Week 5-1
Learn, Try, and Analysis

SFWRENG 4HC3/6HC3 Human Computer Interfaces

** Slides adapted from previous instructors of COMPSCI/SFWRENG 4HC3/6HC3*

McMaster University

Elicitation Methods Overview

Look + Ask

Look

- Observe directly
- Observe indirectly (look for usage pattern)

Ask

- Ask directly
- Ask indirectly (get people to do stuff)

Learn

- Ways to process data
- Help refine the scope for **Ask and Look**

Try

- Test early ideas
- Build empathy with your users

Ask: **Card Sort**

Card Sort

HOW: On separate cards, name possible features, functions, or design attributes. Ask people to organize the cards spatially, in ways that make sense to them.

WHY: This helps to expose people's mental models of a device or system. Their organization reveals expectations and priorities about the intended functions.

In a project to design a new digital phone service, a card-sorting exercise enabled potential users to influence the final menu structure and naming.

Card Sorting Activity

1. Pair up with another classmate.
   a. Either one plays as participant and one plays as facilitator
   b. Or both play as participants and discuss after the activity
2. Download the activity template from Avenue (Card Sorting Activity Template.pptx), and practice using card sorting to understand users' mental model about their tasks.
   a. There are two activities provided, you can choose the one you like
   b. Some additional instructions are provided in in the notes
   c. Facilitator should either ask participant to talk about their thoughts behind the sorted cards at the end, or when they sort the cards

Week 5 Goals Overview

- **Monday**
  - **Understanding Users: Learn and Try**
  - **Data Analysis**
- Wednesday
  - Personas and Scenarios
- Friday
  - Scenarios and HTA

Understanding Users: **Learn**

Now that you have a huge stack of notes and ideas from **looking and asking**, it's time to **make some sense of the data**

Methods here are intended to help you **organize your thinking**, and **express it to help make it concrete and real**

Learn: **Character Profiles**

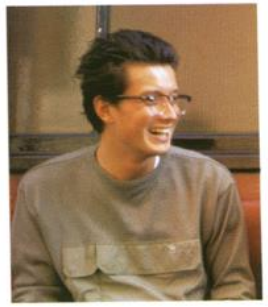
Character Profiles

HOW: Based on observations of real people, develop character profiles to represent archetypes and the details of their behavior or lifestyles.

WHY: This is a useful way to bring a typical customer to life and to communicate the value of different concepts to various target groups.

In order to understand different types of customers and how to target them, IDEO developed four characters for a pharmacy wanting to reach the male beauty-product market.

[Chris]



"I wouldn't be caught dead using moisturiser"

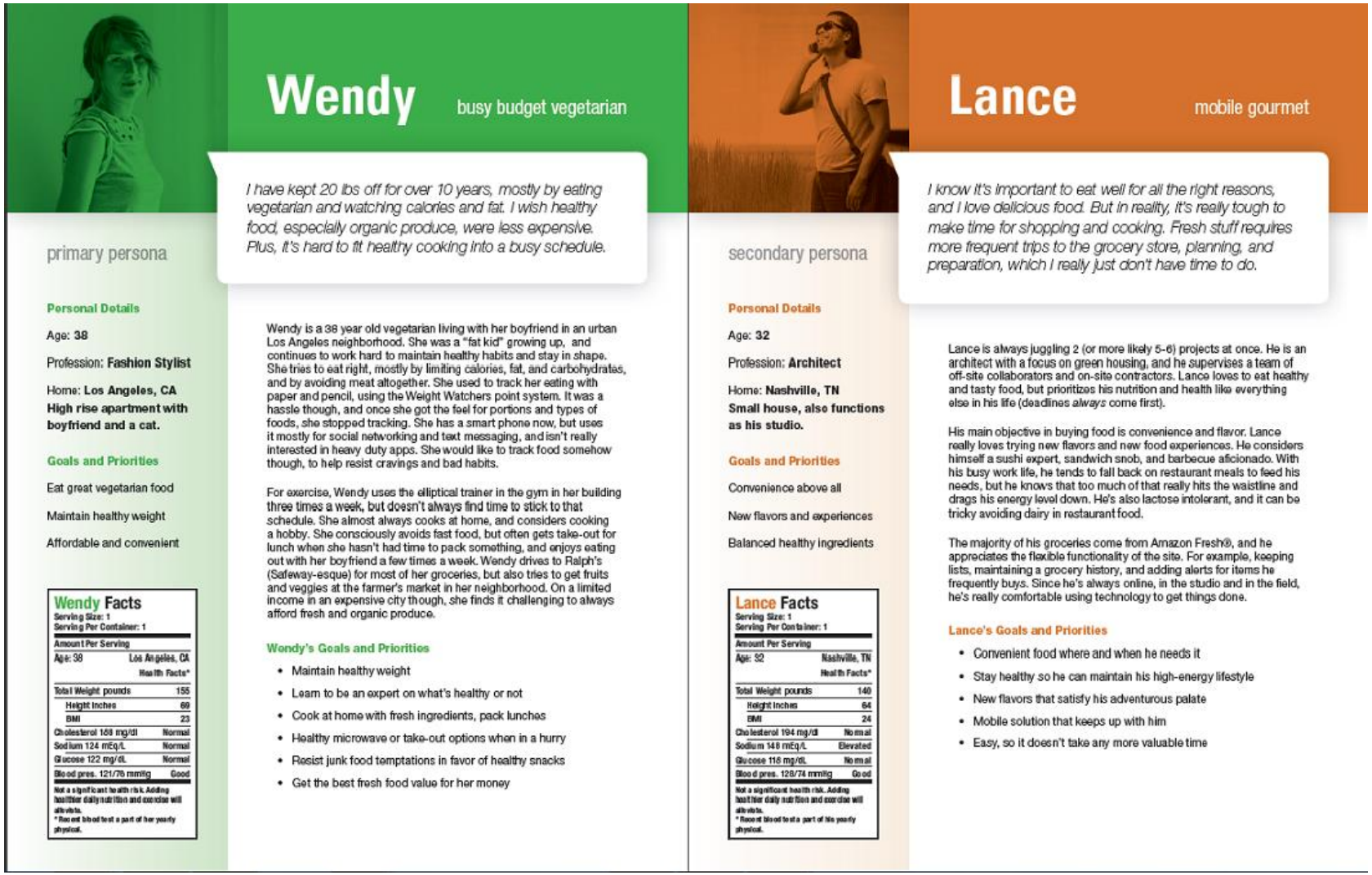
"I never buy after shave...I get it for Christmas"

"I read men's magazines sometimes, but I'd never buy one"

"I only really take vitamin C when I've got a cold"

"keeping fit isn't that important to me"

Learn: **Character Profiles**



Wendy — busy budget vegetarian

I have kept 20 lbs off for over 10 years, mostly by eating vegetarian and watching calories and fat. I wish healthy food, especially organic produce, were less expensive. Plus, it's hard to fit healthy cooking into a busy schedule.

primary persona

Personal Details

Age: **38**

Profession: **Fashion Stylist**

Home: **Los Angeles, CA**
High rise apartment with boyfriend and a cat.

Goals and Priorities

Eat great vegetarian food

Maintain healthy weight

Affordable and convenient

Wendy Facts
Serving Size: 1
Serving Per Container: 1

Amount Per Serving	
Age: 38	Los Angeles, CA
	Health Facts*
Total Weight pounds	155
Height Inches	66
BMI	23
Cholesterol 168 mg/dl	Normal
Sodium 124 mEq/L	Normal
Glucose 122 mg/dL	Normal
Blood pres. 121/76 mmHg	Good

Not a significant health risk. Adding healthier daily nutrition and exercise will alleviate.
* Recent blood test a part of her yearly physical.

Wendy is a 38 year old vegetarian living with her boyfriend in an urban Los Angeles neighborhood. She was a "fat kid" growing up, and continues to work hard to maintain healthy habits and stay in shape. She tries to eat right, mostly by limiting calories, fat, and carbohydrates, and by avoiding meat altogether. She used to track her eating with paper and pencil, using the Weight Watchers point system. It was a hassle though, and once she got the feel for portions and types of foods, she stopped tracking. She has a smart phone now, but uses it mostly for social networking and text messaging, and isn't really interested in heavy duty apps. She would like to track food somehow though, to help resist cravings and bad habits.

For exercise, Wendy uses the elliptical trainer in the gym in her building three times a week, but doesn't always find time to stick to that schedule. She almost always cooks at home, and considers cooking a hobby. She consciously avoids fast food, but often gets take-out for lunch when she hasn't had time to pack something, and enjoys eating out with her boyfriend a few times a week. Wendy drives to Ralph's (Safeway-esque) for most of her groceries, but also tries to get fruits and veggies at the farmer's market in her neighborhood. On a limited income in an expensive city though, she finds it challenging to always afford fresh and organic produce.

Wendy's Goals and Priorities

- Maintain healthy weight
- Learn to be an expert on what's healthy or not
- Cook at home with fresh ingredients, pack lunches
- Healthy microwave or take-out options when in a hurry
- Resist junk food temptations in favor of healthy snacks
- Get the best fresh food value for her money

Lance — mobile gourmet

I know it's important to eat well for all the right reasons, and I love delicious food. But in reality, it's really tough to make time for shopping and cooking. Fresh stuff requires more frequent trips to the grocery store, planning, and preparation, which I really just don't have time to do.

secondary persona

Personal Details

Age: **32**

Profession: **Architect**

Home: **Nashville, TN**
Small house, also functions as his studio.

Goals and Priorities

Convenience above all

New flavors and experiences

Balanced healthy ingredients

Lance Facts
Serving Size: 1
Serving Per Container: 1

Amount Per Serving	
Age: 32	Nashville, TN
	Health Facts*
Total Weight pounds	140
Height Inches	64
BMI	24
Cholesterol 194 mg/dl	Normal
Sodium 148 mEq/L	Elevated
Glucose 116 mg/dL	Normal
Blood pres. 128/74 mmHg	Good

Not a significant health risk. Adding healthier daily nutrition and exercise will alleviate.
* Recent blood test a part of his yearly physical.

Lance is always juggling 2 (or more likely 5-6) projects at once. He is an architect with a focus on green housing, and he supervises a team of off-site collaborators and on-site contractors. Lance loves to eat healthy and tasty food, but prioritizes his nutrition and health like everything else in his life (deadlines *always* come first).

His main objective in buying food is convenience and flavor. Lance really loves trying new flavors and new food experiences. He considers himself a sushi expert, sandwich snob, and barbecue aficionado. With his busy work life, he tends to fall back on restaurant meals to feed his needs, but he knows that too much of that really hits the waistline and drags his energy level down. He's also lactose intolerant, and it can be tricky avoiding dairy in restaurant food.

The majority of his groceries come from Amazon Fresh®, and he appreciates the flexible functionality of the site. For example, keeping lists, maintaining a grocery history, and adding alerts for items he frequently buys. Since he's always online, in the studio and in the field, he's really comfortable using technology to get things done.

Lance's Goals and Priorities

- Convenient food where and when he needs it
- Stay healthy so he can maintain his high-energy lifestyle
- New flavors that satisfy his adventurous palate
- Mobile solution that keeps up with him
- Easy, so it doesn't take any more valuable time

Character profile often includes:

- Basic user characteristics
- Short description
- Goals and needs
- A quote

Learn: **Cognitive Task Analysis**

Cognitive Task Analysis

HOW: List and summarize all of a user's sensory inputs, decision points, and actions.

WHY: This is good for understanding users' perceptual, attentional, and informational needs and to identify bottlenecks where errors may occur.

Cognitive task analysis helped the IDEO team understand the proximity and disorientation problems that remote-vehicle operators suffered due to the design of their controls.

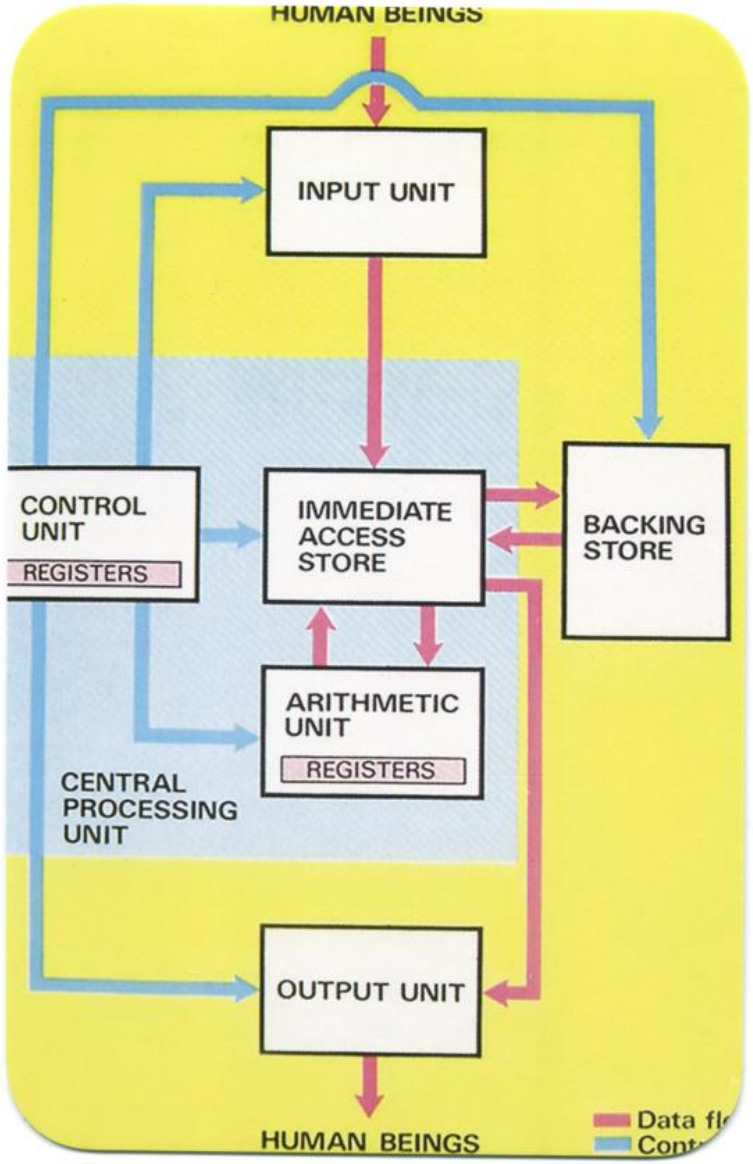
Learn: **Flow Analysis**

Flow Analysis

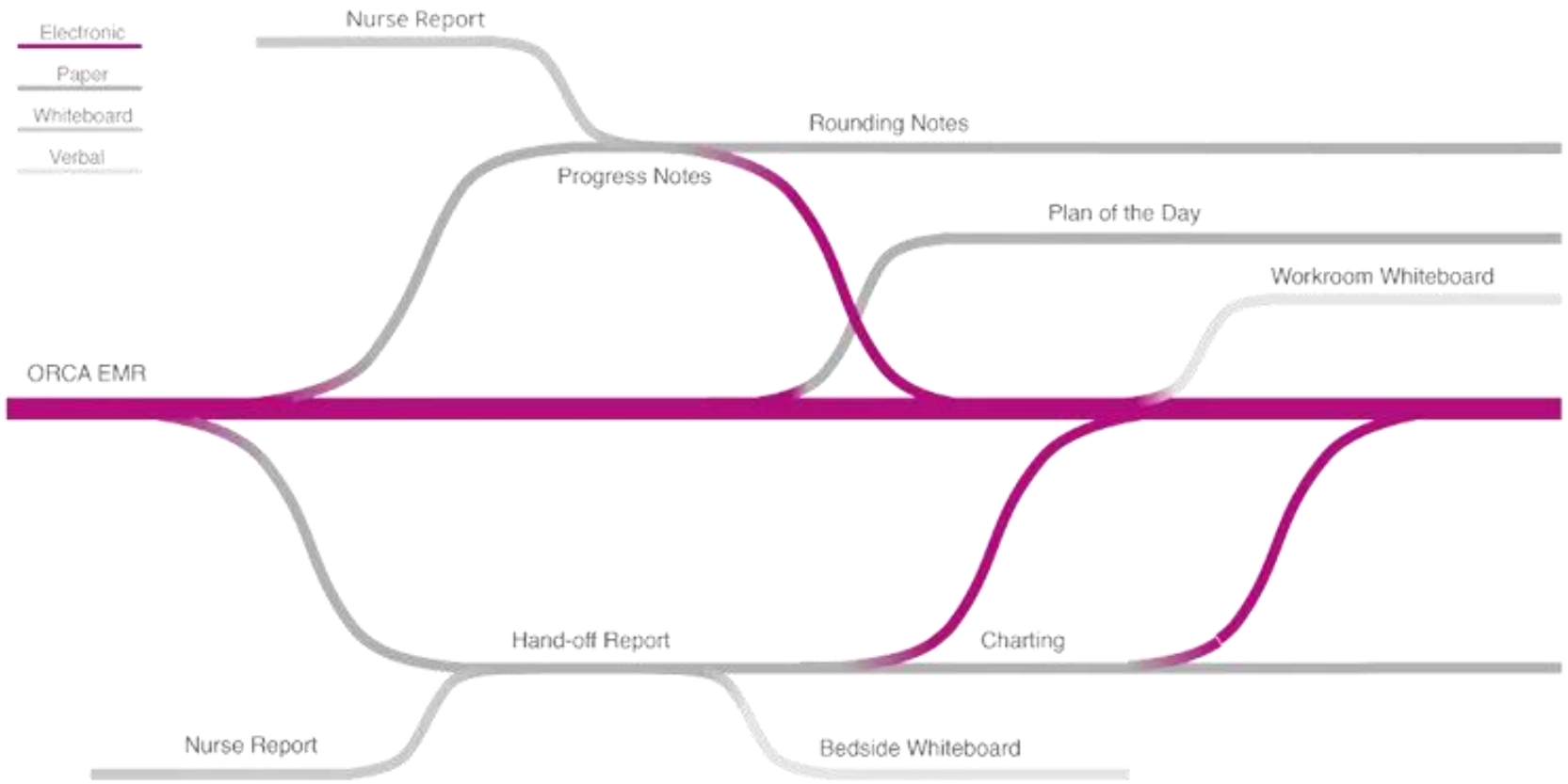
HOW: Represent the flow of information or activity through all phases of a system or process.

WHY: This is useful for identifying bottlenecks and opportunities for functional alternatives.

Designing an online advice website, flow analysis helped the IDEO team to design a more seamless experience navigating the site.



Learn: **Example #1**



A **flow diagram** summarize how information of the patients care plan are distributed through various **activities and places**

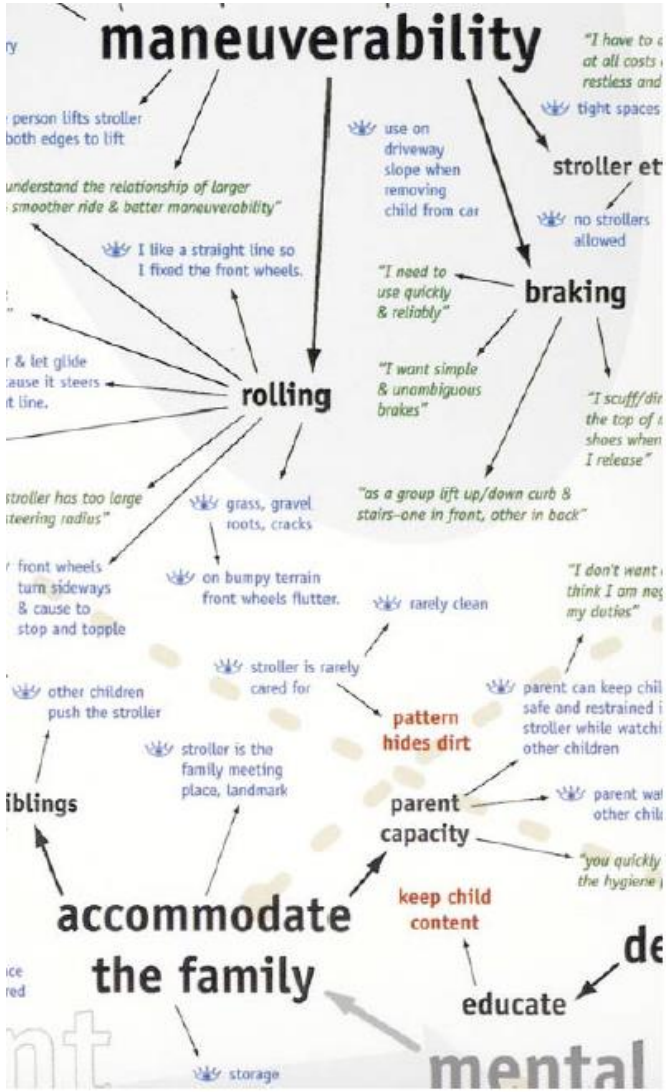
Learn: **Affinity Diagram**

Affinity Diagrams

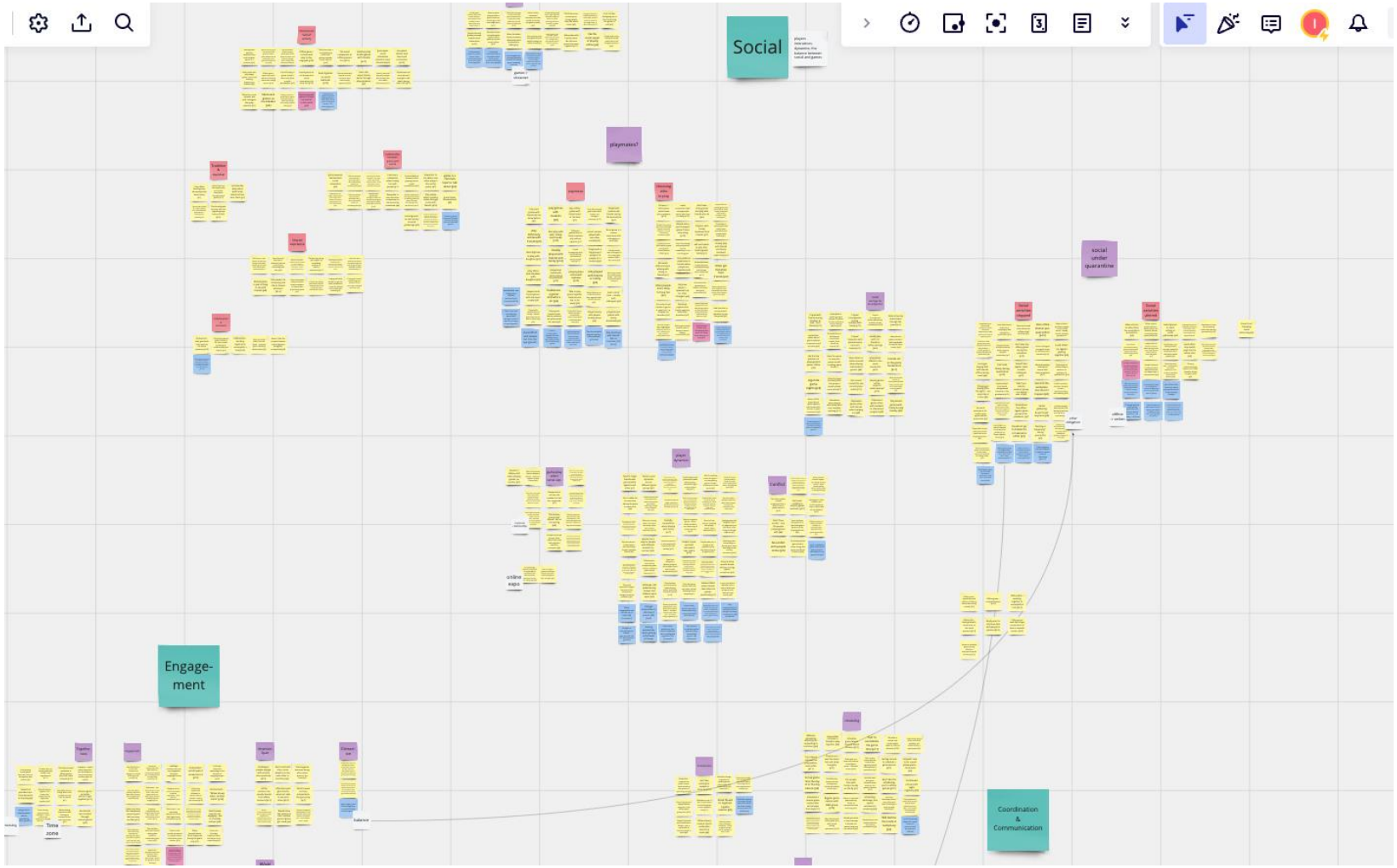
HOW: Cluster design elements according to intuitive relationships such as similarity, dependence, proximity, etc.

WHY: This method is a useful way to identify connections between issues and reveal innovation opportunities.

Clustering the elements related to transporting the family helped the IDEO team to discover some significant opportunities for stroller design.



Learn: **Example #2**



Various information are grouped together by **how close they are to each other**, and form categories from the information.

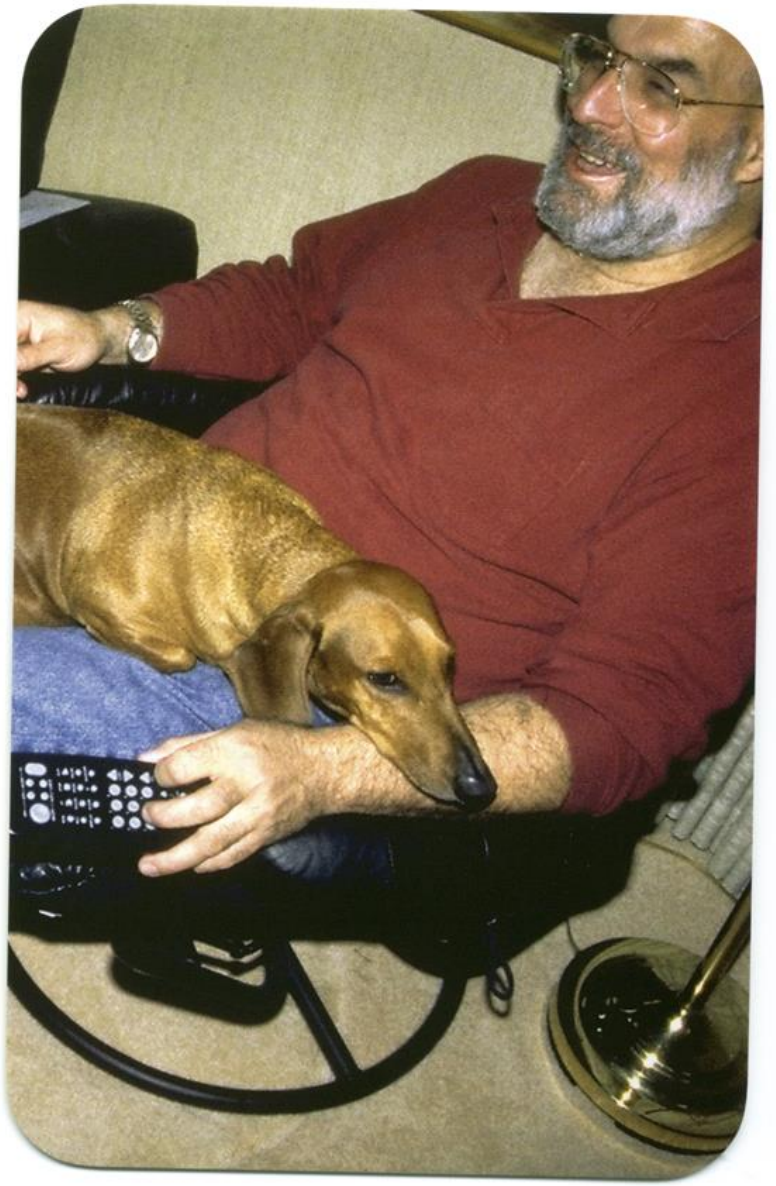
Learn: **Error Analysis**

Error Analysis

HOW: List all the things that can go wrong when using a product and determine the various possible causes.

WHY: This is a good way to understand how design features mitigate or contribute to inevitable human errors and other failures.

The IDEO team used error analysis on a remote-control concept in order to maximize the functionality of each button's size, shape, and texture.



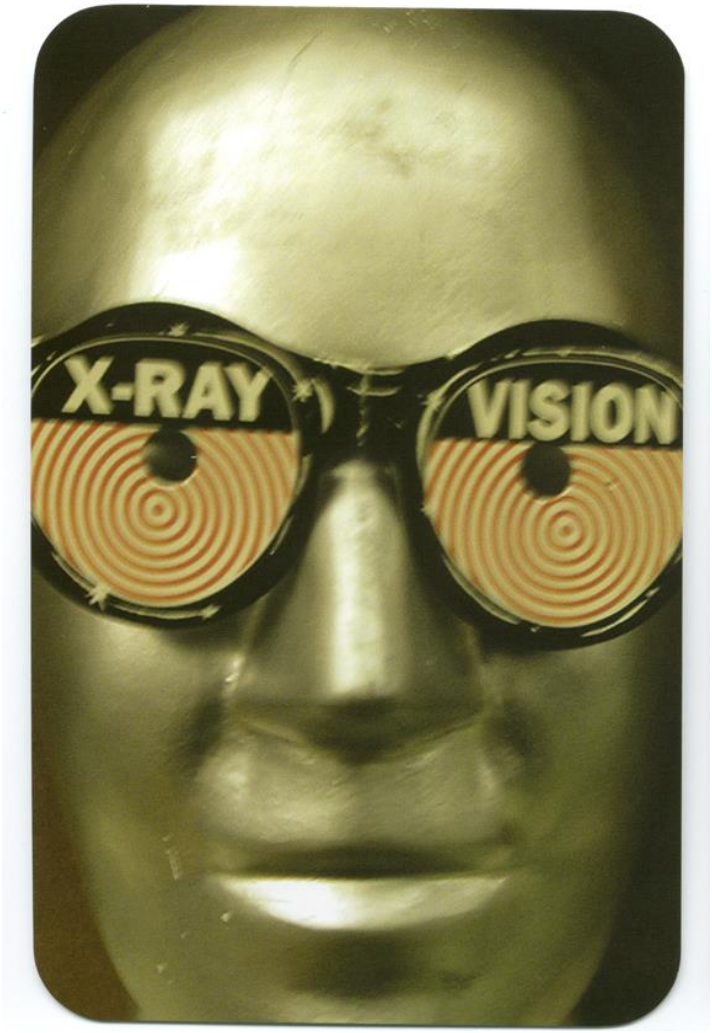
Learn: **Secondary Research**

Secondary Research

HOW: Review published articles, papers, and other pertinent documents to develop an informed point of view on the design issues.

WHY: This is a useful way to ground observations and to develop a point of view on the state of the art.

Understanding emergent social and technological trends helped an IDEO team to produce more relevant PDA concepts.



Learn: **Summary**

Apply **“Learn”** techniques as **a way to process the data** you gather from **“Ask” and “Look”**

Some learning techniques can help you figure out **who to talk to for “Ask” and “Look”**

- Secondary Research

Understanding Users: **Try**

Apply “Try” techniques **once you start getting ideas** to test them early for their feasibility

- Can lead to more robust prototypes later

Get to know your users by “doing” in addition to watching and asking.

- **Build empathy**

Understanding Users: **Try**

Trying out all operations on a wooden block when creating PalmPilot.


Meet me at
my office

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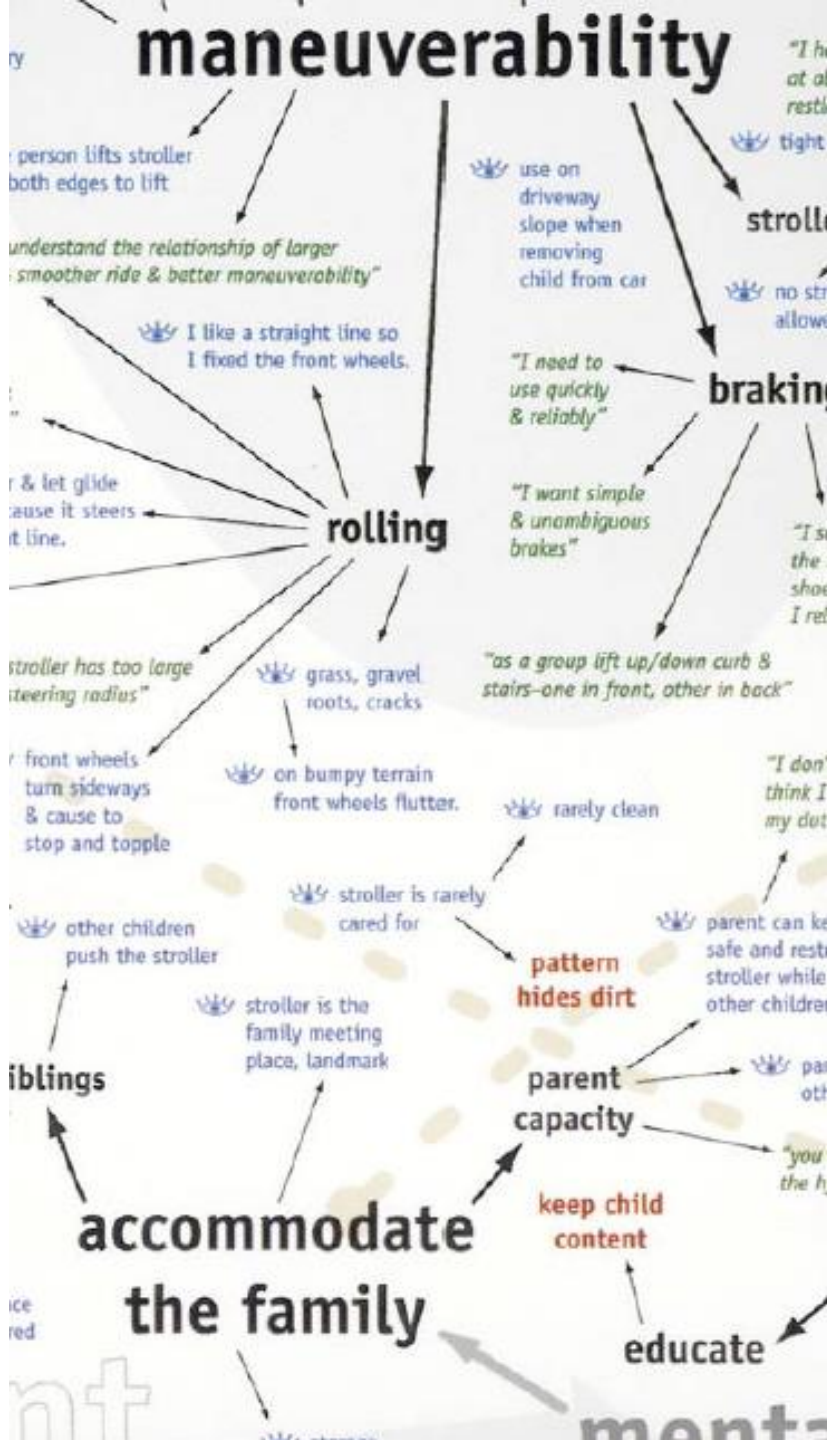
Learning from Your Data

Methods that help you **organize your data**, your thinking, and express it to help make it concrete and real

- IDEO Learn Methods

More generally, based on the type of the data you are collecting:

- **Quantitativ**e analysis
- **Qualitative** analysis



Quantitative Analysis

- **Organize and interpret** numerical data to discover patterns, relationships, and trends

- **Descriptive stats:** summarize, describe, and present key features of dataset
  - Mean, Median, Variance, SD
- Trends/correlation analysis
  - Linear regression

Qualitative Analysis

- Systematically **examine and interpret** non-numeric data to understand user experiences, behaviors, and challenges

- **Thematic analysis** is a common method for analyzing qualitative data that involves:
  - **Reading** through a set of data
  - and **looking for patterns** in the meaning of the data to **find themes**.

Qualitative: Thematic Analysis

- The process often involves iterative **coding and clustering** to draw themes
- Two approaches for qualitative coding
  - **Deductive coding:** Deductive coding is a top-down approach where you start with a set of predetermined codes and then find excerpts that fit those codes.
  - **Inductive coding:** Inductive coding is a bottom-up approach where you start with no codes and develops codes as you analyze the dataset.

Qualitative: Affinity Diagram

- Draw out **common themes** from a **large amount of information**
- Discover previously **unseen connections** between various information

- Can also be used in
  - Selecting ideas during brainstorming
  - Reach a consensus or decision among a team/discussion

Qualitative: Affinity Diagram

1. **Put down all information**
   Each information on an individual sticky note
2. **Sort all information into groups**
   Which information are similar?
   Is this information connected to the others?
3. **Create consensus**
   Discuss meanings of themes
   Iterate if needed
4. **Finalize**
   Name clusters and draw connections

Bias in Data Analysis

We can minimize biases but not eliminate all of them. Some common biases include:

- **Self-Selection Bias**: Participants who volunteer for studies may have different characteristics, interests, or experiences compared to those who do not participate, leading to self-selection bias.
- **Researcher Bias**: The background, beliefs, and experiences of the researcher can influence the interpretation of data and the understanding of the participants' experiences.

Report participants’ demographics and background information!

Qualitative Analysis Walkthrough

Inductive Coding: Process

1. Open coding all your data
   - Stay close to the actual meaning of the actual data
   - Covert non-textual format data into texts
2. Cluster to form axial codes
   - Use affinity diagraming
3. Reapply axial codes
4. Cluster to form themes
5. Make sense of the themes

Inductive Coding: P6

1. What are the TOP 3 things you APPRECIATE when you're using multiple devices

I love it when I can pick up about any of the devices and they'll be in sync with the others - seamlessly.

I enjoy when I can access my information from nearly any device. That way I can choose the best or nearest platform for the job - such as a bigger screen when viewing photos, or my best keyboard and desk when writing a lot.

It's great that many (although not all) apps are very similar across devices, so I don't need to fiddle around when moving from one device to the next

Inductive Coding: P47

1. What are the TOP 3 things you APPRECIATE when you're using multiple devices

- the ability to move from one device to another. start reading news on my phone, then move to move to destkop and continue or finish.
- software that knows I've been on another device, stitcher for example. I start to listen to a podcast, then move to another device and it picks up where I left off.
- use the device where I want, desktop, breakfast table, toilet, car, etc.

Inductive Coding: P72

1. What are the TOP 3 things you APPRECIATE when you're using multiple devices

- Being signed in and syncing of favourites in the new Edge between my Surface Book, Macbook, iPad, iPhone. It means I can pick up a device and access things quickly.
- Cloud services I use for collating content I want to absorb at a later date. Be that my Watch Later list on YouTube, Pocket app, Tweetbot Twitter client on iOS. Basically common apps that sync data/progress on a task giving flexibility of it being likely a device is nearby, and a sort of grab-and-go way of things working.
- Having the flexibility of different forms of devices. iPhone for quick at hand tasks, iPad for something more casual taking in content that warrants a bigger screen, Surface Book for when I need the power or access to certain tools/apps. Or a more single-purpose device like a Nintendo Switch or Amazon Kindle for when I want to focus on one thing instead of risking being distracted by notifications, social media etc.

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