
Lecture 9

Prototyping

UNIVERSITY OF AUCKLAND

COMPSCI 345 / SOFTENG 350

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Lecture Q&A on zoom <https://auckland.zoom.us/j/7290166787>

First 15 minutes of the usual lecture times, or longer

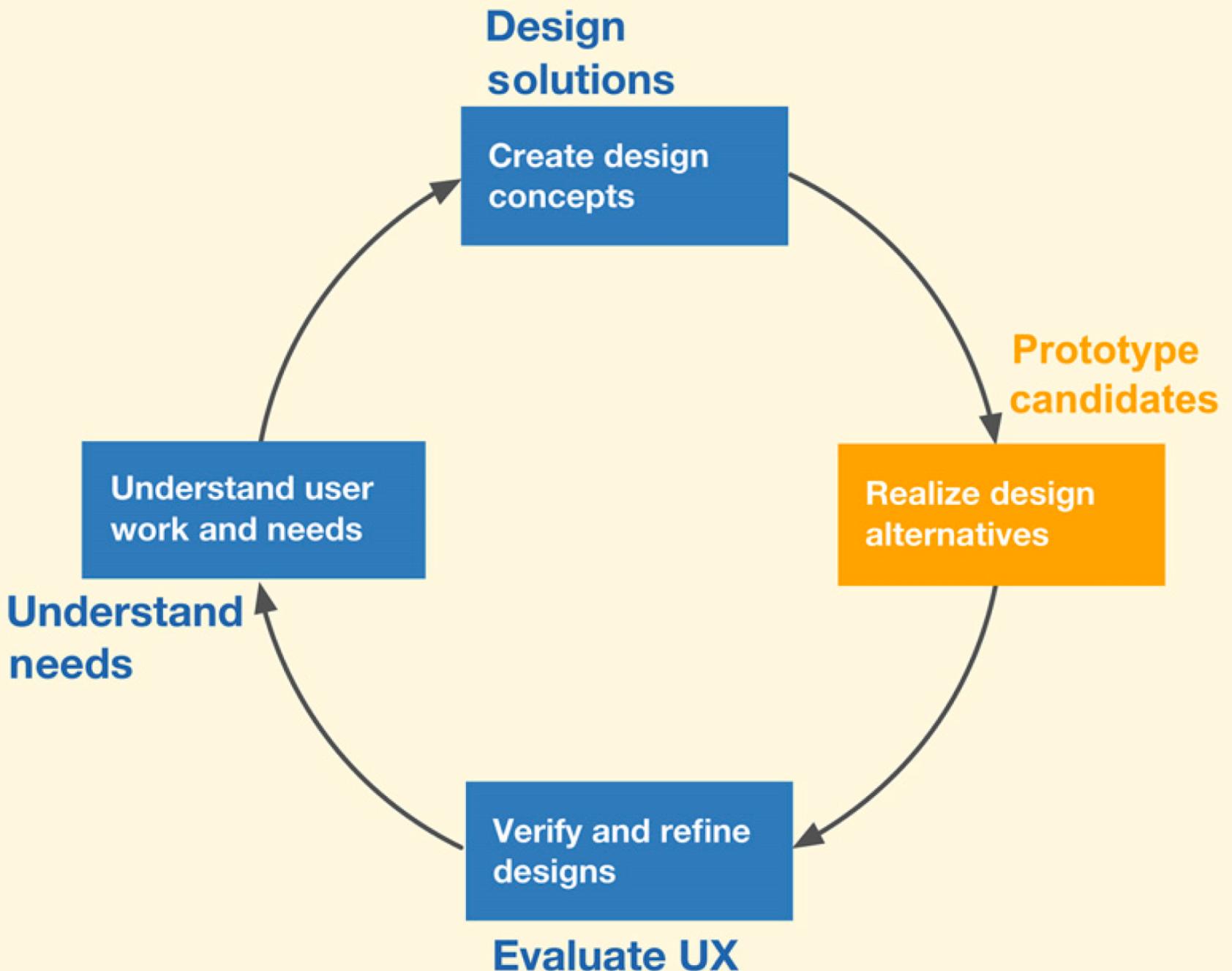
The UX Book chapter 20

Learning Outcomes

- To appreciate value of prototyping, prototyping techniques
- To understand breadth and depth of prototypes, and low and high fidelity prototypes
- To apply learnings to create prototypes
- To understand process of usage testing with low-fidelity prototypes and the ability to prepare prototypes for testing

Agenda

- Where we are in the HCI / UX process
- What is a prototype
 - Breadth vs. depth
 - Low vs. high
- Testing with low fidelity prototypes



What is a prototype?

In HCI it can be:

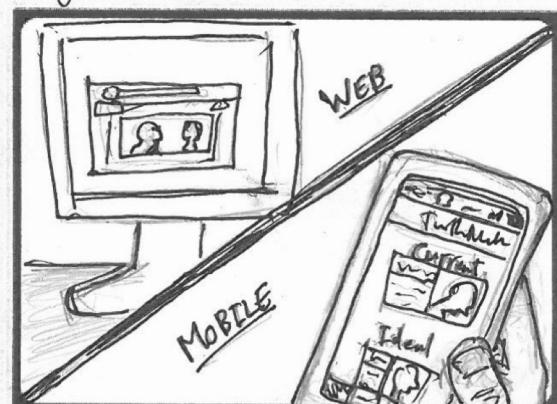
- A series of screen sketches
- A storyboard, i.e., a comic strip series of scenes
- A Powerpoint slide show
- A video simulating the use of a system
- A lump of wood (e.g. PalmPilot)
- A cardboard mock-up
- A piece of software with limited functionality written in the language or in another language



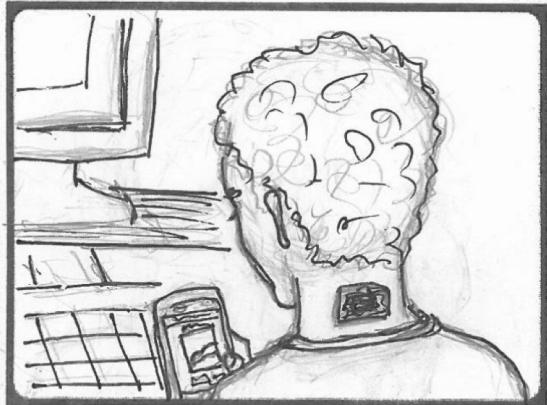
User working at computer adopts an unhealthy forward head posture.



The sensor, adhered to the back of the user's neck, vibrates to alert the user to his unhealthy posture, and the connected mobile phone or computer plays an alert sound and displays an icon indicating an unhealthy posture.



the user can check the app or web page for more information about the current unhealthy posture and what ideal posture should be adopted instead.



He can track his posture over time, adjust settings and preferences and alerts, and view tips on improving posture on the app or web page.



When the user corrects his posture, the sensor sends a brief vibration confirming the healthy posture, the app or web page emits an encouraging sound, and the taskbar/current posture bars change to reflect healthy posture.



The user returns to work with a healthy posture!

Using Storyboards

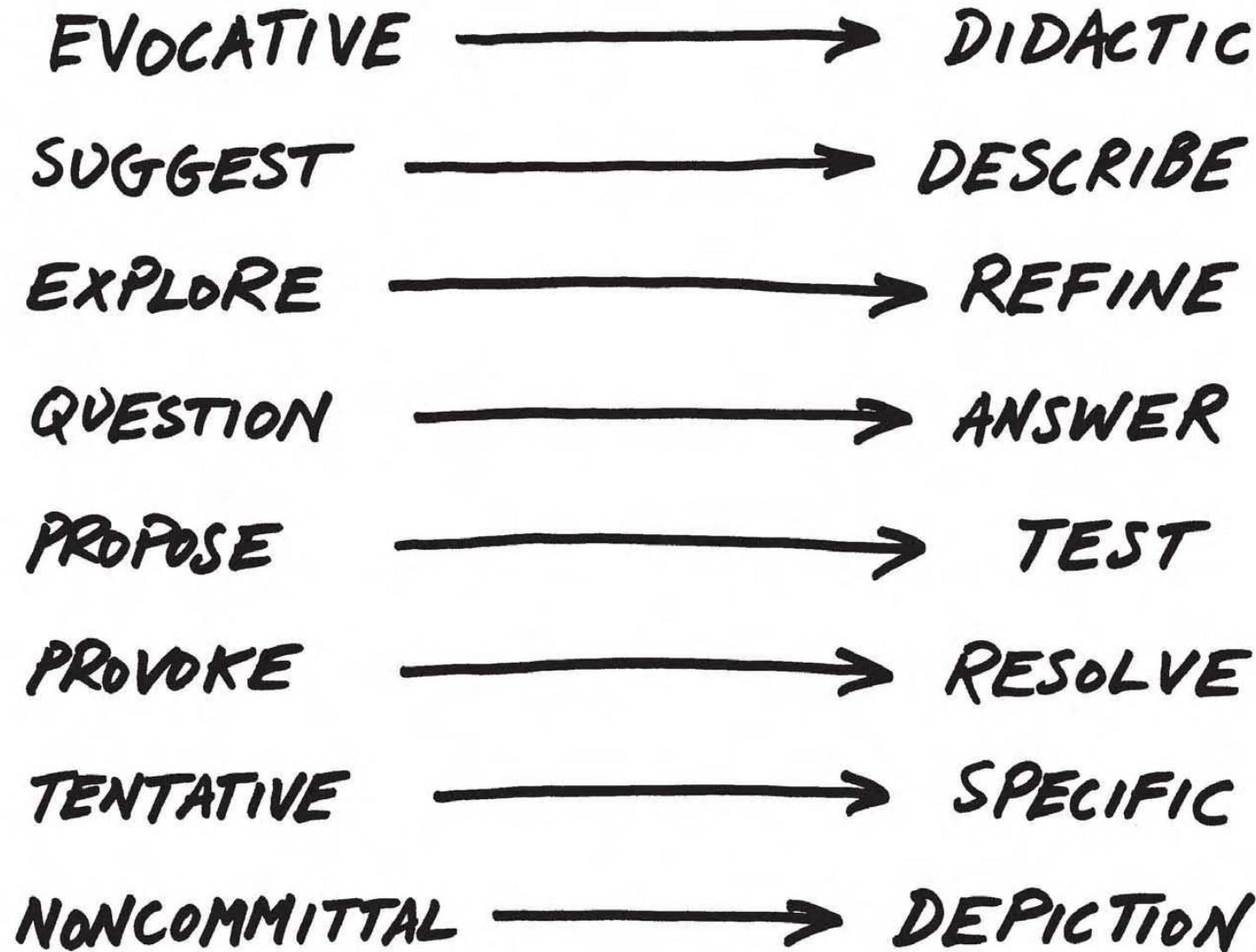
- Express proposed or imagined situations
- Used throughout design in various ways
 - As a basis for overall design
 - Feeds into scenarios for usage testing
 - Concrete examples of tasks



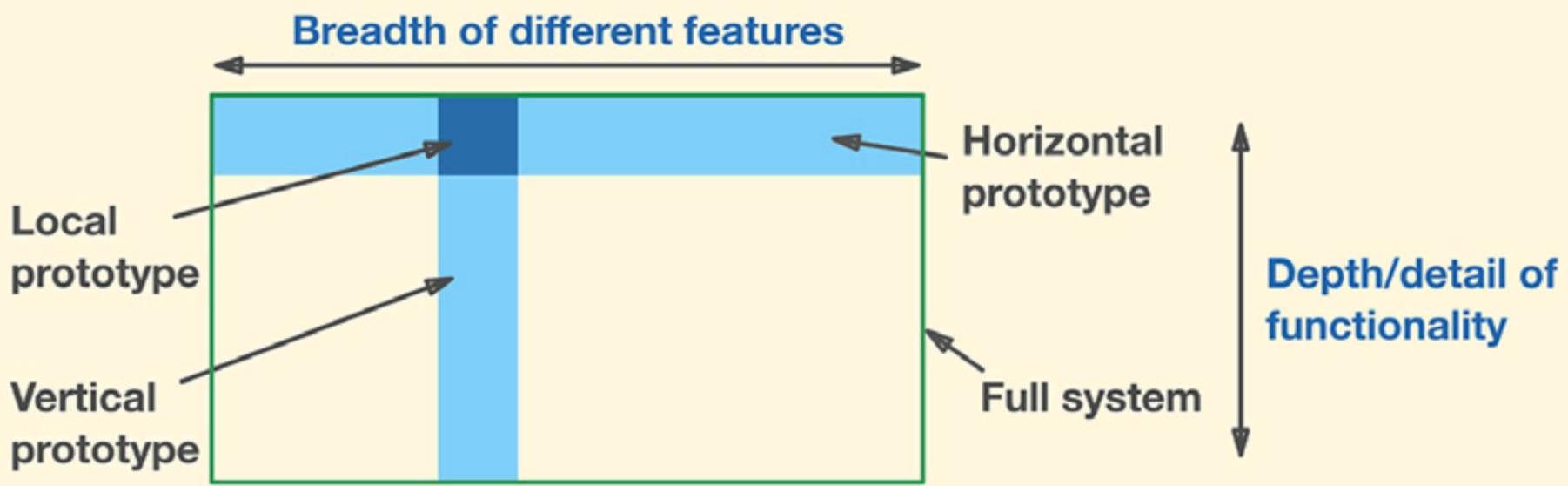
Image: [Superbcrew](#)

SKETCH

PROTOTYPE



horizontal versus vertical
or
breadth versus depth



from low to high fidelity

Order New Ethernet Service

Wired connection to the Virginia Tech network

Enter Liaison Name, PID, or Email:

Service User:

Select Building:

Site Contact:

Select Room:

Additional notes
and requests:

Need New Port:

Select Port ID:

Submit

Add to Cart

Order New Ethernet Service

Wired connection to the Virginia Tech network

Enter Liaison Name, PID, or Email:

Service User:

Select Building:

Site Contact:

Select Room:

Need New Port:

Additional Notes and Requests:

Select Port ID:

Required Information

Type	Advantages	Disadvantages
Low-fidelity prototype	<p>Lower development cost</p> <p>Evaluates multiple design concepts</p> <p>Useful communication device</p> <p>Addresses screen layout issues</p> <p>Useful for identifying market requirements</p> <p>Proof of concept</p>	<p>Limited error checking</p> <p>Poor detailed specification to code to</p> <p>Facilitator-driven</p> <p>Limited utility after requirements established</p> <p>Limited usefulness for usability tests</p> <p>Navigational and flow limitations</p>
High-fidelity prototype	<p>Complete functionality</p> <p>Fully interactive</p> <p>User-driven</p> <p>Clearly defines navigational scheme</p> <p>Use for exploration and test</p> <p>Look and feel of final product</p> <p>Serves as a living specification</p> <p>Marketing and sales tool</p>	<p>More resource-intensive to develop</p> <p>Time-consuming to create</p> <p>Inefficient for proof-of-concept designs</p> <p>Not effective for requirements gathering</p>

Table 11.3 Advantages and disadvantages of low- and high-fidelity prototypes

Evolution of prototypes

Flow model and task-sequence models



State diagram(s)

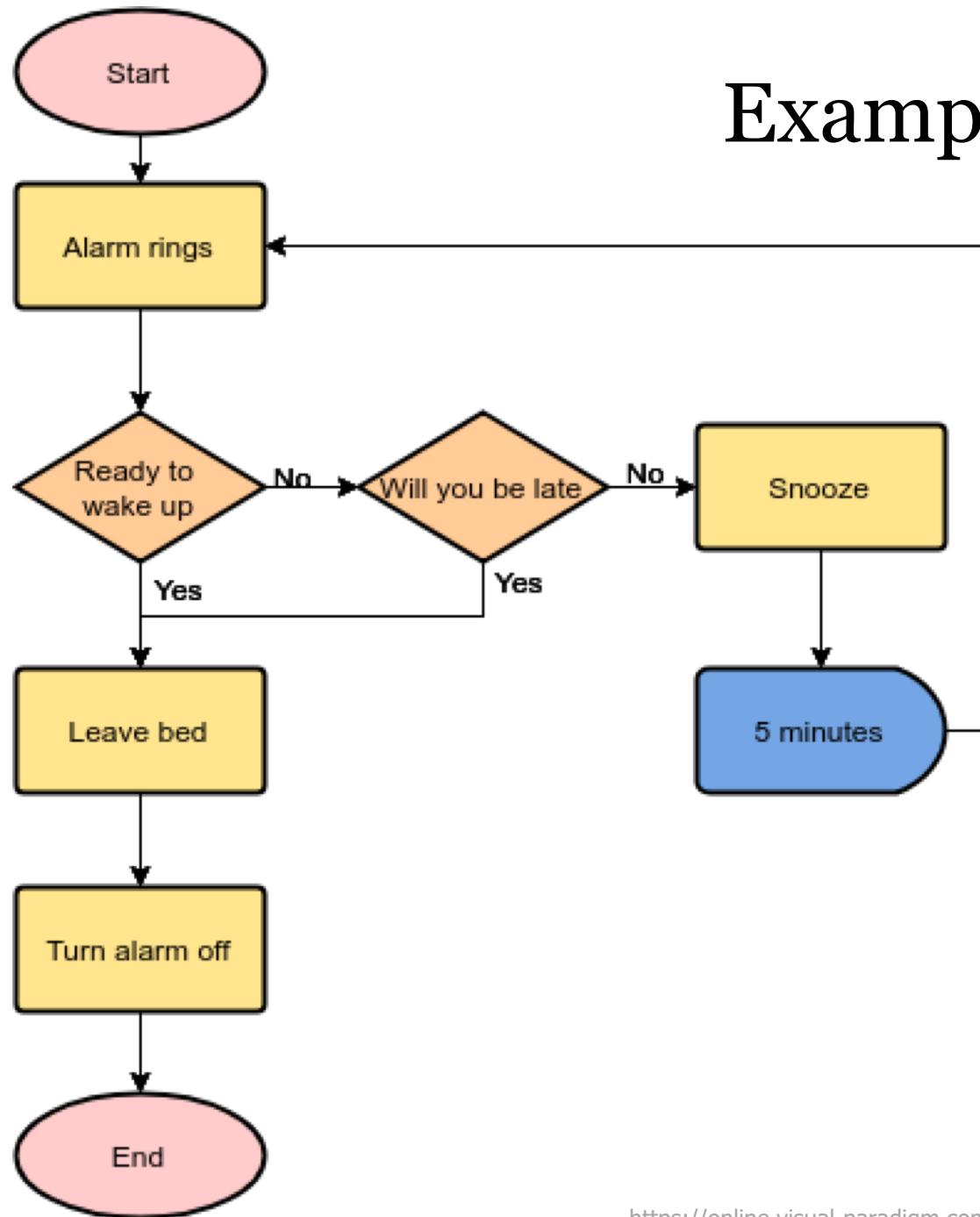


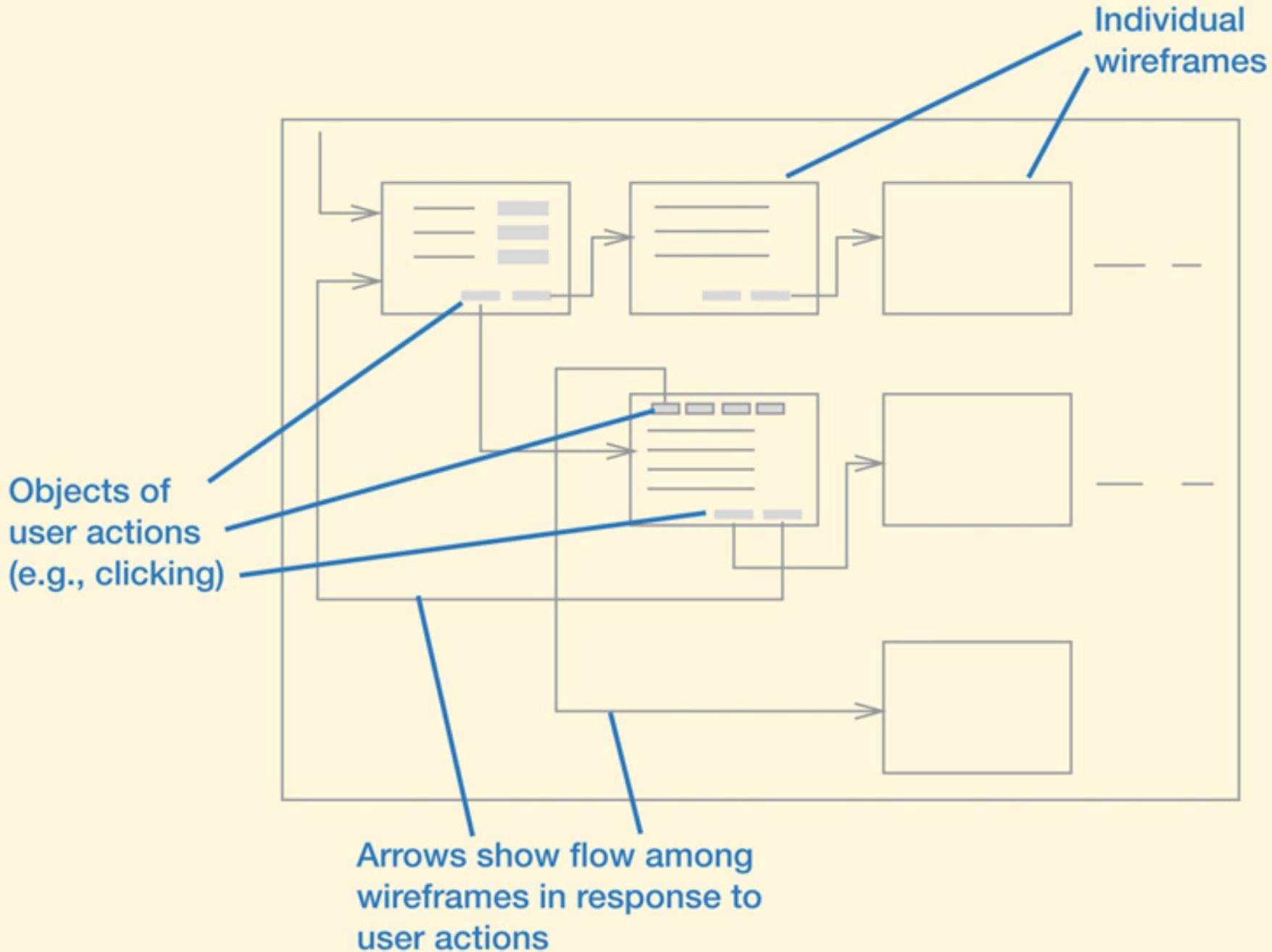
Low-fidelity wireframes of interaction flows



Successively higher-fidelity wireframe prototypes

Example flow model





SN_21

Virginia Tech  4Help

Home > Service Catalog > Network Services > Ethernet

Order New Ethernet Service
Wired connection to the Virginia Tech network.

Enter Liaison Name, PID, or Email: matth@vt.edu Service User:

Select Building: Burruss Hall Site Contact:

Select Room: 100 Additional notes and requests:

Need New Port: No

Select Port ID: Existing or enter port ID:

SN_22

Virginia Tech  4Help

Home > Service Catalog > Network Services > Ethernet

Order New Ethernet Service
Wired connection to the Virginia Tech network.

Enter Liaison Name, PID, or Email: matth@vt.edu Service User:

Select Building: Burruss Hall Site Contact:

Select Room: 100 Additional notes and requests:

Need New Port: Yes

Select Port ID: Existing or enter port ID:

SN_25

Virginia Tech  4Help

Home > Service Catalog > Network Services > Ethernet

Order New Ethernet Service
Wired connection to the Virginia Tech network.

Enter Liaison Name, PID, or Email: matth@vt.edu Service User:

Select Building: Burruss Hall Site Contact:

The following fields are incomplete:
Select Port ID

Select Room: 100 Additional notes and requests:

Need New Port: No

Select Port ID: Existing or enter port ID:

case 2

SN_27

Virginia Tech  4Help

Home > Service Catalog > Network Services > Ethernet

Order New Ethernet Service
Wired connection to the Virginia Tech network.

Enter Liaison Name, PID, or Email: matth@vt.edu Service User:

Select Building: Burruss Hall Site Contact:

Please describe the situation with the unknown port in the additional notes and requests section

Select Room: 100 Additional notes and requests:

Need New Port: No

Select Port ID: Existing or enter port ID:

ORCHESTRA

Dashboard

Service Management

Portfolio

Bundles

Recent Activity

Edit Bundle

Edit bundle service

Search

Not yet implemented

This feature has not yet been implemented in this prototype. Please select “Close” to go back to where you were before.

Cabl

Cellu

Com

Netw

Wire

•

Premium (1 GB)
□ Power POE

○ Enhanced (10 GB)
□ Power POE

ADD
SERVICE

Close

Add-ons Edit

Power (POE)

Photo Messaging

Video Messaging

Remote Accessibility

DVR

DELETE
SERVICE

CANCEL

Q1a, b, c

- Your boss wants to create a product to fix this “before” scenario: a person has trouble using usual alarm apps because they press “stop” (instead of “snooze”) and then fall back asleep. Create a storyboard to depict “after” scenario that includes a new alarm feature that fixes the problem.
- Create a deep (vertical) prototype of the novel feature that helps the “before” scenario mentioned above.
- Point out and justify the chosen fidelity of the storyboards and prototype.

Prototyping tools

Wizard of Oz

Testing with low fidelity prototypes

What's coming up

- No lecture on Good Friday April 10 2020
- Lecture 10 after break: Visual Design
- Midterm test Friday May 8th 2020
 - Intended length: 1.5 hours
 - Submission period: 24 hours
 - Medium-length answers, similar to questions in L8 and L9
 - Relevant practice questions (however they are closed-book and ours will be open-book): SOFTENG 350 2018 exam Q1, Q2a, b (L10), Q3a
- Assignment 2 due Monday May 11th 2020