CPT208 Human-Centric Computing

# 06. Prototyping Fidelity and Dimensions

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# Today’s plan

1. Dimensions in prototyping
2. Physical design
3. Tips for prototyping

# Fidelity in Prototyping (cont.)

Chapter 12

# Questions first

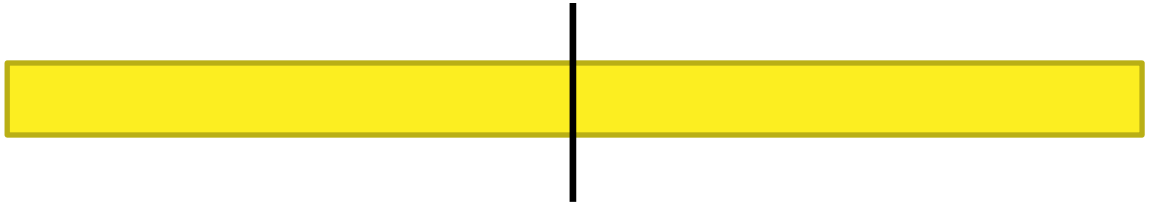
Are we using the low- or high-fidelity prototype if we used the colored UI/operable interface/coding...?

There is no clear separations!

But we do have measures from different perspectives.

# fidelity is a spectrum

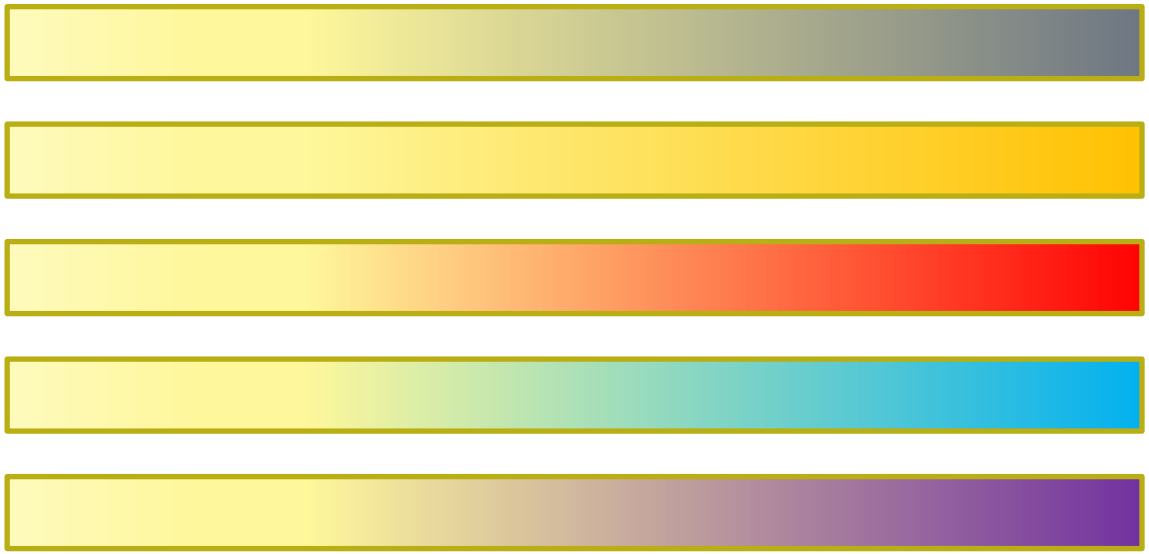
Is it something like this?



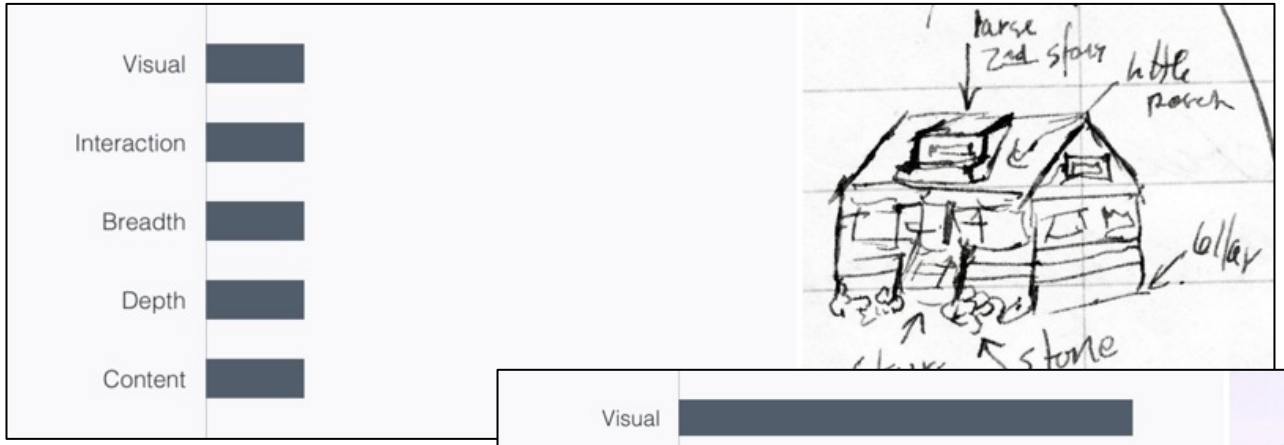
Or something like this?

# How to define the level of fidelity

Or even this



# Remember the building prototype?







# Remember the compromise!

- Neither of these is inherently good or bad.
- There are costs and trade-offs with raising or lowering fidelity in any dimension.
- The path you take as the designer to get from the first image to the last is up to you to determine.

# Why it matters?

- We are doing a ‘low-fidelity’ prototype!

Or

- Let’s make a ‘high fidelity’ prototype to be tested with customers ASAP!

# Why it matters?

- We're wasting time and sanity with imprecise language about fidelity.
- Even worse, we risk falsely validating one thing today and failing to validate a better way tomorrow.
- Teams are prone to over-engineering a prototype prematurely, leading to wasted effort. In other words, a prototype may be low fidelity except for one crucial dimension that may require quality and fidelity at near-production levels to validate fairly.

# Dimensions

Chapter 12

# Five dimensions in prototyping

- Visual: How real does it look?
- Interaction: How real does it feel?
- Breadth: To what degree is this the whole or just a part?
- Depth: At a given level of breadth, to what degree is the user constrained?
- Content: How real is the stuff and is it contextual to the user?

# Dimensions - Visual fidelity

“I’ll know it when I see it.
I can see what you’ve done there and I like it.”


- ➔ We judge books by their **covers**, even when we’re told not to — because we can’t help it.
- ➔ It is the most direct dimension that user feels about the prototype

# Dimensions - Visual fidelity

Refers to the devotion and granularity put into the design for **visual interfaces and physical objects**

- ➔ In early stages, the visual fidelity are rather low, so users will focus on the **actions/procedures/concepts**..
- ➔ In later stages, it should be higher to test the **accessibility/touch/visual details**...

# Dimensions - Visual fidelity

- The **big, obvious problem** involves **jumping to high visual fidelity too early** in the process.
  - There's a feeling that when something looks done, it must be done.
- Just because a designer **is capable of prototyping fairly quickly** at high visual fidelity **does not make it the right decision**.
  - Designers should sometimes intentionally keep visual fidelity low to encourage the kind of communication and feedback they want.

# Dimensions - Interaction fidelity

“I’ll know how what is the feedback if I click/tap/swap.”


➔ InVision lets anyone stitch screens together to increase interaction fidelity. Balsamiq has screen-linking capabilities that combine with a low-visual-fidelity component library.

# Dimensions - Interaction fidelity

Refers to the objective degree of **exactness** with which real-world interactions can be reproduced

- ➔ Users can **click, tap, and swipe** through screens and **get the feel**.
- ➔ It allowed the team to **quickly and cheaply test hundreds of variations.**

# Dimensions - Interaction fidelity

- The palm pilot
  - The most creative use of a chopstick
  - Imagine the era that there is no smart phone
  - How would design and test **the way how people use portable computers?**

# Dimensions - Breadth fidelity


Let's say we wanted to redesign Amazon.com. Where would we start?

- Should we just start by prototyping the home page and checkout pages?
- What about product pages, search results, filtering, or wish list pages?
- **Amazon.com is huge**. Choosing where to draw the lines of your prototype's edges sets up its breadth.

# Dimensions - Breadth fidelity

Simply speaking, it refers to **the number of features covered.**

- ➔ Sometimes you will want to prototype it all. Sometimes you should avoid most of the product's surface area because it can't change anyway.
- ➔ It's up to you to decide because **the entry and exit points** to your redesign may matter more than you think.

# Dimensions - Depth fidelity

Imagine that this time, we're prototyping a voice assistant (e.g., Siri, Alexa).

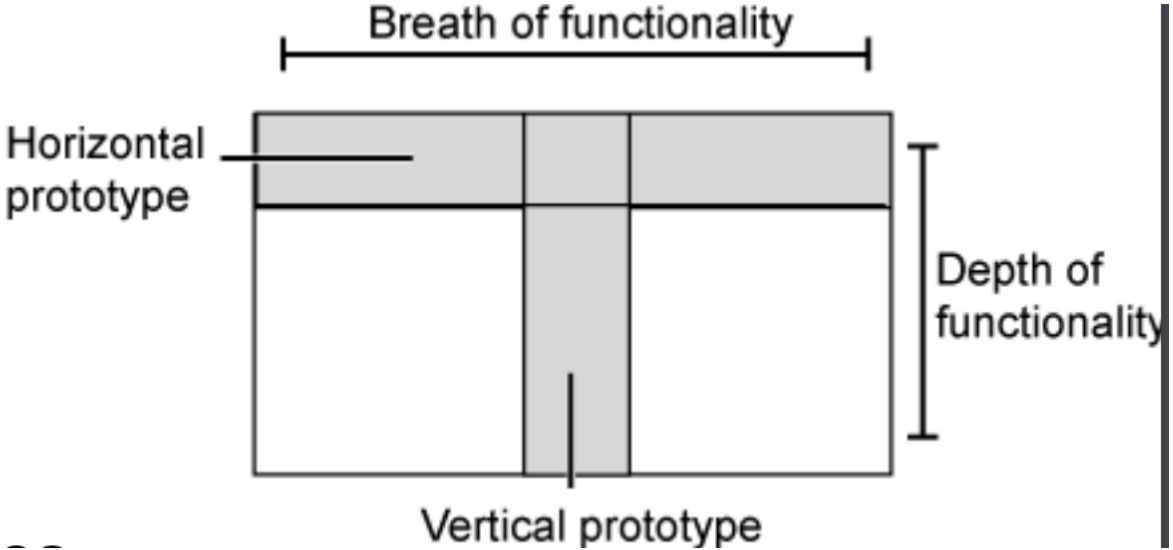

- ➔ Pretend we **limited the breadth** of our voice assist prototype to a single domain: **weather**.
- ➔ If I can ask about **anything at all related to weather** and get a response, that's high depth fidelity — in other words, it's **deep**.
- ➔ If I can only inquire about forecasts in major cities, that's less depth. If I can ask only about my current location's temperature, that's even lower.

# Dimensions - Depth fidelity

Simply speaking, it refers to **the degree of functionality.**

- ➔ Remind yourself about depth by asking **if the interactions are shallow**.
- ➔ How **significant** are my constraint handcuffs?

# Dimensions - Breadth and Depth



# Dimensions - Content fidelity

“No one reads the user notice.”


- Content is the **king**. The video, the data, and the names of their teams are what customers care about in our tools.
- Make good decisions in showing **the right content** in prototypes

# Dimensions - Content fidelity

Refers to the degree of realism for the content.

- ➔ Imagine your prototype about serious recruitment apps with fake names as SpongeBob
- ➔ The content fidelity will impact on the feedback from users

# Dimensions - Content fidelity

➔ Have you ever confused someone with *lorem ipsum* when you hoped they would comment on your impeccable use of negative space?



# OTHER dimensions

- Autonomy:
  - operates alone vs requires "supervision"
- Platform:
  - interim vs final implementation

# IMPORTANT LESSONS:

- ➔ it is COMPLICATED (slow, expensive) to prototype multiple dimensions at once.
  - ⇾ so don't. Instead: modularity of prototyping.
- ➔ Each prototyping tool has **strengths and weaknesses**
  - ⇾ may be better (more efficient and capable) for some of these prototyping dimensions than others.
  - ⇾ you may need multiple tools throughout your design's life cycle.

# Physical Design

Chapter 12

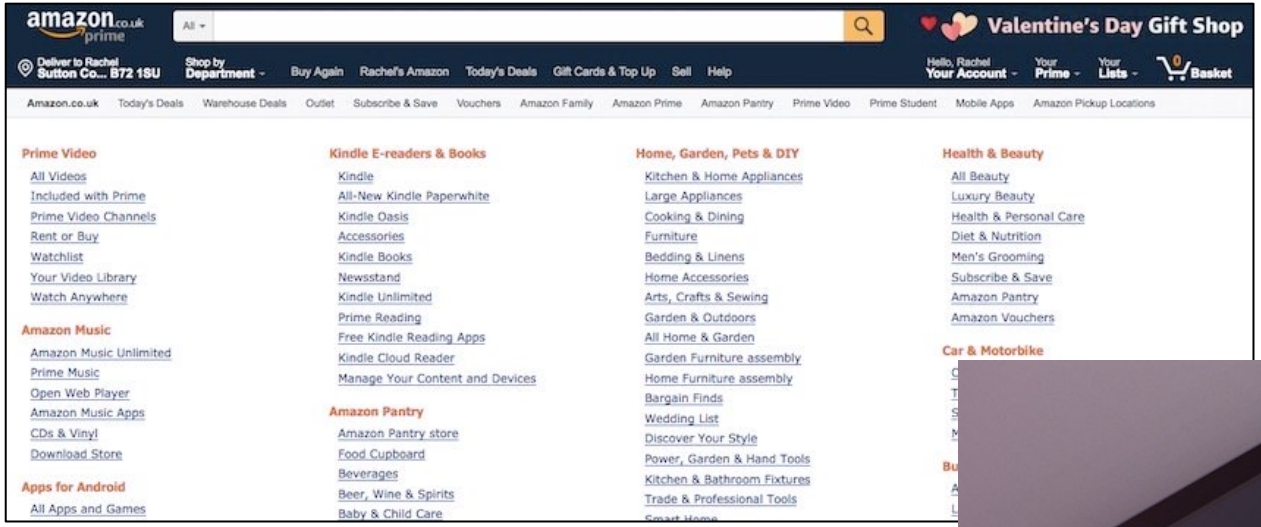
# Getting concrete (vs. conceptual design)

- Considers more concrete, detailed issues of designing the interface
- Iteration between physical and conceptual design
- Guidelines for physical design
  - Nielsen's heuristics
  - Shneiderman's eight golden rules
  - Styles guides: commercial, corporate decide 'look and feel' for your widgets prescribed, e.g., icons, toolbar

# Getting concrete

- Different kinds of widget (dialog boxes, toolbars, icons, menus etc.)
  - menu design
  - icon design
  - screen design
  - information display

# Menu design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Valentine's Day Gift Shop
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All Videos
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Prime Video Channels
Rent or Buy
Watchlist
Your Video Library
Watch Anywhere
Amazon Music
Amazon Music Unlimited
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Prime Reading
Free Kindle Reading Apps
Kindle Cloud Reader
Manage Your Content and Devices
Amazon Pantry
Amazon Pantry store
Food Cupboard
Beverages
Beer, Wine & Spirits
Baby & Child Care
Home, Garden, Pets & DIY
Kitchen & Home Appliances
Large Appliances
Cooking & Dining
Furniture
Bedding & Linens
Home Accessories
Arts, Crafts & Sewing
Garden & Outdoors
All Home & Garden
Garden Furniture assembly
Home Furniture assembly
Bargain Finds
Wedding List
Discover Your Style
Power, Garden & Hand Tools
Kitchen & Bathroom Fixtures
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Men's Grooming
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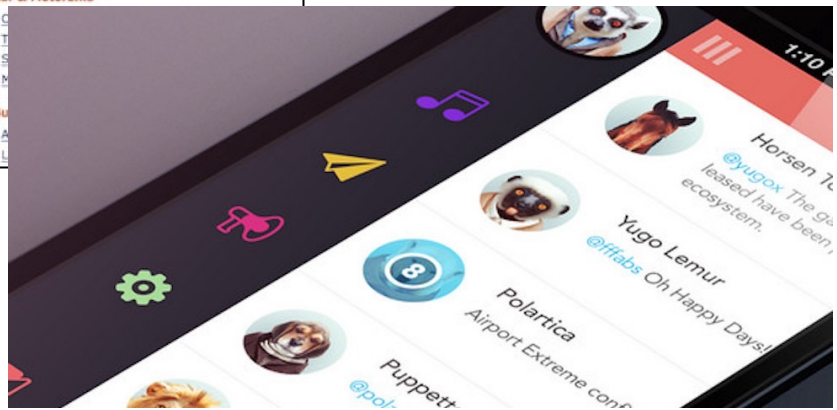
Car & Motorbike


Yugo Lemur
@fiflabs Oh Happy Days!
Polartica
Airport Extreme

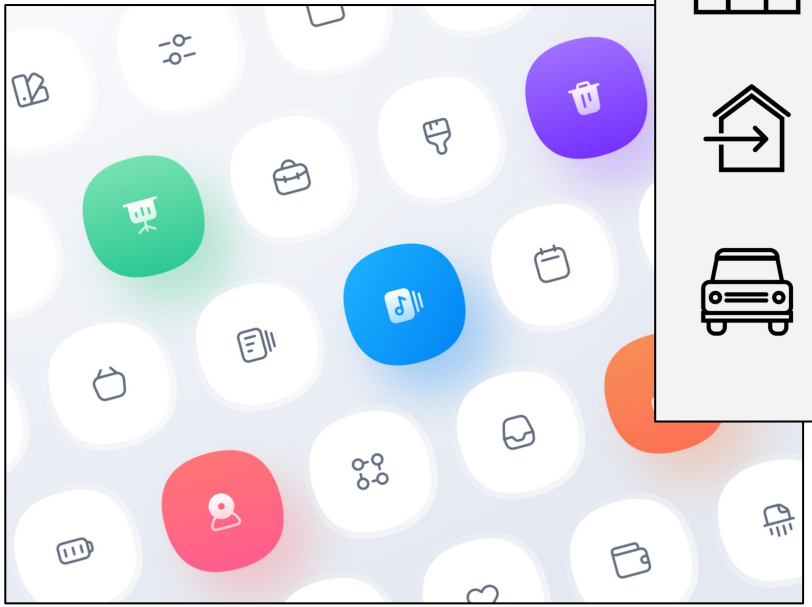
# Menu design

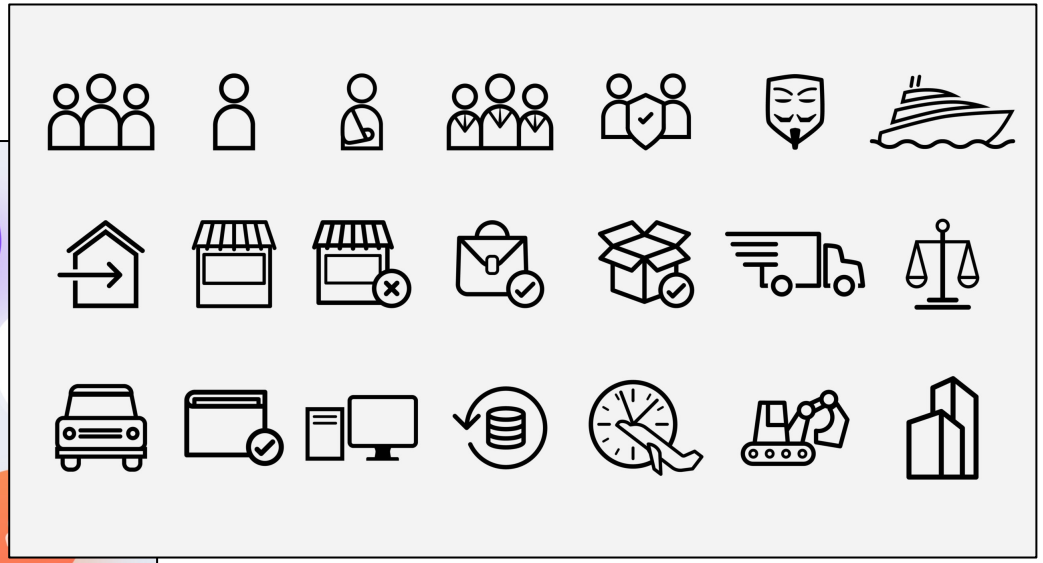
- **How long** is the menu to be?
- **In what order** will the items appear?
- How is the menu to be **structured**, e.g., when to use sub-menus, dialog boxes?
- **What categories** will be used to group menu items?

# Menu design

- How will **division into groups** be denoted, e.g., different colors, dividing lines?
- **How many** menus will there be?
- **What terminology** to use? (results of requirements activities will indicate this, remember the project about climbing!)
- How will any **physical constraints** be accommodated, e.g., mobile phone?

# Icon design



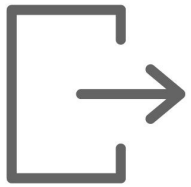


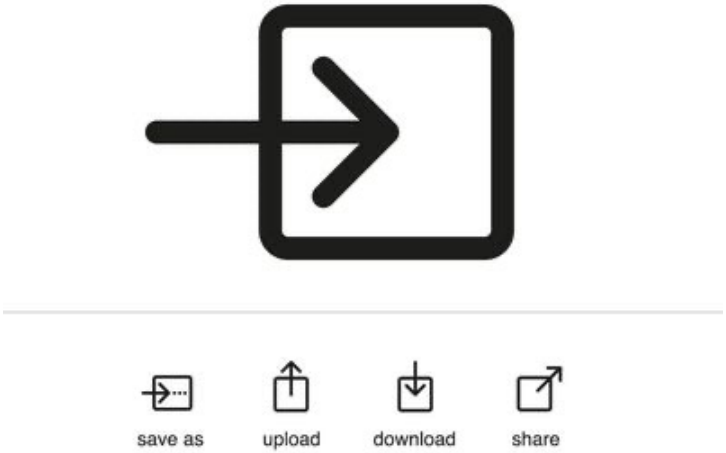
# Icon design

- Good icon design is **difficult**
- Meaning of icons is **cultural and context sensitive**
- Some tips:
  - always draw on **existing traditions or standards**
  - **concrete objects or things** are easier to represent than actions

# Icon design

- From clip art, what do these mean to you?





# Screen design

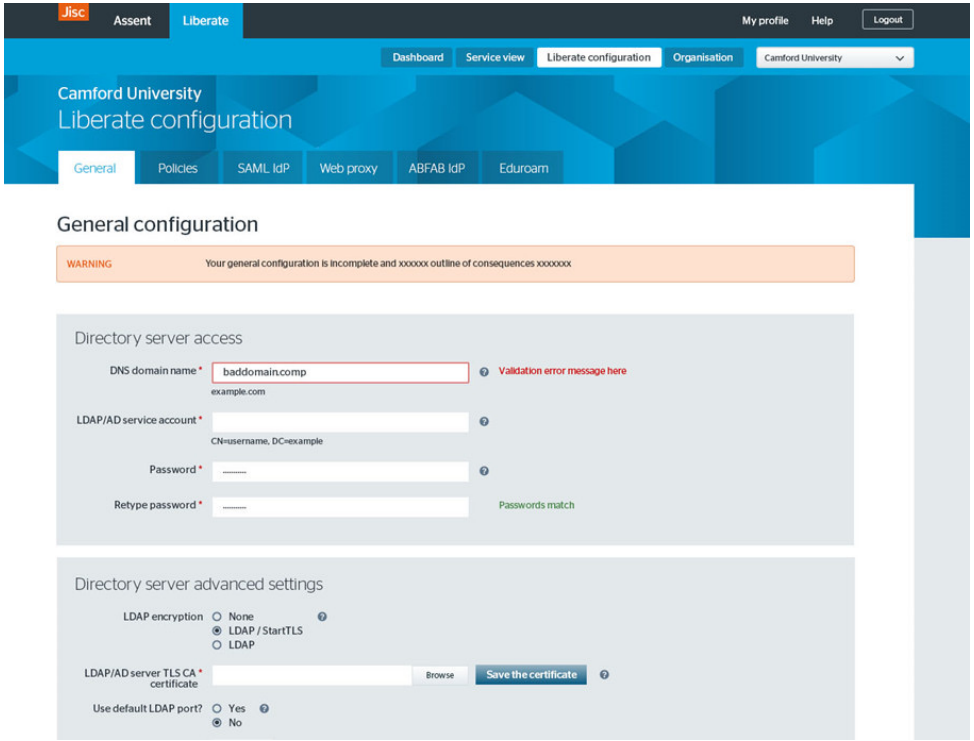
- Two aspects:
  - How to split across screens
    - moving around within and between screen show much interaction per screen? serial or workbench style?
  - Individual screen design
    - white space: balance between enough information/interaction and clarity
    - grouping items together: separation with boxes? lines? colors?

# Splitting functions across screens

- Task analysis as a starting point
  - Each screen contains a single simple step?
  - **Frustration** if too many simple screens

- Keep **information available**
  - multiple screens open at once

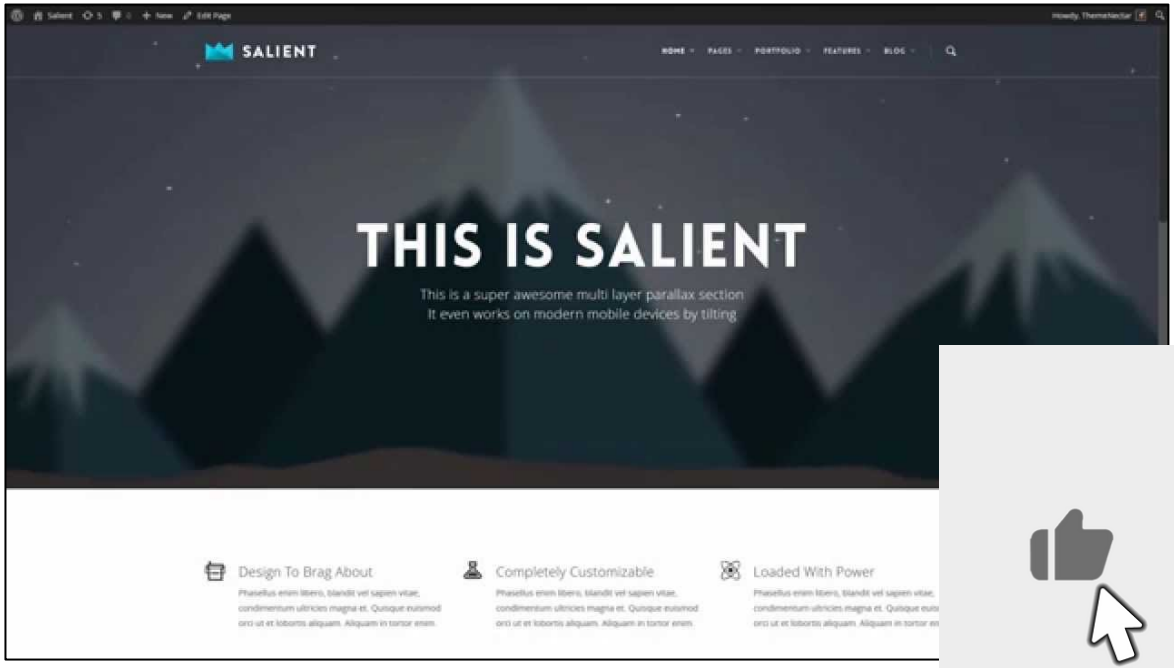
# Splitting functions across screens

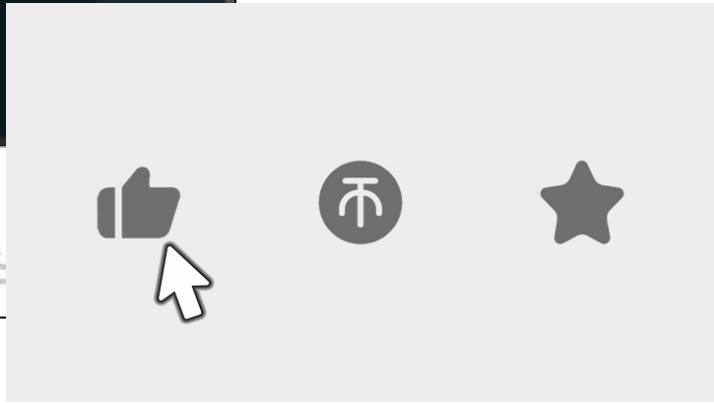



# individual screen design

- Draw **user attention** to salient point, e.g., colour, motion, boxing (Visibility?)
  - **Animation** is very powerful but can be distracting
  - **Good organization** helps: grouping, physical proximity
- Trade off between sparse population and overcrowding

# individual screen design



# Information display

- Relevant information available at all times
- Different types of information imply different kinds of display
- Consistency between paper display and screen data entry

# Information display


# Tips for prototyping

Chapter 12

# What Type of Prototyping?

- throw-away
  - prototype only serves to elicit user reaction
  - creating prototype must be rapid, otherwise too expensive
- incremental
  - product built as separate components (modules)
  - each component prototyped and tested, then added to the final system
- evolutionary
  - prototype altered to incorporate design changes
  - eventually becomes the final product

# What Type of Prototyping?

- Progress prototype fidelity during the design life cycle to…
  - Understand the ecological (low), interactive, and emotional perspectives (high) and to ….
  - Focus on behavior first then appearance

# What Type of Prototyping?

| | |
|---|---|
| Ideation | Low fidelity paper sketches |
| Conceptual design | Low fidelity paper sketches, storyboards |
| Intermediate design | Low to medium fidelity wireframes |
| Detailed design | High fidelity wireframes, programmed prototypes |

# Cautions

- Rationalize cost-value tradeoffs
- Do not oversell - capabilities that can't be delivered, development completeness
- Do not overbuild – "good enough" as a prototype
- Decide early on exploratory or evolutionary prototypes

# ACTIVITY

- discuss the following questions for your own projects:
  - what are the **main challenges** that your prototype **means to solve**?
  - **what fidelity seems right** for your prototype?
  - **what dimensions** you need to consider?
  - what are some **possible tools** for your project? what are the **tradeoffs**?

# Take-aways

# Summary

- No “low fidelity” versus “high fidelity” in a generic way. Instead, refer to the **primary dimensions** and why they matter for your prototype.
- Ask yourself **if you are controlling the less obvious dimensions**. Will any of them create an unintended distraction or hindrance during your tests?
- **The levels** of each dimension.
- Articulate how your **prototype connects to your key research questions**.
- Ask if you’re **picking the right fidelity** to answer those questions fairly and efficiently.

# Summary

- **Different kinds of prototyping** are used for different purposes and at different stages
- Prototypes **answer questions**, so prototype appropriately
- **Physical design**: e.g., menus, icons, screen design, information display
- Prototypes and scenarios are used **throughout design**

# Any Questions?

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