Module 3 – Topic 3.2

User Interaction

Topic Outline

▸ Restaurant scenario

▸ User considerations

  ▸ Types of users

  ▸ Issues associated with user interactions

▸ Involving clients

  ▸ How to properly interact with clients

  ▸ Good questions to ask your clients

▸ Techniques that facilitate requirements elicitation

  ▸ Use cases

  ▸ Wireframes

  ▸ Storyboards

Restaurant Scenario

We're looking to develop some software for in-house use at our restaurants. My goal is to take the restaurant ordering process and make it more efficient.

I'm thinking that customers should be able to view the menu of the restaurant they're in, and once they're ready, place an order. I'd really like there to be a kids' page where you can see the kids' menu. Maybe there's a few games for the kids to play, but most importantly, it should be easy enough to use that kids can make an order themselves.

Customers should also be able to specify any changes they'd like to make for their meal, and they should be able to list any dietary restrictions they may have before they submit their order to the kitchen. The kitchen should then be able to view these orders as they come in. Customers should be able to view and pay their bill within the system.

User Considerations

Define "User"

▶ End user - anyone that is going to be directly using the product

▶ Stakeholder – anyone who is affected by, or has an effect on the success of a project

  ▶ Primary users – who will be directly using the product

  ▶ Secondary users - who will occasionally use the product, or those who use it through an intermediary

  ▶ Tertiary users – who will be affected by the use of the product

"User" Examples in Restaurant Scenario

"I'd really like there to be a kids' page where you can see the kids' menu. Maybe there's a few games for the kids to play, but most importantly, it should be easy enough to use that kids can make an order themselves."

- Primary users
  - Kid
- Secondary users
  - Guardian, wait staff
- Tertiary users
  - Restaurant owner

▶

Quick Question

You produce an online booking system for a hair salon. The system was requested and funded by the owner of the salon. The system allows customers of the salon to call or visit, and have the receptionist book their appointments on the system. Customers also have the option to create an online account and book their own appointments from the salon's website. Hair stylists can also ask the receptionist to check when they have appointments on a particular day.

Who, if any, are the primary users of the system?

A. The owner of the salon
B. The receptionists
C. The customers
D. The hair stylists

Quick Question

An association that represents senior citizens with diabetes has approached your team to develop a mobile application, that will allow seniors to track their blood glucose levels. The representative from the association specified that users will be above the age of 65. Also, the application must be easy enough to use without assistance.

What features could you add to the product that would better accommodate its end-user?

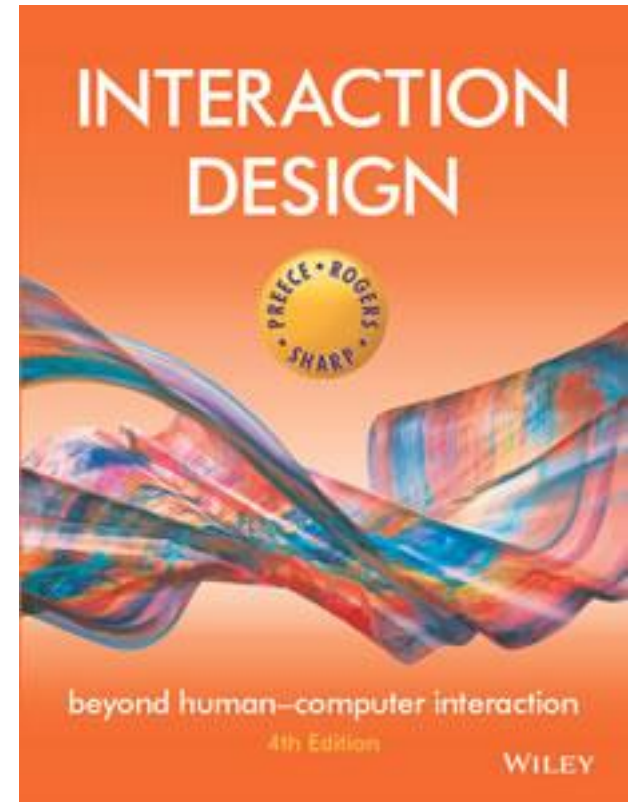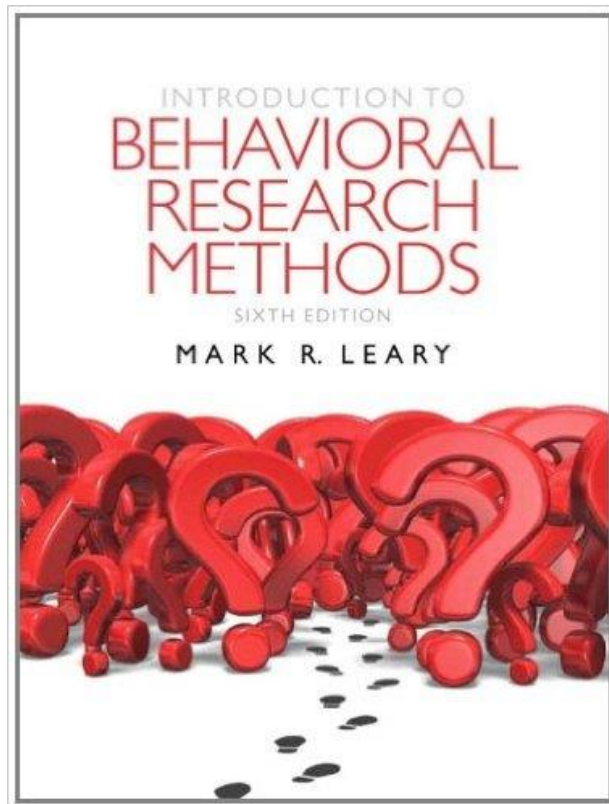- Voice command
- Many menus
- Large text
- Audio reminders

Xiaomi Senior Mode

Human Computer Interaction

▸ Study how end users interact with a technology product

Know "User"

- Users may not know what is possible in software
  - They tend to have a hard time expressing what they need, but they will usually tell you what they don't like
- Users can be biased by what they know
  - e.g., an old product

- You are NOT users!
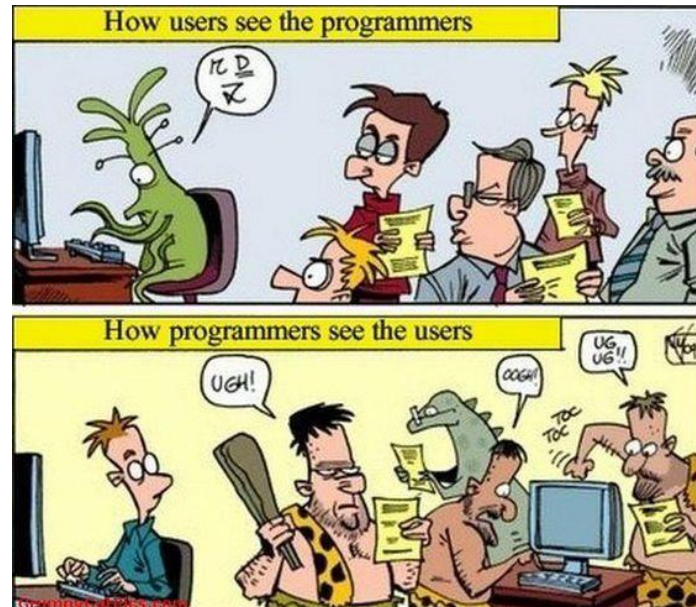
Know Human Limitations

- **Perceptual limitations**
  - Visual, auditory, touch sense, …
- **Physical limitations**
  - Children versus adults, young versus senior, left versus right handedness …
- **Cognitive limitations**
  - It is easier to recognize something that it is to recall from memory
  - Working human memory can hold five to nice items at a time
- **Cultural differences**
  - Which colour do you prefer in weddings?
  - Which sign, X, O, √ indicates a selection?

Quick Question

Hal was reading the feedback that he received about his game. Most of the feedback was positive, however, there were a couple of complaints about usability.

Which of the following complaints, represent a physical limitation?   the other 3 are perceptional limition

A.   I can't see some of the circles, because the circle, and the background colours are too similar.
B.   I have limited hearing, and I feel like I'm at a disadvantage, because I can't hear the music well.
C.   I hate that the phone vibrates when I press a bubble. It's really annoying.
D.   I can only play the game for so long before my hand gets tired, because the controller is too heavy

Involving Clients

Elicitation, Not Gathering!

▸ You are not a waiter who just takes the order and deliver what the client asked

▸ But, you, as a chef, and the client look at the ingredients and talk about all the delicious dishes you could make

You are Neither a Waiter Nor a Trial Lawyer

▸ Find a balance where you are assertive and helpful

Too passive

"You *say* you fell in the forest, and yet you can't produce even *one* witness."

Too aggressive

What Not to Ask

- Not close-ended, yes or no, questions
  - You are not a trial lawyer

- but, not too open-ended questions either
  - What do you want?
  - What are your requirements?

What to Ask – Good Open-Ended Questions and Why

▸ Stay focused on the goal and purpose of the product
▸ Try to stay as independent of technology as possible
▸ Constantly ask your client "why"

Examples adopted from More About Software Requirements by Karl E. Wiegers

Business requirements:
- What is the motivation for solving this problem?
- What would a successful solution do for you?
- Who could be influenced by this project?
- Could there be any unintended consequences?
- Are there any related projects to this one?

User requirements:
- What goals could this product help you accomplish?
- What aspects of the product excite you?
- What aspects are most/least valuable to the users?

External interfaces
- What events must the product respond to?
- Could exception ever occur?
- What should happen if exception does occur?

Constraints, assumptions, rationales
- Could you help me understand why, e.g., something applies, is relevant, is really required, is high priority?
- How should the product be different from the ways things are done now?

Non-functional requirements
- What qualities (e.g., efficiency, security, performance, etc.) are critical for the specific parts of the product?

Good Open-Ended Questions in Restaurant Scenario

▸ "Customers can use the system to place an order"

This is very vague, as there are many ways that you could resolve this requirement.

This is a good situation to ask more direct questions to figure out exactly how your client envisions this feature to work.

Can you think of some good open-ended questions to ask?

Do not Steer Towards a Certain Solution Prematurely

▸ **The client may try steering towards a certain solution, but**

  ▸ Sometimes the client is wrong

  ▸ Sometimes the client doesn't know what is possible

Ask "why?" to understand the rationale behind their thinking	Highlight it may not work; Suggest possible alternatives

Requirement Elicitation Does Not Just Occur at the Beginning

‣ You need to revisit requirements often

Mock-ups and prototypes make it easier for the clients to say what they like, what they want, and what they hate

Number your requirements with some unique identifier so they are easy to reference throughout development

Involving not Just the Client, but End Users

▸ Interview end-users to see how they work, what they need, and what they like

▸ Observe end-users to see how they use the product

▸ If the end-users had used a previous product, you can consult the products user manual to see what they're used to

Establish a Glossary for the Product

- A glossary increases clarity because there will not be different terms for the same thing

J.Hitchcock

"It appears one of you has misunderstood the term cutting edge in the last memo."

Quick Question

Kyle is a new software product manager. In the first meeting with the client, he asks his client about the goal of the product and gets some insightful answers. He then asks the client what they would like to see in the product. The client starts listing features that she wants to see, Kyle records the answers. After the meeting Kyle meets with his development team to turn the list of requested features into a backlog of requirements. He emails the backlog to the client and asks her to prioritize the requirements. Once the development team receives the prioritized backlog, they get started with development. Two weeks later, Kyle and the development team meet the client to show her a prototype. The prototype was exactly what the client had asked for, but it was pretty difficult to use. The development team wasn't very satisfied with their work.

What did Kyle do that resulted in this situation?

A.   Asked the client about the goal of the product
B.   Based the requirements solely on what the client suggested
C.   Had the client prioritize the requirements
D.   Provided the client with a prototype after two weeks

▶

Quick question

You and your development team are creating an online shopping website for a company that sells pet supplies online. The client is very specific about what they want. She wants all products displayed on the front page, sorted by price from high to low. The development team explained to the client that the user should be able to sort by animal type or product types like food, toys etc. They explained it would make the website much easier for users and less crowded on the main page. The client refuses to change the sorting system.

What should be the next approach for the development team in this situation?

A. Create the website with all her requests and deliver the product she wants
B. Provide experimental data to show her that sales can be increased with a better sorting system
C. Make the animal dance moves inappropriate, just to spite her
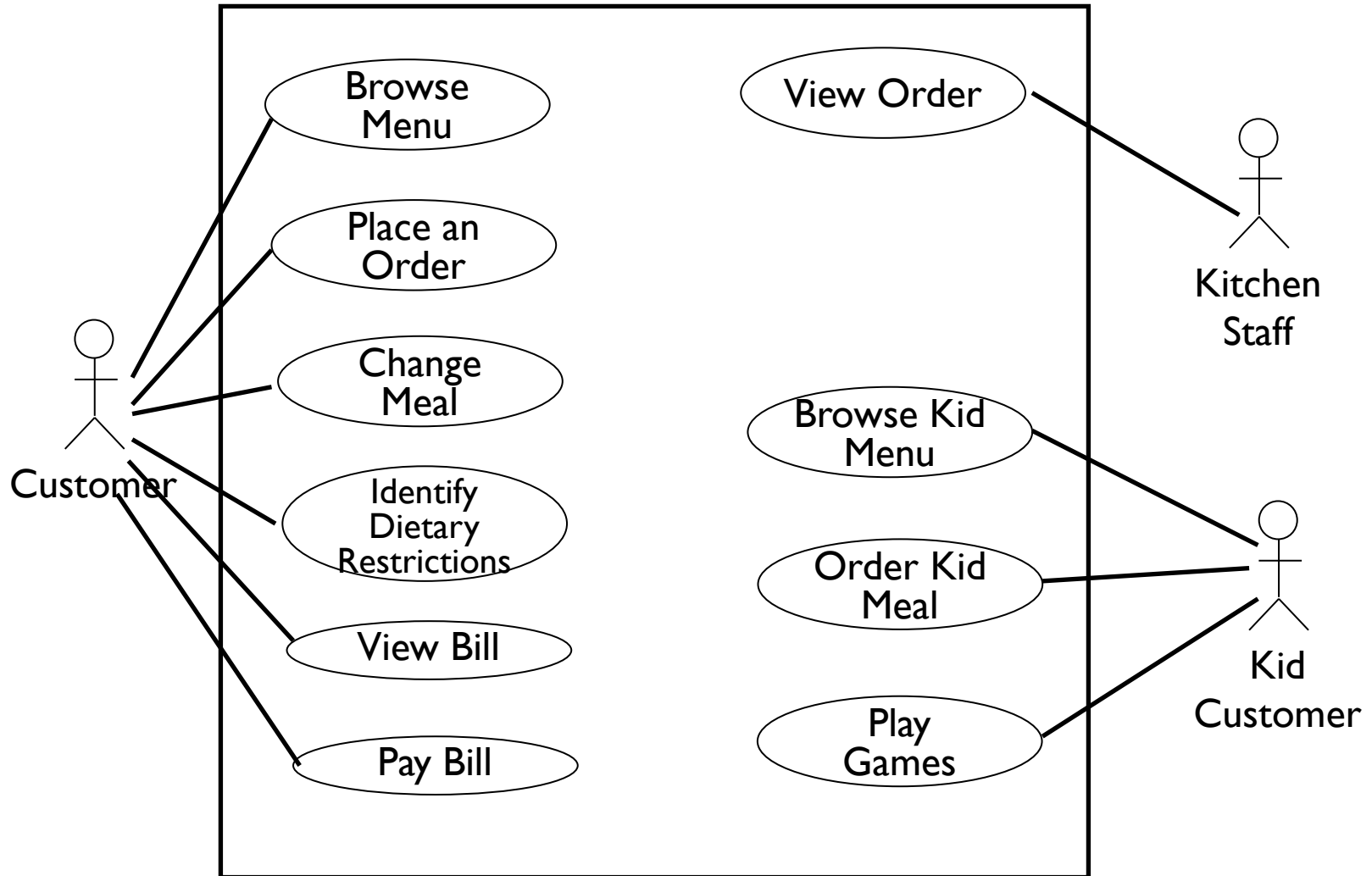D. Create a website that is visually appealing and has a great sorting feature

Use Case

User Case Diagram + Use Case Description for System Functionality

Use Case Diagram for Restaurant Scenario

Use Case Description for "View Bill"

| Name	View Bill
Participating Actors	Customer
Goals	View the bill for the order
Triggers	Request to view bill
Pre-condition	An order was placed
Post-condition	Customer can view bill and pay for bill
Basic Flow	1) Customer requests to view bill 2) System displays order details and the amount to pay 3) Customer views bill
Alternative Flow	Customers get wait staff to print and bring them bill
Exceptions	2a) if no order was placed, system displays error message
Qualities	Bill takes less than 5 seconds to load

Wireframes

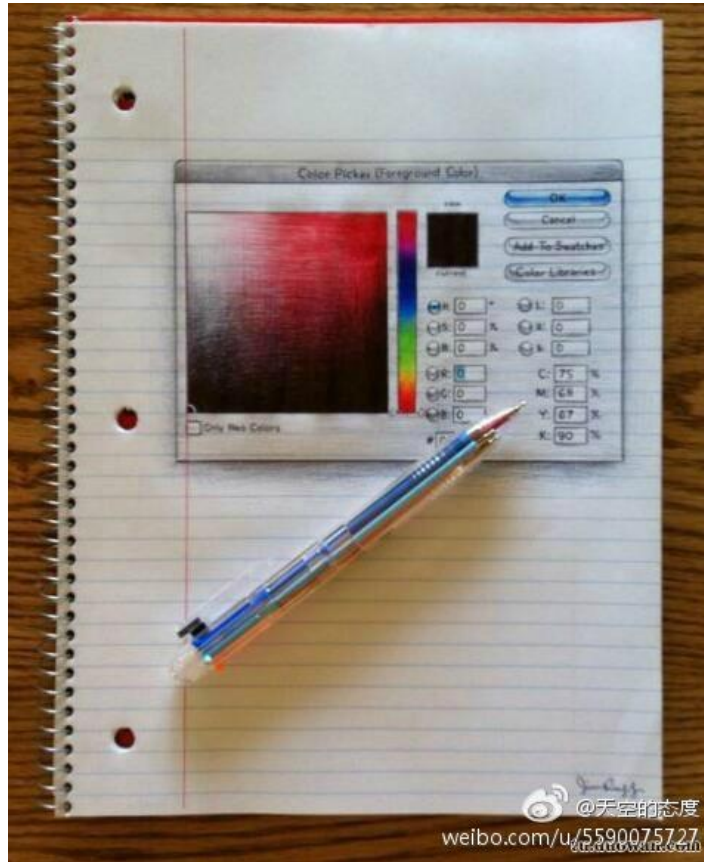Also know as mockup

Illustrative Prototypes are Wireframes

▸ Share an idea using a low fidelity, disposable image
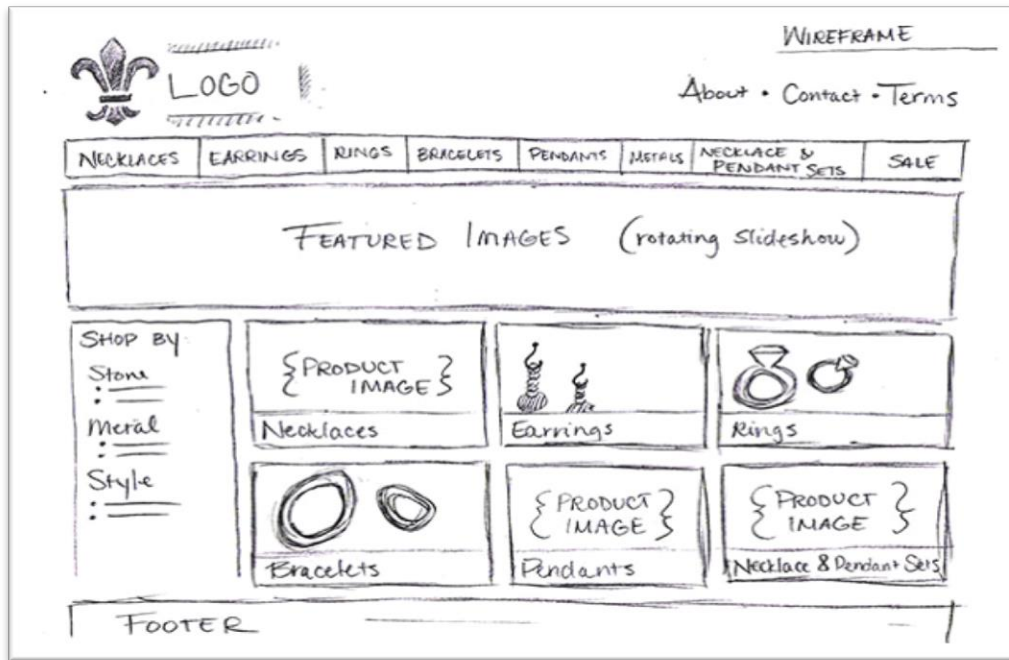
Consider this approach if your client is having a hard time expressing what they actually need

Keep Wireframes Very Simple

▸ It is NOT a demo of the interface or the product in detail

Avoid flashy colours and images

Do not prematurely develop a solution

Grab a Pencil or Use a Tool?

▸ Whichever it works ☺

The key is not what tools you use, but what you use them for – easier communication and discussions
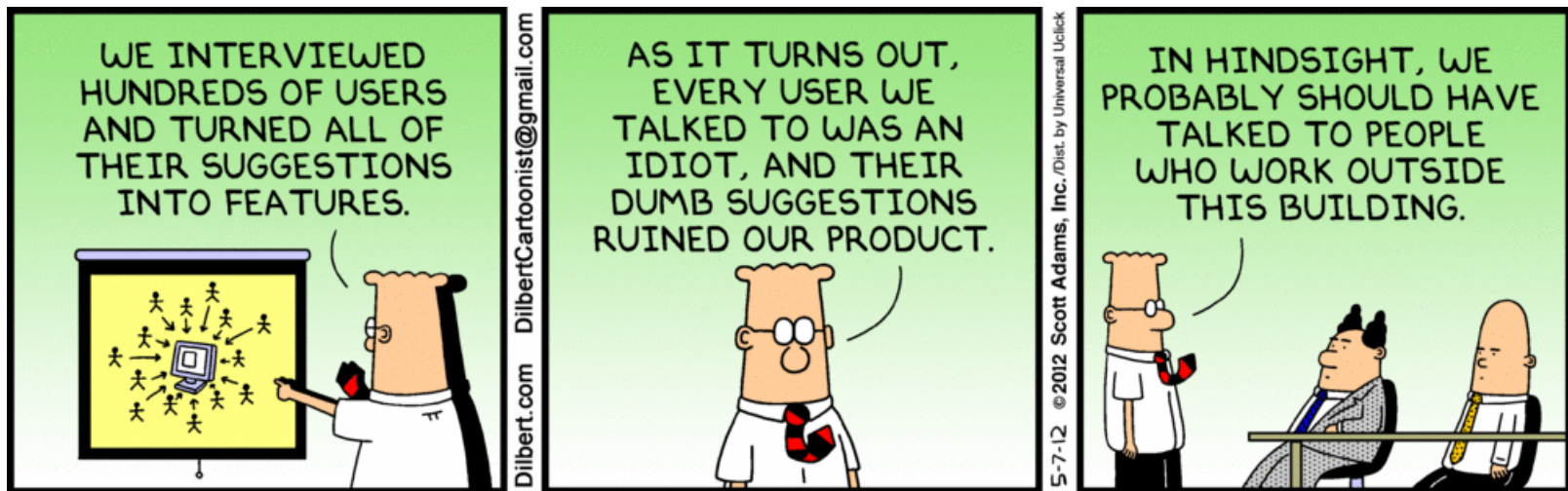
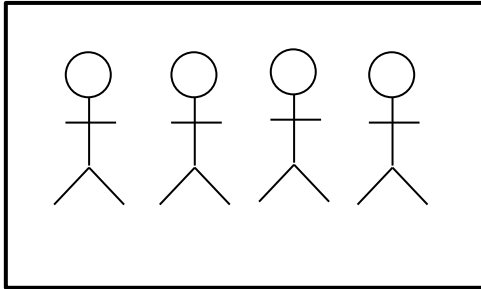Check [Reading 3.2 Wireframing Guide and Examples](#)

Storyboards

Movie-Style Storyboards

▸ A sequential, visual representation of an interaction

Storyboard in Restaurant Scenario

Xing family goes to the restaurant

They sit at a table and use the tablets to browse the menu
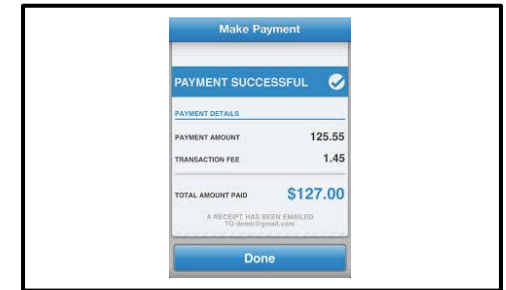

They place their order

The chef receives new order

The food is delivered and the family has a nice dinner

The mother views and pays for the bill

Quick Question

Frank is about to embark on a road trip and looks out his window and sees that it's snowing. He wonders if the roads are snow covered and slippery as a result. Frank opens his roadside assistance application and checks the road conditions for his route. The application tells him that the shortest route is hazardous and that he should take an alternate route. Frank takes the suggested route and arrives safely at his destination.

Which of the following, if any, would be requirements associated with this storyboard?

A. As a driver I want to enter departure and destination locations, and have the application calculate routes

B. As a driver I want the application to track my travel and notify an emergency contact if I don't make it to the destination

C. As a driver I want hazardous routes to be highlighted in red

D. As a driver I want safer routes to be suggested

E. As a driver I want roadside assistance to be sent to my location automatically, if my vehicle is stationary along a highway for 45 minutes

Glorified Wireframes

▸ Show how a user will interact with the user interface of a product in more detail