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Fundamentals of Interaction Design

Representing users in the design process
&
Conceptualising interaction

Lecture overview: Part 1. Personas

- Why do we represent users in the design process?

- What are Personas?

- Using Personas throughout the development lifecycle.

- How Personas fit into the Design Assignment.

Lecture overview: Part 2, Conceptualising interaction

- Mental models

- Conceptual models

- Interaction types

- Future visions

Why do we represent users in the design process?

https://spotify.design/articles/2019-03-26/the-story-of-spotify-personas/

You are not your user

A reminder that you are not designing the product for people like yourself.

Design artefacts we use in this course

- Persona
- Problem scenario
- Future use scenario
- Storyboard
- Prototype
- Usability report
- Design in action video

Design artefact we discuss today

- Persona

Due week 7

- Persona

Design: artefacts and representations

Artefacts and **representations**

(e.g. user research data, documents, briefs, user journeys, Personas, Scenarios, diagrams, prototypes, and plans)

User journey example

are produced during the design process.

Artefacts and **representations** are used to support the design process because they:

help maintain the context of the design over time, between meetings and among different people involved in the team.

An example persona (Source: www.christinanghiem.com/images/persona-01.jpg)

Artefacts and **representations:**

Personas and Scenarios become more useful and important as systems become more complex.

They act as props to help you manage the complexity of design, without needing to deal with the full complexity all the time.

What are Personas?
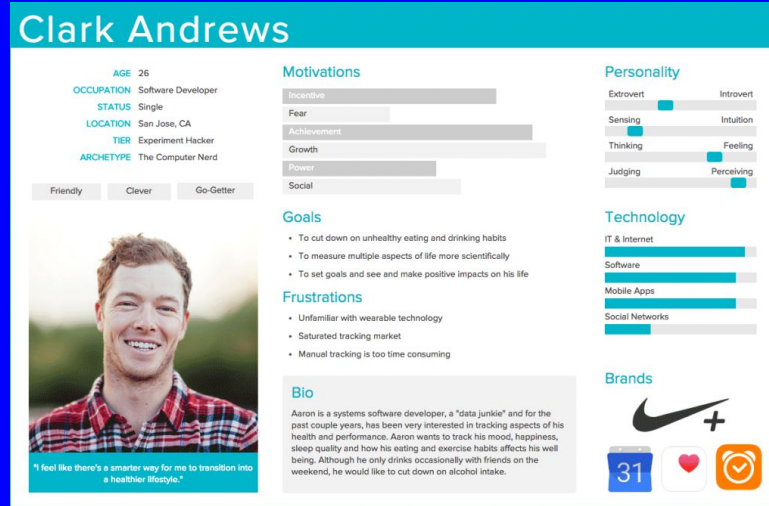
Personas are one of the most commonly used design artefacts in Interaction Design, Design Thinking, UX design, etc.

Clark Andrews

AGE 26
OCCUPATION Software Developer
STATUS Single
LOCATION San Jose, CA
TIER Experiment Hacker
ARCHETYPE The Computer Nerd

Friendly	Clever	Go-Getter

"I feel like there's a smarter way for me to transition into a healthier lifestyle."

Motivations

Incentive
Fear
Achievement
Growth
Power
Social

Goals

- To cut down on unhealthy eating and drinking habits
- To measure multiple aspects of life more scientifically
- To set goals and see and make positive impacts on his life

Frustrations

- Unfamiliar with wearable technology
- Saturated tracking market
- Manual tracking is too time consuming

Bio

Aaron is a systems software developer, a "data junkie" and for the past couple years, has been very interested in tracking aspects of his health and performance. Aaron wants to track his mood, happiness, sleep quality and how his eating and exercise habits affects his well being. Although he only drinks occasionally with friends on the weekend, he would like to cut down on alcohol intake.

Personality

Extrovert — Introvert
Sensing — Intuition
Thinking — Feeling
Judging — Perceiving

Technology

IT & Internet
Software
Mobile Apps
Social Networks

Brands

What are Personas?

- <u>Personas are fictional representations and generalizations</u> of a cluster of your target users who exhibit similar attitudes, goals, and behaviors in relation to your product.

- They're human-like snapshots of relevant and meaningful commonalities in your user groups and are based on user research.

PERSONA PROFILE

"I want to get as many of my images out there to make a name for myself in this creative industry."

Jade The Emerging Creative

Age: 29
Occupation: Commercial Photographer
Location: Chicago, IL

With three years of experience in commercial photography, most experts would consider Jade a fresh face in the industry. She's tired of the label and wants her work to be more recognized.

Jade's been building her portfolio with unique and edgy photoshoots with marketing appeal that she sends to clients and Corbis Images. She does it all on the creative side, from creating the concept, working with the models, and editing photos. Jade enjoys the post production work the most, as she is able to utilize the latest technology, from touching up subjects to incorporating computer generated elements to her photos. While Jade enjoys the aristic aspect, she dislikes dealing with administrative tasks such as model releases. Jade wants her clients to trust that her creative photography can help sell their product, but that trust comes with building a reputable name in the industry.

Jade's Questions

- I am looking to diversify my portfolio. How can I learn about the latest trends in creative photography?

- How can I portray the message of my images to those who view and purchase my work?

- How can I efficiently communicate with my editor to generate ideas?

- What is a simple way to complete administrative tasks such as model releases?

Jade's Goals

- I want to make a name for myself in the creative industry. I am looking to develop my prestige and reputation.

- There are many steps to a successful photo shoot and I would rather not deal with the complicated administrative tasks. I want something that can streamline these tasks into my workflow.

- I enjoy thinking outside of the box and having someone to generate ideas with.

	LOW	MID	HIGH
NEEDS Speed	■	■	░
Adaptability	■	■	░
Editor	■	■	■
TASKS Upload	■	■	■
Input Info	■	■	■
Royalties	■	■	░
Communication	■	■	░
KNOWLEDGE Technology	■	■	■
Trends	■	■	■
Contracts	■	░	
Image Editing	■	■	

Remember

Personas are only as good as the research behind them

What are Personas?

Personas describe the users we are designing for.

- Not stereotypes or generalisations [too vague]

- Not real people but 'composite' or an aggregation of characters based on actual behaviour patterns we observe.

What are Personas?

Personas are problem-focused:

A typical and believable represent groups of people who have different:

- motivations, attitudes
- goals
- technology uses (familiarity)
- contexts

MORE THAN ONE PERSONA to represent different behaviours.

Elements needed when creating personas

Part 1:

Significant and meaningful characteristics that represent a broad cross-section of your user, such as basic personal details and background.

- Start with physical characteristics (age, gender, abilities), status (work/personal), relevant personal info.

Elements needed when creating personas

Part 2: Problem focus and personal attitudes with regards to the design brief/design problem including hopes, fears, expectations:

- Attitudes towards the design problem/brief.
- How they see the world or act in the world.
- Goals: What they want to do, achieve, fulfil with regards to the design brief?
- Any prior knowledge and experience.
- Technology use & familiarity.
- what they currently use and their comfort level.
- A sense of the person's context of technology use - where and when?

Why do we represent users in the design process?

https://spotify.design/articles/2019-03-26/the-story-of-spotify-personas/

Why do we represent users in the design process?

- Enable the design team to have 'users' in mind.

- To enable the design team to build empathy for the 'users'.

- To help focus the team and other stakeholders during the design process.

- To communicate the 'users' to others.

- To validate and prioritize design moves.

Developing Personas

Develop the relevant user characteristics

- Don't mirror one real person
- don't "average" your different user characteristics
- Don't idealise
- Bring them to life with a name, characteristics, goals, personal background, relationships
- a brief bio: jobs (past careers), hobbies, interests, type of person, etc.
- Attitude or relationship with digital technologies

The Persona and the 'design problem'

- needs, wants, hopes, wishes, surrounding the problem
- challenges, obstacles, surrounding the problem

> *"I know my electronics consume a lot of energy but I don't want my roommate to pay for it."*

LITTLE TECH KNOWLEDGE		EXPERT TECH KNOWLEDGE
STAYS AT HOME		FREQUENTLY AWAY
NOT CONCERNED		ENERGY CONSCIOUS

Sara Knight

AGE	26
LOCATION	AUSTIN, TX
MARITAL STATUS	SINGLE
KIDS	NONE
LIVING	2 BR APARTMENT
OCCUPATION	IT SPECIALIST
SALARY	41K
EDUCATION	BACHELOR'S

ABOUT SARA

Sara Knight has been living with her roommate, Julia Palmer, for 2 years. Sara is a hardcore gamer and has a lot of electronics, including multiple game consoles and computers. Sara prefers to stay home most nights and usually watches television or streams herself playing video games online. Julia is more social and prefers to go out to bars or hang out with friends. The girls each pay half of the bills, although they both know that Sara's room most likely consumes more energy than Julia's room. Julia has asked Sara in the past to try and become more energy conscious to keep their bill low.

HABITS

- Sara is forgetful and often leaves her tv, game consoles, or computers on for long periods of time.
- She usually has several electronics on at once, such as watching television and playing video games at the same time.
- Sara frequently keeps the A/C on because her room becomes hot from running all of her electronics.

MOTIVATORS

- Sara doesn't want her roommate to pay more than her fair share of the energy bill.
- Leaving her electronics on for too long may cause them to overheat or become damaged.

GOALS

- Lower monthly bills
- Reduce the amount of energy that Sara personally uses

DEVICES USED

laptop & desktop PC
Android phone
iPad

AVERAGE MONTHLY USAGE

A/C
space heating
water heater
appliances, electronics, & lighting
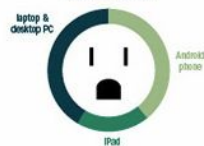
963 KWH

DAILY ACTIVITIES

WORKS FROM 8-6
PLAYS VIDEO GAMES
BOARD GAME NIGHT WITH FRIENDS

WEEKDAYS — **WEEKENDS**

USES SOCIAL MEDIA TO KEEP IN TOUCH WITH FRIENDS & FAMILY
WATCHES TV
READS BOOKS

Teach Me
TINA

LEARNING FOCUSED Teacher

title	company name
Science Teacher	Crabapple Middle School

industry	location
Education	Roswell, Georgia

description

Crabapple Middle School has enjoyed twenty plus years of excellence in education since its opening in 1983. In 1988, Crabapple Middle became Fulton County's first National School of Excellence and a Georgia School of Excellence. In 2003, Crabapple Middle was recognized as one of the first Georgia Lighthouse School to Watch for excellence in middle level education.
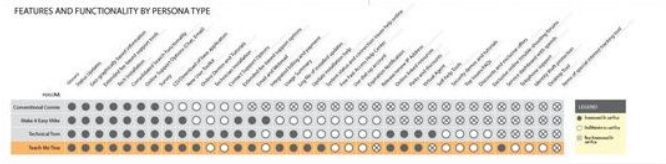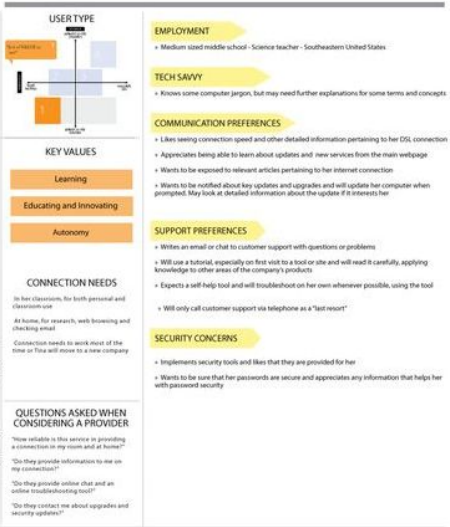
"Tell me more! I need Internet at home and in my classroom. So, it's got to work. When I do have trouble, though, I want to be able to fix it quickly on my own."

My school continuously strives to be a premier educational institution in the state of Georgia. Technology is now a part of our everyday lives, so I use technology and the Internet in my classroom. I use it for personal projects, but also for classroom projects with all of my students. When in a classroom with 30 middle school kids, I don't have time to call the DSL provider if I have trouble with the connection. So, I need to be able to troubleshoot problems on my own, right there on site. If I have too many connection problems, I will report it to our school principal and recommend that we use a different DSL provider. As Teachers, we don't have a lot of time to deal with extra problems, outside of our everyday chaos.
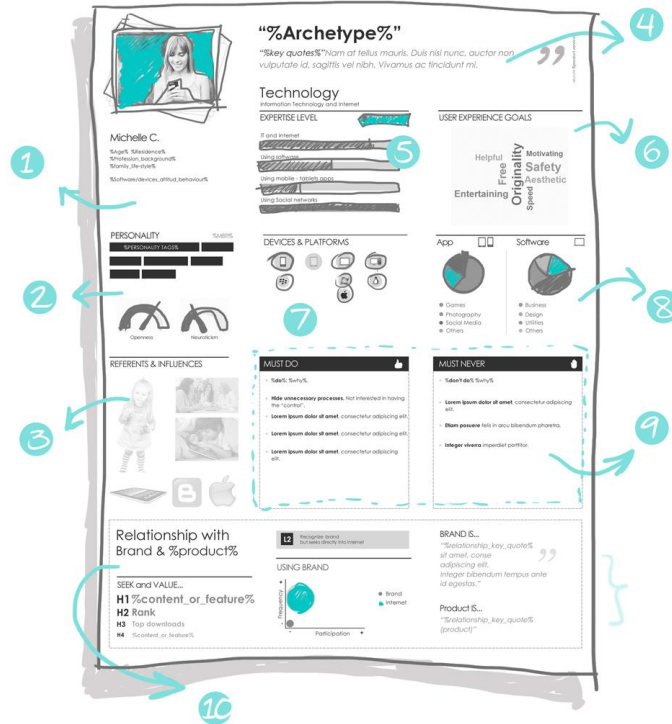
At home, I use the Internet to do research for the book I am writing. I am also an avid cook, so I connect almost every evening to pick out recipes and view the recipes I've saved online. When I am at home, I have a little bit more time to troubleshoot if needed. And, I do prefer to fix the problem myself, if possible.

This user has a high need for connection and a moderately high willingness to troubleshoot problems when they arise. She is interested in what is happening and why the function is being performed. She wants to learn about her computer and DSL. Tina will study simple wiring diagrams, try to check connections and will download DSL software. She wants to learn more computer jargon, but explanations may be needed. She may also use a chat for customer support, to learn how to fix her DSL connection in her classroom or at home by herself.

USER TYPE

KEY VALUES

- Learning
- Educating and Innovating
- Autonomy

CONNECTION NEEDS

In her classroom, for both personal and classroom use

At home, for research, web browsing and checking email

Connection needs to work most of the time or Tina will move to a new company

QUESTIONS ASKED WHEN CONSIDERING A PROVIDER

"How reliable is this service in providing a connection in my room and at home?"

"Do they provide information to me on my connection?"

"Do they provide online chat and an online troubleshooting tool?"

"Do they contact me about upgrades and security updates?"

EMPLOYMENT
- Medium sized middle school - Science teacher - Southeastern United States

TECH SAVVY
- Knows some computer jargon, but may need further explanations for some terms and concepts

COMMUNICATION PREFERENCES
- Likes seeing connection speed and other detailed information pertaining to her DSL connection
- Appreciates being able to learn about updates and new services from the main webpage
- Wants to be exposed to relevant articles pertaining to her internet connection
- Wants to be notified about key updates and upgrades and will update her computer when prompted. May look at detailed information about the update if it interests her

SUPPORT PREFERENCES
- Writes an email or chat to customer support with questions or problems
- Will use a tutorial, especially on first visit to a tool or site and will read it carefully, applying knowledge to other areas of the company's products
- Expects a self-help tool and will troubleshoot on her own whenever possible, using the tool
- Will only call customer support via telephone as a "last resort"

SECURITY CONCERNS
- Implements security tools and likes that they are provided for her
- Wants to be sure that her passwords are secure and appreciates any information that helps her with password security

FEATURES AND FUNCTIONALITY BY PERSONA TYPE

10 elements for User Persona

Consider replacing some of the elements with:

- Active ageing goals
- A day in the life
- Motivations/ preferences
- Home environment
- Activities (?)
- Hopes, fears

The content _must be_ derived from your interview notes about the participant (or audio interview resource), observations, and data analysis.

Include a problem statement quote

1- Profile

2- Personality

3- Referents & Influences

4- Archetype & quotes

5- Technology expertise

6- User Experience Goals

7- used device and platforms

8- Domain details

9- Must Do - Must Never

10- Brand & Product relationship

Personas must have a problem statement, (a quote)

Personas must <u>not</u> use the real photo of the interviewee.

Fungus Winterbottom

AGE	65
OCCUPATION	Telephone technician
STATUS	Married
LOCATION	Cork, Ireland
ARCHETYPE	Retiree
EDUCATION	School Certificate

Active | Outgoing

Volunteer | Socialising

As you have already done all the damage it is just waiting in the wings to come to the for. You have to stop rusting!

Bio

Fungus Winterbottom is a retired telephone technician. He lives is the family home in Cork, Ireland with his wife whom he cares for as she has Parkinson's disease. He has four adult children. Most of his children have moved abroad and are scattered around the world, but one child still lives close by. He would prefer if all his children lived closer so he could get to know his grandchildren and see them grow up. Fungus has found that video chat is a good way to keep in touch with the three children and seven grandchildren who live abroad. He finds the video chat a much more engaging way to connect with them than the telephone, particularly the young children, who are lively and interested in showing him their art and re-enacting school performances for him over the chat. Although Fungus has joined Facebook he prefers to not post that much as he is concerned about privacy issue. However he does enjoy using Facebook to catchup on what his family and friend are doing in particular looking at photos of his grandchildren.

He is realising as he ages that he must start to look after his health, which he does by walking everyday and swimming at the beach a couple of days a week. He eats quite healthy meals, but enjoys a drink at the pub with friend a couple of time a week.
Fungus enjoys volunteer work as it fills in his spare time and give him the chance to meet and talk to people of all ages. He teaches reading at the local school once a week and works in the school canteen twice a month.

Fungus and his wife also like to travel but know that as they get older this will become more difficult and require greater planning.

Motivations

Health (Stop rusting)

Money

Keeping in Touch

Travel

Goals

- Live long and enjoy my retirement.
- Know my grandchildren and watch them grow up.
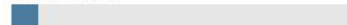- Travel before I get too old.

Frustrations

- Not being able to keep in touch with your family regularly.
- Technology is hard to use.
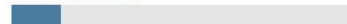- Finding it more difficult to move around.

Technology

Computer and Internet

Mobile Apps

Social Networks

Liz Draper

AGE	69
OCCUPATION	Retired Lawyer, now homemaker
STATUS	Married (Partner Michael)
LOCATION	Perth, Australia
ARCHETYPE	Healthy Grey Nomad
EDUCATION	Law degree as a mature student

Opinionated   Caring

"The majority of my friends and family are overseas"

Bio

Liz is married to Michael for 40 years and has 2 children, Christopher (31) and Lucy (36). Liz returned to university in her forties to study law and English and has recently retired from the legal profession. She still helps out at the office 2 days a week but no longer handles cases.

Her health is reasonably good although a car accident a few years ago seems to have damaged one knee. She finds she cannot garden or walk as much as she used to but does yoga and swimming to compensate.

She emigrated to Australia from the UK 38 years ago and now considers Perth home.

Liz used to be an active member of the Green Party and takes sustainability very seriously. She and her husband are strict vegetarians and spend a lot of time at local farmers markets. She cannot stand mass marketing and corporate companies and will go out of her way to avoid Starbucks, McDonalds etc.

Both of Liz's children as well as her five grandchildren live in Europe (Christopher in Switzerland and Lucy in England). As a result Liz tends to travel overseas at least once per year to visit family but always takes in a new destination on the way.

Liz speaks with her family and best friend from school on Skype once a fortnight typically but they often miss each other due to the time difference and hectic schedules. Her husband has a severe stutter and suffers from depression so finds Skype stressful but Liz really enjoys seeing the kids. She set up a facebook account years ago to keep in touch with friends and the kids but found that many of her clients were requesting her friendship. She found this very disconcerting and closed her account, even though she misses seeing the pictures.

Liz is proficient with technology and spends a lot of time on her laptop or tablet reading news articles, books or history. She also likes Sudoko and crossword puzzles.

Motivations

Health

Financial Stability

Keeping in touch

Travel

Goals

- Keeping my mind active
- Feeling close to family
- Travelling

Frustrations

- Violence in society
- Not being able to eat out often
- Facebook

Technology

Computer & Internet

Mobile Apps

Social Networks

Information for **Personas** comes from **user research:** your interview summary and;

Impressions of the person

* personal notes and observations

* What you understand about the person

User research ➡ [affinity diagramming]

· look specifically for personal information
· Produce categories

Work together to see if categories can be used as common headers for describing your Personas

Use the 'problem' as a way of focusing your analysis on the themes:
Health; Participation and Security

Ideation: Affinity Diagramming

From your interview summary

➡

Brainstorm ideas, keywords, short sentences

➡

write on Post-it-Notes

Affinity Diagramming

More post it notes!

AFFINITY DIAGRAMMING

Extract findings, keywords, short sentences ➜ write on Post-it-Notes

post the 'notes' on a wall, table or window - random order

sort into themes:
> related findings under the same column
> establish new themes
repeat until all findings are in a theme
> if there are 'loners' leave them under their own header

1- Extract findings

2- Display findings

3- Sort findings into themes

4- Create Headers for themes

5- Photograph finished Diagram

HEADERS can be developed by:
> finding an existing note that can serve as the header
> discussing and agreeing on an appropriate header
> discovering a relationship among 2 or more groups and rearranging them in columns under a superheader

HEADER = a label that captures the essential theme among the findings

Write this header on a single post-it.
The header must be a word/phrase or sentence that clearly conveys the meaning, even to people who are not on the team.

For more information about Personas
watch the Lynda video on UTS online

Fundamentals of Interaction Design Spring 2019

Week 5: Representing Users Lecture slides and video links

Creating Personas

Please watch this video series on Creating Personas

Interaction designers of the week:

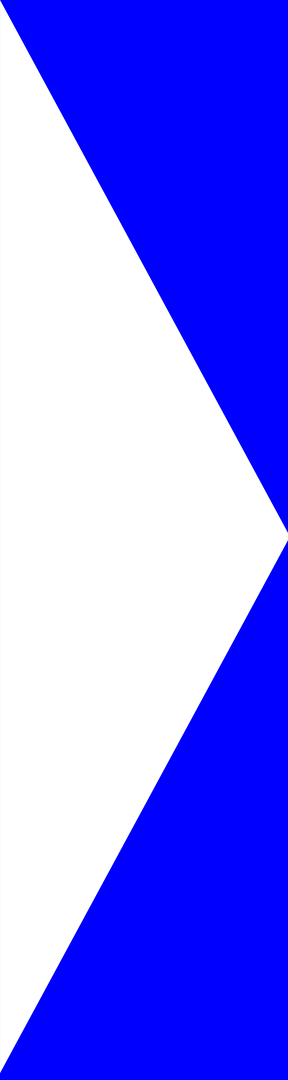**Hwanghah Jeong**

Hwanghah Jeong · 3rd

Experience Designer at Airbnb
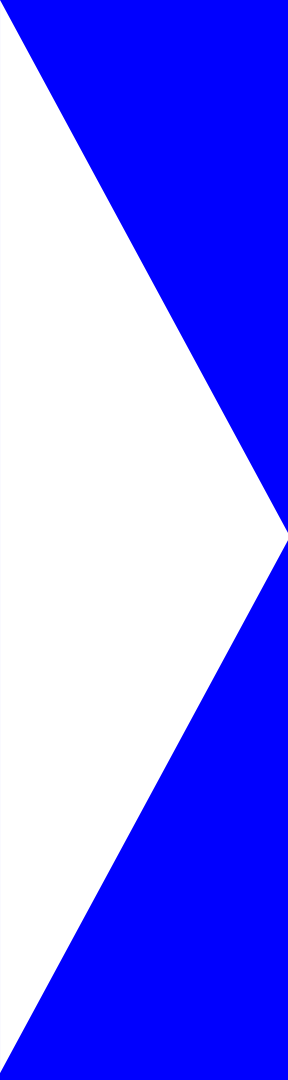
San Francisco, California · 500+ connections
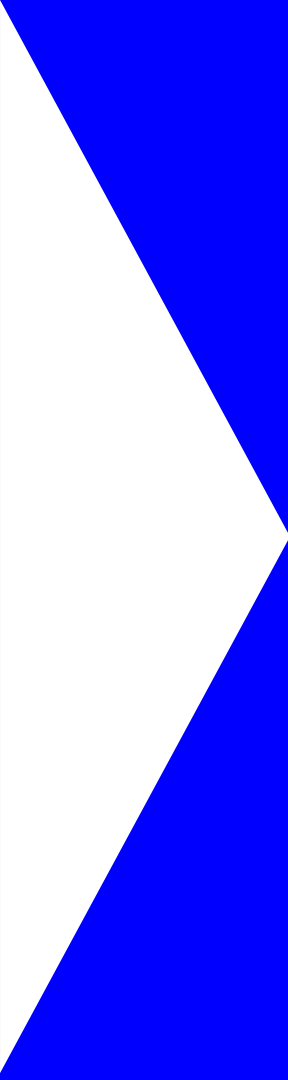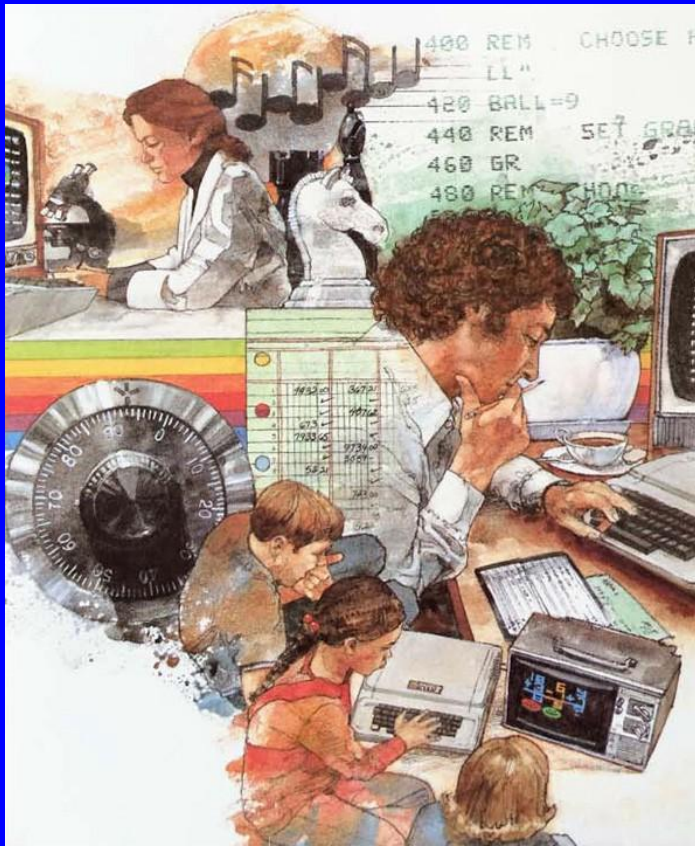
Hwanghah Jeong, made whilst Design Intern at Microsoft

STRENGTH

28

Now that we have an understanding of the problem space (active ageing) we can start to conceptualise the design of the interactive experience.

Part 2: Conceptualising Interaction

Mental models

"Mental models are deeply held internal images of how the world works, images that limit us to familiar ways of thinking and acting. Very often, we are not consciously aware of our mental models or the effects they have on our behavior"

Senge (1990)

Above: A Cliff Spohn illustration for an early Apple Computer manual. His artwork was personally commissioned by Apple co-founder Steve Jobs. (Courtesy of Dynamite Entertainment)

Mental models and use of technology

Every user has their own mental models of their tasks and tools.

For example, although different users are using the same device, they may understand it differently. They may understand some aspects well, and others less well or not at all. Also, a user's mental model may well change as a result of experience with the application.

Therefore, mental models are personal, partial, uncertain and dynamic.
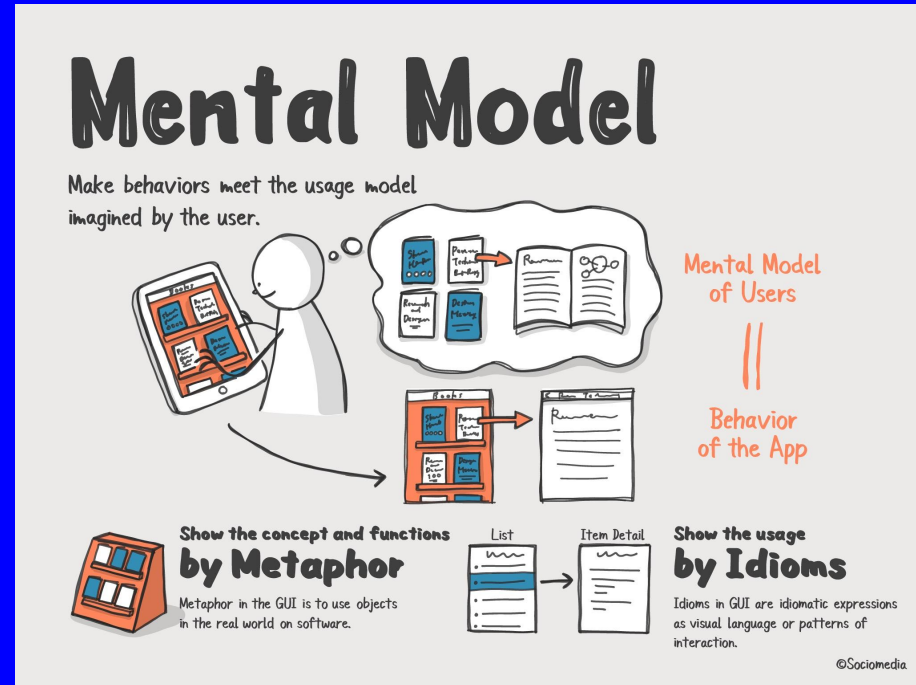
Mental model and design principles

If we understand how people develop mental models then we can help them develop more appropriate mental models for the systems they were using.

Mental model and design principles

The main design principle (and the reason mental models are important) is to design systems to **match what people already know** so they can learn to use the new systems more easily.

Mental model and design principles

Does **match what people already know** sound familiar?

If so, which Usability / Design principle does this sound like?

PONG, released in 1972

User familiarity

The interface should use terms and concepts which are drawn from the experience of the anticipated class of user.

Ian Sommerville (1995) Software Engineering

Match between the system and the real world

Designers should endeavor to mirror the language and concepts users would find in the real world based on who their target users are.

Study and understand these heuristics - www.nngroup.com/articles/ten-usability-heuristics

Mental model exercise

You get home after big night out. You still have an assignment to finish and the flat is freezing cold. **You want to warm it up as quickly as possible**.

Do you set the thermostat as high as it goes (30ºC)?

Or turn it to your desired temperature (21ºC)?

Mental model exercise

Mental models
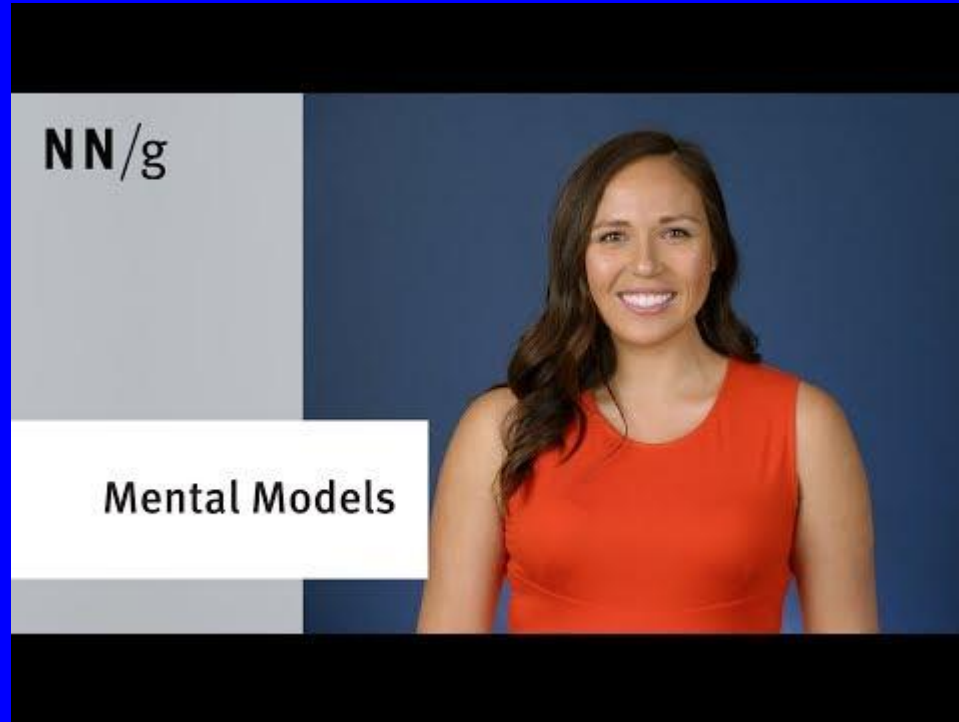
Problems with mental models

- People can have wrong mental models / understandings of how interactive devices and computers work:

  - Poor, often incomplete, easily confusable, based on inappropriate analogies and superstition.

  - Frustrating actions include frozen cursor/screen - randomly bashing keys.

From mental model to conceptual model

Mental models belong to the *individual*

- useful term for describing people's existing knowledge, but not that useful for interaction designers.

From mental model to conceptual model

Interaction Designers can help users foster appropriate conceptual models

- Through application of the prescribed design and usability principles

Conceptual model

Conceptual models may be thought of as the **ideal mental model** of the function of the application as it.

- It provides a high-level understanding of how your design will work.

- It allows you to try to match the way your mobile application works with the mental models of your users. This in turn should make the application more usable and intuitive.

- It allows users to see how well your conceptual model matches different mental models.

Conceptual model

Towards a
Low-Cost Mobile
Subcutaneous Vein
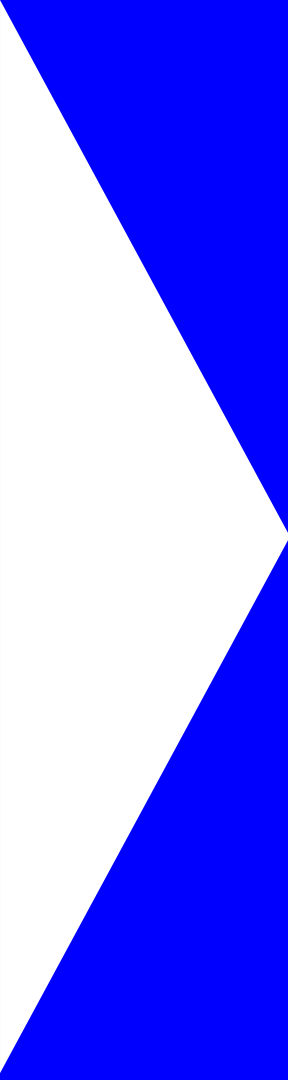Detection Solution
Using Near-Infrared
Spectroscopy
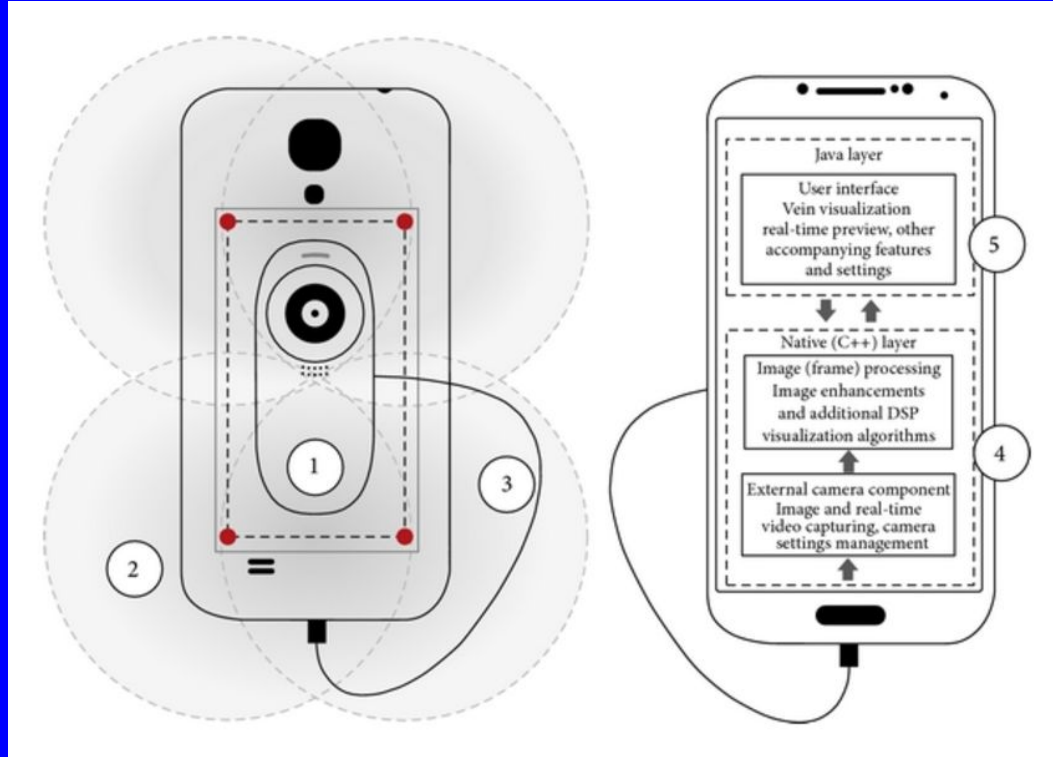
High level conceptual model and architecture of the prototype, embedded in a wireframe of one of the target devices (smartphone).

Interaction Types

"Another way of conceptualizing the design space is in terms of the <u>interaction types</u> that will underlie the user experience. "

Interaction Types

PRINCIPLE	DESCRIPTION
Instructing	Issuing commands using keyboard and function keys; selecting options via menus.
Conversing	Underlying model: conversing with another human
Manipulating	Manipulating objects in a virtual or physical space by moving, opening, and closing
Exploring	Moving through a virtual environment or a physical space, finding out and learning things

Instructing

Quick and efficient interaction, good for repetitive actions performed on multiple objects

Instructing

tell time, print file, attach file, send mail

Conversing

More like 2-way communication,

matching as partner rather than just obeying orders

Conversing

Cathy Pearl, Book Trailer: Designing Voice User Interfaces

Interaction designers of the week:

Cathy Pearl

Currently Head of Conversation Design Outreach at Google. Her O'Reilly book, Designing Voice User Interfaces, was published in December 2016.

She has been designing Voice User Interfaces (VUIs) since 1999. She started out at Nuance Communications, designing IVRs for banks, airlines, healthcare companies, and more.

Before that, she was VP of User Experience at the startup Sensely. Sensely has a virtual nurse avatar who helps patients with chronic health conditions.

Prior to Sensely, as the first non-founding employee at Volio, I helped build a conversational iPad app that has Esquire Magazine's style columnist advise users on what they should wear on a first date.

Cathy Pearl, Book Trailer: Designing Voice User Interfaces

Manipulating

Manipulating objects in a virtual or physical space by moving, opening, and closing

e.g. dragging a file into the recycling bin, arcade games (Solitaire, Angry Birds, Minority Report)

Manipulating

Minority Report 's gesture-based user interface

Exploring

Moving through a virtual environment or a physical space, finding out and learning things

e.g. 3D virtual worlds, google maps, games and web pages

Exploring

Assassin's Creed Odyssey

Steps in formulating a conceptual model

1. What will the users be doing when carrying out their activities?

2. How will the system support these?

3. What kind of interface metaphor, if any, will be appropriate?

4. What kinds of interaction types to use? (instructing, conversing, manipulating, exploring)

When making design decisions, always keep in mind how the user will understand the underlying conceptual model/s

Which type of interaction is best?

- **Direct manipulation** is good for 'doing' types of tasks, e.g. designing, drawing, flying, driving, sizing windows.

- **Issuing instructions** is good for repetitive tasks, e.g. spell-checking, file management.

- Having a **conversation** is good for children, computer-phobic, people with particular access needs and specialised applications (e.g. phone services, SIRI etc).

- Hybrid interaction models are often employed, but can be harder to learn.

Future visions

"Visions of the future are another driving force that frame research and development in interaction design."

For example this video about the internet of things (IoT) by IBM

Books

Where Good Ideas Come from:
The Natural History of Innovation
by Steven Johnson

Ideas do not exist in a bubble.

They often emerge from combined systems and from chaotic networked environments, similar in ways to the brain.

YouTube combined advances in (shockwave) streaming video with user generated content

https://www.ted.com/talks/steven_johnson_where_good_ideas_come_from?language=en

# Homo Deus: A Brief History of Tomorrow
by Yuval Noah Harari

Intelligence is now decoupling from consciousness.

Humans are significant because they can collaborate.

They have shared myths that unify them together (conceptual models?).

Jobs of the future include designing interactive virtual spaces.

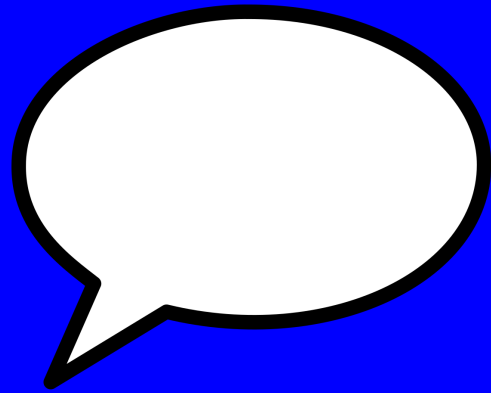A new class of humans that can afford body enhancements will start to develop and live longer!
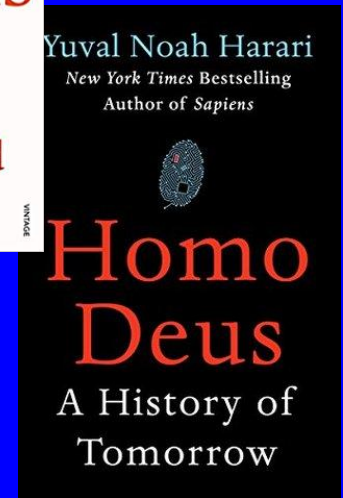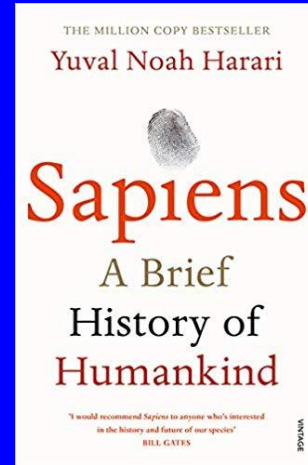
The Singularity is Near
When Humans Transcend Biology
Ray Kurzweil, 2015

Predicts that by 2030 "human brains will be able to connect to the cloud, allowing us to send emails and photos directly to the brain and to back up our thoughts and memories".
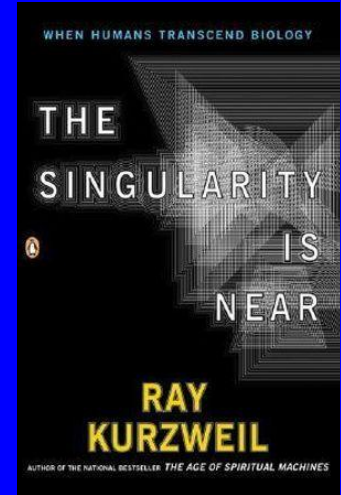
In this weeks tutorial we will start the formation of groups (4-5 people per group)

Questions?