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Mobile Application Development

Mobile Platforms and Application Development fundamentals

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Lecture Plan

- Introduction to App Development
- Mobile Platforms and Application Development fundamentals
- Mobile Interface Design Concepts and UI/UX Design
- Introduction to Android Operating System
- Main Components of Android Application
- Sensors and Media Handling in Android Applications
- Data Handling in Android Applications
- Android Application Testing and security aspects

Simplicity of the UI

- Different Perspectives for the design
  - User
  - Manager
  - Engineer
- User's perspective is the main thing
- Make things feel simple to use
- Making things simple does not mean it is created using simple technologies

Simpler than a bike.
Until you try to ride it.

Complexity makes it Unsustainable

- Having too many features
- User will not use everything
- Users may feel, they are paying for unnecessary features
- There will be massive legacy code that makes the product more expensive to maintain

All that unnecessary power comes at a price

Simplicity should not be faked

- Appear to be simple
- No real usage
- If you must show a magic character to explain how things work, it is not simplicity
- Simplicity isn't something you can stick on top of a user interface

Understand the user's environment

Offices

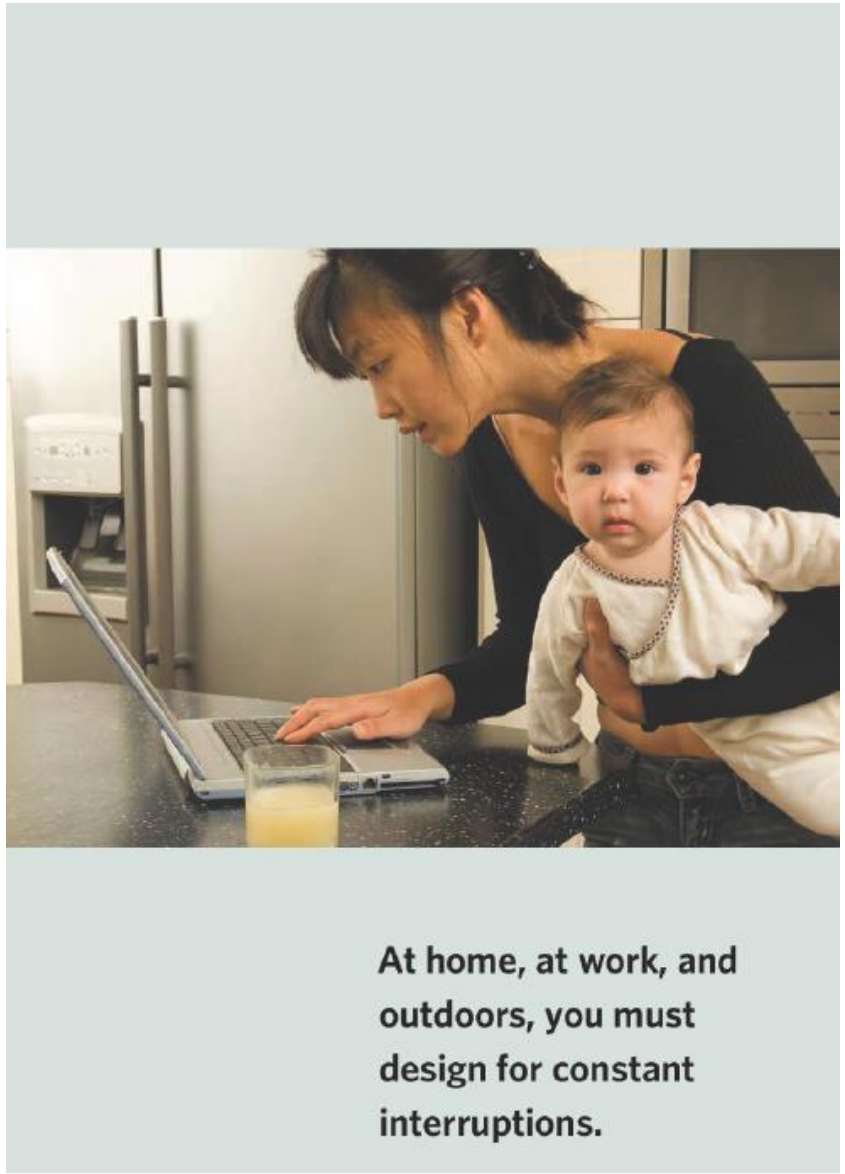
- People are getting interrupted
- Telephone, messages emails
- Last minute work

Homes

- Do multiple things at ones (Laptop While Watching TV)
- Home Broadband may not be reliable
- Mothers, Fathers, Children

Outdoors

- Busy streets
- Carrying bags
- In Ques
- Bright sun light
- Large devices may not be carried



At home, at work, and outdoors, you must design for constant interruptions.

Types of users

Experts

- Will explore the product
- Want never seen technology
- They will spend time with your product

Willing Adopters

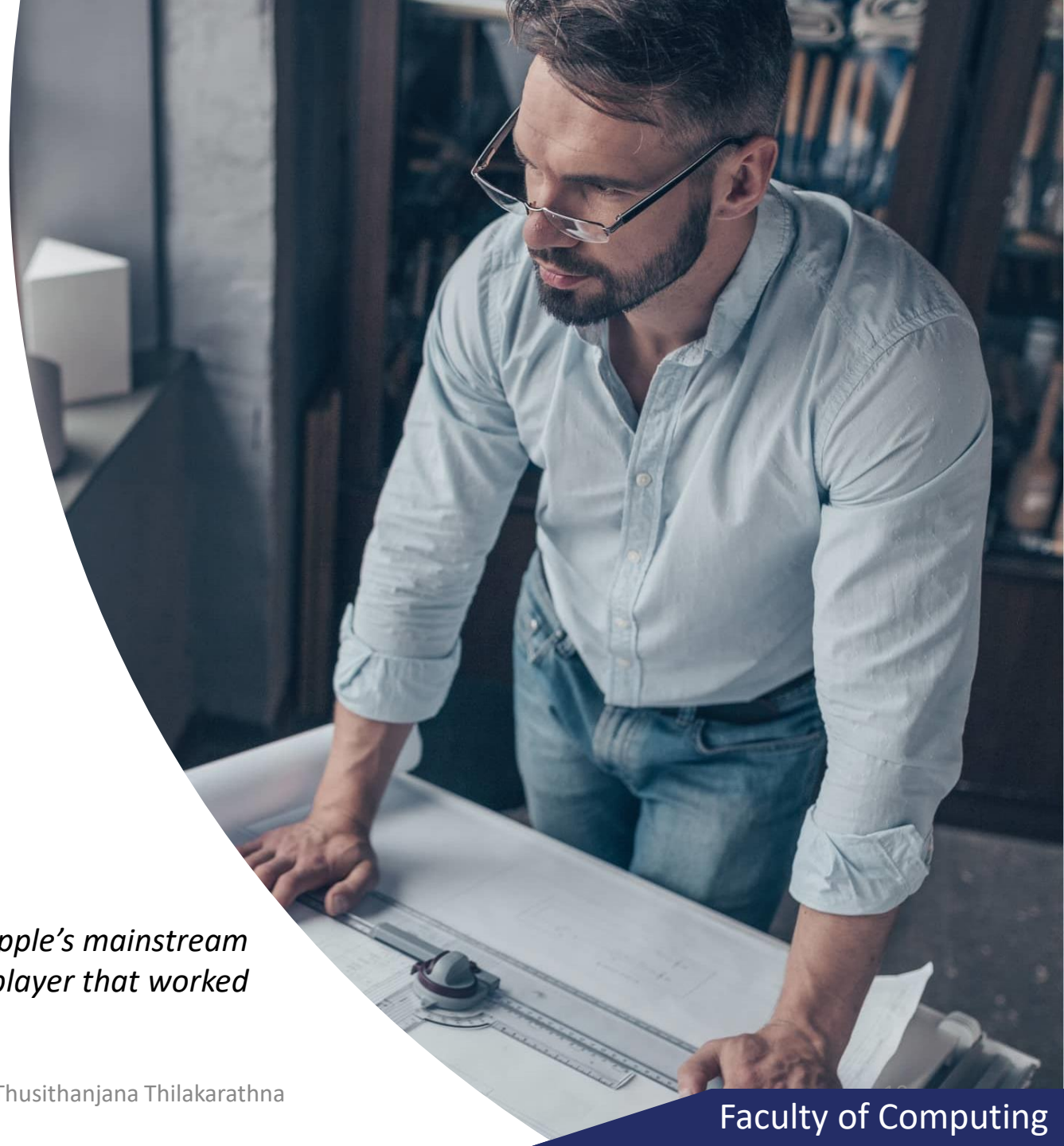
- Already using similar products
- Not comfortable with new products
- They need easy ways to adopt to new features
- Very fewer of these type of users

Mainstreamers

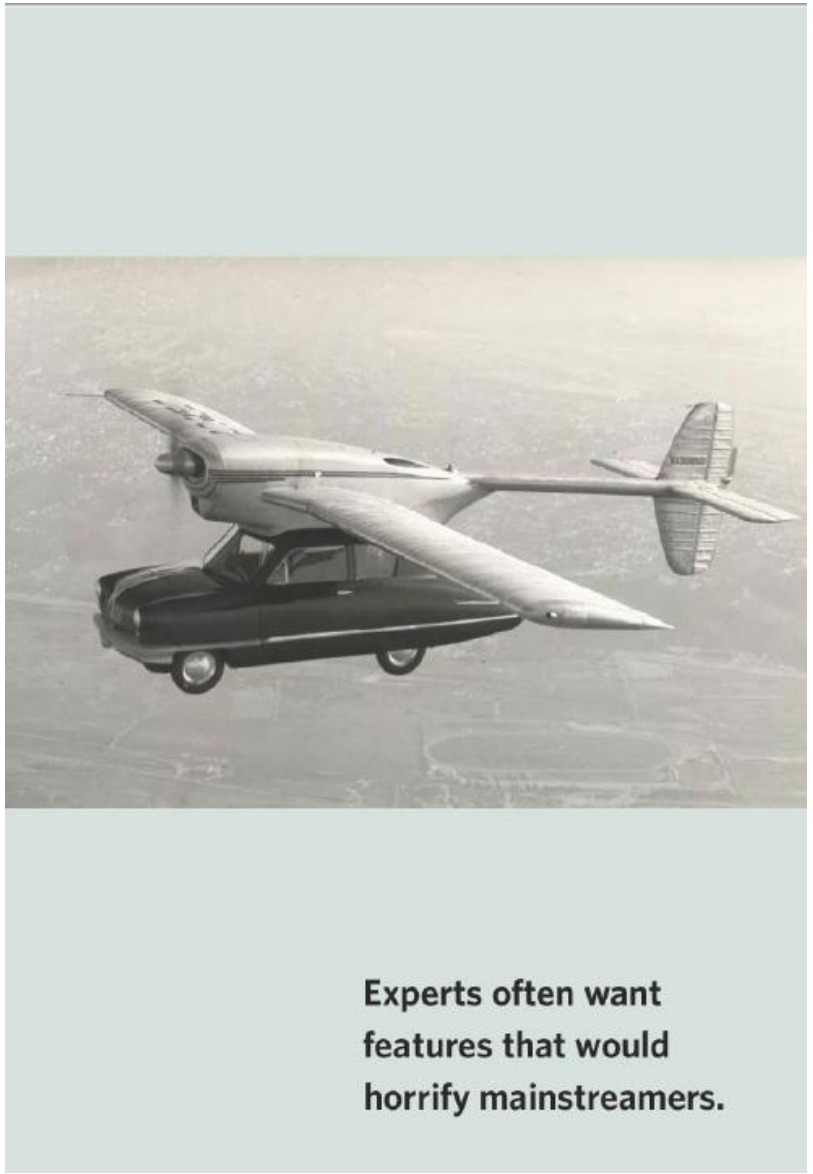
- Majority is this category
- They don’t use the technology for its own sake; use it to get the job done
- Only use few key features
- “I just want my phone to work” attitude

Experts can be ignored

- Highly technical
- won’t face issues in your app like mainstreamers
- They care about highly technical details
- Always expect wonders
- Their demands may be complicated for the other users



Apple’s expert customers wanted a flying car. Apple’s mainstream customers just wanted an MP3 player that worked


Experts often want
features that would
horrify mainstreamers.

Design for the Mainstream

- Usable design tends to focus on this group
- You can learn a lot by watching these people
- They are the majority
- They just want your app to work
- They hate the complexity

> We will build a motor car for the great multitude. It will be…small enough for the individual to run and care for. It will be constructed…after the simplest designs modern engineering can devise. But it will be so low in price that no man making a good salary will be unable to own one.
>
> — *Henry Ford, on the Model T*

Mass appeal comes from focusing on the mainstream

What mainstreamers want

- Mainstreamers are interested in getting the job done now; experts are interested in customizing their settings first
- Mainstreamers value ease of control; experts value precision of control
- Mainstreamers want reliable results; experts want perfect results.
- Mainstreamers are afraid of breaking something; experts want to take things apart to see how they work.
- Mainstreamers want a good match; experts want an exact match
- Mainstreamers want examples and stories; experts want principles

Mainstreamers don't want to build from scratch.

Emotional Need

When we thought about why people would use our software, we realized that they had a lot on their plate. They wanted to achieve a lot and still feel in control. They needed to be able to capture a thousand items and yet not feel overwhelmed when they looked at the list. So, we put a lot of effort into making sure that they'd only ever look at a handful of the most important things, but they'd be able to find all their other notes and reminders just when they needed them.

Jürgen Schweizer
Developer
Award winning iPhone to-do list app

A getting things done app needs to be more than just a notepad. It needs to help users feel organized and relaxed. The Things app does this because it has a simple, flexible way of categorizing users' to-do items.


O2-UK
12:19
Lists
Inbox
3
Today
1
13
Next
Scheduled
Someday
Projects
Monday meetings
Even a to-do list has to
satisfy emotional needs.

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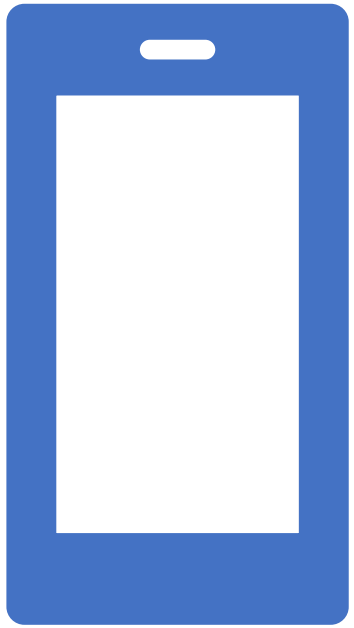
UI and UX in Mobile Applications

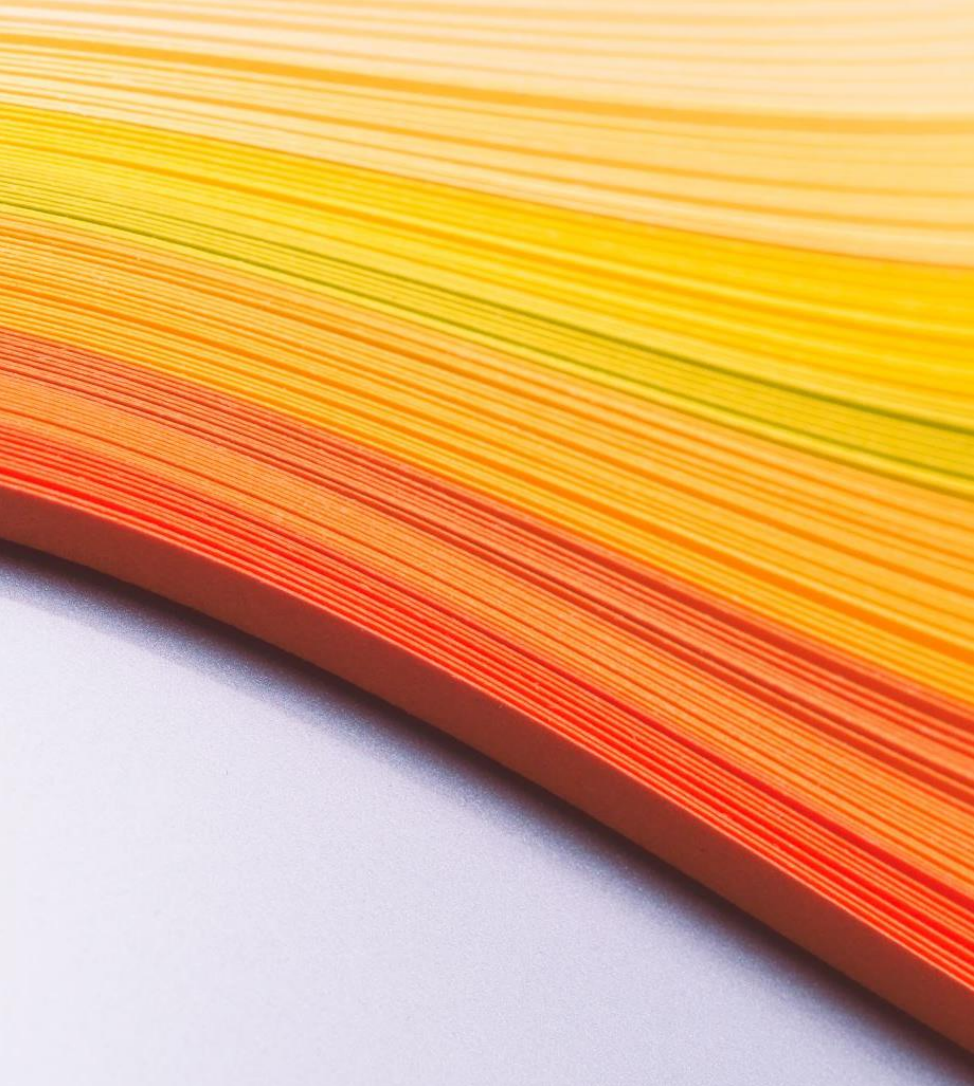


User Interface

- What user can see and interact with
- Its not the appearance, but how it works
- It is the first thing that user see, it directly effects the user's view
- Visual elements greatly impacts an emotional connection with the user

Usage of colors in your app

- The key to picking the right colors for your app is to first understand the basics.
- You can then go on to apply to any UI that you're designing for.
- It's very easy to overdo or pick the wrong colors, which is why you may find yourself spending more time than you anticipated simply figuring out what the color of buttons in your product should be, for example.
- Understanding the basics is the first step to knowing what to do and also knowing what not to do, which is equally important when picking colors.



Consider the following when selecting colors

- UI Hierarchy
- Content Legibility
- Brand Color
- Primary Color
- Secondary Color
- Surface and Background

60-30-10

- Primary Color 60%
  - Background
- Secondary Color 30%
- Accent Color 10%
  - Buttons
  - Pop Ups
  - Highlights

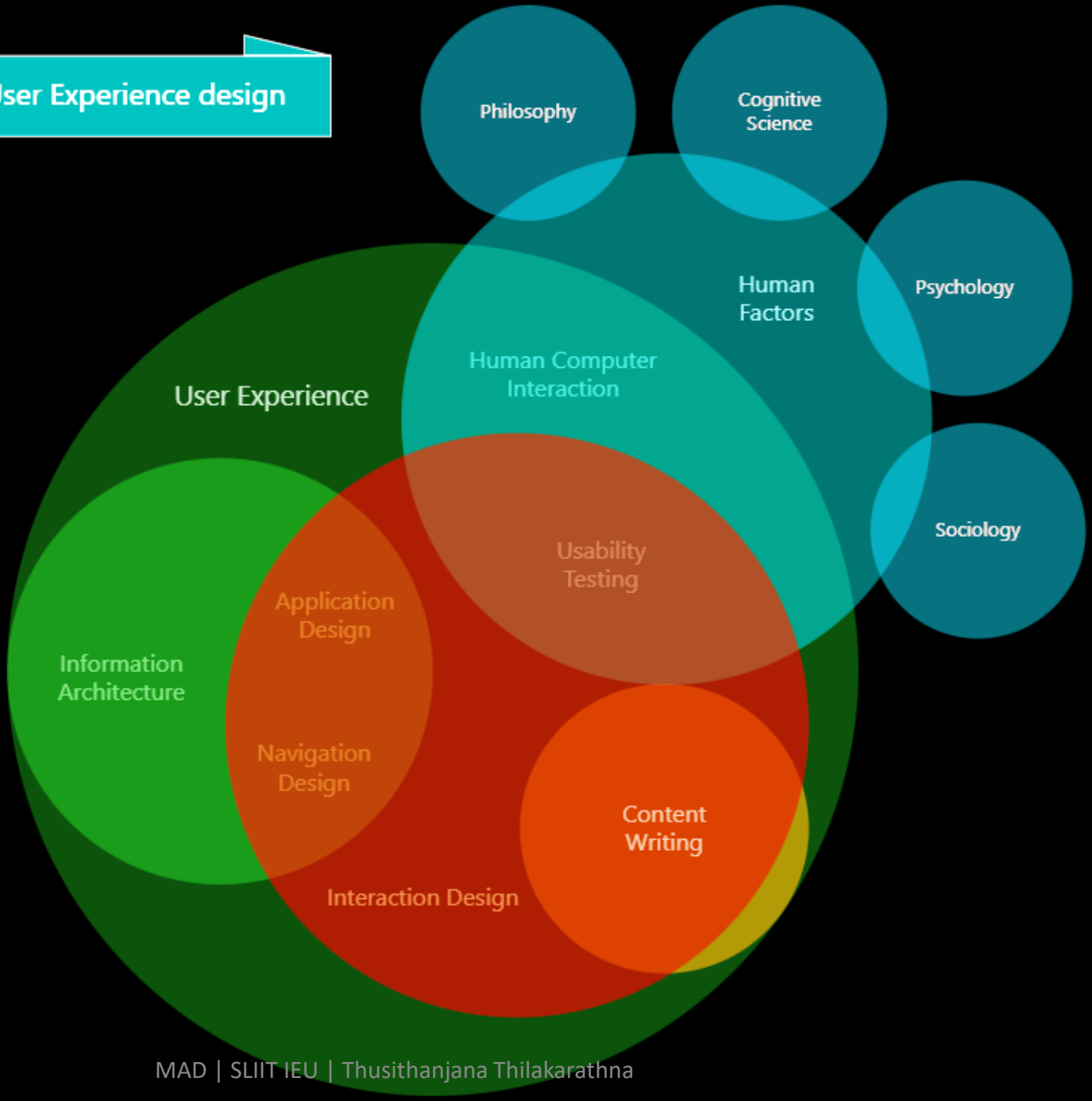
User Experience

- Enhancing user satisfaction of an app, while involving the user's opinions and feelings **before, during, and after** their interaction with an app.
- UX of a mobile application influences how users observe it
- Its about the value addition
- Ease of use
- Help to fulfil user's needs
- Includes all aspects of the end-user's interaction with the company, and its products/services.

Design Thinking

- Read the article on Design Thinking
  - https://www.designorate.com/design-thinking-guide-what-why-how/
- Read more about Double Diamond design thinking process
  - https://www.designorate.com/the-double-diamond-design-thinking-process-and-how-to-use-it/

The disciplines of User Experience design



xml

- XML stands for extensible Markup Language.
- XML was designed to store and transport data.
- XML was designed to be both human- and machine-readable.
- XML does not do anything
- Someone must write a piece of software to send, receive, store, or display it
- Refer to https://www.w3schools.com/xml/default.asp
- Xmlns - The xmlns attribute specifies the xml namespace for a document.

Android Studio

- Android Studio provides the fastest tools for building apps on every type of Android device.
- Intelligent Code Editor
- Flexible Build System
- Realtime Profilers
- Insightful APK Analyzer
- Fast Emulator

Android UI elements

Text	Buttons	Widgets	Layouts	Containers	Helpers	Addons
• Labels • Inputs	• Buttons • Image Buttons • Radio Buttons • Toggle Buttons • Switch • Floating Action Buttons	• View • Web View • Calendar • Progress bar • Rating bar • Dividers • Search View	• Constraint Layout • Linear Layout • Frame Layout • Table Layout	• Spinner • Recycler View • Card View • Toolbar	• Groups • Barriers • Flow	• Google widgets • List views

Android Templates