ID2216
Developing Mobile Applications

F1: Mobile UX
Spring 2021 | Lungaro

ID2216
Developing Mobile Applications

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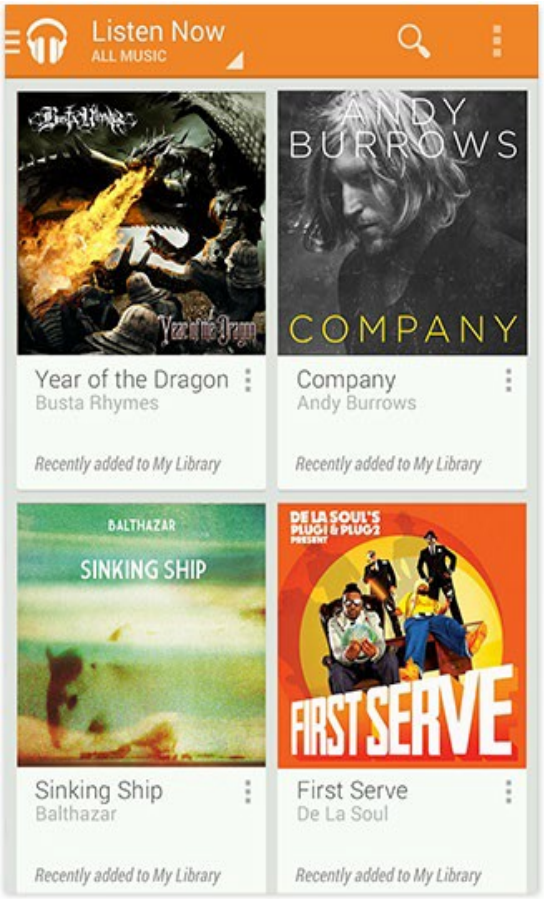
- end-to-end optimization of mobile communication systems,
- connected and self-driving vehicles,
- VR/AR/MR services and platforms,
- user experience centric design,
- eye-tracking technologies and applications,
- Internet-of-Things (IoL) and Internet-of-Light (IoL) services, applications and platforms.

How to create a good UX?

Put content forward

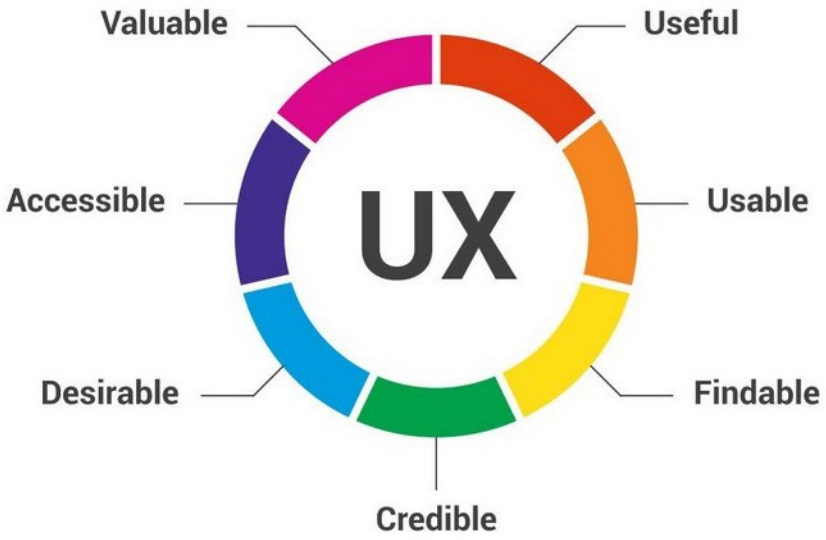


Key Concept: User Experience

User Experience (UX) involves a person's behaviors, attitudes, and emotions about using a particular product, system or service.

Comparison with Usability: Usability is the ease of use and learnability of a human-made object such as a tool or device

http://en.wikipedia.org/wiki/User_experience



Key Concept: Mobile User Experience

The mobile user experience encompasses the user's perceptions and feelings before, during and after their interaction with your mobile app

What does the system feels like?

- Fun
- Aesthetically pleasing
- Entertaining
- Rewarding
- Motivating
- Emotionally fulfilling

Understand Gestures

Gestures allow users to interact with your app by manipulating the screen objects you provide.

Touch / Long Press / Swipe / Long Press Drag / Double Touch / Double Touch Drag / Pinch Open / Pinch Close

Material Design by Google

- Material is an adaptable system of guidelines, components, and tools that support the best practices of user interface design. Backed by open-source code, Material streamlines collaboration between designers and developers, and helps teams quickly build beautiful products.
- https://material.io/design

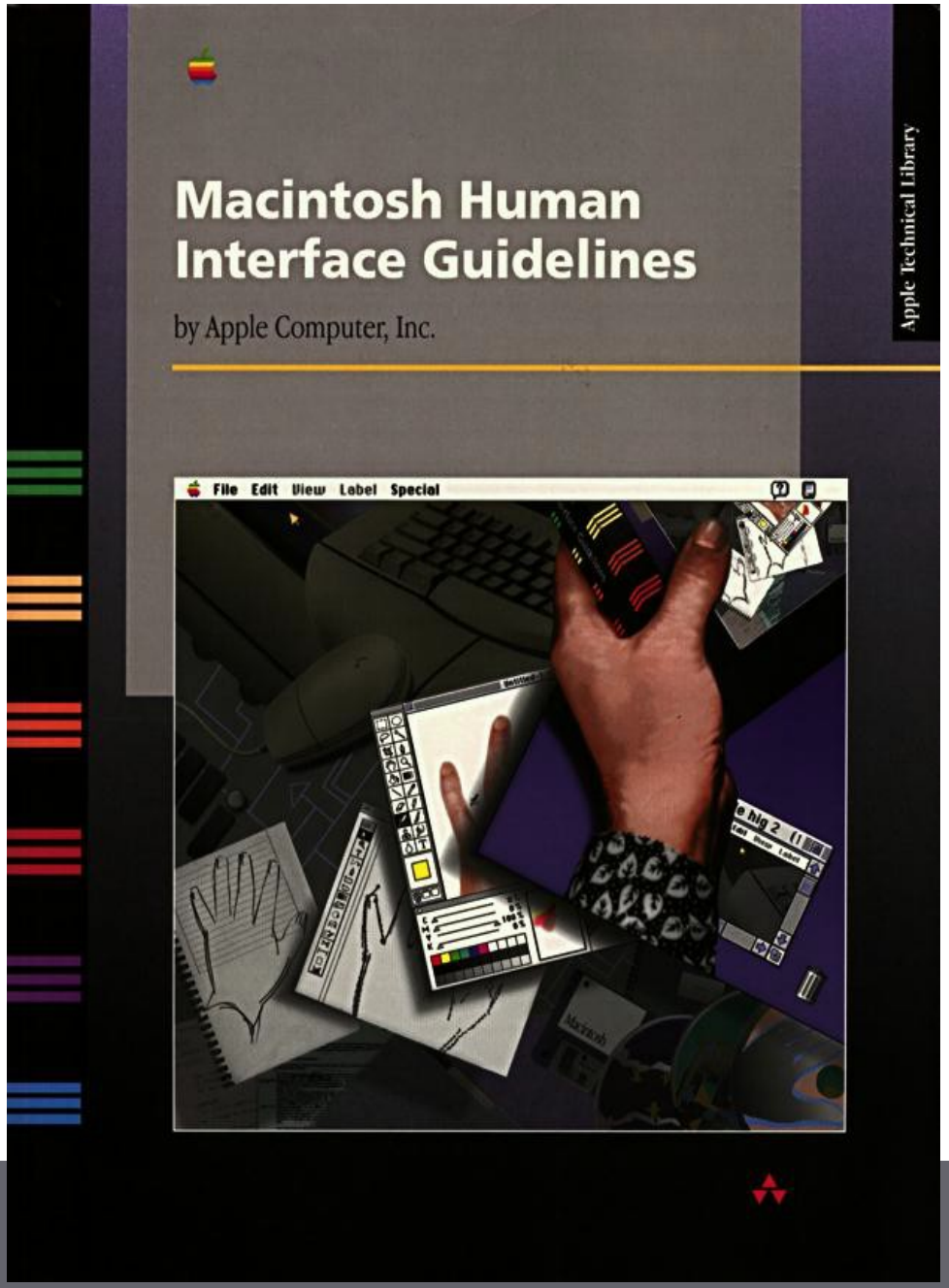
Mobile UX - Challenges

Form factors
•Small screen size
•Difficulty of data input

Context of use
•Short, simple but repetitive interactions
•Snippets of information, re-use learned behaviors

User interface
•UX is in its infancy
•Web-like interaction
•Reward-based exploration

Technology
•Network
•Batteries
•Privacy and security


Macintosh Human Interface Guidelines
by Apple Computer, Inc.
Apple Technical Library
File Edit View Label Special

Apple's 27 Guidelines for Mobile User Experience Design

Focus on the Primary Task
Elevate the Content that People Care About
Think Top Down
Give People a Logical Path to Follow
Make Usage Easy and Obvious
Use User-Centric Terminology
Minimize the Effort Required for User Input
Downplay File-Handling Operations
Enable Collaboration and Connectedness
De-emphasize Settings
Brand Appropriately
Make Search Quick and Rewarding
Entice and Inform with a Well-Written Description
Be Succinct
Use UI Elements Consistently
Consider Adding Physicality and Realism
Delight People with Stunning Graphics
Handle Orientation Changes
Make Targets Fingertip-Size
Use Subtle Animation to Communicate
Support Gestures Appropriately
Ask People to Save Only When Necessary
Make Modal Tasks Occasional and Simple
Start Instantly
Always Be Prepared to Stop
Don't Quit Programmatically
If Necessary, Display a License Agreement or Disclaimer

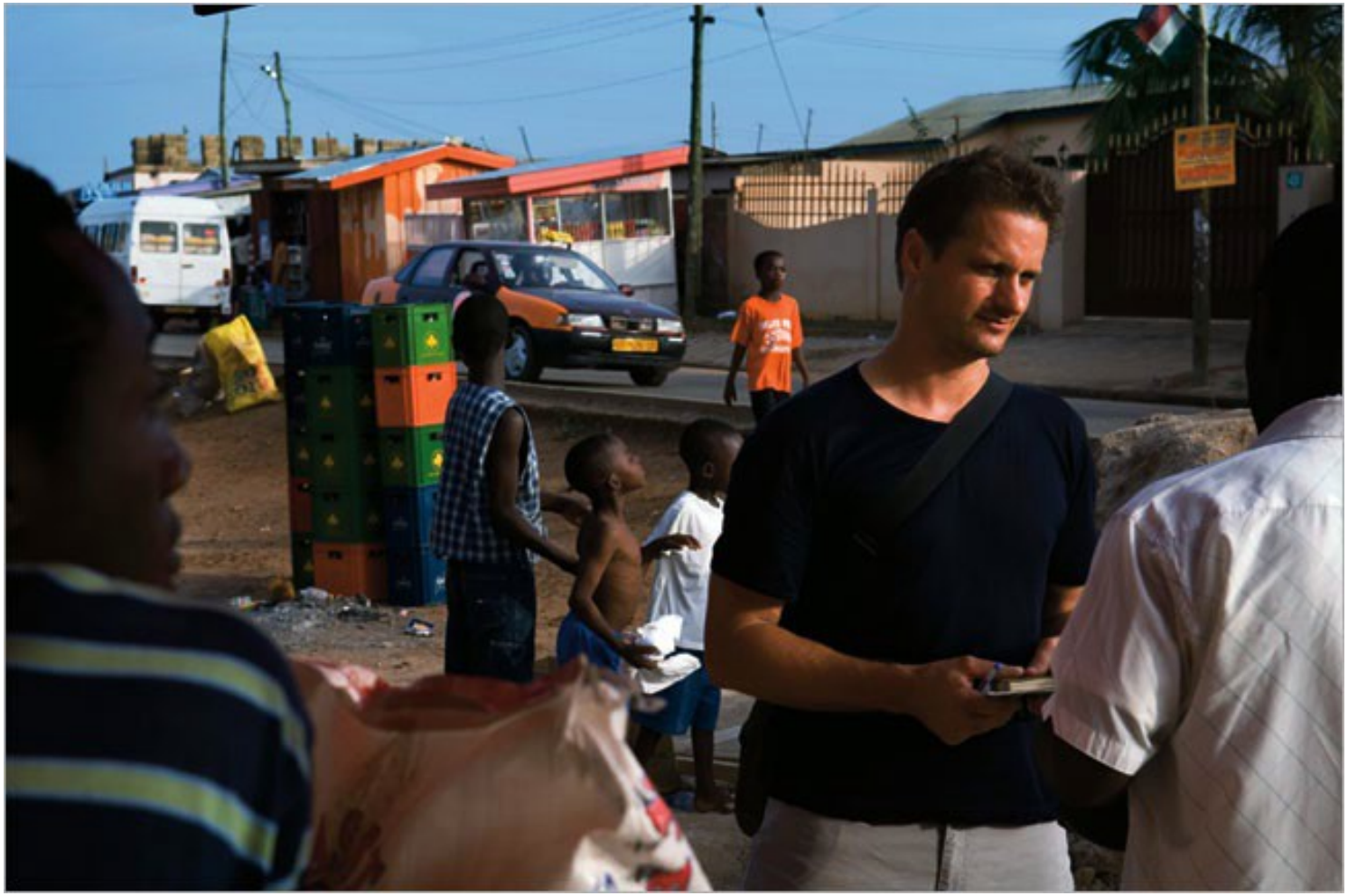
https://developer.apple.com/design/human-interface-guidelines/ios/overview/themes/

Building Mobile Experiences

Frank Bentley and Edward Barrett

User-centred mobile experience

- Ideation
- Observations
- Prototyping
- Testing
- Building
- Testing… Building… etc
- Marketing… Measure… etc



Jan Chipchase Ted 2007


https://www.ted.com/talks/jan_chipchase_on_our_mobile_phones

Street-based Innovations
- Some Reports from the Field

Storytelling
Healthcare
Public Places
Tagging
Location
Pervasive Games
Play
Domestic
Interactive
Architecture
Social Media
Media
Transport

Pervasive Gaming

Can You See Me Now?

Blast Theory

CYSMN is a chase game. Three runners run through actual city streets equipped with handheld computers, wireless networking, and GPS receivers. They chase up to 15 online players through a virtual model of a city.
https://www.blasttheory.co.uk/projects/can-you-see-me-now/

Public Places

Proboscis *Urban Tapestries*, 2004 / prototype PDA-based application allowing pedestrians to annotate a shared map of London with their personal geographic experiences by recording and uploading photographs, text and sound files. Threads from the public trial include "Arguments I Had With My Ex-Husband" / see "The Map Gets Personal," p.107.

{Urban|Socal} Tapestries

http://socialtapestries.net/

Social Tapestries is a research programme exploring the potential benefits and costs of local knowledge mapping and sharing, what we have termed the public authoring of social knowledge.

Public Places

Sonic City
http://www.sics.se/fal/projects/soniccity/

Sonic City involves a wearable system which senses the user's context when walking through the city. A personal soundscape is created algorithmically as a direct result of a user's state, actions, path through the streets, the physical landscape, activities nearby, as well as the way the system is worn.

Public Places

Familiar Stranger

http://www.paulos.net/research/intel/familiarstranger

The Familiar Stranger is a social phenomenon first addressed by the psychologist Stanley Milgram in his 1972 essay on the subject. Familiar Strangers are individuals that we regularly observe but do not interact with.

What is a Prototype?

A representation of a design before the final artifacts exist

To evoke reactions from stakeholders in the design process

- Designers
- Users
- Clients

Design Alternatives

Humans stick to what they know works

But considering alternatives is important to ‘break out of the box’

Designers are trained to consider alternatives, software people generally are not

How do you generate alternatives?

- ‘Flair and creativity’: research and synthesis
- Seek inspiration: look at similar products or look at very different products

CASE: IDEIXIS


IDEIXIS
IMAGE-BASED DEIXIS
FOR FINDING
LOCATION-BASED
INFORMATION

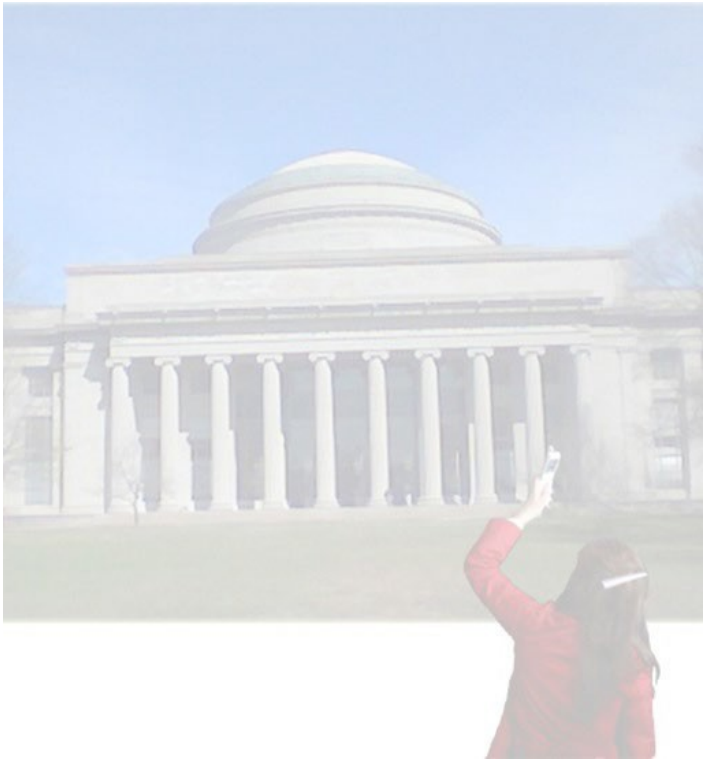
Three Initial User Studies

- Interview Study
- Usability Evaluation with Prototype
- Experiment with real images

Interview Study

20 subjects in a couple of common tourist locations around Boston

- Use of maps and tour books?
- What do you want to know about a specific location?
- How do you want to obtain that information?
- How would you take pictures that express that particular interest?



“Take pictures of things and places..”

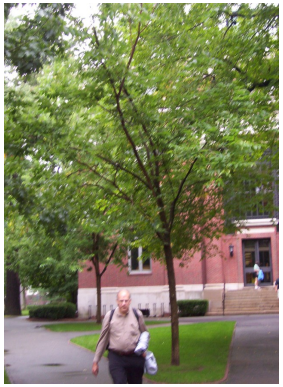
1 / What is this building called?

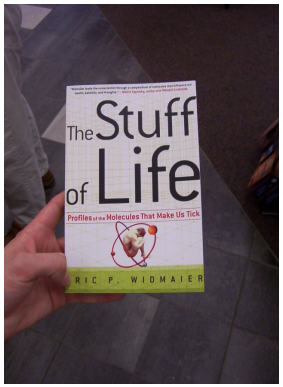
2 / Who is the architect?

3 / What is the bus schedule?

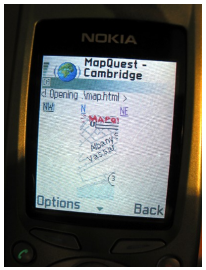
4 / What kind of tree is this?

5 / Where could I buy this book?



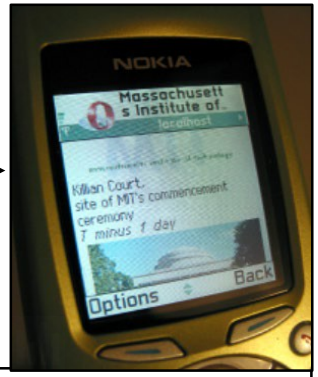


Three types of search mechanisms



GPRS - MapQuest

Select a webpage

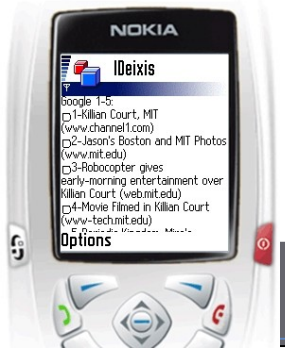


Found a web page

Take a picture

Select search method

Select a keyword



Use Google

Prototype Evaluation

16 subjects aged between 13 and 63

Two locations:

- The MIT Dome
- Stockholm City Hall

Semi-functional

- Pre-computed image search
- “Live links”

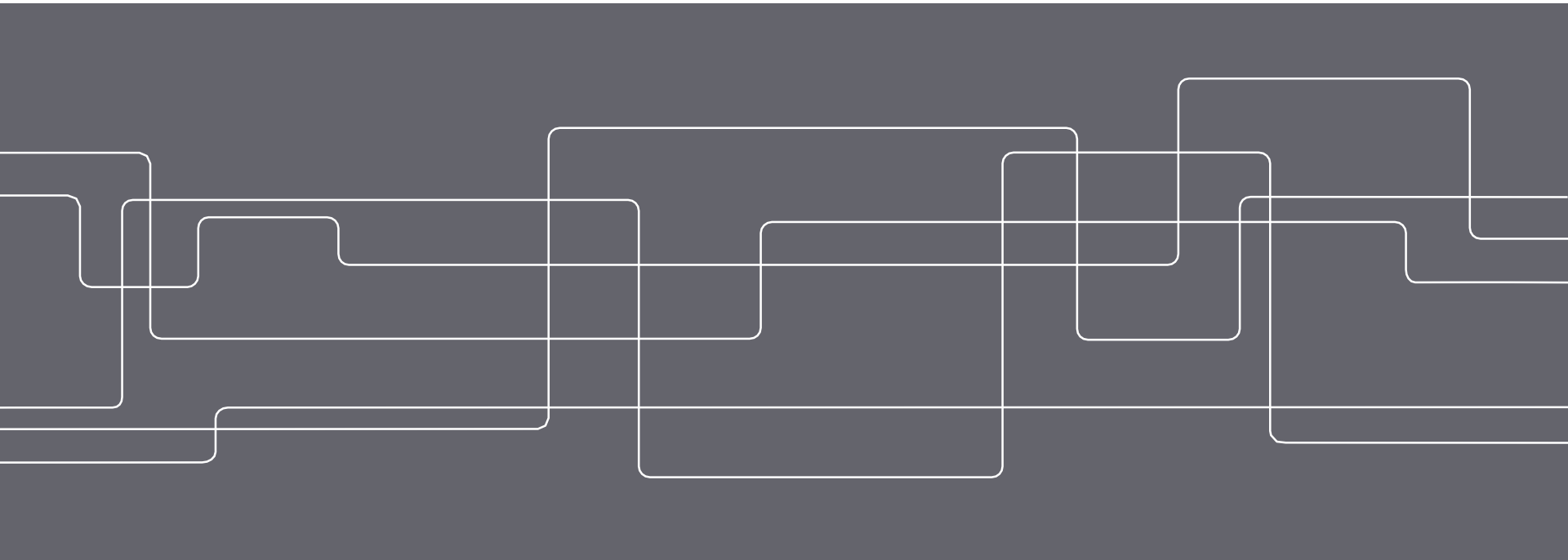
Video-recorded outdoor experiment

Experiment

29 MIT Locations

222 Images

Course project…



Course Project

- During the course, students work in small teams that propose, build, and document a mobile app.
- The students should in the end of the course have developed an functional application (Web or Native) that addresses an interesting and relevant area that the students have identified.
- The aim of the course project is to teach step-by-step how to design mobile applications and services.
- Each step is accomplished with a lab assignment and in the end an oral presentation and a written report should be delivered.

Get started…

- Form groups of 4 students
- Register your groups and tentative name in Canvas
- Start to work on A1: Course project proposals

Concepts (from google UX course)

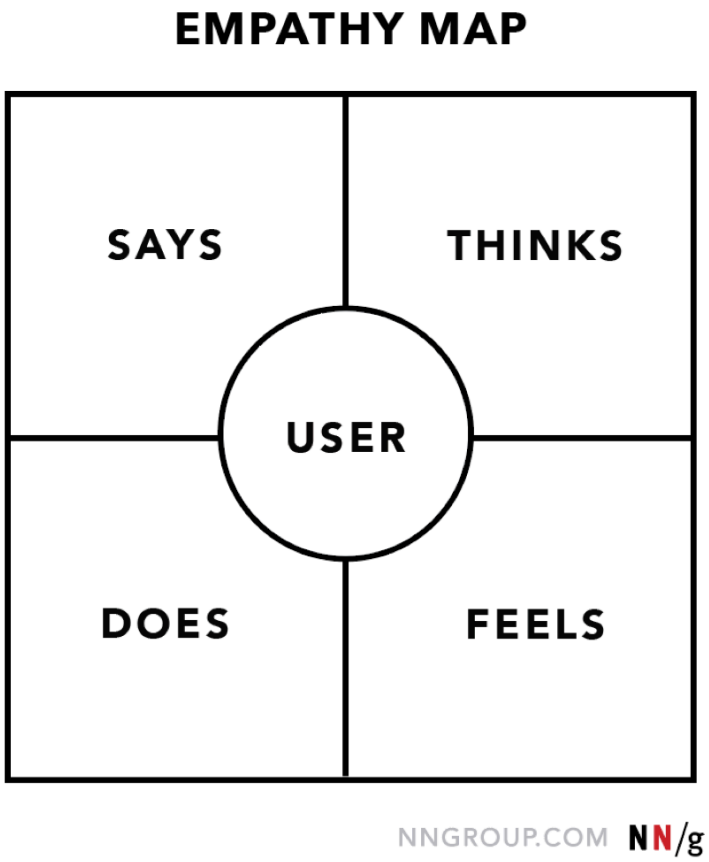
•**Empathy maps:** explore users' main motivations: what the user says, thinks, does, and feels. These insights can help fostering ideas for user's real problems.

•**Personas:** detailed user profiles, to envision who you are design for.

•**User stories** determine which user needs are the most critical to address with your designs. This direction will help focus your ideation.

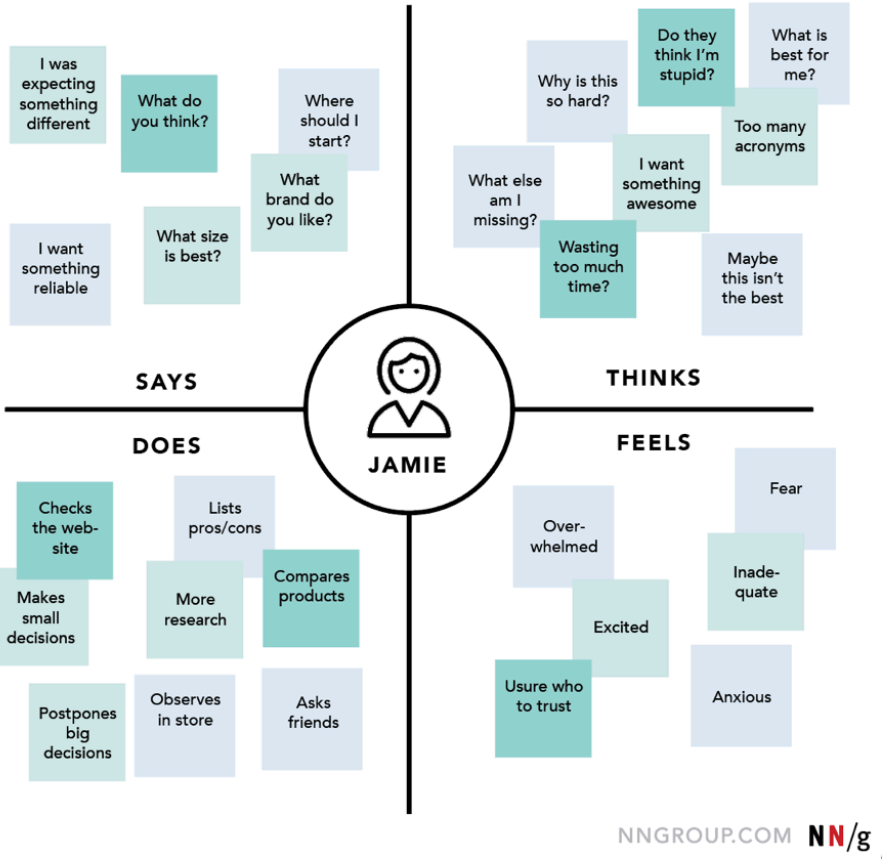
•**User journeys** help you come up with ideas for designs that truly support the users' needs and solve their problems.

Empathy map

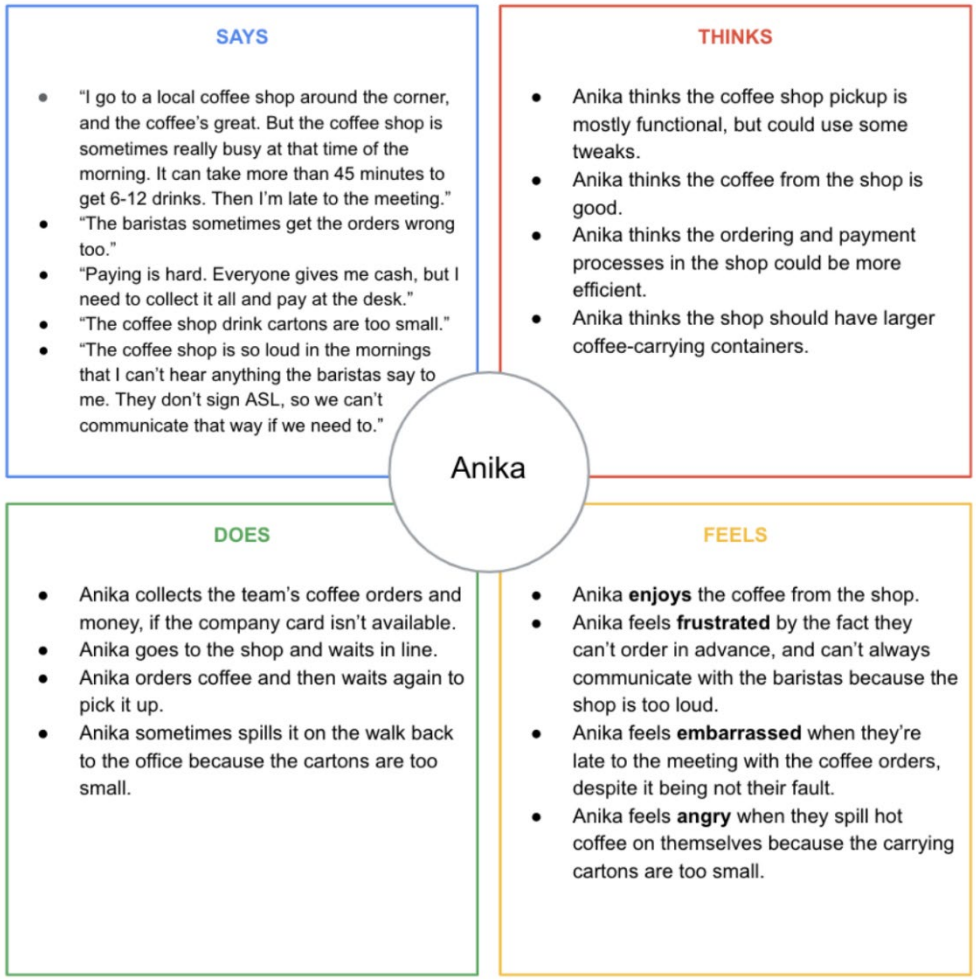


- Four dimensions in which summarizing the users' experience with a product or a service
- Can be built for individual users or aggregating the feedback of several users into the same graph

Empathy map



Google UX course



Problem statement

_____ is a _____

user name — user characteristics

who needs _____

user need

because _____ .

insight

Based on the performed research initial problem definition should emerge

Goal Statement

Google UX course

Goal Statement

Goal Statement for CoffeeHouse app, targeted towards Anika

Our CoffeeHouse app (product) will let users place multiple coffee orders in advance (perform specific action)

which will affect users who have to order and pick up multiple coffees (describe who the action will affect.)

by letting them skip the line and by streamlining the payment process (describe how the action will positively affect them).

We will measure effectiveness by reading user reviews and tracking orders placed (describe how you will measure the impact).

Mapping the identified problem into a “call for action”

Important tools for UX collaboration

- Figma: http://figma.com/
- Adobe XD: https://www.adobe.com/products/xd.html free
- MarvelApp: https://marvelapp.com/features/prototyping

Important especially while needing to work remotely!
Please download and get familiar with these tools!

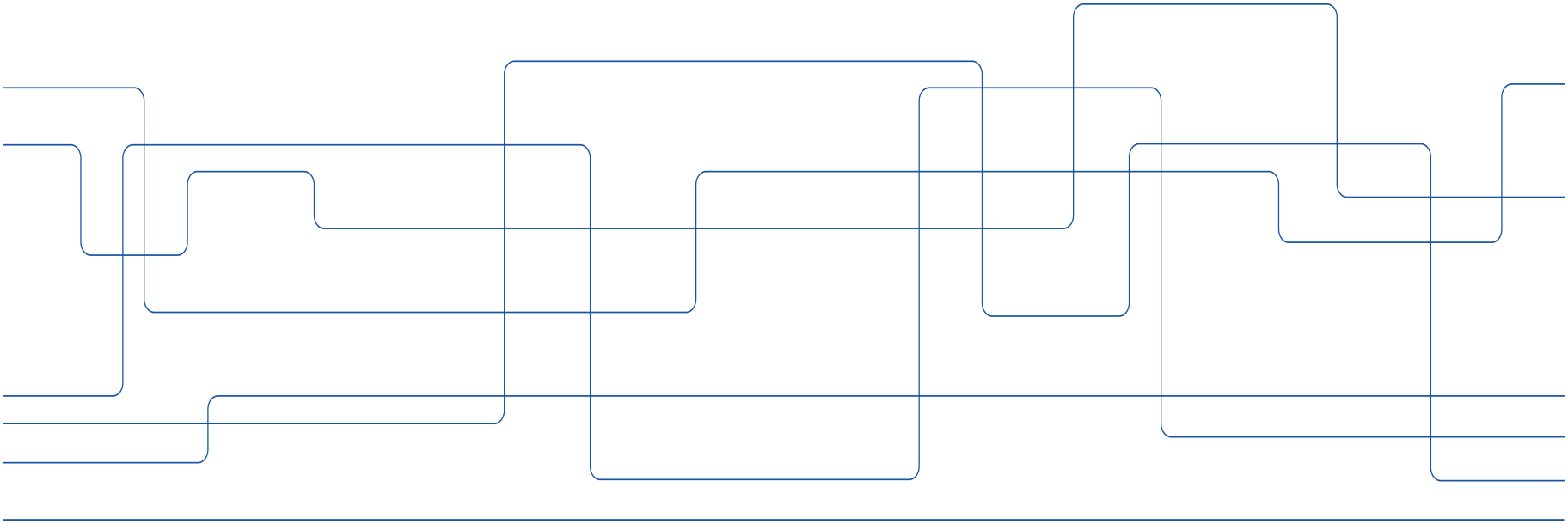
L1: Mobile Observations & Innovations

- Exercise 1: Observations & Interviews (20min)
- Exercise 2: Conceptual design (20min)
- Exercise 3: Paper prototyping (20min)
- Exercise 4: Field observation (1h)

Project work for the course

Dr. Pietro Lungaro

Mobile Service Lab / KTH



A1: Course project proposals

Observation-based field study
•Do a quick plan for a mobile field study
•Take your jacket and leave the classroom.
•Perform at least 4-5 observation in at least 2 different locations
•Perform 2-4 informal interviews on daily use of mobile apps and services
•Collect, sort and group your pics, notes, quotes, etc

Define the course project proposal
•Identify common themes and outliners
•Rank findings based on interest and importance (affinity)
•Perform a brainstorming based on the most important findings to define your course project proposal

Delivery:
•Prepare a project proposal presentation for S1
• Write a 2-4p summary of your field study and course project proposal

Option 1

- Topic
  - Self-determined by the project groups
  - Interviews
- Implementation
  - Self-decided by the project groups
  - Paper and digital prototypes
  - The goal for the course is not a published app in the app store. Goals will be defined depending on the group's skills and background knowledge.

Option 2

- Topic
  - Pre-determined: contribute to the research project “Sömn in vardagen” with KTH/SU
  - The project will run in 2021 and will have about 400 participants from different demographics and age groups. The idea is to explore impact of sleep quality on mental alertness and stress levels. The app will allow periodic testing and user reporting.
  - Pietro Lungaro will act as “customer” for the group’s work, putting some requirements
- Implementation
  - Features decided in “meetings” with the “customer”
  - The goal for the course is not a published app in the app store. Goals will be defined depending on the group’s skills and background knowledge.
- Follow-up
  - Contributing to cutting edge research
  - Depending on performances possible publications opportunities in international conferences and journals.

Option 3

- Topic
  - Pre-determined: contribute to the research project “Smart city” with KTH/Chalmers/City of Curitiba in Brazil and many more
  - The project will run in 2021 and will have access to unique real-time data from the city of Curitiba in Brazil. Most of the data will represent real-time info generated by public transportation, e.g. busses. The goal is to provide innovative ways for citizens to consume that data, e.g. novel bus routes (e.g. less COVID probable routes etc.)
  - Pietro Lungaro will act as “customer” for the group’s work, putting some requirements
- Implementation
  - Features decided in “meetings” with the customer
  - The goal for the course is not a published app in the app store. Goals will be defined depending on the group’s skills and background knowledge.
- Follow-up
  - Contributing to cutting edge research
  - Depending on performances possible deployment of the app in the city of Curitiba in Brazil.

F1: Literature

Mobile Design and Development:

- 1: A Brief History of Mobile
- 4: Designing for Context
- 5: Developing a Mobile Strategy

Beyer, H. and Holtzblatt, K. (1998) Contextual Design: A Customer-Centered Approach to Systems Designs. Morgan Kauffman Press.

Paulos E. and Goodman E. (2004) The familiar stranger: anxiety, comfort, and play in public places. In Proceedings of the SIGCHI Conference on Human Factors in Computing Systems(CHI '04). ACM, New York, NY, USA, 223-230.

Chipchase J. (2008) Reducing Illiteracy as a Barrier to Mobile Communication, In Handbook of Mobile Communication Studies, Ed Katz, MIT Press.