



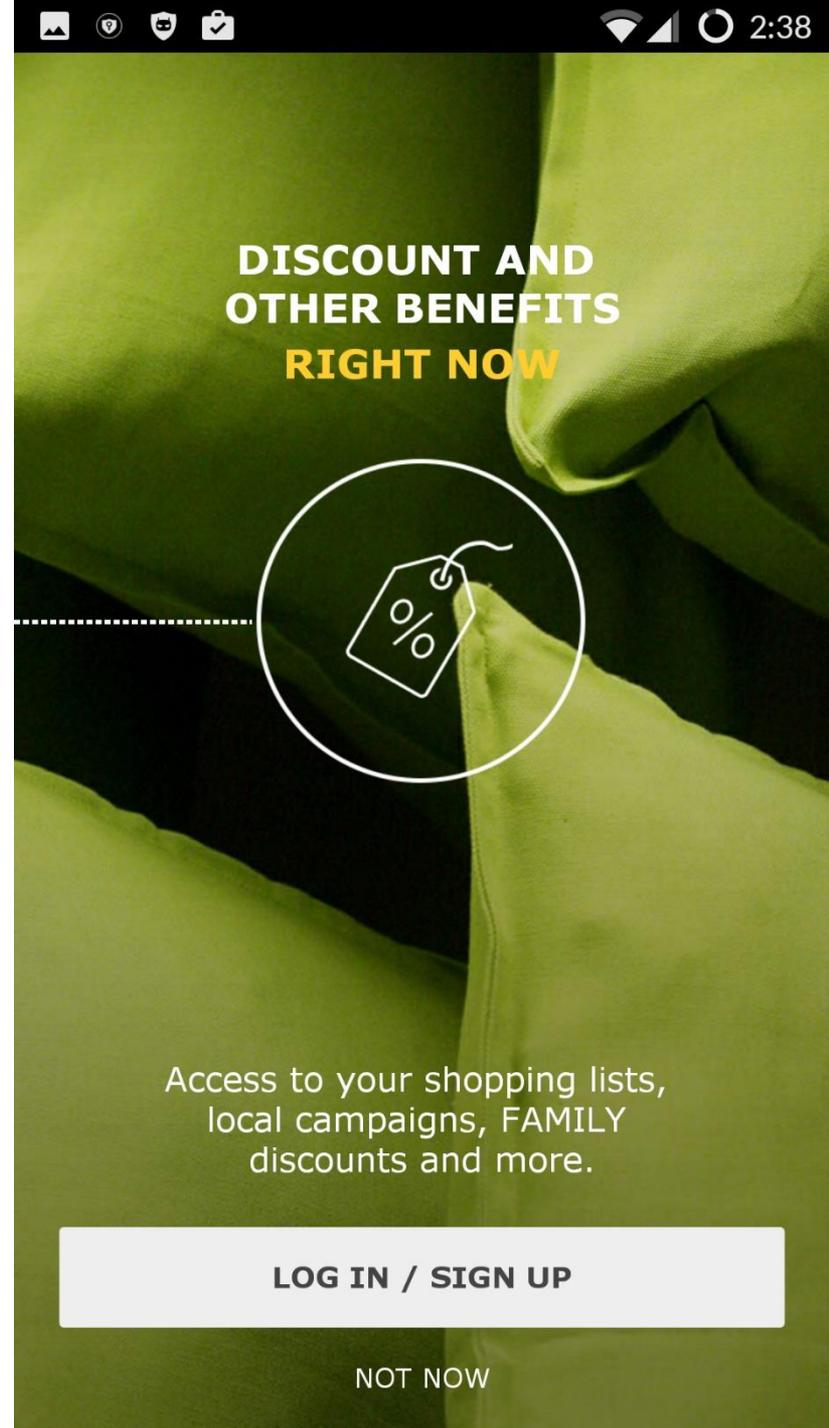
HCI: CONTEXTUAL INQUIRY STORYBOARDS, DESIGN PATTERNS

Dr Kami Vaniea

First, the news...

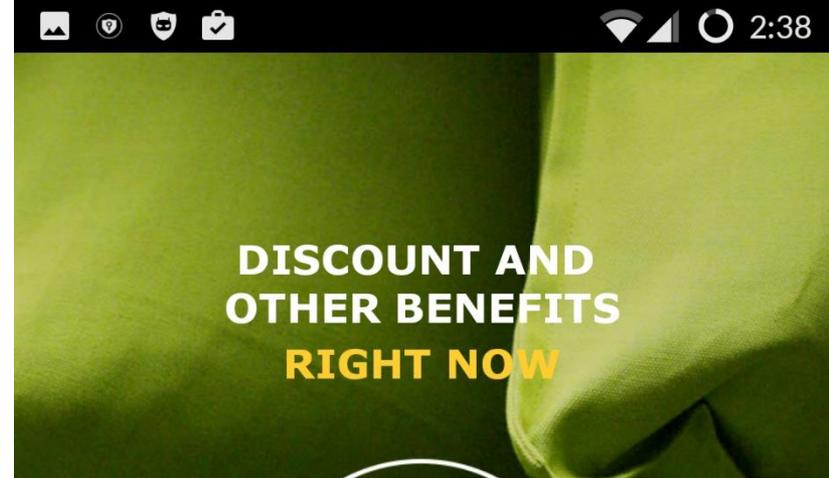
- Privacy dark patterns
- <http://darkpatterns.org/privacy-zuckering/>

- Can you spot the dark pattern?



First, the news...

- Privacy dark patterns



Access to your shopping lists,
local campaigns, FAMILY
discounts and more.

LOG IN / SIGN UP

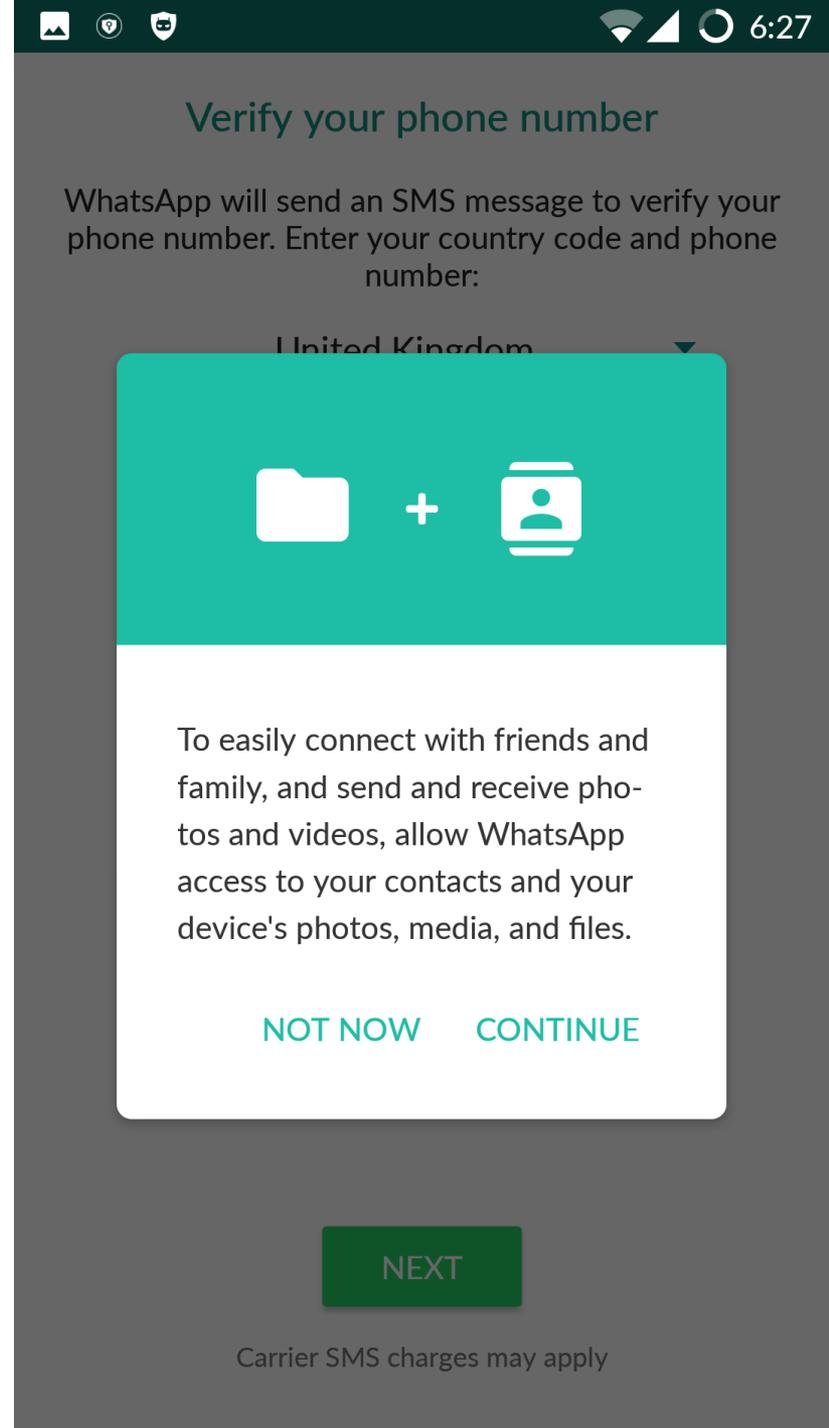
NOT NOW

LOG IN / SIGN UP

NOT NOW

First, the news...

- Privacy dark patterns

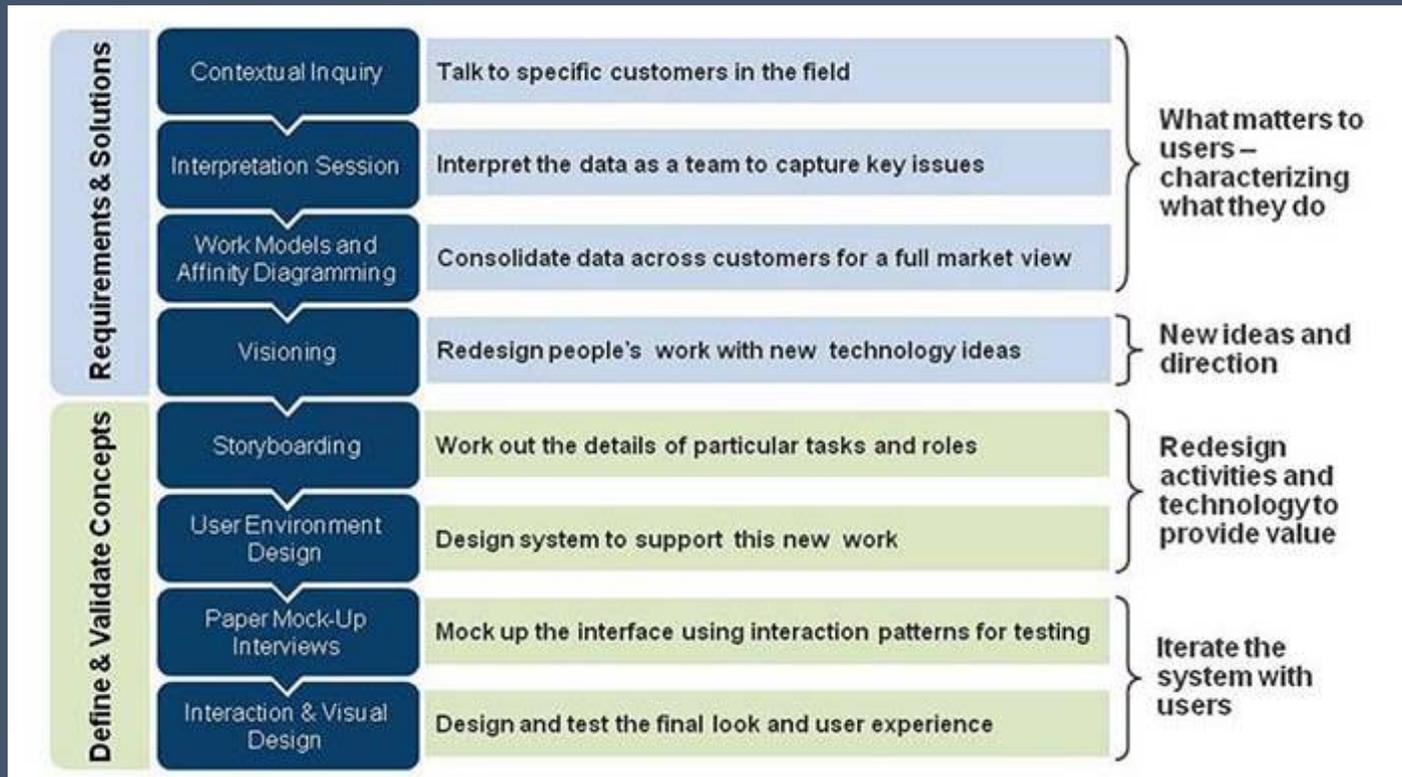


Contextual Inquiry

Contextual Inquiry

- Similar to an interview, but done in the “context” where the participant is likely to interact with the technology.
- Greater partnership with the participant, working together to figure out how a workflow actually happens.
- Pros
 - Rich data similar to a normal unstructured or semi-structured interview
 - Get to see the space where users normally interact with your technology
 - Opportunity to identify “obvious” things that users don’t mention
- Cons
 - More involved, travel to location, 1-3 hour inquiry
 - Less structured data is harder to analyze
 - May require special permission to visit and record space

Contextual design



<https://www.interaction-design.org/literature/book/the-encyclopedia-of-human-computer-interaction-2nd-ed/contextual-design>

“Principle: People are experts at what they do - but are unable to articulate their own work practice.”

<https://www.interaction-design.org/literature/book/the-encyclopedia-of-human-computer-interaction-2nd-ed/contextual-design>

Example Contextual Inquiry

- I: “I noticed that after putting the order into the system you called the stocking room and told them about the order. Why did you do that?”
- P: “I just wanted to let them know that the order is coming.”
- I: “Why do they need to know that the order is coming?”
- P: “They can’t see the order system and it takes them a few minutes to find items in the stocking room. So when the customer shows up we look unprepared, so I always call down and tell them. Order from this department always look fast!”

Contextual Inquiry

- Ethnographic interviews
- Pros
 - Strong understanding of how a particular user works
 - Deep understanding of the context in which your software will be used
 - Opportunity to build a relationship with a user
 - Ability to observe context and understand “obvious” elements of environment
- Cons
 - Harder to use on infrequent tasks (like app installs)
 - Limited sample size

At a prior university the library decided to figure out why researchers were not backing up data. They tried surveying, but people left out important information. So they sent someone around to various research labs to do a contextual inquiry.

Where is all the data?



<http://www.csoonline.com/article/2112379/physical-security/the-clean-desk-test-what-s-wrong-with-this-picture.html>



5:34 / 11:50



13



Example exchange with researcher

- Me: we back up our data onto local servers which are then backed up to an online service.
- Interviewer: What about that? (pointing to the tablet in my hand)
- Me: I have a folder on this which rsyncs (uploads) to my backed up computer once an hour when I am at work
- Interviewer: What about when you travel?
- Me: It doesn't backup, but I consider the risk minimal

The result

- Researchers were not considering mobile devices like phones and tablets or cameras when describing where their data was
- They were using Dropbox instead of university services to sync to things like mobile devices
- Sources like Google Docs were also not being reported
- Large files like detailed photos or video were all being stored locally
- Some data was being printed and stored in hard copy with no backup

Storyboards



DAEWOO

8:8:8

- Auto cook menu
- 1. Bread
- 2. Soup
- 3. Baked Potato
- 4. Fresh Vegetable
- 5. Frozen Vegetable


AUTO
COOK


Power


Defrost


Clock


Beverage


Pasta


Frozen Pizza

10 min.
1 hour

1 min.
10 min.

10 sec.
1 min.

STOP/
Clear

START/
+30 sec

KOR-6L6BD

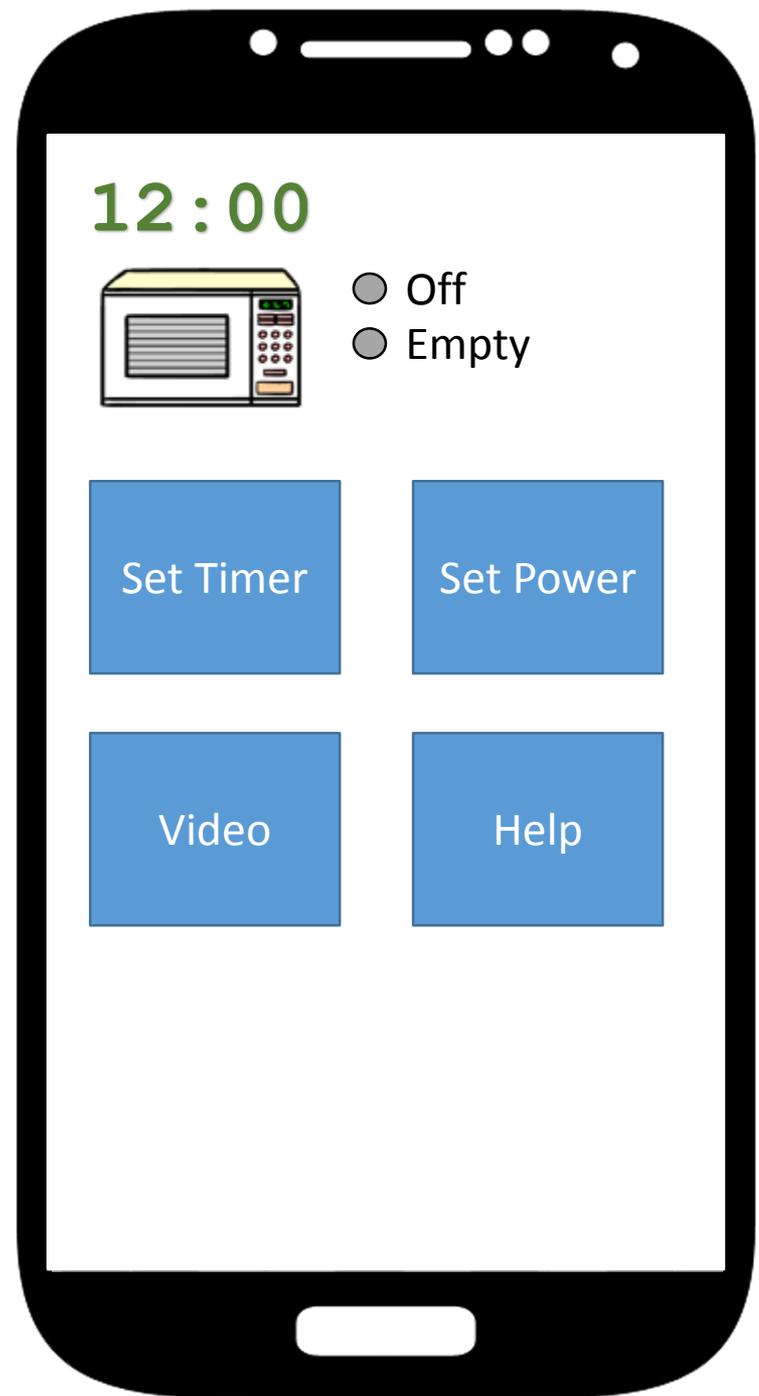

600W
E

**What do people use microwaves for?
Why might they need an app?**

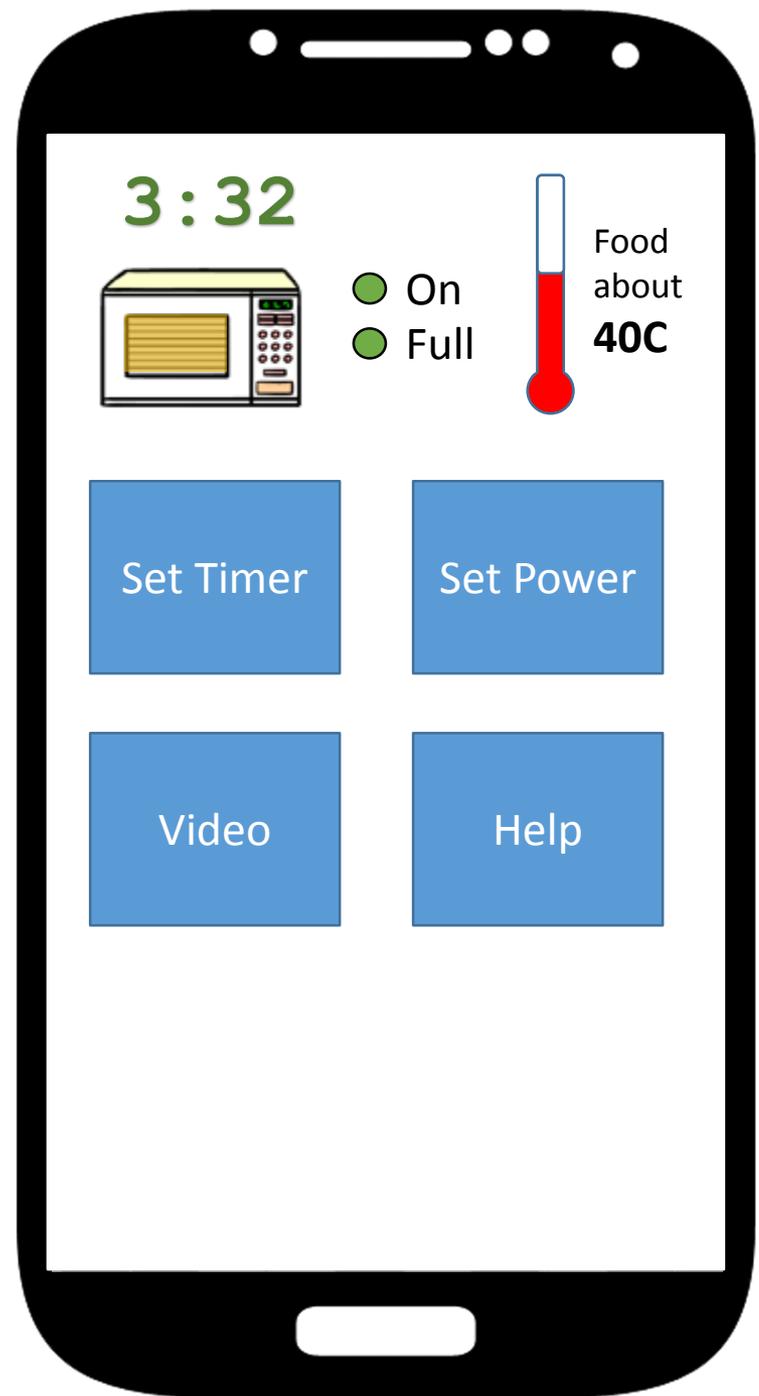
Microwave app requirements

- Display status of the microwave (off, on, full, empty)
- If full, see when the timer went off
- Read temperature of food
- Peek at food (video of food)
- Remotely set new power level and time
- Remotely start/stop microwave

**Rough
approximation of
the microwave
app last year's
class developed**



**Rough
approximation of
the microwave
app last year's
class developed**



**So we have an idea, but it isn't really
thought through very well yet**

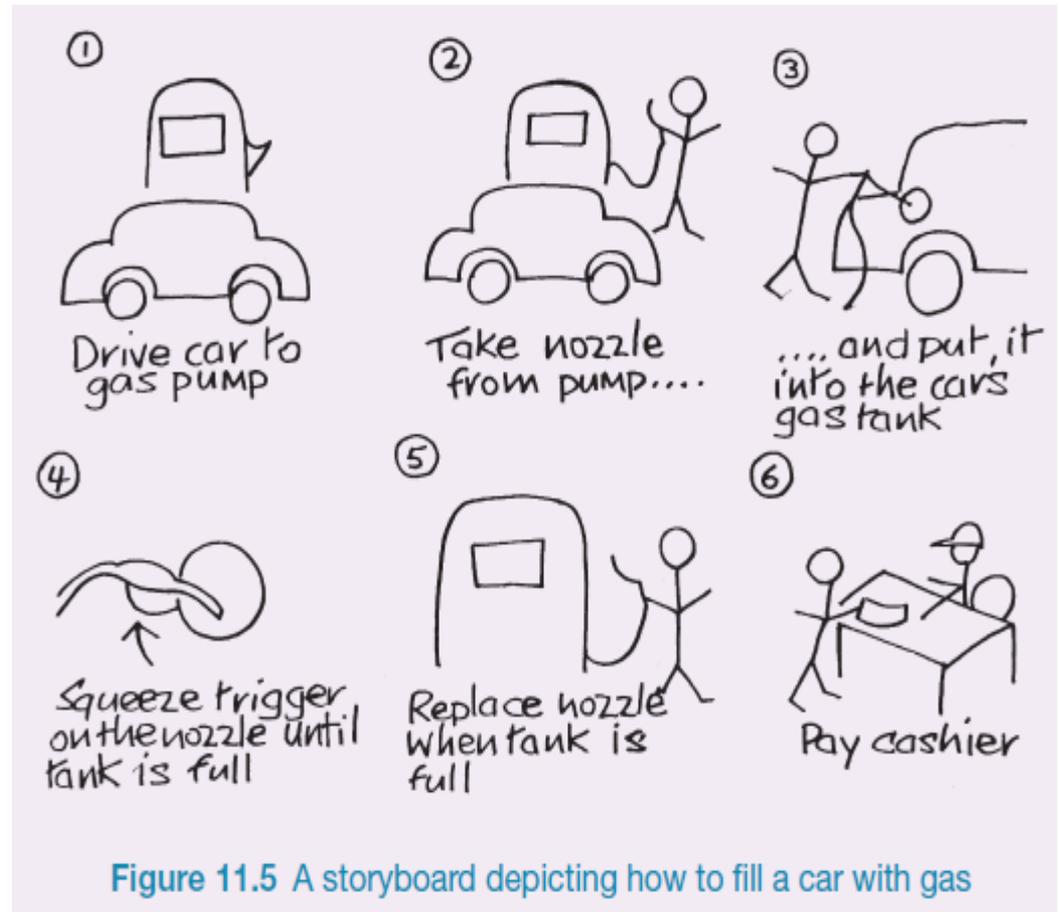
Storyboards

Storyboards

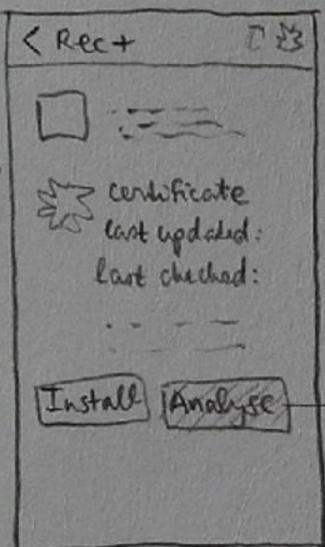
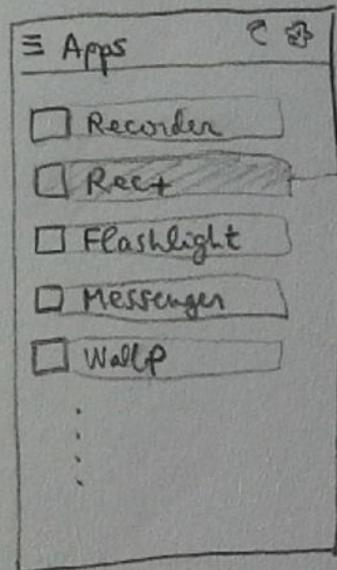
- Series of sketches showing how a user might interact with the technology or progress through a task
- Often used with a scenario to bring in more detail and context
- Pros
 - Simple to design by yourself
 - Makes you think through the process of how something will be used and identify needed features
 - Useful for communicating ideas
- Cons
 - Rough sketches, not everything can go in
 - Limited in scope, impractical to use on a whole project

Sketching

- Sketching is important to low-fidelity prototyping
- Don't be inhibited about drawing ability. Practice simple symbols



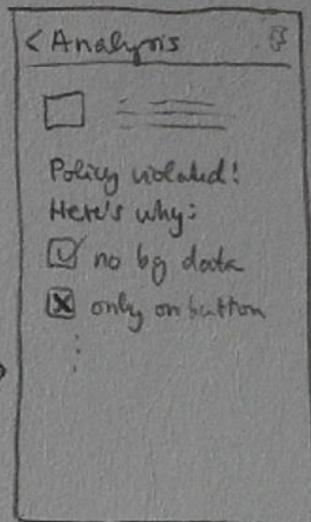
CHECKER APP (ALICE)



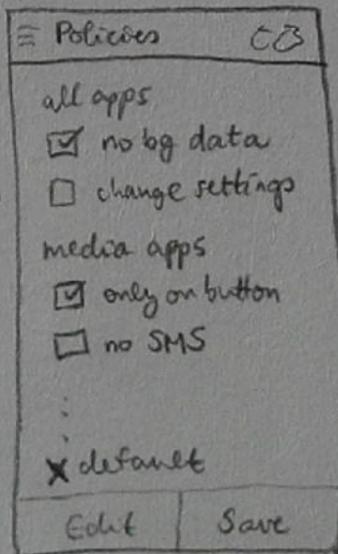
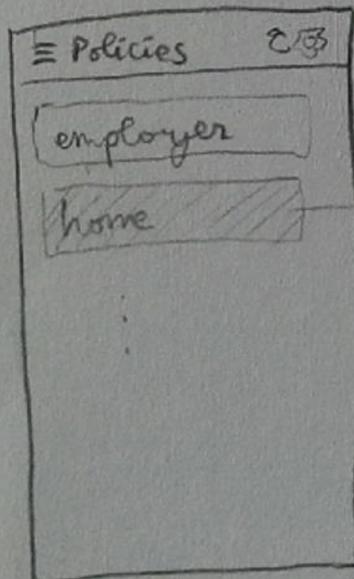
1. download app.
2. generate cert / check cert
3. if OK, check policy

What policy profile?

- employer
- home

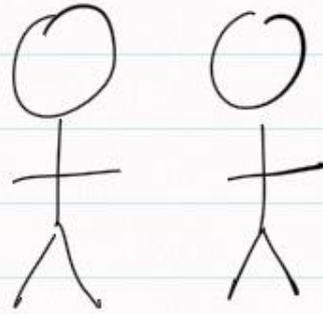


(depending on results)



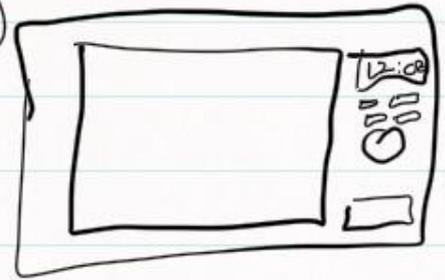
Storyboard around microwave app

①



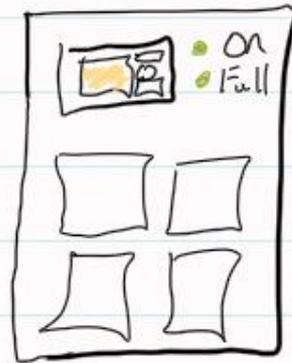
Bob & Charlie
are roommates

②



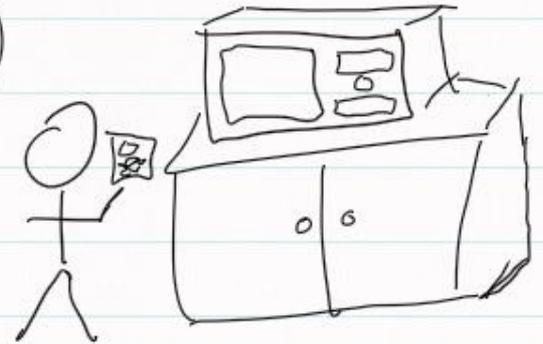
Who both use
their microwave to
cook Dinner

③



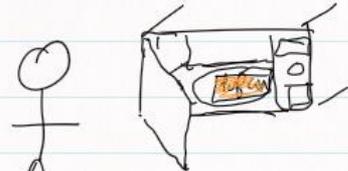
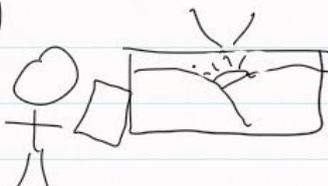
Bob downloads
the microwave app

④



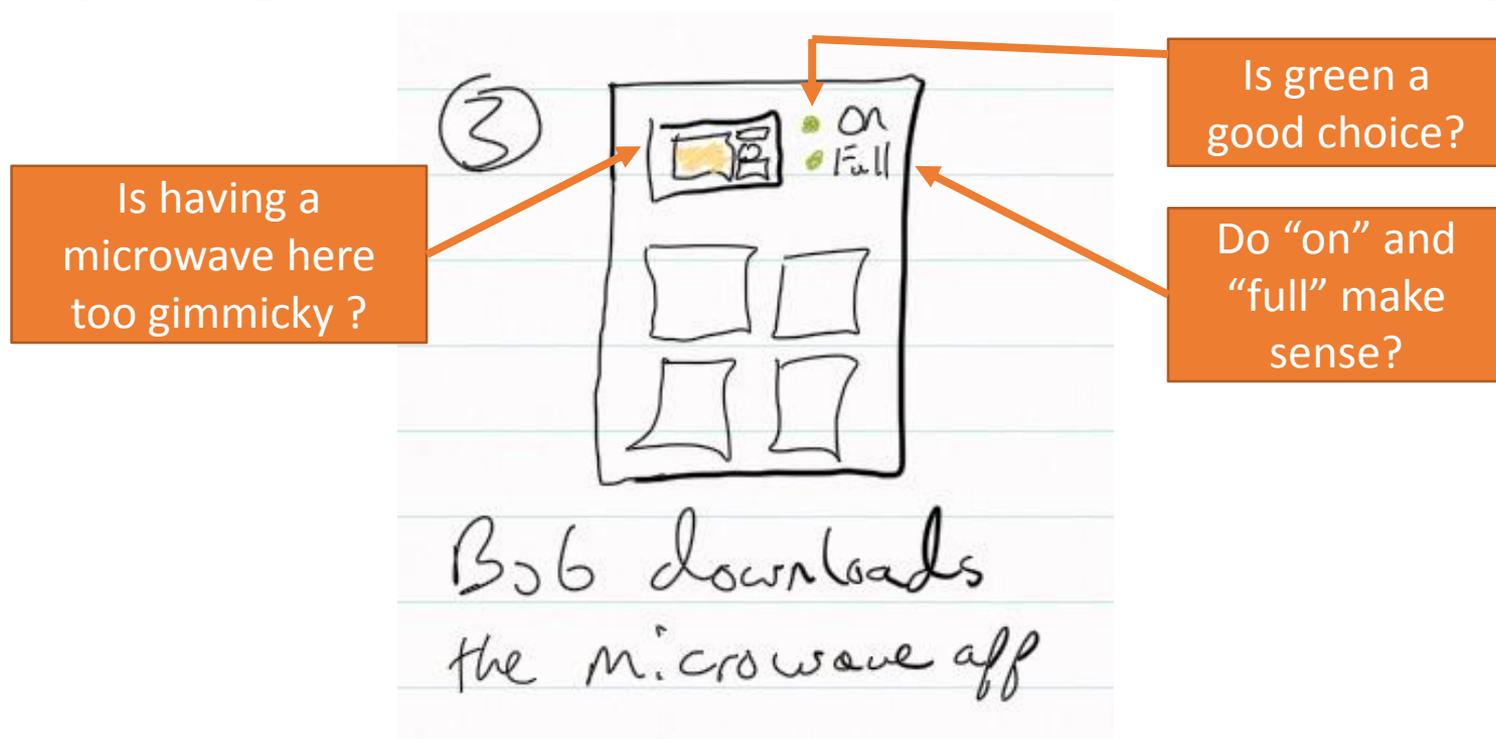
Bob tries all the
buttons on the
new app

Tell a clear story about how technology will be used in context

- Bob makes Popcorn 
- ① 
Popcorn says to Microwave till the Bag inflates
- ② 
Bob puts popcorn in the Microwave and starts it
- ③ 
Bob goes and watches his movie and the popcorn at the same time
- ④ 
Bob sees the bag expand and hits stop
- ⑤ 
Bob eats popcorn

You might have noticed that I can't draw

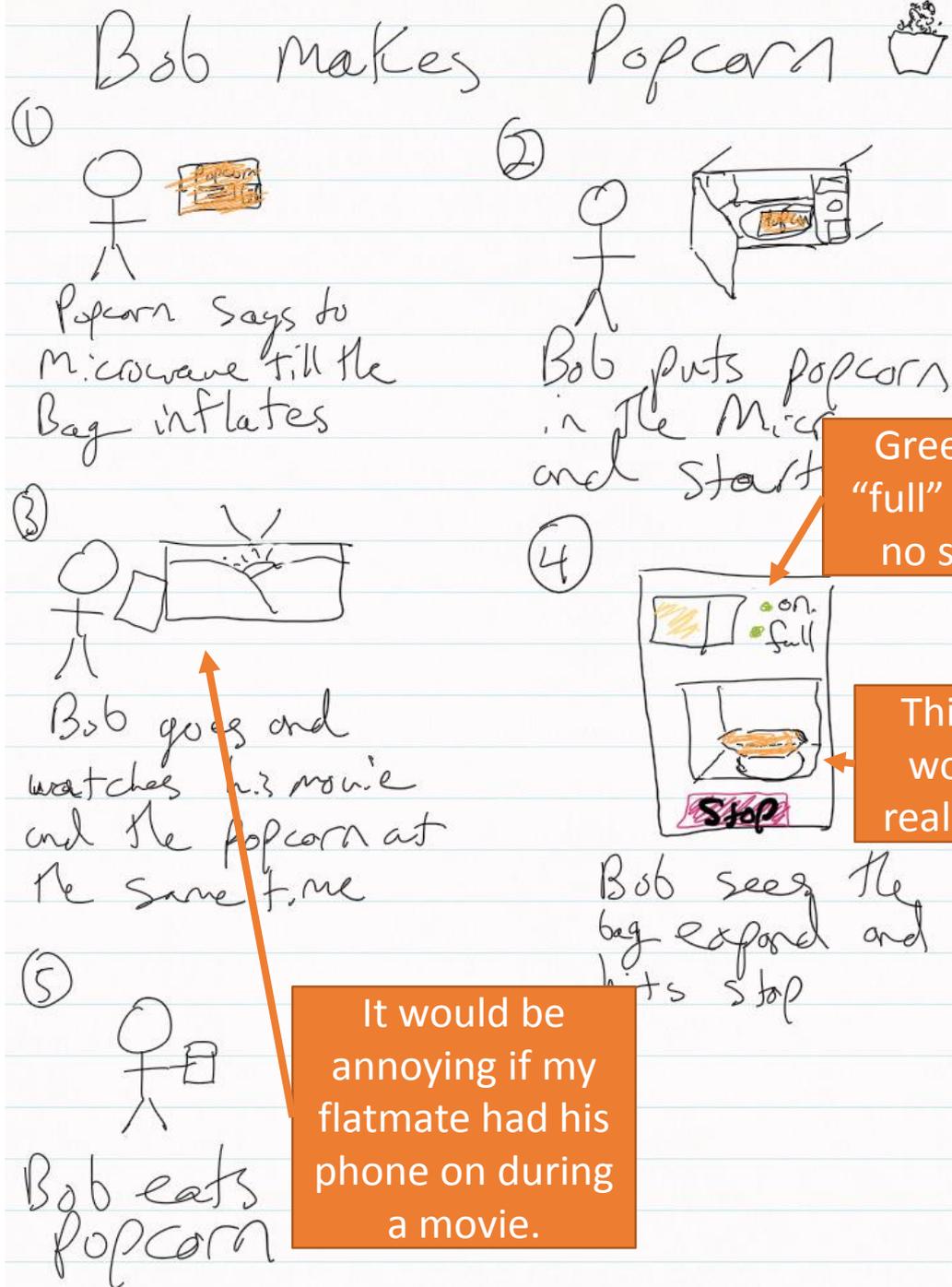
- That is ok. Storyboards do not need to be perfectly drawn, they just have to be clear enough to get the idea across
- Poorly drawn storyboards are actually better for getting feedback from users on important things



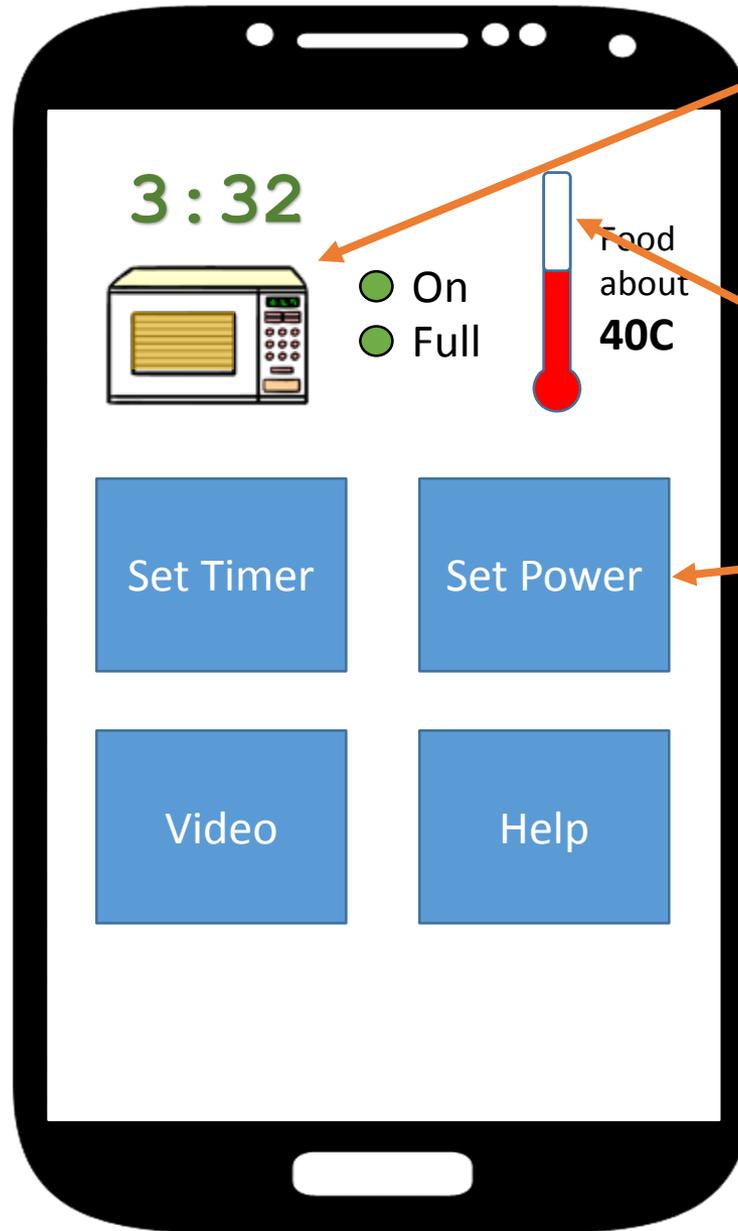
Storyboards are used for:

- Getting feedback from users early in the process
 - In focus groups to see what people's initial reactions are
 - With customers to see if your idea matches theirs
 - With potential users to quickly see if something makes sense
 - With client or boss to clearly articulate an idea
- Helping you think through your design
 - Forces the designer to step through how something will be used
 - It didn't occur to me that the microwave video screen might need a large "stop" button till I drew the Bob storyboard. Now it seems obvious...

Rough storyboards let us get high level feedback from users early in the process



If I show a potential user a nicer drawn image I will get different feedback



Can't you find a nicer looking graphic?

The white bit doesn't perfectly line up with the red bit.

I don't like this color of blue

Think-pair-share

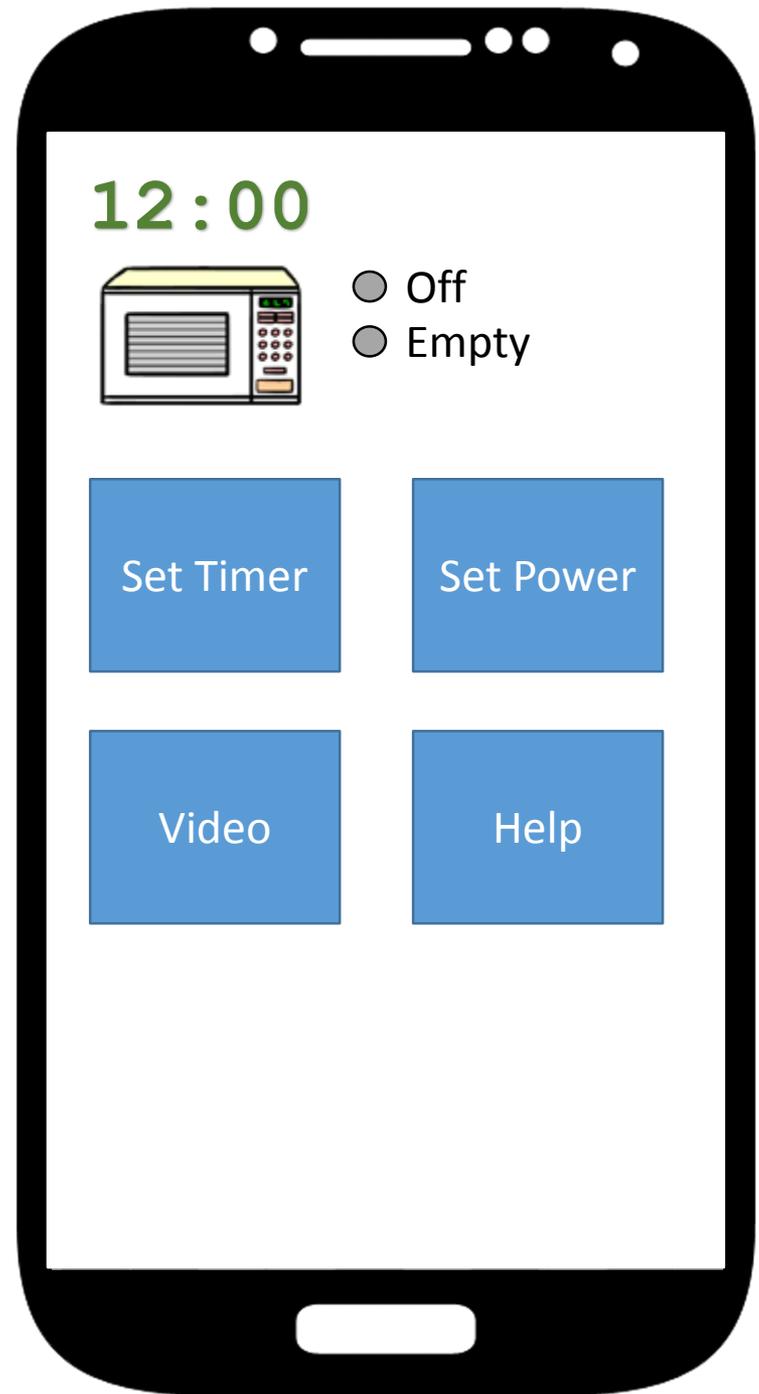
- Draw a storyboard where Bob wants to use the microwave but Charlie is using it right now.

Design Fictions

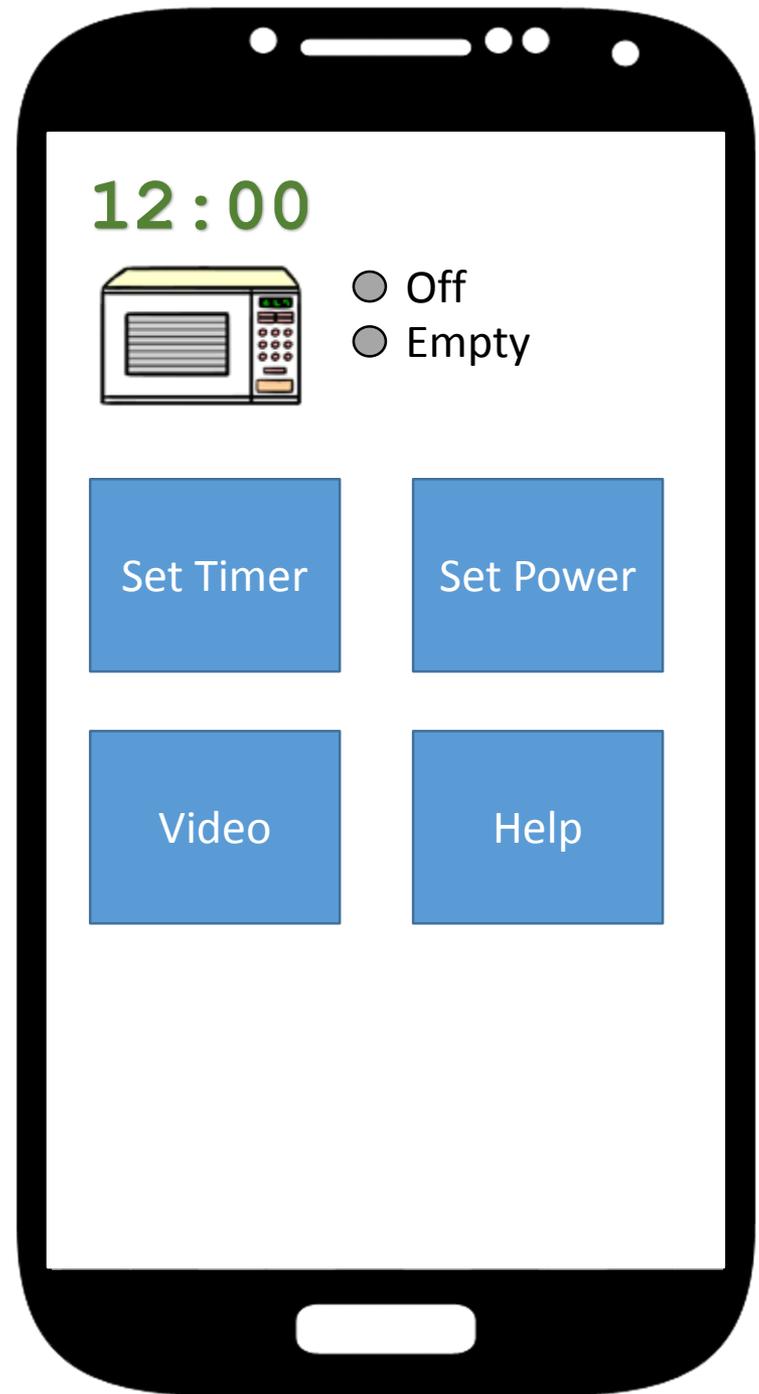
Design Fiction

- A short story which explains how you envision your app will be used ideally.
- Similar to a story board, but typically using words.
- It provides enough detail that someone could understand key parts of the interaction and how the app fits into the daily work flow of the user.

Bob lives with his flatmate Charlie. Both of them regularly use the microwave. Bob would like to microwave a pizza pocket, but he knows that Charlie sometimes microwaves food and leaves it in the microwave. He can get really grumpy if anyone touches his food. So Bob wants to check if there is food in the microwave before he goes into the kitchen.



Thankfully Bob and Charlie's microwave is "smart" and has an app. Bob pulls out his smartphone and opens the microwave app. He sees that the microwave is currently off and empty so Charlie must not be using it. He goes to the kitchen and microwaves his pizza pocket without having to waste a trip.



Design Patterns

A large number of examples drawn from:

<http://ui-patterns.com/>

Design Pattern

- Similar to a recipe for how to handle common user interface design issues
- When facing a design problem it can be useful to look at several patterns and see if they help you solve the problem
- Pros
 - Good way to not reinvent the wheel
 - Learn from others' mistakes
- Cons
 - Only common things have patterns
 - Patterns are not one-size-fits-all, what works in one situation may not work in another

Common elements of design patterns

- Name
- Description
- Problem Statement
- Use When
- Solution
- Rationale
- Examples
- Comments

List of different design patterns for helping the user enter input

Getting input

Getting the user to input data is a task that should be tailored to the context of use.

Forms

- Password Strength Meter
- WYSIWYG
- Input Feedback
- Captcha
- Calendar Picker
- Structured Format
- Inplace Editor
- Fill in the Blanks
- Preview
- Settings
- Keyboard Shortcuts
- Expandable Input
- Undo
- Autosave
- Drag and drop
- Forgiving Format

Explaining the process

- Wizard
- Completeness meter
- Steps Left
- Inline Help Box

Community driven

- Vote To Promote
- Pay To Promote
- Wiki
- Flagging & Reporting
- Rate Content

Structured Format (ui-patterns.com)

Problem summary

The user needs to quickly enter data into the system but the format of the data must adhere to a predefined structure.

Example

The image shows three variations of a flight booking form. The first form on the left has empty date fields with the placeholder 'DD/MM/YY'. The middle form features a calendar for 'SEPTEMBER 2007' with the date '20' selected. The third form on the right has the date '20/09/07' pre-filled in the 'Depart' field. All forms include fields for 'Return', 'Class' (set to 'Economy'), 'Ticket type' (set to 'Lowest'), and passenger counts for 'Adults (12+)', 'Children (2-11)', and 'Infants (0-2)'.

Usage

- Use when the more explicit form elements like select boxes, radio buttons, and checkboxes make entering data for everyday tasks a too complicated process
- Use when the time it takes to complete a task proportional exceeds the importance of the goal the user wants to accomplish.
- Use when the input you want to collect is a specific data type. For instance a zip code, a date or time, a phone number.
- Use when the expected user input follows a specific format which can readily be interpreted by a computer program.

Structured Format (ui-patterns.com)

Solution

Represent input fields in a way that clearly guides or limits the user as to what input format to use.

An input field is presented with an accompanying label describing the input that is expected in the field. The label describes a specific structure the user must follow to input a valid value.

In some cases the user is presented with the possibility to use helping mechanisms such as a date selection calendar to fill out the input box in the correct way. When the user has done this multiple times, they slowly learn how the input is formatted, so that they can copy the same format on their own.

Rationale

Set clear expectations by ordering input fields in a Structured Format: clue users as to what kind of input is being requested. By chunking large input fields into smaller bits, data entry errors can be decreased dramatically. It is easier to transcribe or memorize a long number when it is broken up into chunks. Where the Structured Format is well suited for predictable input, the Forgiving Format is well suited for open-ended input.

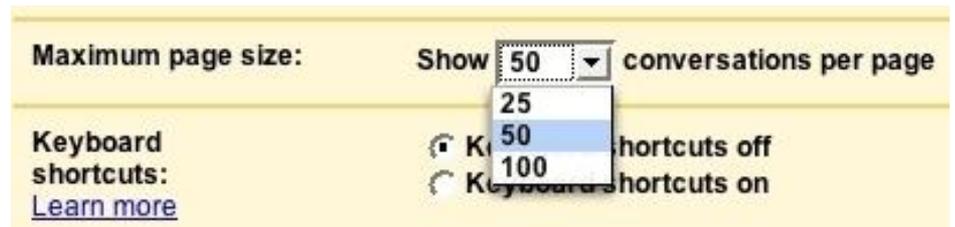
Using a structured format in an input field saves time for the user, when they are required to fill out the same input field repeatedly as a part of a frequent task. The structured data pattern aids the user through streamlined and controlled inputs, which in turn speeds up data capturing tasks and reduces the garbage in, garbage out problem.

Getting input

- Flexible format
- Fill in the blank
- Structured format



A screenshot of a web form titled "Add an event". It features a large, empty text input field. Below the field, the text "6pm Dinner" is displayed, followed by a link that says "(Enter dates and times)".



A screenshot of a settings menu with a yellow background. It includes the following elements:

- "Maximum page size:" followed by a dropdown menu showing "50" and a list of options: "25", "50", and "100".
- "Show 50 conversations per page" (partially obscured by the dropdown).
- "Keyboard shortcuts:" with a radio button selected for "Keyboard shortcuts off" and another for "Keyboard shortcuts on".
- A link labeled "Learn more" below the keyboard shortcuts section.

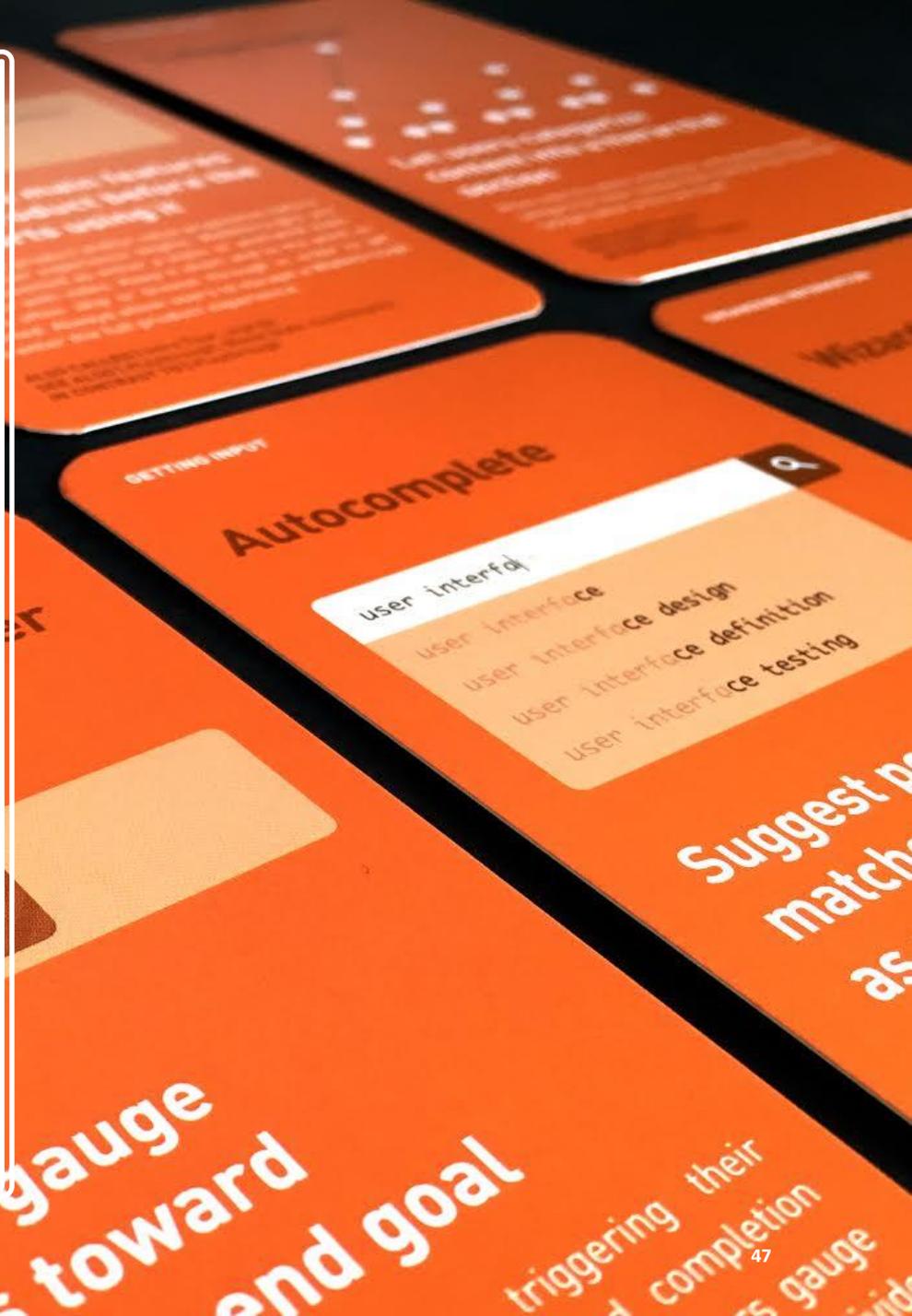


A screenshot of a flight booking form with the following sections:

- Depart:** A text input field with the placeholder "DD/MM/YY" and a checkbox labeled "One way only".
- Return:** A text input field with the placeholder "DD/MM/YY" and a checkbox labeled "My dates are fixed".
- Class:** A dropdown menu showing "Economy" with a link "what's this?" next to it.
- Ticket type:** A dropdown menu showing "Economy" with a link "what's this?" next to it.
- Options:** Radio buttons for "Lowest" (selected) and "Flexible".
- Passenger counts:** Three columns for "Adults (12+)", "Children (2-11)", and "Infants (0-2)". Each column has a spinner control showing the count: "1" for Adults, "0" for Children, and "0" for Infants.

UI Pattern card deck

- <http://ui-patterns.com/>
- Set of ideation cards used to help designers think through what kind of UI elements might be needed
- Helps designers think about all the options and how they match the needs



Questions?