

Prototyping

- **Exploratory Prototypes**
 - used to **determine problems**, elicit needs, clarify goals, compare options
 - informal, unstructured and thrown away.
- **Presentation Prototypes**
 - used for **proof of concept**; explaining design features; etc.
 - explain, demonstrate and inform – then throw away
- **Breadboards or Experimental Prototypes**
 - explore **technical feasibility**; test suitability of a technology
 - typically no user/customer involvement
- **Evolutionary (e.g. “operational prototypes”, “pilot systems”):**
 - development seen as continuous process of adapting the system
 - “prototype” is an **early deliverable**, to be continually improved.

Throwaway Prototyping

Throwaway Prototyping

Purpose:

- learn more about the problem
- discard after desired knowledge is gained

Use:

- early or late

Approach:

- horizontal - build only one layer (e.g. UI)
- “quick and dirty”

Advantages:

- better medium for learning
- early feedback → less rework and less cost
- successful even if it fails!

Disadvantages:

- often replaces documentation (models)
- may set customers’ expectations too high
- can get developed into final product

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Purpose:

- learn more about the solution
- reduce risk by building parts early

Use:

- incremental; evolutionary

Approach:

- vertical – partial implementation of all layers
- designed to be extended and adapted

Advantages:

- success translates into progress

Disadvantages:

- early architectural choice may be poor
- optimal solutions not guaranteed
- lacks control and direction

Evolutionary Prototyping

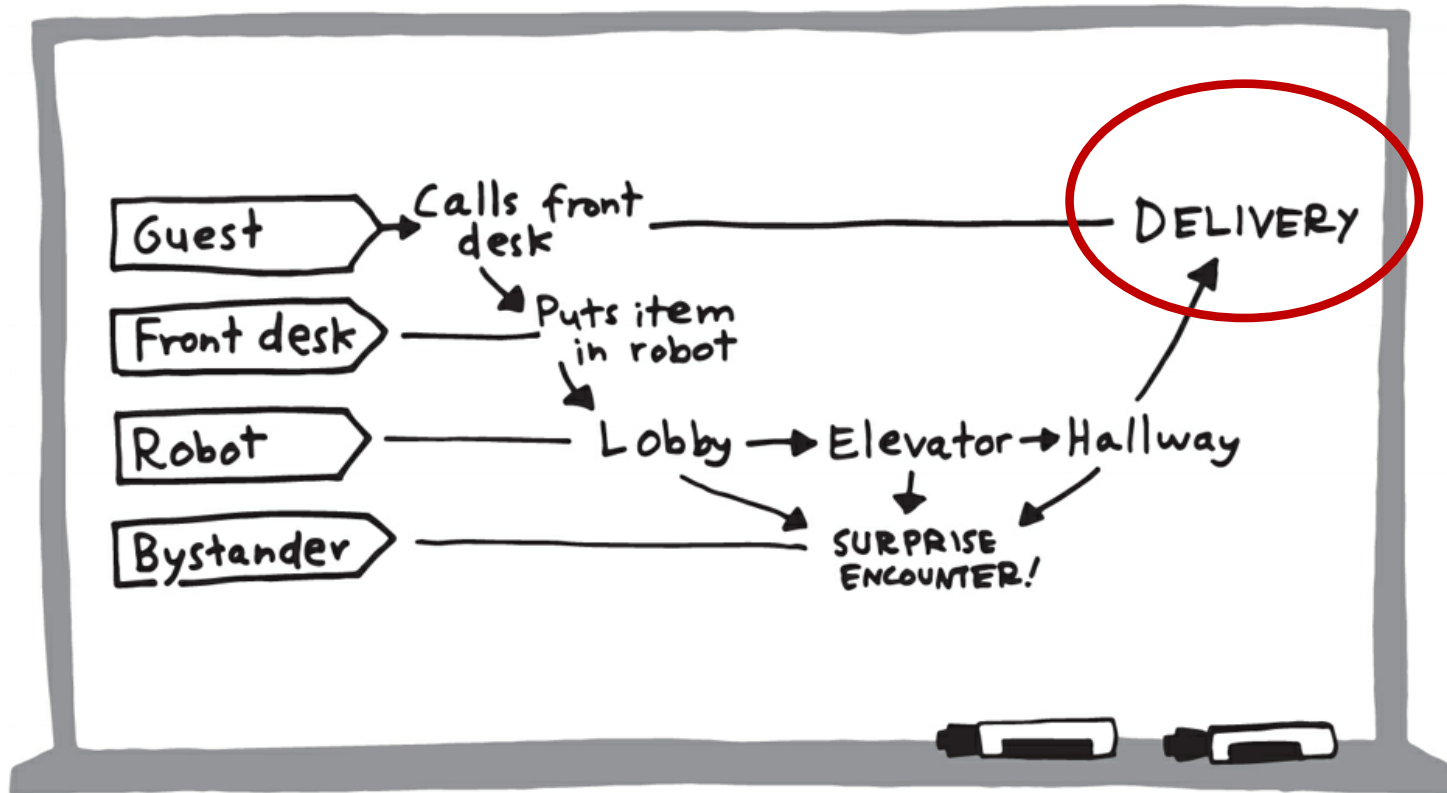
Case Study #1: Savioke Labs



Business Goals: bringing robot helpers into humans' everyday lives

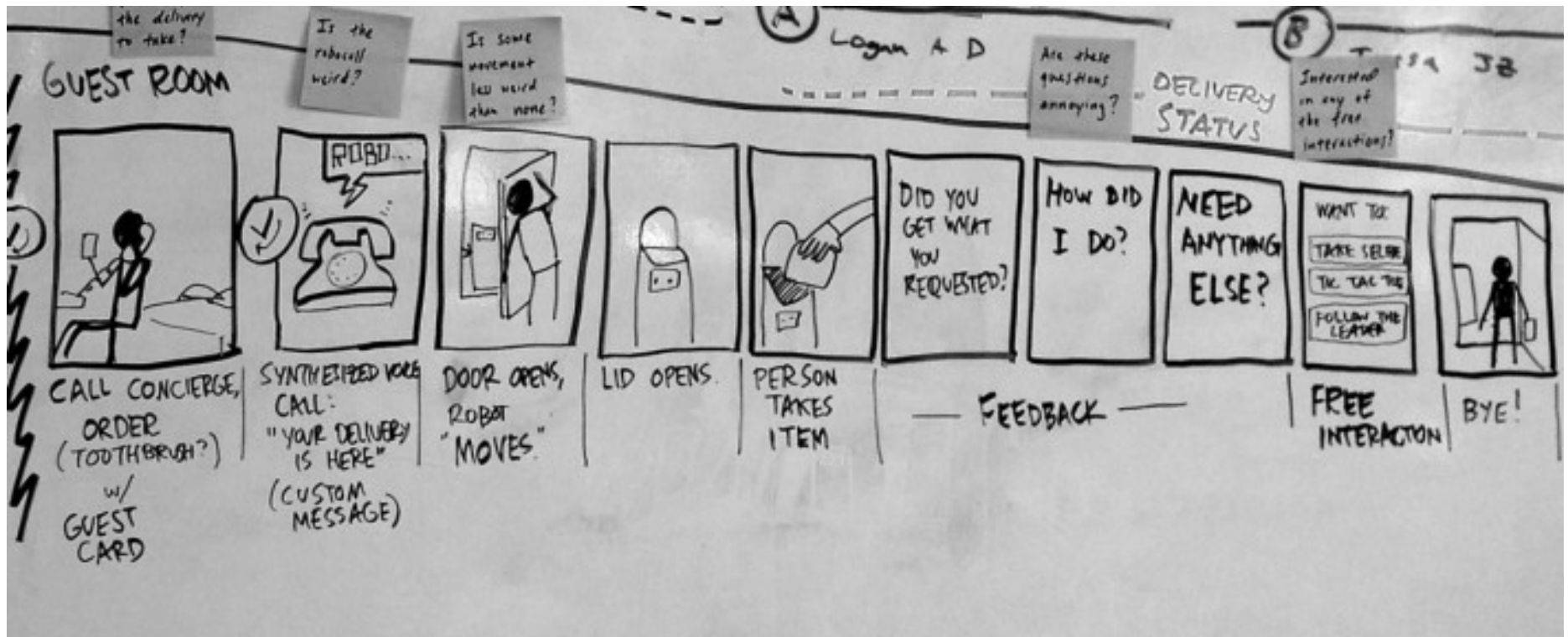
- How should robot interact with humans?
 - when completing work task (e.g., delivering toothbrush to hotel guest)
 - in chance encounters (e.g., in elevator)
- How much personality should it exhibit?

Savioke: Target Problem



Knapp, Zeratsky, Kowitz. *Sprint: How to Solve Problems and Test New Ideas in Just Five Days*, Simon & Schuster, 2016

Prototype Storyboard



Jack Knapp, "How Savioke Built a Robot Personality in 5 Days", FastCompany, March 2016.

Savioke Prototype

Robot + ipad + Keynote + sound effects library
+ acting + PlayStation video game controller



success

Jack Knapp, "How Savioke Built a Robot Personality in 5 Days", FastCompany, March 2016.

Case Study #2: Slack

Target Problem: How to explain Slack to nontechnies.

Companies have

- Internal email systems
- SMS for chatting
- Skype and Zoom for video calls



What value does Slack provide?

- Easy group chats
- Channels for organizing conversations, subteams
- All-in-one communications solution

Case Study #2: Slack

Target Problem: How to explain Slack to nontechnies.

Ideas:

- 1) Case study of a well-known company using Slack
-  2) Guided tour through software
- 3) Animated video
-  4) Have user experience Slack, interacting with bots

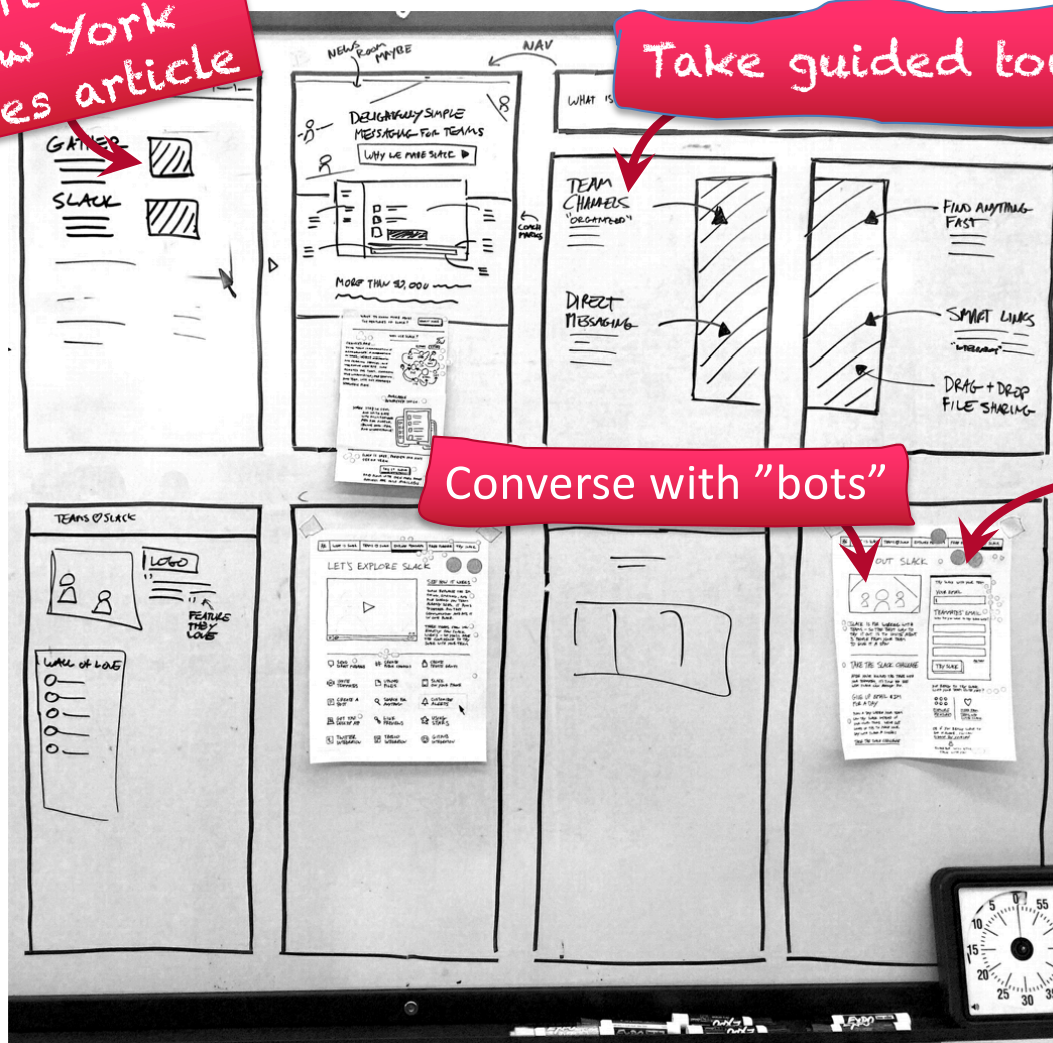
Prototype Storyboard

Start with New York Times article

Take guided tour

Converse with "bots"

Sign up



Knapp, Zeratsky, Kowitz. *Sprint: How to Solve Problems and Test New Ideas in Just Five Days*, Simon & Schuster, 2016

Prototypes of Slack Promotion

Tour Prototype: A Web site that walks the customer through a step-by-step explanation of the software

- Keynote
- InVision (prototyping software)



rework

Bot Prototype: Have customer experience Slack communicating with a team of bots that send messages and reply to simple questions

- The real Slack software
- Some acting

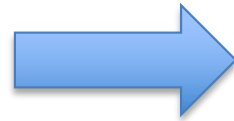


discard

A Realistic Façade

Product

- on screens, on paper
- service
- object
- physical space



Façade

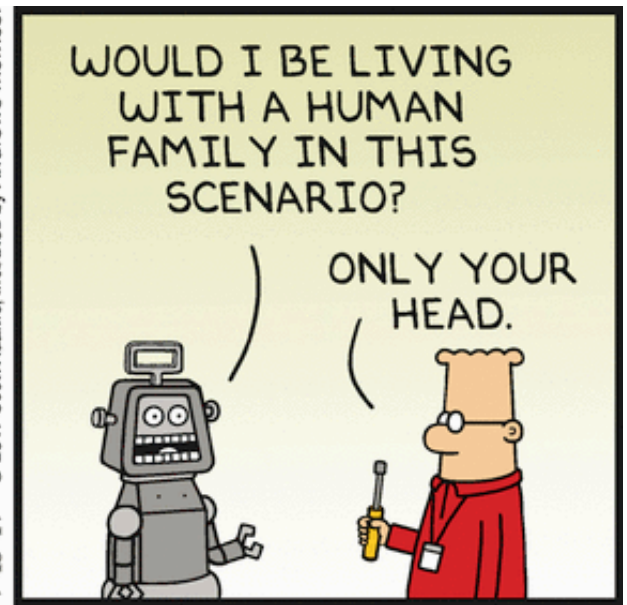
- Keynote, Powerpoint, Invision, Marvel
- actors
- the real object, 3D printed object
- existing space



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References

Karl E Wieggers and Joy Beatty. *Software Requirements*, 3ed. Microsoft Press, 2013.

Chapter 15: “Risk reduction through prototyping”

Knapp, Zeratsky, Kowitz. *Sprint: How to Solve Problems and Test New Ideas in Just Five Days*, Simon & Schuster, 2016



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