PART 7 – USER INTERFACE PROTOTYPING

We Shall Discuss
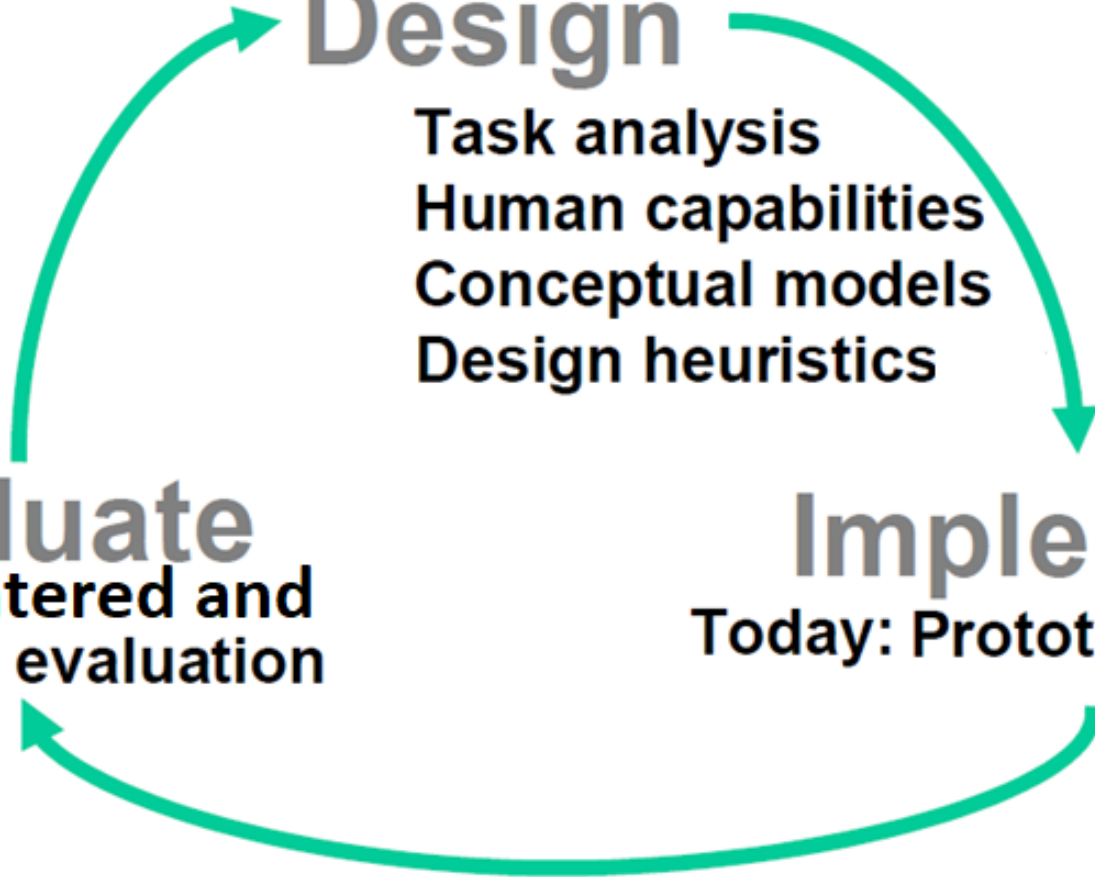
◦Low fidelity prototypes
◦High Fidelity prototypes
◦Prototyping Techniques
◦Prototyping Perspectives

Design

Task analysis
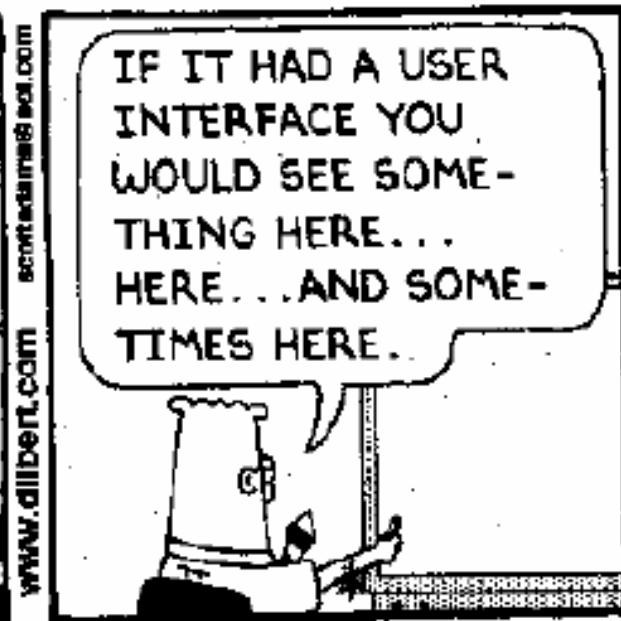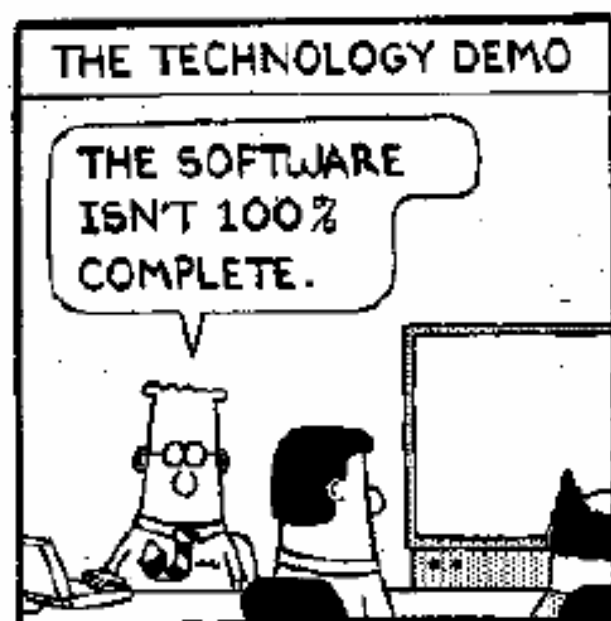**Human capabilities**
Conceptual models
Design heuristics

Implement

Today: Prototyping

Evaluate

user centered and
Heuristic evaluation

What is a Prototype?

◦ What is a prototype?
  ◦ It is a concrete representation of part or all of an interactive system.
  ◦ It is a tangible artifact, not an abstract description which requires interpretation

◦ Scope
  ◦ Is it just the interface (paper and pencil, mock-up)
    ◦ low-fidelity prototype - a prototype that is sketchy and incomplete, that has some characteristics of the target product but is otherwise simple, usually in order to quickly produce the prototype and test broad concepts

  or

  ◦ does it include some computational component?
    ◦ high-fidelity prototype - an interactive prototype that simulates the real system or site's functionality and design details

Why use Prototypes?

- Dilemma
  - You can't evaluate design until it's built
- But…
  - After building, changes to the design are difficult

- It is easier to simulate the design, in low-cost manner using prototypes

Prototyping Goals

- A good design of a usable product is one that provides a user mental model which is the same as the designer's mental model
  - Use of prototypes enables the designer/developer to compare these two models

- Prototypes encourage communication between the designer and users and aid in collection of requirements and as a means of prompting feedback from the intended users of the product

- Prototypes promote creativity among the designers especially if they are working in groups

Prototyping Terminology

◦ Early prototyping vs. Late Prototyping

Prototyping Terminology

◦ Horizontal vs. Vertical

  ◦ Horizontal prototype

    ◦ They involve reducing the level of functionality and therefore many features or aspects of the interface are simulated but in a shallow manner

    ◦ They are appropriate for understanding relationships across a broad system and for showing the range of abilities of a system

  ◦ Vertical prototype

    ◦ Fewer features or aspects of the interface simulated, but done in great detail

    ◦ They are most appropriate when a certain complex feature of a system is poorly-understood and needs to be explored

Prototyping Terminology

- High-fidelity vs. low-fidelity
  - Low-fidelity prototype
    - Far from final form of system
    - Such as paper, drawings, etc.
  - High-fidelity prototype
    - Close to final form of system, much more realistic to actual application
    - Use of a software tool and can sometimes simulate computer response

Low-Fidelity Prototypes

◦ To develop these prototypes designers use paper, glue, index cards, tape, stickies, colored markers, pencils, etc.

◦ Early stage of development – prototyping for the conceptual design

◦ Advantages:

  ◦ Easy and inexpensive to build

  ◦ Easy and cheap to change, many times

  ◦ Lack of polish does not affect user opinion of prototype (obviously isn't finished product)

Low-Fidelity Prototypes

○ Disadvantages:

  ○ Need to set up and explain conventions for user

  ○ Don't simulate computer response time accurately

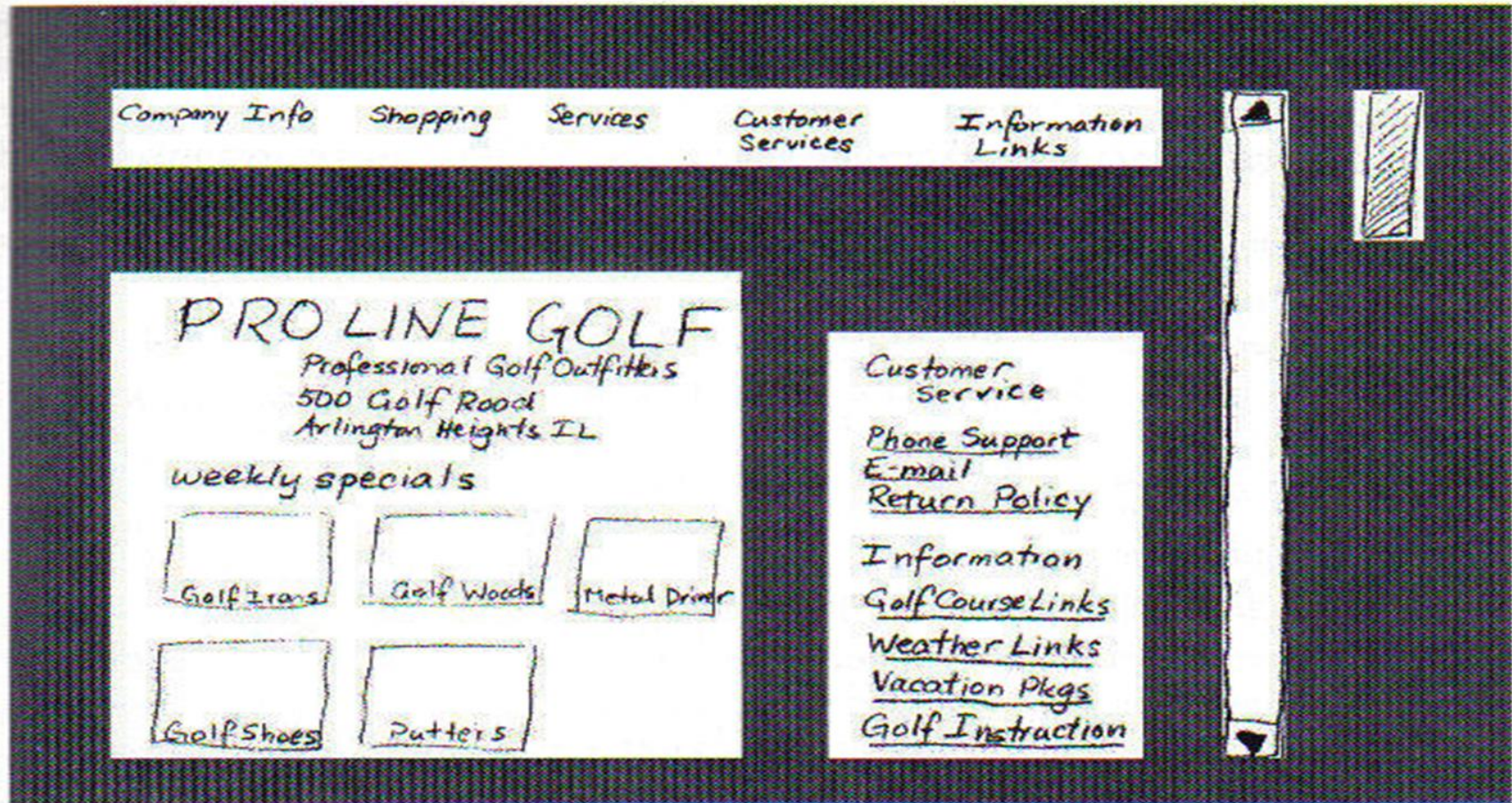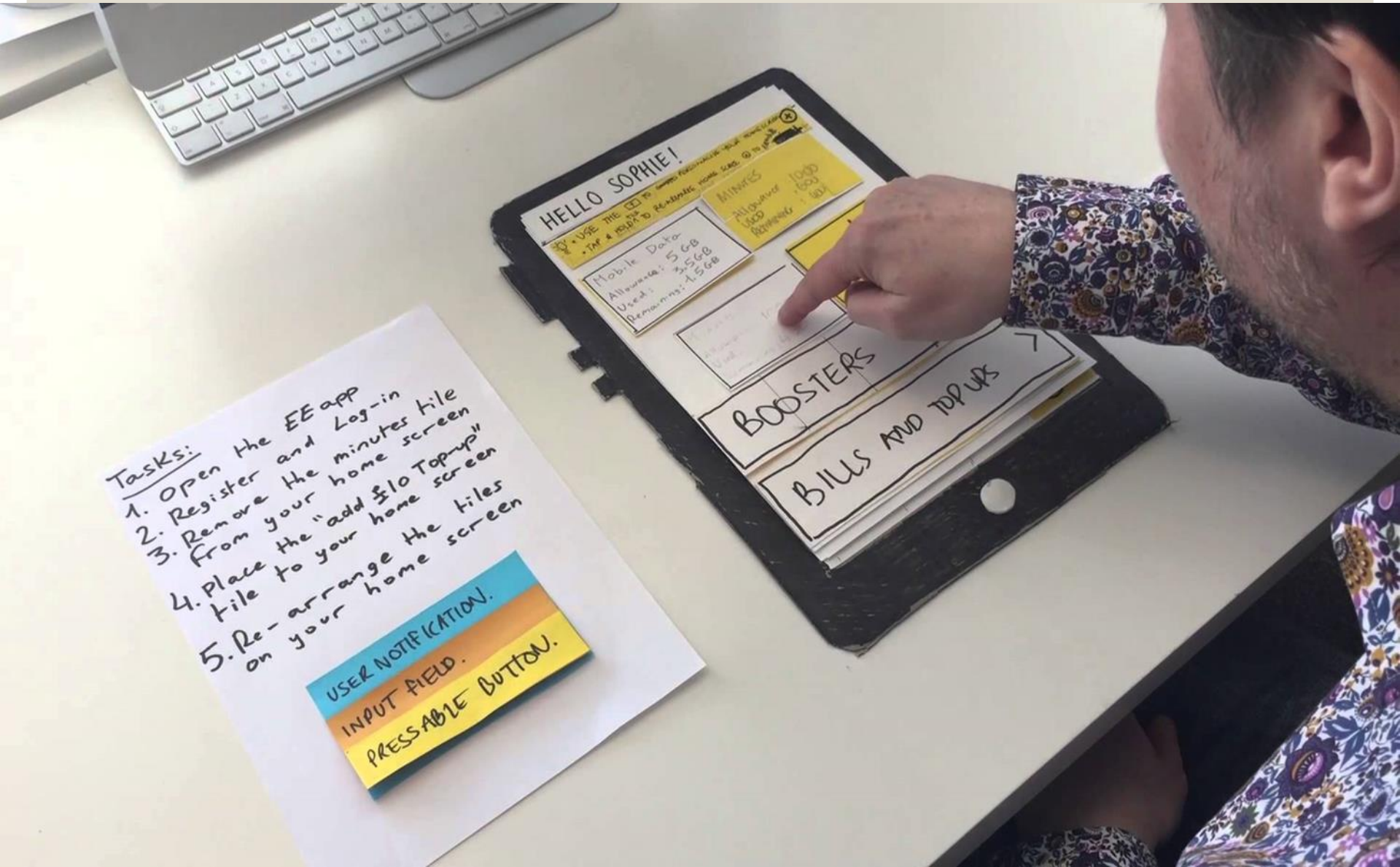 ○ Don't show well to management

Examples

Figure 7–5 Clockwise, from top: a menu bar, a scrollbar indicator, a scrollbar, a secondary menu, and opening contents. After Kirsten Pielstrom.

Examples

Examples

Manage My Account	Customer Service	Save Energy and Money	Careers	Community Involvement	Safety and Reliability	About Alliant Energy

Report an Emergency or Outage
or call
800-555-1234

Search [Go]

Log in to My Account

or enroll in online access

ID

Password [Login]

Forgot your ID?
Forgot your password?

< > abcdefg abcdefg

Quick Links

- abcdef
- abcdef
- abcdef

Learn about Alliant Energy's Commitment to Environmental Stewardship

Life is Easier with Online Access

Abcdef abcdef abc defghi abc def ghi jkl abcdef abc defghi abc def ghi jkl

Save Energy, Save Money

Abcdef abcdef abc defghi abc def ghi jkl abcdef abc defghi abc def ghi jkl

A Career at Alliant Energy

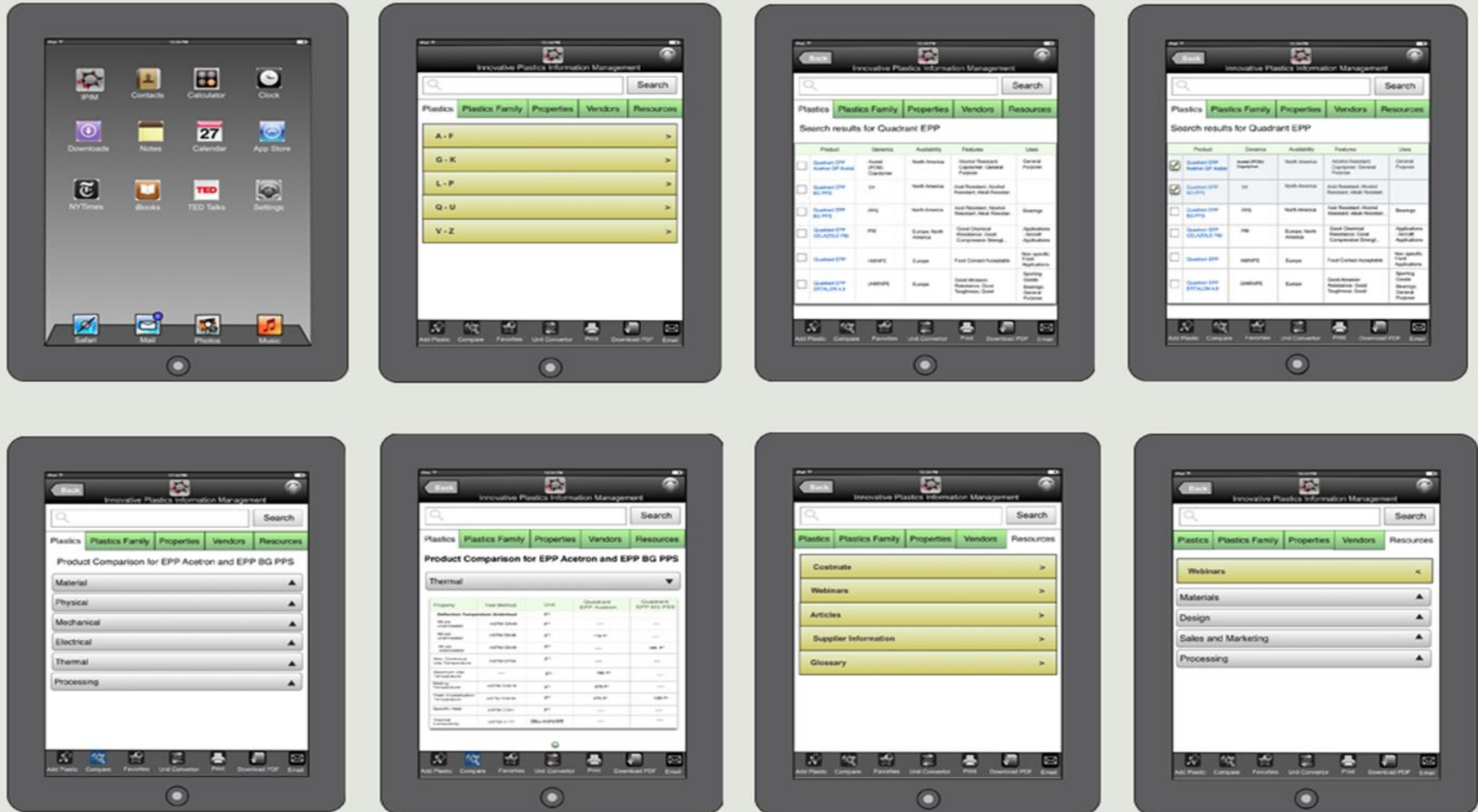Abcdef abcdef abc defghi abc def ghi jkl abcdef abc defghi abc def ghi jkl

High-Fidelity Prototypes

◦ These prototypes look very much like the final product

◦ Use a software tool: Adobe Director or Flash, Visual Basic or Smalltalk, InVision, etc.

◦ Software prototype tools are also often qualified development environments

◦ Advantages:
  ◦ High-fidelity prototypes offer more realistic interactions than low-fidelity
  ◦ Better at conveying the range of design possibilities
  ◦ User-driven

High-Fidelity Prototypes

◦ Disadvantage:

  ◦ More time-consuming to produce than low-fidelity prototyping and requires skill

  ◦ May make designers reluctant to change designs and less likely to fully explore the design space

  ◦ Reviewers and testers tend to comment on surface aspects rather than content

Examples

iPad high fidelity wireframe done in Omni Graffle

Examples

From Low to High Fidelity

From Low to High Fidelity
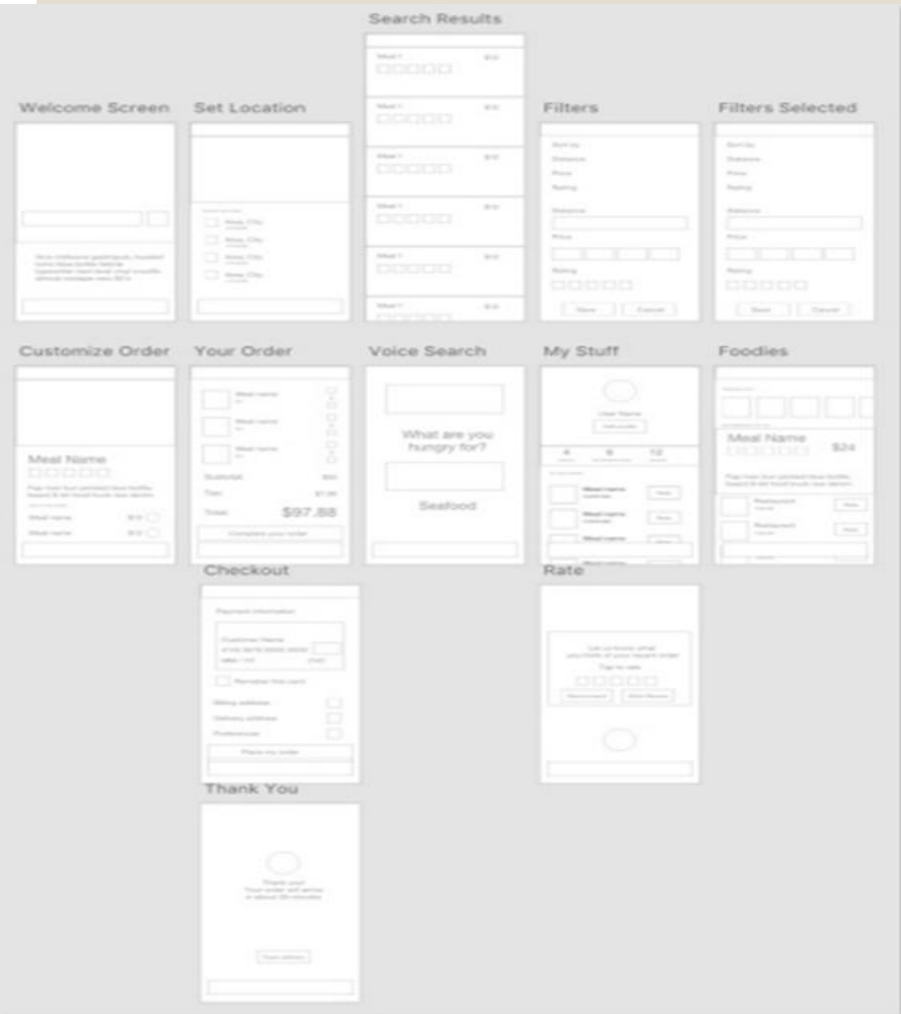
Low fidelity
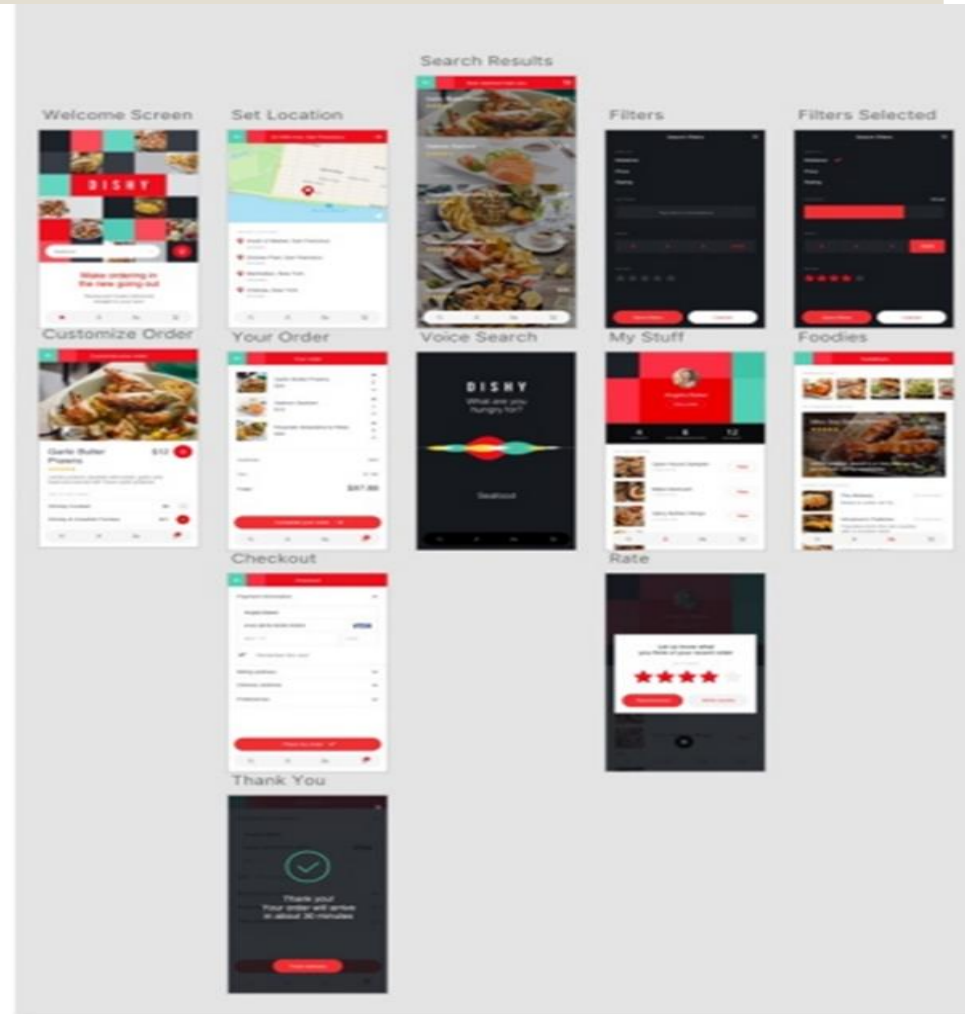
High fidelity

Storyboards

◦ Once prototypes are complete, storyboards can then be created

◦ A **storyboard** is a sequence of drawings, typically with some directions and dialogue, representing the shots planned for interface interactions, a movie or television production
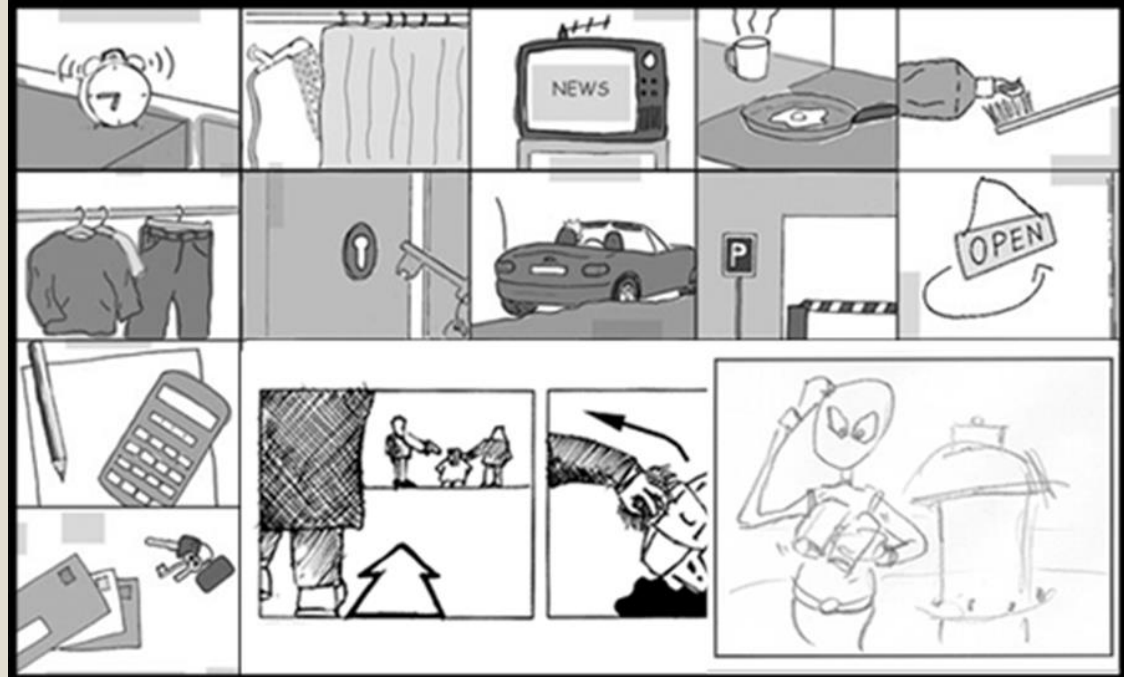
Examples

CREATE NEW COLLECTION

CURRENT FOLDER LOCATION

CAMERA FILES

NEW COLLECTION

ICON VIEW OPTIONS

COPY TO NEW COLLECTION

REMOVE FROM NEW COLLECTION
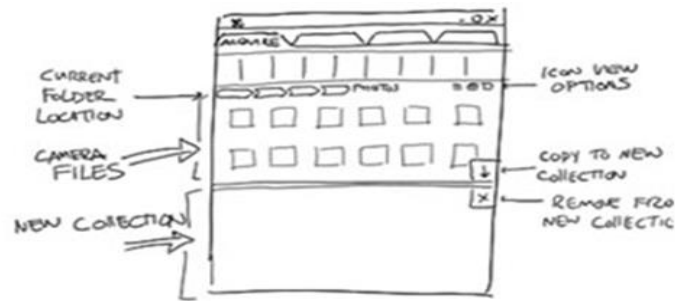
- DOWNLOAD FROM CAMERA
(OR) - RETRIEVE PHOTOS FROM DEFAULT CAMERA LOCATION

COPY TO COLLECTION

REMOVE FROM COLLECTION

ADDING TO COLLECTION

SELECT DATA FILES

Tools
TITLE
ITEMS

NEW COLLECTION

? SCROLL OR SCALE TO FIT ALL ITEM
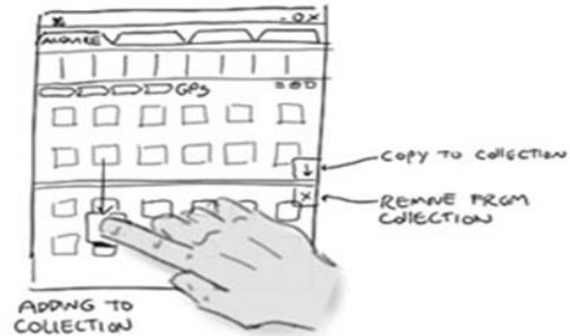
"ORGANIZE" HOME SCREEN

NEW COLLECTION

SELECT FACE TO SORT BY

NEW COLLECTION

EDIT LAYOUT OF COLLECTION

Examples

1. ShoppingCart

Item	Qty	Price
WireframeSketcher	1	$75

Total: $75

Continue Shopping | Checkout

2. Login

Customer account

⦿ I have an account

Email: [_____]

Password: [_____]

Login

◯ I am a new customer

Email: [_____]

Password: [_____]

Repeat: [_____]

Register

3. Address

Billing and shipping information

First name: [_____]

Last name: [_____]

Address 1: [_____]

Address 2: [_____]

City: [_____]

Country: [_____ ▼]

Back | Submit

4. PaymentInformation

Payment information

Name: [_____]

Card number: [_____]

Expiration date: [yy] / [mm]   CVC [___]

Name: [_____]

Back | Submit

5. ThankYou

Thank you for purchasing our product!

Continue Shopping

Reading Assignment

- What are the advantages of using storyboards during user interface design?
- Create a short storyboard for the users of your interfaces

Prototyping Techniques

◦ The main techniques include:
  ◦ Paper and Pencil
  ◦ Mock-Ups
  ◦ Wizard of Oz
  ◦ Video Prototyping
  ◦ Script-driven prototyping
  ◦ Visual programming
  ◦ Internet-based prototyping

Prototyping Techniques

Paper and Pencil

◦ The fastest form of prototyping involves paper, transparencies, and post-it notes(stickies) to represent aspects of an interactive system

◦ Designers work through scenarios using sketches of the interface

◦ They use a storyboard to present a series of interactions with the system

◦ Paper prototyping is an effective way of getting user reactions to a design proposal

Prototyping Techniques

Mock-Ups

◦ A mockup is a static high-profile visual design draft of a design or device, used to represent the structure of information, visualize the content and demonstrate the basic functionalities in a static way

◦ It is can also be used for teaching, design evaluation, and promotion of a product to clients

◦ A mockup is a prototype if it provides at least part of the functionality of a system and enables testing of a design

◦ Mock-ups are useful for interactive system designers, helping them move beyond two-dimensional images drawn on paper or transparencies

Prototyping Techniques

Reading Assignment:

◦ What is a wireframe?

◦ What is the difference between wireframes and mockups?

Prototyping Techniques

Wizard of Oz

- It is a method used in rapid product development to improve the user experience

- The designers develop a rudimentary model of the system and the designers use role playing to test how end users will interact with the system

- The users are usually under the impression that they are working with a real system, even before it exists

- The users believe that the system that they are interacting with is autonomous, but it is actually operated or partially operated by the designer who is hidden from view

- This technique enables unimplemented technology to be evaluated by using a human(designer) to simulate the response of a system

Prototyping Techniques

Video Prototyping

◦ Video prototypes use video to illustrate how users will interact with the new system

◦ The goal is to refine a single design

◦ Video prototypes may build on paper-and-pencil prototypes and cardboard mock-ups and can also use existing software and images of real-world settings

Prototyping Techniques

Script-driven prototyping

◦ Develop a set of scripts and screens using a tool such as Adobe Director. When the user interacts with these, the screen changes to the next display

Visual programming

◦ Use a language designed for rapid development such as Visual Basic

Internet-based prototyping

◦ Use a web browser and associated scripts

Prototyping Techniques

Reading Assignment

◦ What other techniques are currently in use?

◦ Download balsamiq and practise using it

◦ What prototyping technique does balsamiq apply?

◦ Define the following:
  ◦ Throw-away prototyping
  ◦ Evolutionary prototyping
  ◦ Operational prototyping

Prototyping Perspectives

◦ There are two prototyping perspectives
  ◦ Non interactive Simulations
  ◦ Interactive Simulations

Non Interactive Simulations

◦ A non interactive simulation is a computer-generated animation that represents what a person would see of the system if he or she were watching over the user's shoulder

◦ Non interactive simulations are usually created when offline prototypes, including video, fail to capture a particular aspect of the interaction, and it is important to have a quick prototype to evaluate the idea

◦ It is usually best to start by creating a storyboard to describe the animation, especially if the developer of the prototype is not a member of the design team

Interactive Simulations

◦ Designers can also use tools such as Adobe Photoshop to create Wizard-of-Oz simulations

◦ For example, the effect of dragging an icon with the mouse can be obtained by placing the icon of a file in one layer and the icon of the cursor in another layer and by moving either or both layers

◦ The visibility of layers, as well as other attributes, can also create more complex effects