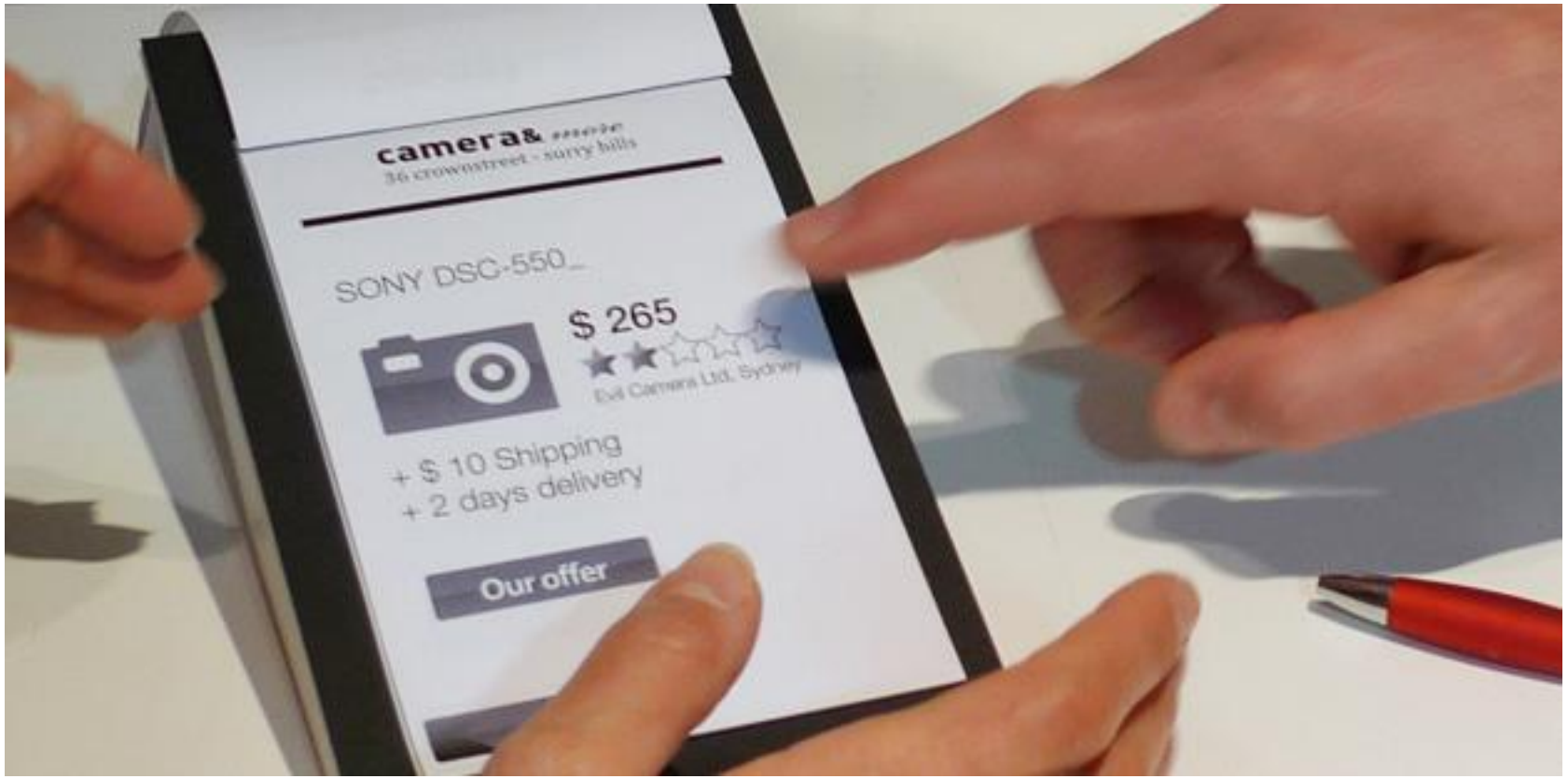
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- Jeff Hawkins, Palm co-founder and one of the inventors of the Palm Pilot and his wooden block prototype
- *GRiDPad*: not in building 'it' wrong, but building the wrong 'it'

What is a prototype?

In interaction design it can be (among other things):

- a series of screen sketches
- a storyboard
- a *PowerPoint* slide show
- a video simulating the use of a system
- a lump of wood
- a cardboard mock-up
- a role-play
- a piece of software with limited functionality

Why prototype?

- Useful aid when discussing idea with stakeholders
- Communication device amongst designers
- Support designers in choosing between alternatives
- User testing and evaluation
- Low fidelity prototypes are low cost and fast assembly, affording multiple concept testing in short time frame

Quantity vs. Quality

David Bayles and Ted Orland in *Art and fear: Observations on the Perils (and Rewards) of Artmaking*

Quantity vs. Quality

While the quantity group was busily churning out piles of work – and learning from their mistakes – the quality group had sat there theorizing perfection, and in the end had little more to show for their efforts than grandiose theories and a pile of dead clay.

David Bayles and Ted Orland in *Art and fear: Observations on the Perils (and Rewards) of Artmaking*

Functional Fixation

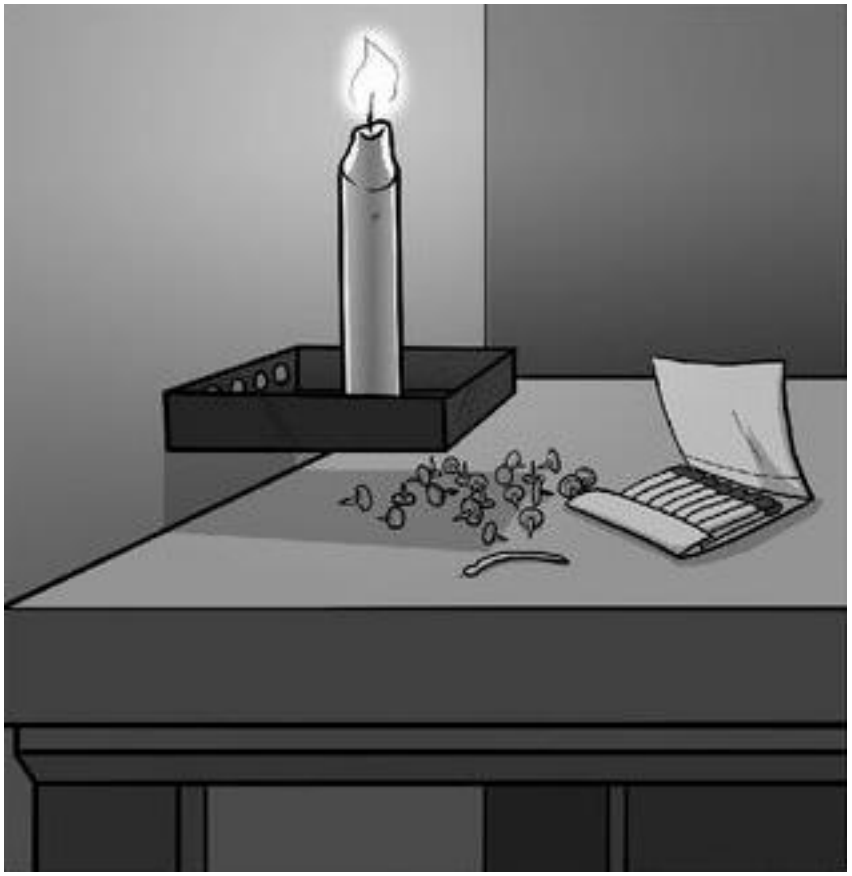
Functional fixedness is a cognitive bias that limits a person to using an object only in the way it is traditionally used.

Karl Duncker defined functional fixedness as being a "mental block against using an object in a new way that is required to solve a problem.“ This "block" limits the ability of an individual to use components given to them to complete a task, as they cannot move past the original purpose of those components.

Candle Problem

Duncker, 1945

Candle Problem

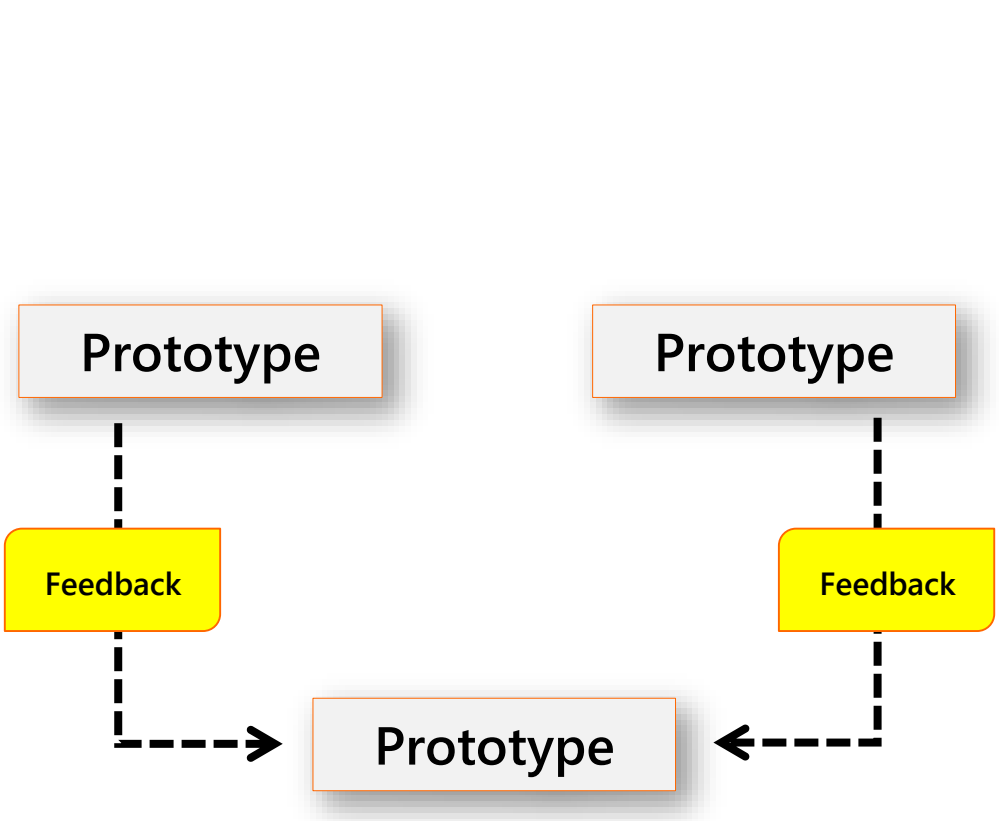


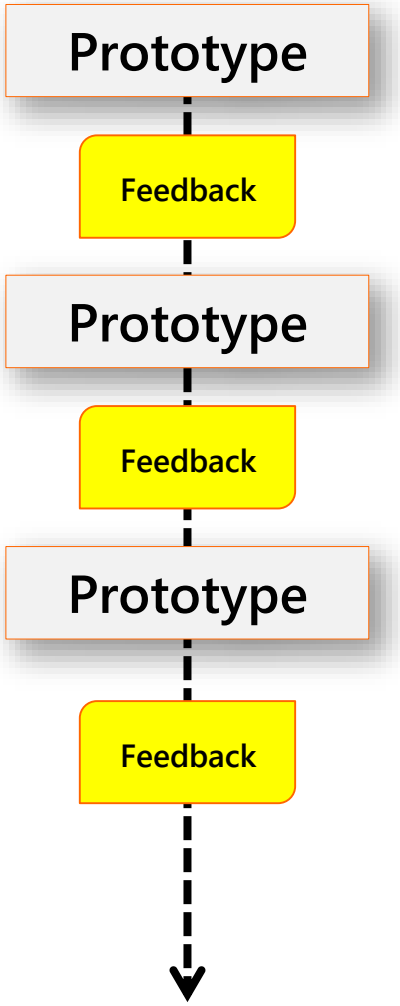
Duncker, 1945

Two String Problem

Duncker, 1945

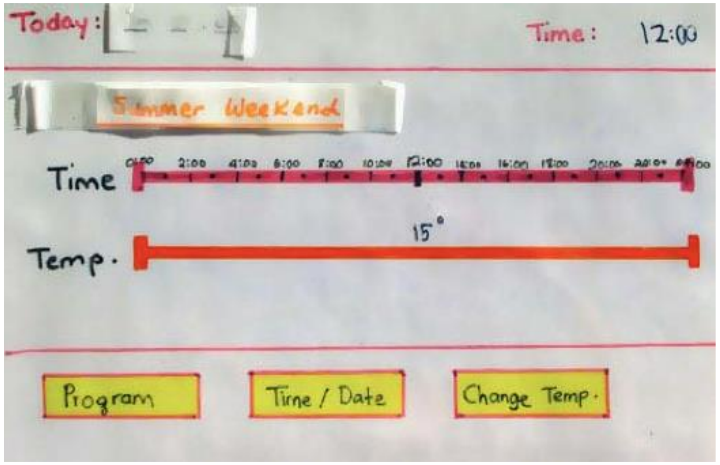
Parallel vs. Serial Prototyping

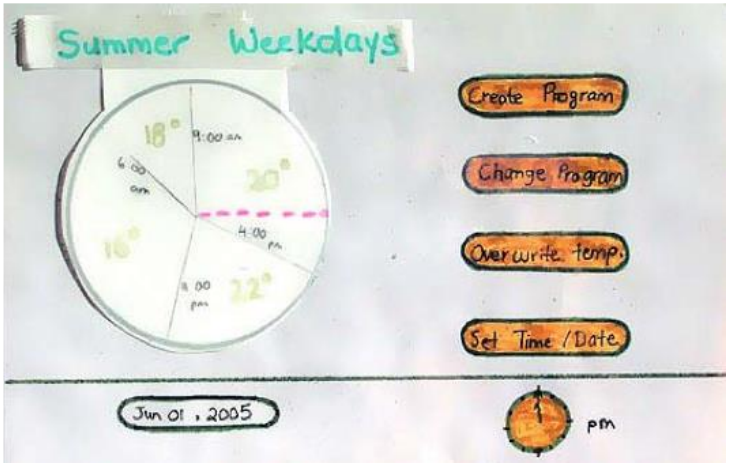


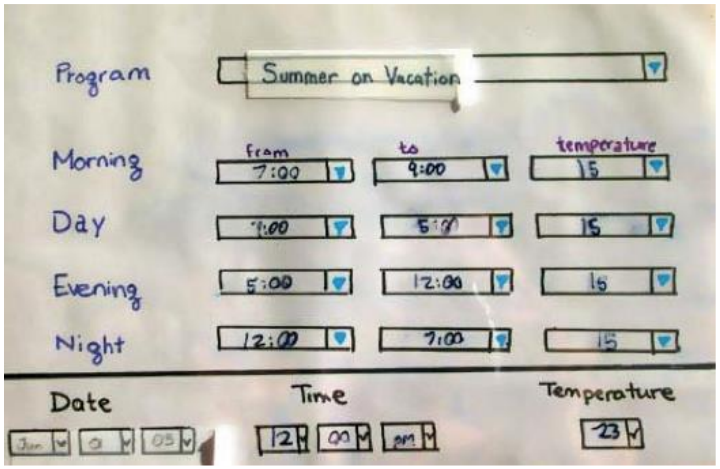


Why does a parallel approach yield better results?

- Separating ego from artefact
- Parallel encourages comparison and transfer
  Steven P Dow et.al. ACM Transactions on Computer-Human Interaction, 2010
- Comparison aids learning
  Gentner, Loewenstein, & Thomson, 2003
- Alternatives provide a vocabulary
  Tohidi, Buxton, Baecker, Sellen, CHI 2006



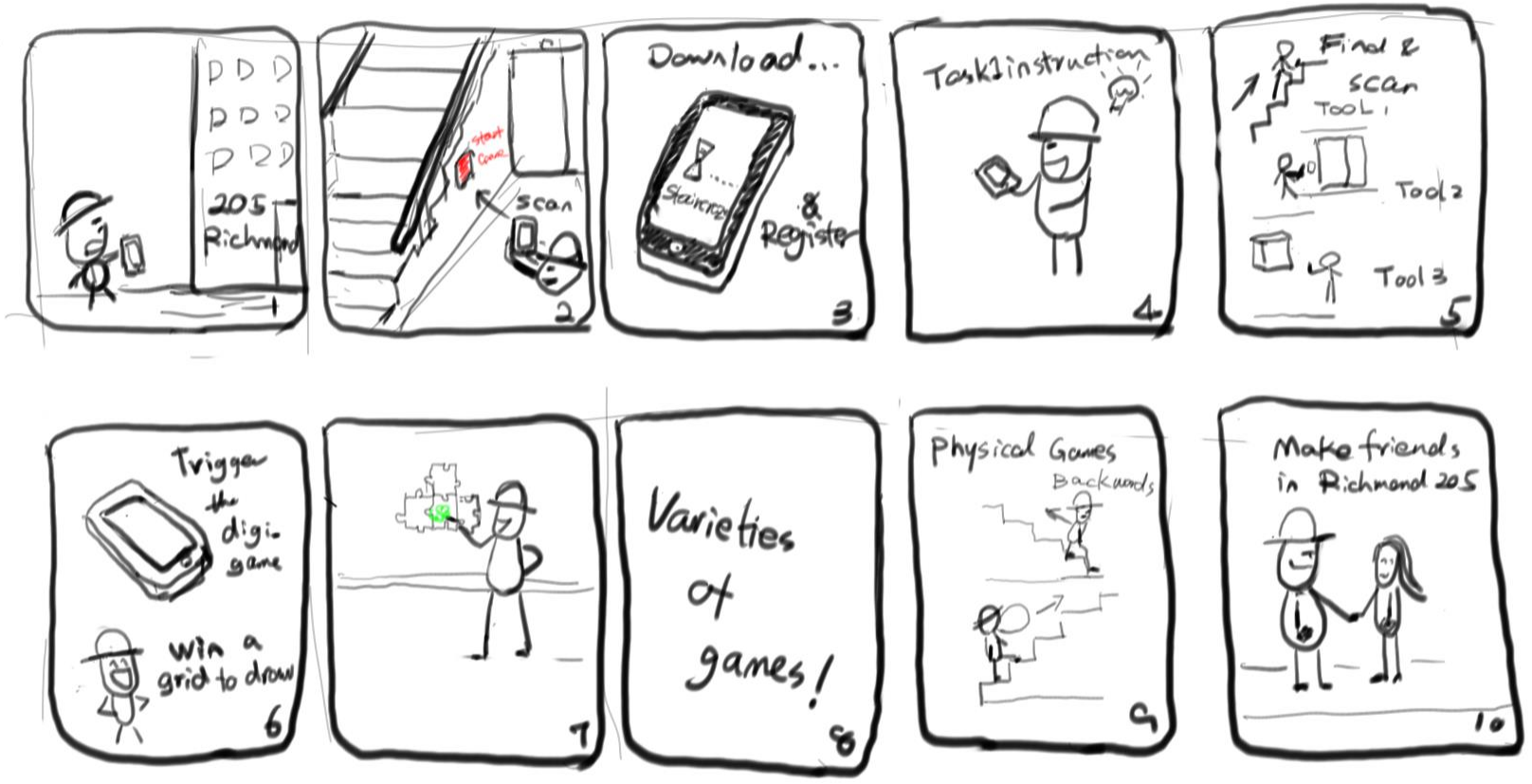




Types of Prototyping

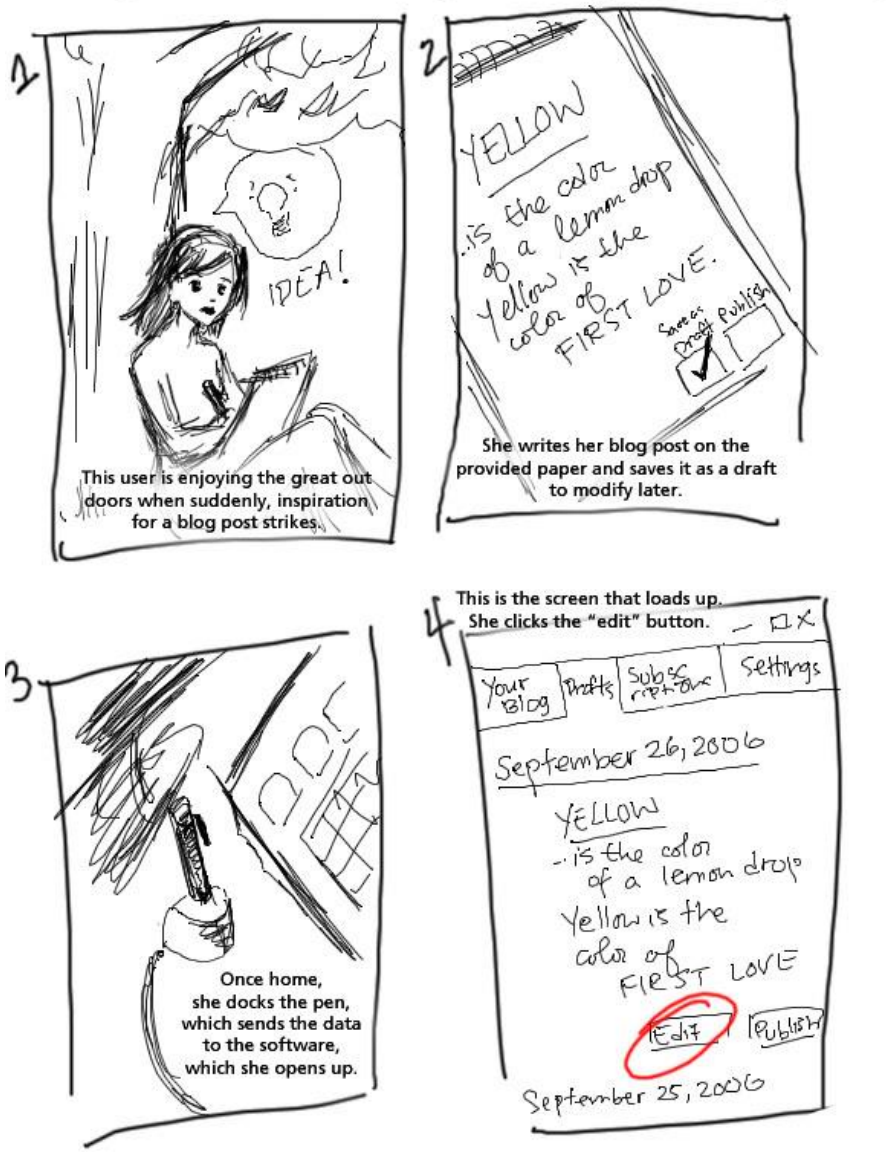
- Storyboards, Paper Prototypes and Digital Mock-ups
- Wizard-of-Oz Prototyping
- Video Prototyping

Storyboards



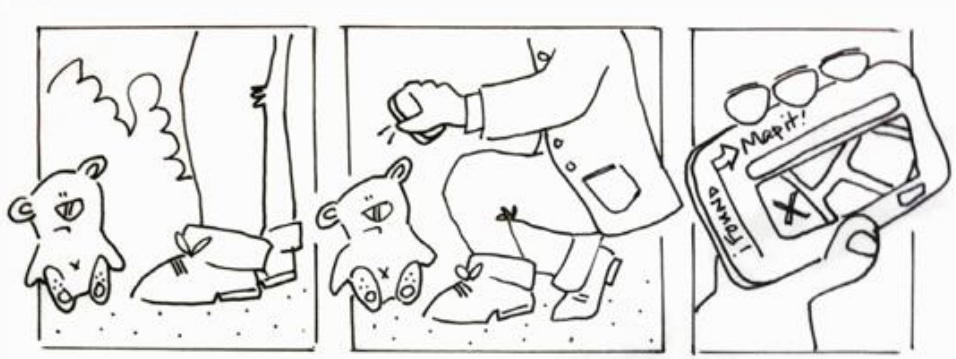
Storyboards

Storyboard #1: Creating + Modifying a Blog Entry



Storyboards

STORYBOARD: iFound®



On a walk through the park, Marco stumbles across a teddy bear fallen on the side of the path.

Realizing it must be lost, he uses his mobile phone to photograph it where he found it, and takes the bear home.

Once home, Marco uploads the photo to iFound®. The MapIt! function uses the GPS from the photo to record where the bear was found.

As soon as the iFound® match list is generated, Marco sees a photo of the very same bear he has just found. He immediately contacts the finder and they arrange a way to get the bear back to its owner.

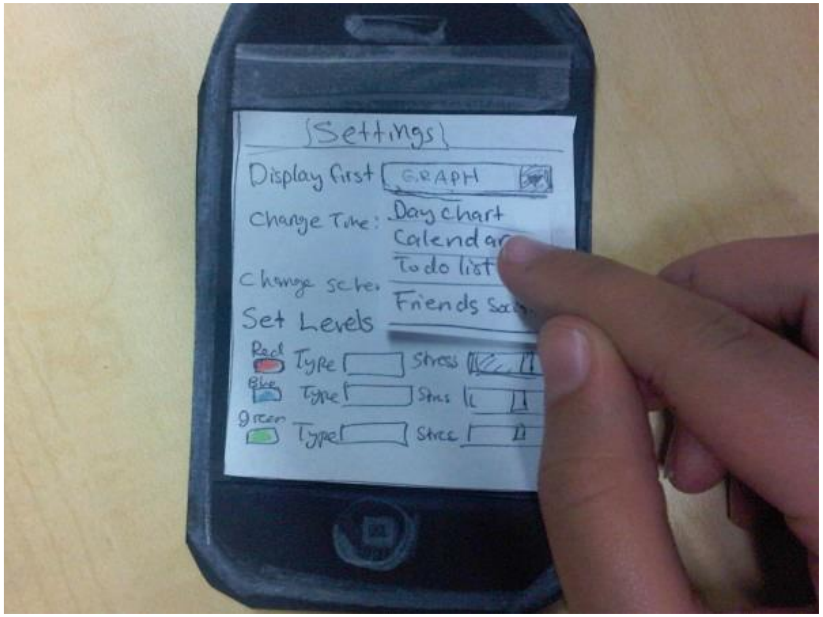
The teddy bear is handed off to a very relieved mom.

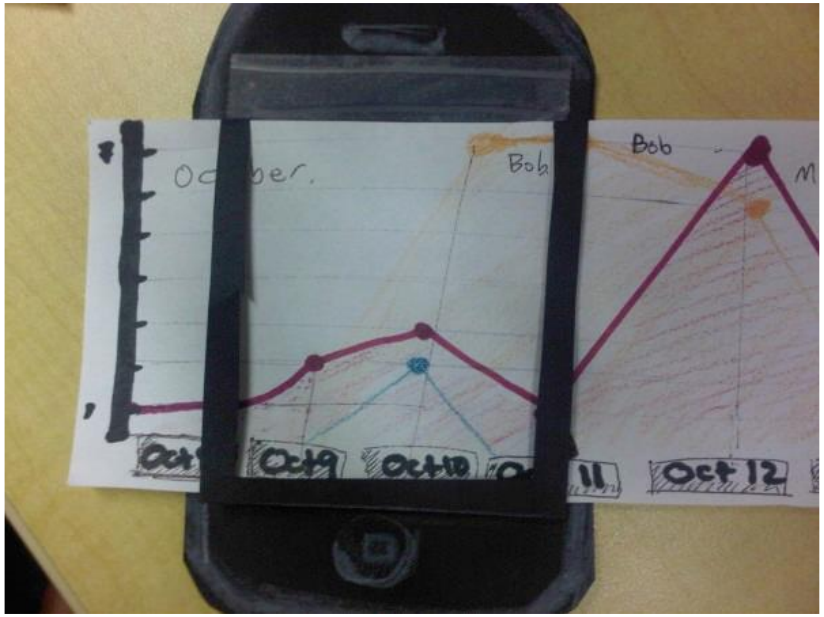
When it is recorded that the bear has made it safely home, Marco receives a 'thank you' email from iFound®, offering him a choice of coupons for anything form ice cream to flowers. Marco's choice provides useful information to corporate sponsors.

Storyboards should convey

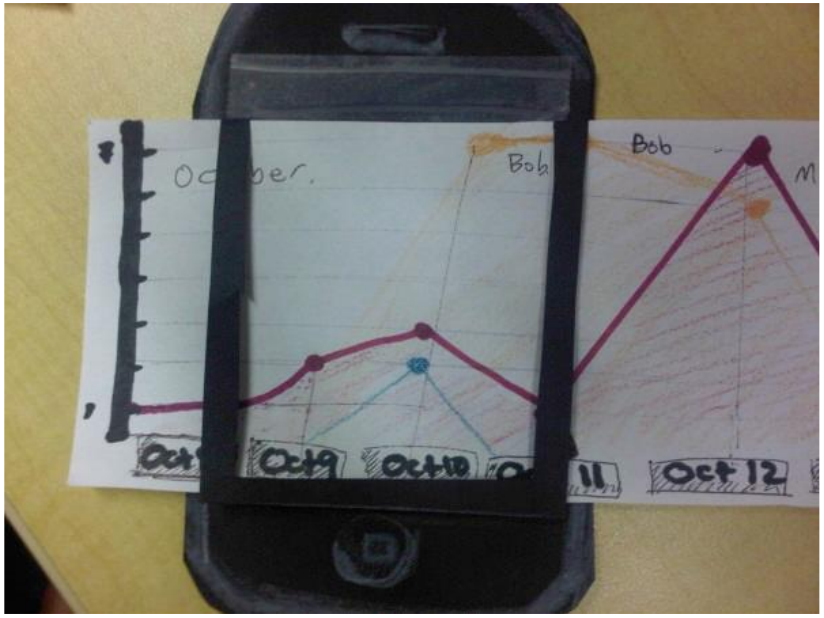
- **Setting**
  - People involved
  - Environment
  - Task being accomplished
- **Sequence**
  - What steps are involved?
  - What leads someone to use the app?
  - What task is being illustrated?
- **Satisfaction**
  - What's motivates people to use this system?
  - What does it enable people to accomplish?
  - What need does the system fill?

Paper Prototypes



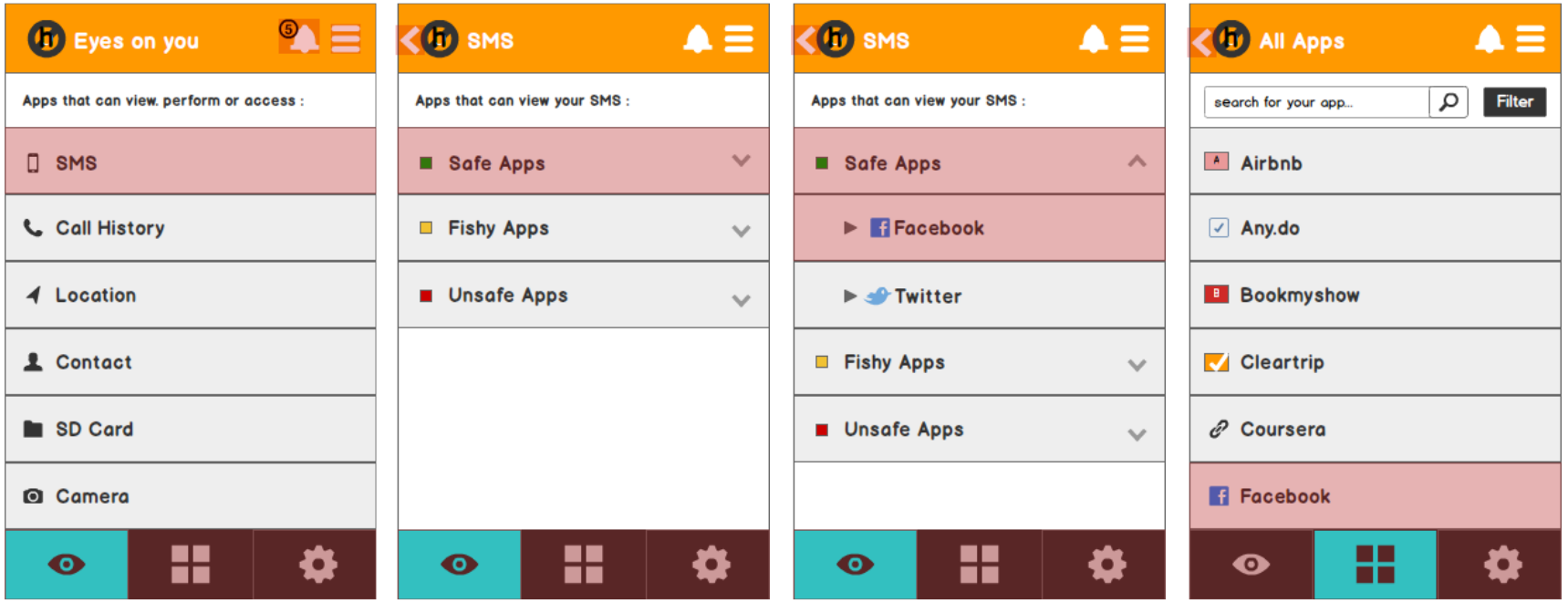


Paper Prototypes



Paper Prototypes

Digital Mockups



Wizard-Of-Oz Prototyping

Wizard-Of-Oz Prototyping

- **Simulating machine behaviour with human operators**

- **Make an interactive application without (much) code**
  - Front end interface
  - (Remote) wizard controls user interface
  - Faster/cheaper/easier than making real thing

- **Get feedback from users**
  - Hi-fidelity: users think it's more real
  - Low-fidelity: more license to suggest changes

Video Prototyping