CPT208 Human-Centric Computing

02. Discovering Requirements

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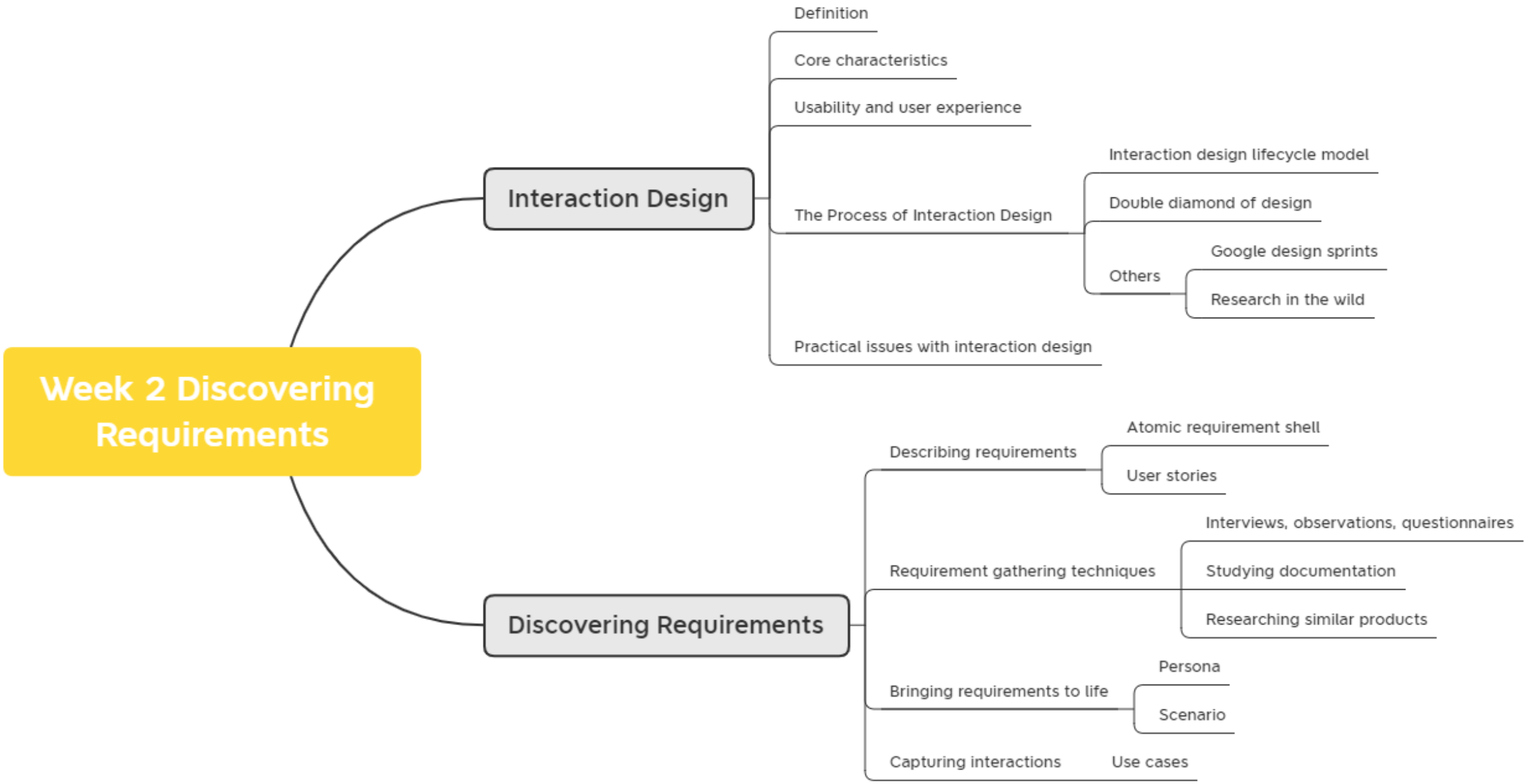
Lecture Syllabus

1. Introduction
2. Discovering requirements
3. Conceptual Prototyping and Practical Guide
4. Heuristic Evaluation, Questionnaire, and interview
5. Design Principles and Design Alternatives
6. Prototyping Fidelity and Dimensions
7. *SAT reading week*
8. *Group Project Demonstration Day*
9. Usability Testing & Experimental Design
10. Interfaces and Research Considerations
11. Field Study and Analytics
12. Flipped Classroom: Selected Coursework Demonstration
13. Revision


Week 2 Discovering Requirements
Interaction Design
Definition
Core characteristics
Usability and user experience
The Process of Interaction Design
Interaction design lifecycle model
Double diamond of design
Others
Google design sprints
Research in the wild
Practical issues with interaction design
Discovering Requirements
Describing requirements
Atomic requirement shell
User stories
Requirement gathering techniques
Interviews, observations, questionnaires
Studying documentation
Researching similar products
Bringing requirements to life
Persona
Scenario
Capturing interactions
Use cases

Learning Outcomes

1. Understand what is interaction design
2. Understand usability and user experience
3. Get familiar with the process of interaction design
4. Be able to critically reflect on the practical issues with interaction design
5. Be able to describe different kind of requirements
6. Get familiar with some data gathering techniques to discover requirements
7. Know how to develop a persona, scenario and use cases

This lecture is based on **Chapter 1, 2 and 11** of the ID book.

Interaction Design

Chapter 1

Defining interaction design

"Designing **interactive products** to support the way people communicate and interact in their everyday and working lives."

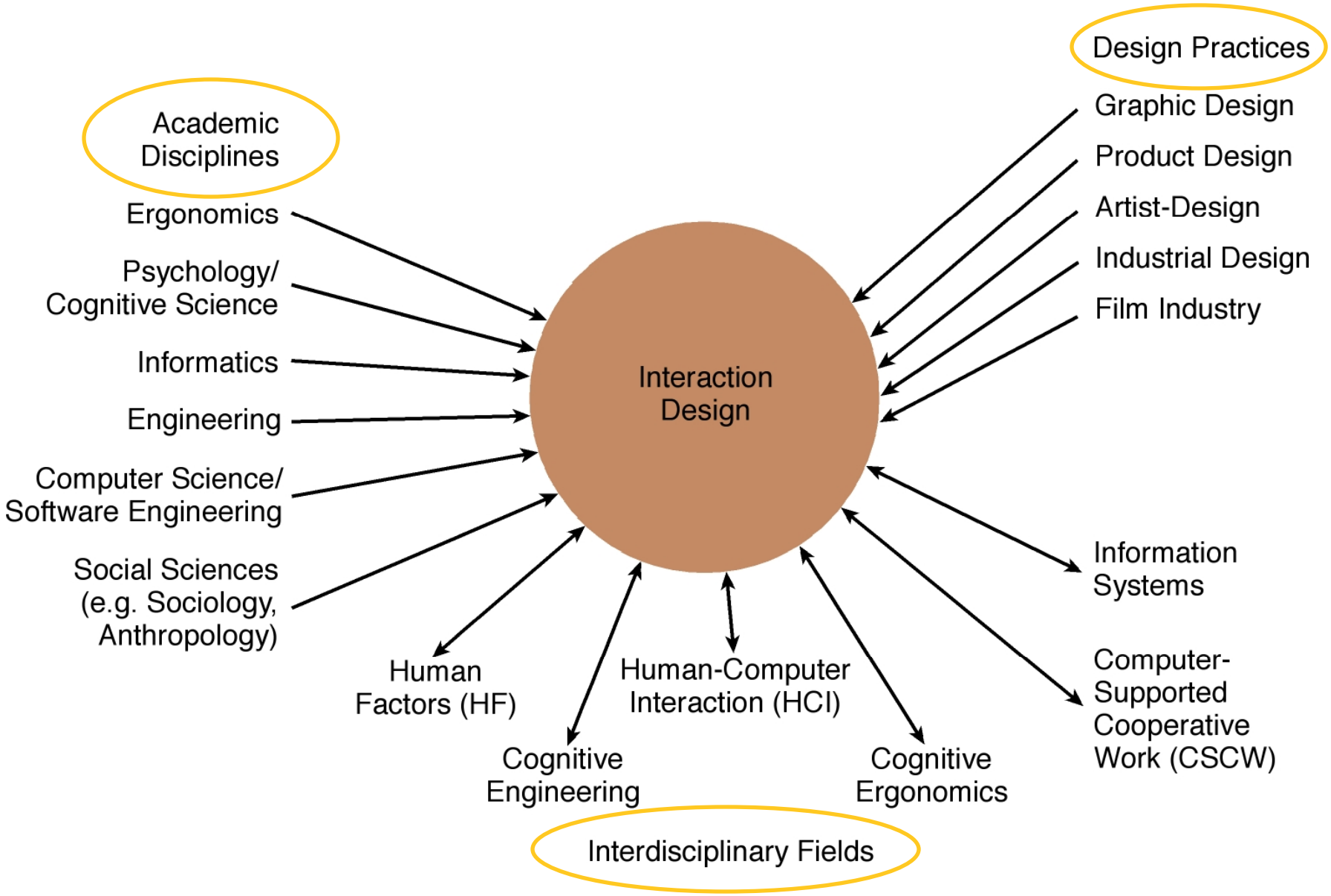
Sharp, Rogers, and Preece (2019)

"The design of **spaces** for human communication and interaction."

Winograd (1997)

Which kind of design?

- Number of other terms used emphasizing what is being designed, for example:
  - User interface design (UI), software design, user-centered design, product design, web design, user experience design (UX), interactive system design, …
- Interaction design is the **umbrella term** covering all of these aspects:
  - Fundamental to all disciplines, fields, and approaches concerned with researching and designing computer-based systems for people


Design Practices
Graphic Design
Product Design
Artist-Design
Industrial Design
Film Industry
Academic Disciplines
Ergonomics
Psychology/ Cognitive Science
Informatics
Engineering
Computer Science/ Software Engineering
Social Sciences (e.g. Sociology, Anthropology)
Interaction Design
Information Systems
Computer-Supported Cooperative Work (CSCW)
Human Factors (HF)
Human-Computer Interaction (HCI)
Cognitive Engineering
Cognitive Ergonomics
Interdisciplinary Fields

Core characteristics of interaction design

1. Users should be involved throughout the development of the project
2. Specific usability and user experience goals need to be identified, clearly documented, and agreed to at the beginning of the project
3. Iteration is needed through the core activities

Importance of involving users

- Understanding of users' goals leading to better products
- Expectation management
  - Realistic expectations
  - No surprises, no disappointments
  - Timely training
  - Communication, but no hype
- Ownership
  - Make the users active stakeholders
  - More likely to forgive or accept problems
  - Can make a big difference in acceptance and success of product

Degrees of user involvement

- Member of the design team
  - Full-time: constant input, but lose touch with users
  - Part-time: patchy input, and very stressful
  - Participatory design: involve all stakeholders in the early stages of design
- Face-to-face group or individual activities
- Online contributions from thousands of users
  - Online Feedback Exchange (OFE) systems
  - Crowdsourcing design ideas
  - Citizen science
- User involvement after product release
  - Customer review analysis

Activity 1: Who to involve?

1. An interactive educational website, such as learning mall
2. A public kiosk providing information about food prices at the Hanlin market

➔ What about your own project?

Core characteristics of interaction design

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2. Specific usability and user experience goals need to be identified, clearly documented, and agreed to at the beginning of the project
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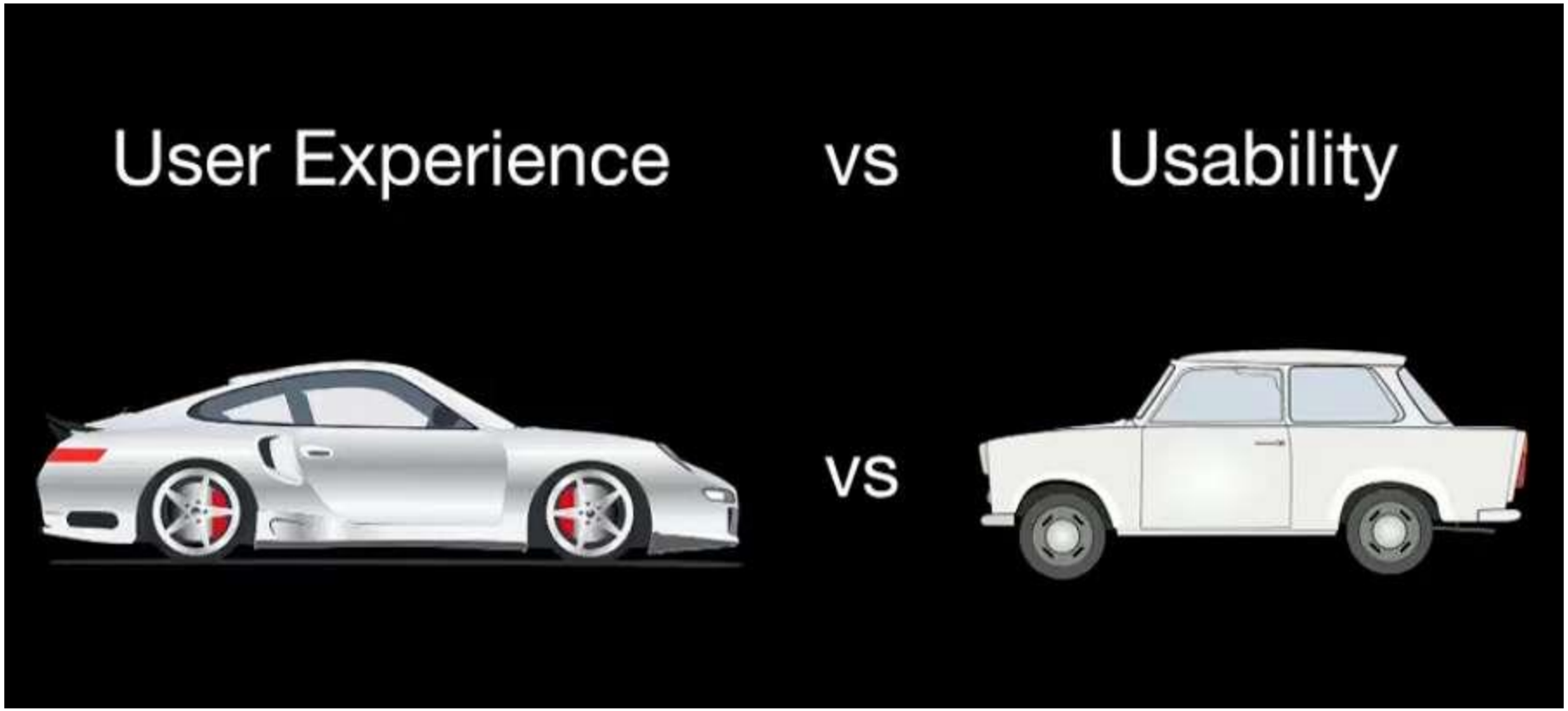
Example usability goals

1. Effective to use (effectiveness) – how good it is
2. Efficient to use (efficiency) – how easy / fast it is
3. Safe to use (safety)
4. Have good utility (utility)
5. Easy to learn (learnability)
6. Easy to remember how to use (memorability)

Example user experience goals

- Desirable aspects
  - Satisfying
  - Enjoyable
  - Engaging
  - Pleasurable
  - Exciting
  - Entertaining
  - Helpful
  - Motivating
  - Challenging
  - Enhancing sociability
  - Supporting creativity
  - Cognitively stimulating
  - Fun
  - Provocative
  - Surprising
  - Rewarding
  - Emotionally fulfilling
  - Experiencing flow
- Undesirable aspects
  - Boring
  - Frustrating
  - Making one feel guilty
  - Annoying
  - Childish
  - Unpleasant
  - Patronizing
  - Making one feel stupid
  - Cutesy
  - Gimmicky

Differences?



Usability and user experience goals

- There is no clear cut between them
- Usability goals differ from user experience goals
  - **Usability** is more objective: how useful or productive a system is from its own perspective
  - **User experience** is more subjective: how users experience an interactive product from their own perspective
- Trade-offs between the two kinds of goals
  - Can a product be both fun and safe?
- Historically HCI was concerned primarily with **usability**, but it has since become concerned with understanding, designing for, and evaluating a wider range of **user experience** aspects.

Core characteristics of interaction design

1. Users should be involved throughout the development of the project
2. Specific usability and user experience goals need to be identified, clearly documented, and agreed to at the beginning of the project
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The Process of Interaction Design

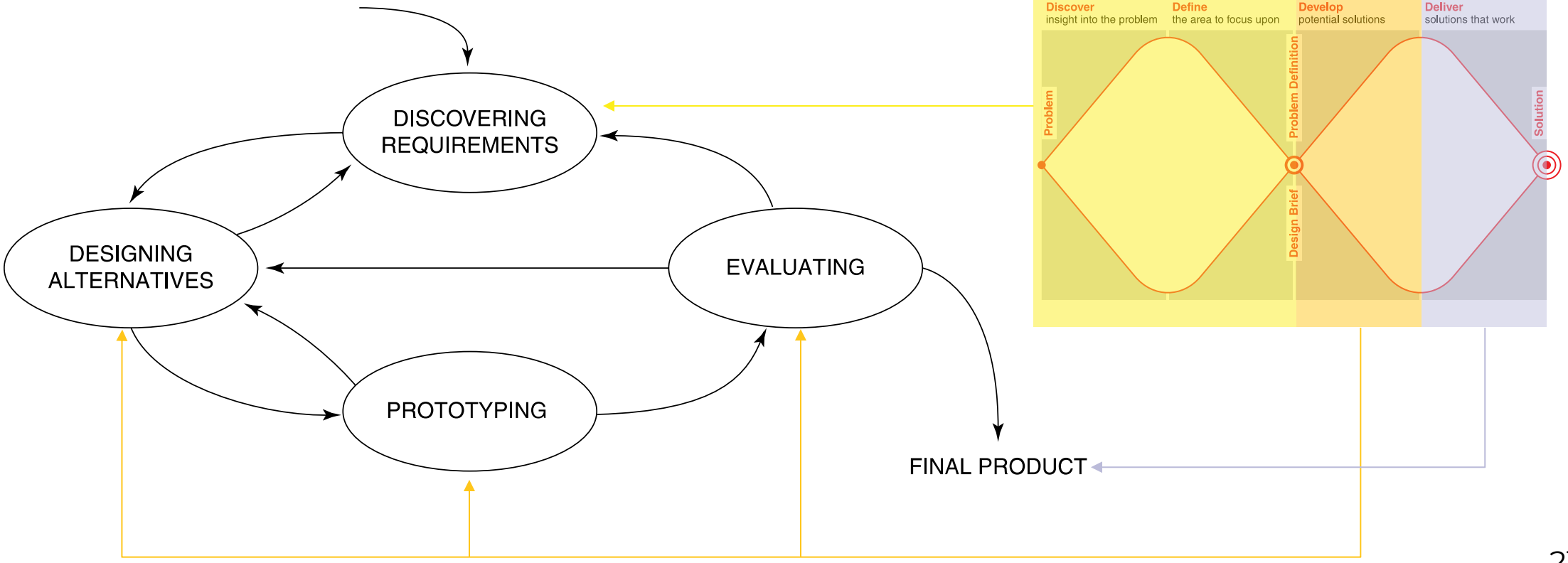
Chapter 2

Four basic activities of Interaction Design

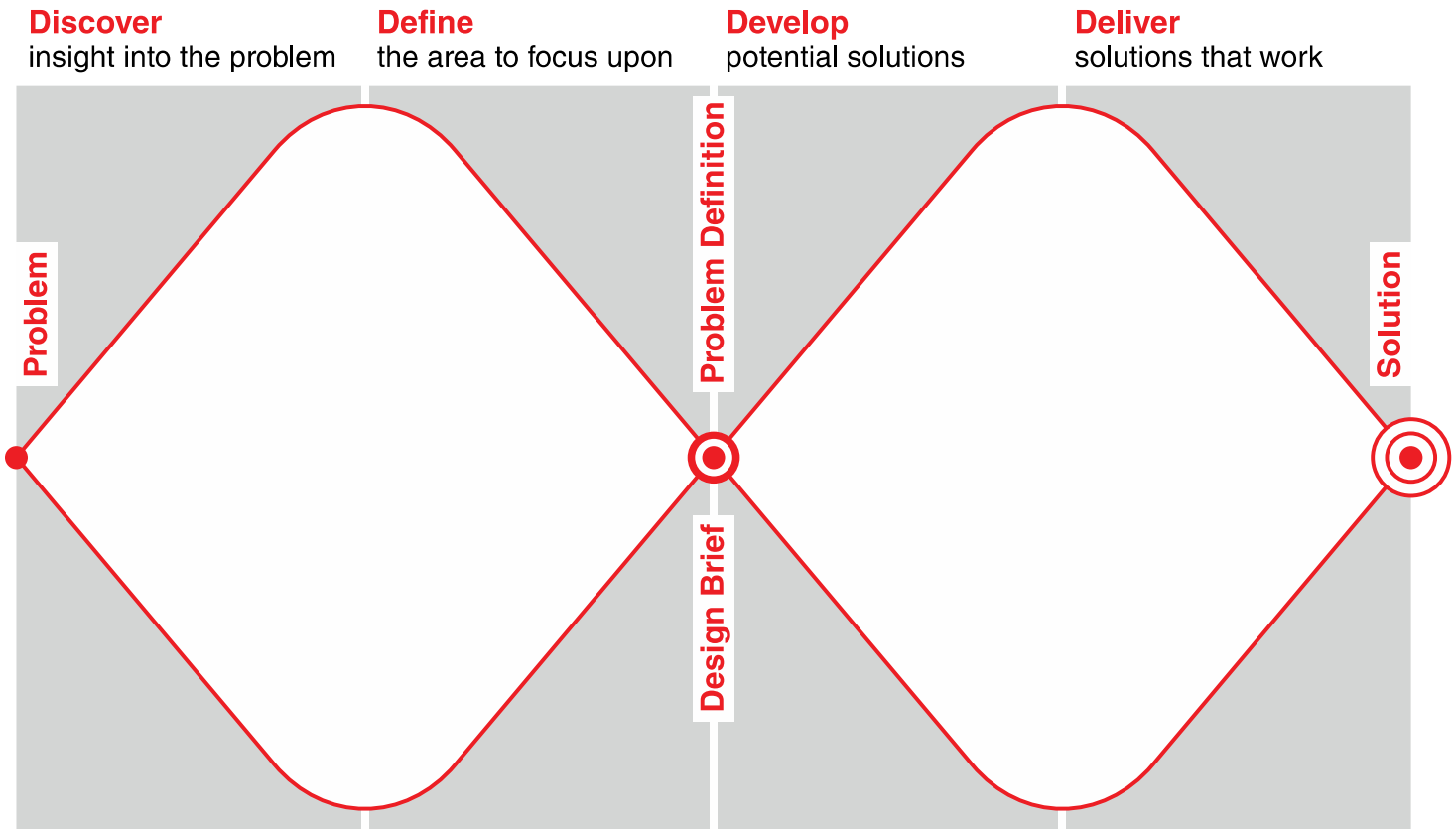
1. Discovering requirements for the interactive product.
2. Designing alternatives that meet those requirements.
3. Prototyping the alternative designs so that they can be communicated and assessed.
4. Evaluating the product and the user experience it offers throughout the process.

Interaction design lifecycle model

- Exemplifies a user-centered design approach



The double diamond of design



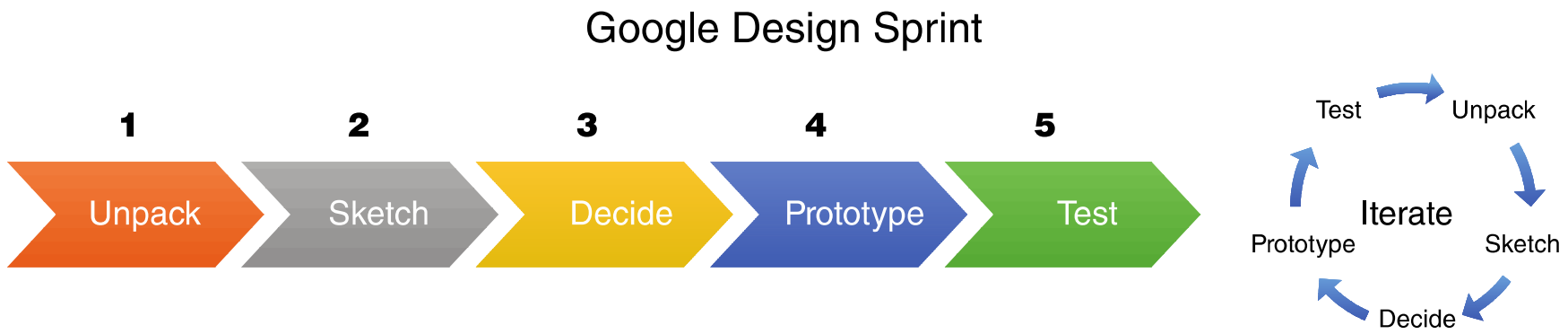
Source: Adapted from [The Design Process: What is the Double Diamond?]

Understanding the problem space

- Explore
  - What is the current user experience?
  - Why is a change needed?
  - How will this change improve the situation?
- Articulating the problem space
  - Team effort
  - Explore different perspectives
  - Avoid incorrect assumptions and unsupported claims

Google Design Sprints

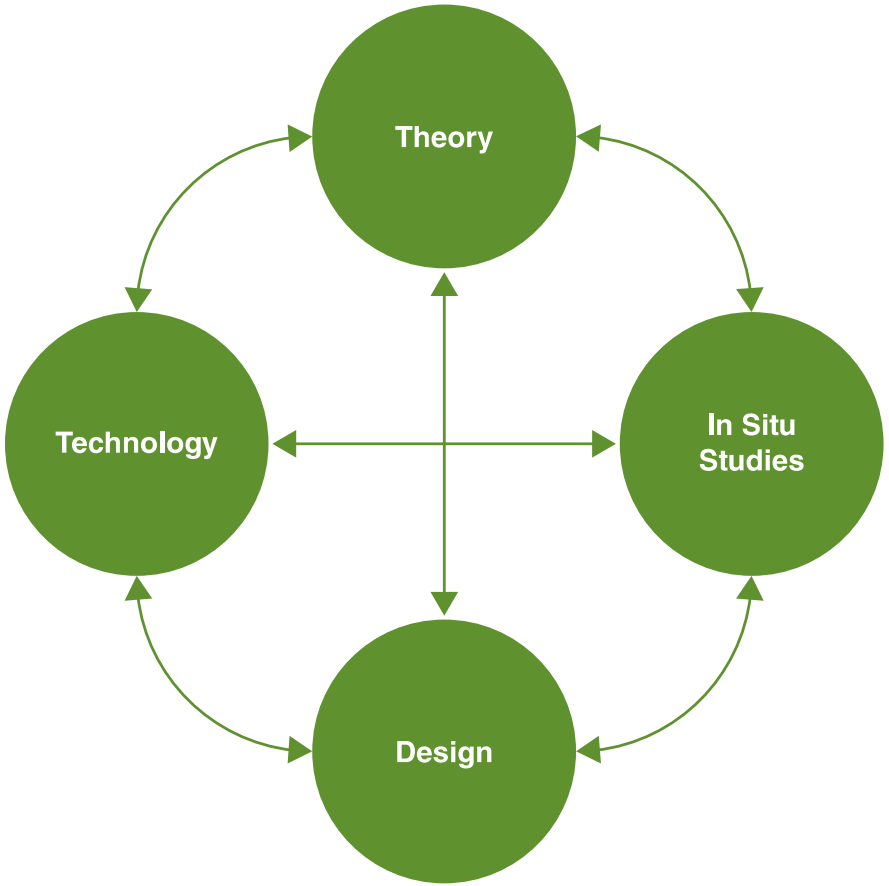
➔ Knapp et al., 2016



Source: Google Design Sprints (used courtesy of Agile Marketing)

Research in the Wild

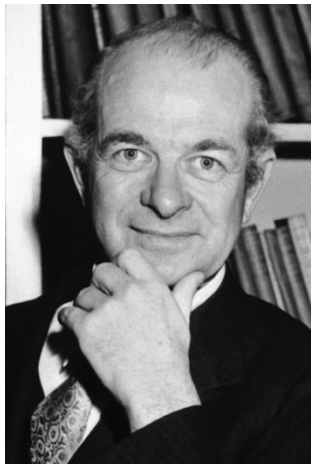
- Rogers and Marshall, 2017



Source: Rogers and Marshall, 2017, p6. (used courtesy of Morgan and Claypool)

What is involved in Interaction Design?

- It is a process:
  - Focused on discovering requirements, designing to fulfil requirements, producing prototypes and evaluating them
  - Focused on users and their goals
  - Involves trade-offs to balance conflicting requirements
- Generating alternatives and choosing between them is key
  - *"The best way to get a good idea is to get lots of ideas", Linus Pauling*



Practical Issues in Interaction Design

Chapter 2

User-centered approach: 3 principles

1. Early focus on users and tasks: directly studying cognitive, behavioral, anthropomorphic, and attitudinal characteristics
2. Empirical measurement: users' reactions and performance to scenarios, manuals, simulations, and prototypes are observed, recorded, and analysed
3. Iterative design: when problems are found in user testing, fix them and carry out more tests

Early focus on users and tasks

1. Users' tasks and goals are the driving force behind the development.
2. Users' behaviour and context of use are studied, and the system is designed to support them.
3. Users' characteristics are captured and designed for.
4. Users are consulted throughout development from earliest phases to the latest.
5. All design decisions are taken within the context of the users, their activities, and their environment.

Some practical issues

- Who are the users?
- What are the users' needs?
- How to generate alternative designs?
- How to choose among alternatives?
- How to integrate interaction design activities with other lifecycle models?
- ...

Who are the users/stakeholders?

- Users are not always obvious
  - 382 distinct types of users for smartphone apps (Zhao et al, 2016)
  - Many products are intended for use by large sections of the population, so user is “everybody”
  - More targeted products are associated with specific roles
- Stakeholders
  - The individuals or groups that can influence or be influenced by the success or failure of a project
  - Larger than the group of direct users
  - Identifying stakeholders helps identify groups to include in interaction design activities

What are the users' needs?

- Users rarely know what is possible
  - "un-dreamed-of" needs
- Instead:
  - Explore the problem space
  - Investigate who are the users
  - Investigate user activities to see what can be improved
  - Try out ideas with potential users
- Focus on peoples' goals, usability, and user experience goals, rather than expect stakeholders to articulate requirements

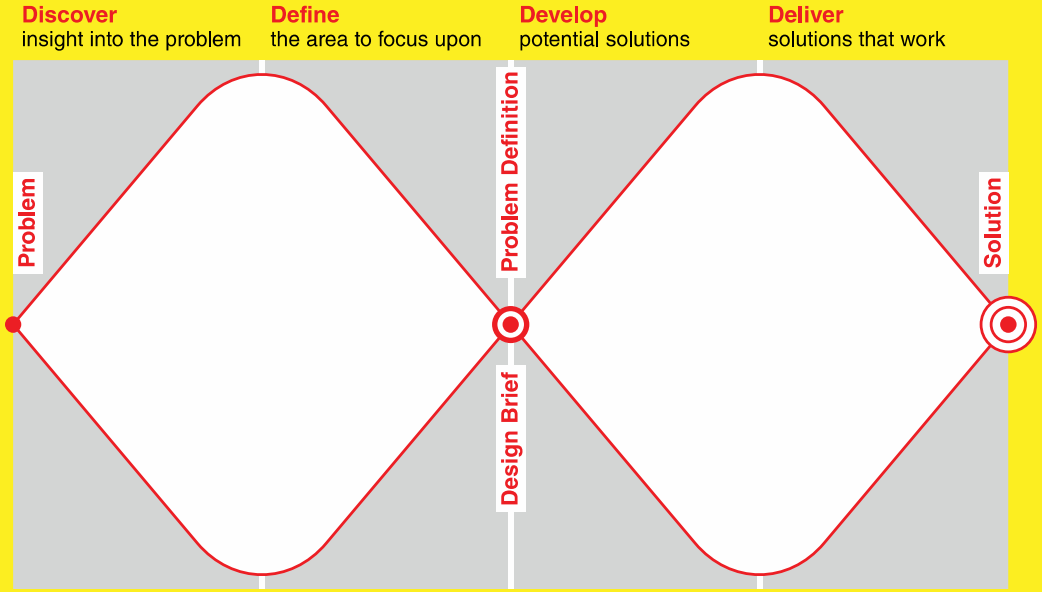
Back to the question last week...

- What do you expect from CPT208?
  - emmm.....

- What is your preferred assessment method, coursework or exam? group work or individual work?
- What kinds of learning method do you find more effective, delivery-centered or practice-led?
- How would you like to engage in the class? By verballing answering questions or using responsive slides?
- ...

Activity 2: Discover and define

- Suppose you need to **redesign the XJTLU mobile app.**
  - What is the main issue to solve?
  - What is the key area to focus upon?
  - What is the requirement(s) that has not been fulfilled by existing designs?
- What the problem to solve in your group project?



Discovering Requirements

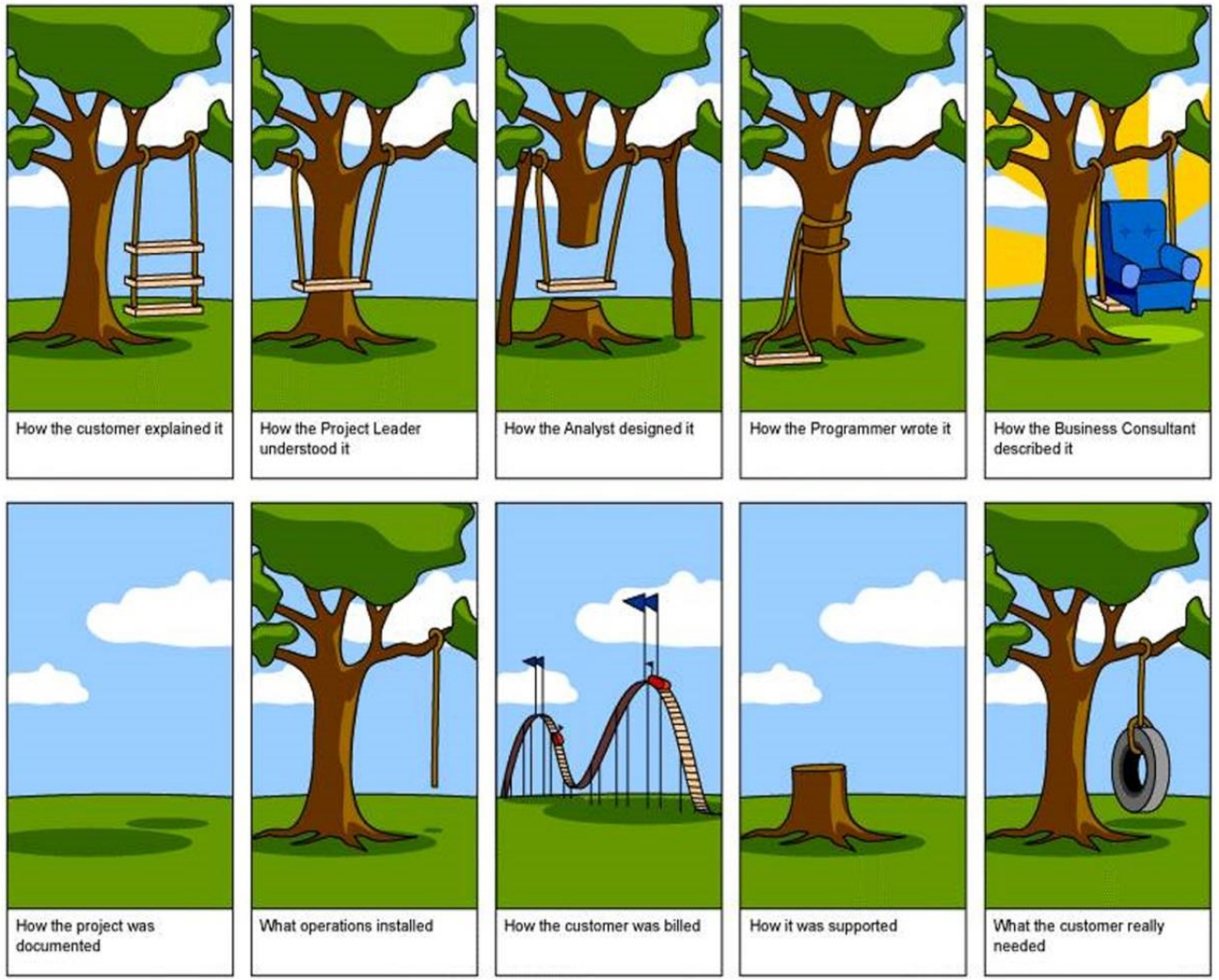
Chapter 11

What, how and why?

- What is the purpose of the requirements activity?
  - Explore the problem space to gain insights
  - Establish a description of what will be developed
- How to capture requirements once discovered?
  - In prototypes or operational product
  - Through structured or rigorous notations
  - Good to be explicit to keep record of key requirements
  - Different capturing mechanisms emphasize and de-emphasize different aspects

Why bother?

- Requirements activity is the stage where miscommunication occurs most commonly

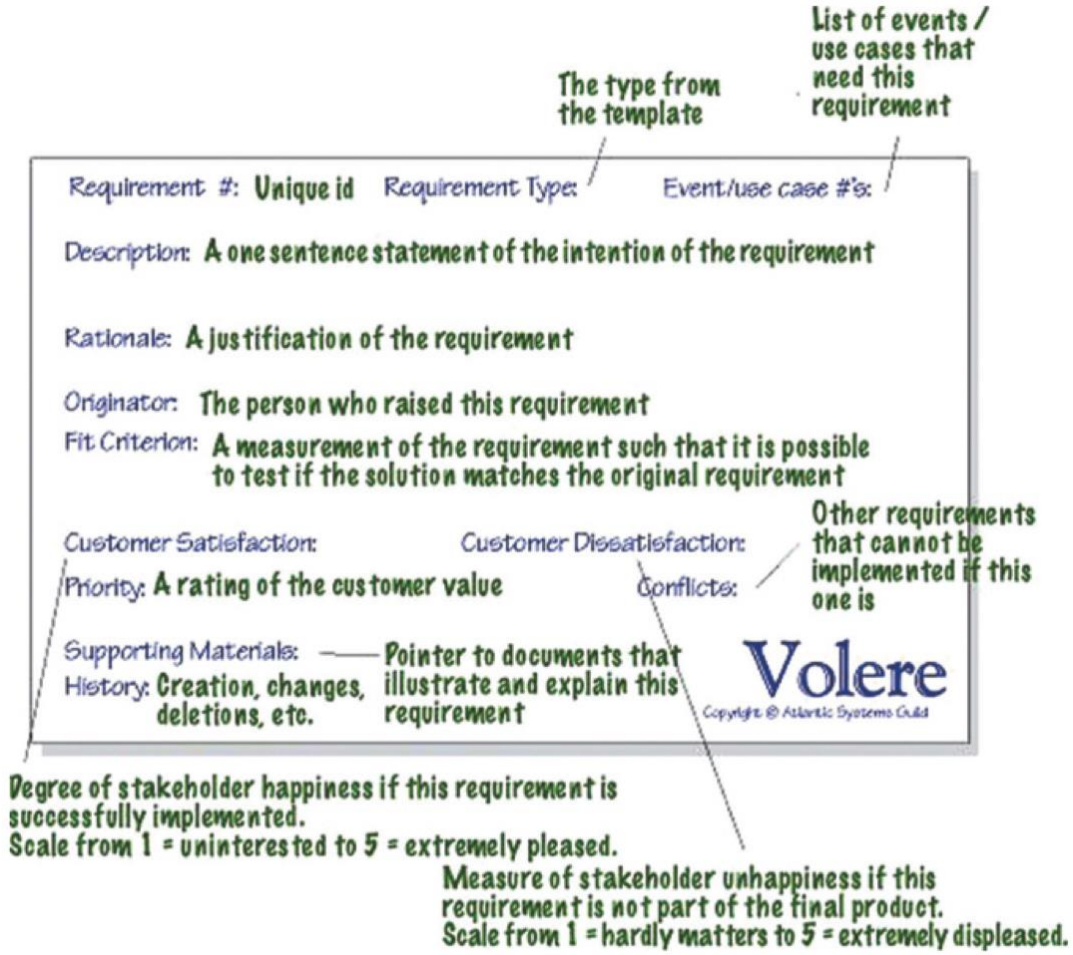


What are requirements?

- A statement about an intended product that specifies what it is expected to do or how it will perform
- Different forms and different levels of abstraction
  - Atomic requirement shell
  - User stories

Atomic requirement shell

- Robertson and Robertson, 2013



Atomic requirement shell

Requirement #: 75 Requirement Type: 9 Event/use case #: 6

Description: The product shall issue an alert if a weather station fails to transmit readings.

Rationale: Failure to transmit readings might indicate that the weather station is faulty and needs maintenance, and that the data used to predict freezing roads may be incomplete.

Source: Road Engineers
Fit Criterion: For each weather station the product shall communicate to the user when the recorded number of each type of reading per hour is not within the manufacturer's specified range of the expected number of readings per hour.

Customer Satisfaction: 3 Customer Dissatisfaction: 5

Dependencies: None Conflicts: None

Supporting Materials: Specification of Rosa Weather Station

History: Raised by GBS, 28 July

Volere

Example from last year

Atomic requirement shells (Task 3)

Requirement #: **1** || Requirement Type: **9** || Event/Use Case #: **TBA**

Description: **The product should be able to indicate to what extent a user studies during a period of time.**

Rationale: **As one important aim of the product is to help the learners self-study, it is necessary that the product generates data showing how the users study with the help of the product over a long period of time, which is used to show if the user's studying is really improving.**

Source: **The stakeholders**

Fit Criteria: **For each day the product shall collect information that includes but is not limited to the time the user spent in studying, how many interactive tasks the user completed, and how well the user thinks he studied.**

Customer Satisfaction: **4** Customer Dissatisfaction: **5**

Dependencies: **None** Conflicts: **None**

Supporting Materials: **Specification of <Our product name>**

History: **Raised by Stakeholder 1, March 4th, 2023**

User stories

- Format:
  - As a <role>, I want <behavior> so that <benefit>
- Example user stories for a travel organizer might be:
  - As a <traveler>, I want <to save my favorite airline for all my flights> so that <I will be able to collect air miles>
  - As a <travel agent>, I want <my special discount rates to be displayed to me> so that <I can offer my clients competitive rates>
- Most prevalent in agile development contexts

Example from last year

- As a user, I want to have an improved **social community feature** on the sports app, similar to Keep app, so that I can connect with other fitness enthusiasts, share my progress and receive motivation from the community.
  - As a user, I want to have **a profile page** on the app, so that I can customize my personal information and view my fitness progress.
  - As a user, I want to **join fitness groups or communities**, so that I can connect with other fitness enthusiasts and receive motivation from them.
  - As a user, I want to have **a leaderboard function**, so that I can compete with other users and motivate myself to achieve my fitness goals.
  - As a user, I want to have **a chat function**, so that I can communicate with other users in real-time and receive motivation and support from them.
  - As a user, I want to have **a feature that allows me to share my fitness progress on social media**, so that I can inspire my friends and receive encouragement from them.

Different kinds of requirements

- Functional requirements
  - What the system should do
  - Example: *As a video game, it will be challenging for a range of user abilities*
- Non-functional requirements
  - The characteristics (sometimes called constraints) of the product
  - Example: *As a video game, it can run on a variety of platforms, such as the Microsoft Xbox, Sony PlayStation, and Nintendo Switch game systems.*

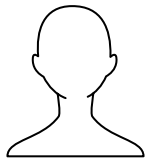
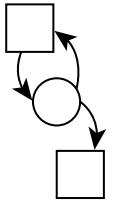
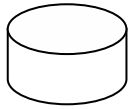
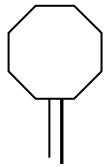
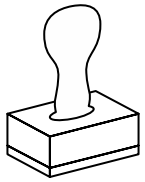
A comprehensive categorization of requirements types

- Suzanne and James Robertson (2013)

Project Drivers	1. The Purpose of the Product
	2. The Stakeholders
Project Constraints	3. Mandated Constraints
	4. Naming Conventions and Terminology
	5. Relevant Facts and Assumptions
Functional Requirements	6. The Scope of the Work
	7. Business Data Model and Data Dictionary
	8. The Scope of the Product
	9. Functional Requirements

Nonfunctional Requirements	10. Look and Feel Requirements
	11. Usability and Humanity Requirements
	12. Performance Requirements
	13. Operational and Environmental Requirements
	14. Maintainability and Support Requirements
	15. Security Requirements
	16. Cultural Requirements
	17. Compliance Requirements
Project Issues	18. Open Issues
	19. Off-the-Shelf Solutions
	20. New Problems
	21. Tasks
	22. Migration to the New Product
	23. Risks
	24. Costs
	25. User Documentation and Training
	26. Waiting Room
	27. Ideas for Solutions

The seven product dimensions

						
User	Interface	Action	Data	Control	Environment	Quality Attribute
Users interact with the product	The product connects to users, systems, and devices	The product provides capabilities for users	The product includes a repository of data and useful information	The product enforces constraints	The product conforms to physical properties and technology platforms	The product has certain properties that qualify its operation and development

Source: Gottesdiener and Gorman (2012), p.58. Used courtesy of Ellen Gottesdiener

Six most common types of requirements

1. Functional requirements
   - → What the system should do
2. Data requirements
   - → What kinds of data need to be stored?
   - → How will they be stored (for example, database)?

Six most common types of requirements

3. Environment requirements or context of use:
   - → Physical: dusty? noisy? vibration? light? heat? humidity? …. (for example, in a hospital)
   - → Social: collaboration and co-ordination, data sharing, distributed, synchronous or asynchronous, privacy
   - → Organizational: user support, communications structure and infrastructure, availability of training
   - → Technical: On what technologies will it run or need to be compatible?

Six most common types of requirements

4. Users characteristics
   - → Nationality, educational background, attitude to computers
   - → System use: novice, expert, casual, frequent
     - Novice: prompted, constrained, clear
     - Expert: flexibility, access/power
     - Frequent: shortcuts
     - Casual/infrequent: clear menu paths
   - → User profile

Six most common types of requirements

5. Usability goals
6. User experience goals

➔ Different products have different requirements and may be implemented in different ways

Data gathering for requirements

- Interviews, observations, and questionnaires
- Studying documentation
  - Procedures and rules are often written down in manuals
  - Good source of data about the steps involved in an activity and any regulations governing a task
  - Good for understanding legislation and getting background information
  - Does not involve stakeholder time
- Researching similar products
  - Good for prompting requirements

Combining data gathering

- Observation (direct and indirect)
- Interviews (individual and group)
- Diaries
- Surveys
- Think-aloud evaluation
- Working prototype evaluation
- Studying documentation
- Evaluating other systems
- Ethnographic study
- Usability tests
- …

See Box 11.12 for more details (page 396-398)

Using probes to engage with users

- Many types of probe:
  - Designed to prompt users into action
  - For researchers to learn about users

Contextual Inquiry

- Part of Contextual Design, but also used on its own to gather requirements
- One-on-one field interviews (contextual interviews)
  - 1.5 to 2 hours long
  - Focus on daily life at home or work relevant to the project
  - Uses a model of master (participant) and apprentice (researcher)

Contextual Inquiry

- Four main principles:
  - Context: Going to the user, wherever they are, and seeing what they do as they do it
  - Partnership: User and interviewer explore user's life together
  - Interpretation: Observations interpreted by user and interviewer together
  - Focus: Project focus to understand what should be paid attention

Contextual Inquiry

- Interview guided by seven “cool concepts” divided into two groups
- Joy of life concepts (How products make our lives richer and more fulfilling)
  - Accomplish (empower users)
  - Connection (enhance real relationships)
  - Identity (support users’ sense of self)
  - Sensation (pleasurable moments)
- Joy of use concepts (Describe impact of using the product)
  - Direct in action (provide fulfillment of intent)
  - The hassle factor (remove all glitches and inconveniences)
  - The learning delta (reduce the time to learn)

Contextual Inquiry

- Interview in four parts
  - Overview
  - Transition
  - Main interview
  - Wrap-up
- Following interview, interpretation session
  - Contextual design models are created or consolidated
  - Most relevant models are chosen by team, out of 10 suggested (see Chapter 11, section 11.4.2, P401)

Affinity diagram

Brainstorming for innovation

1. Include participants from a wide range of disciplines, with a broad range of experience
2. Don't ban silly stuff
3. Use catalysts for further inspiration
4. Keep records. Capture every idea, without censoring
5. Sharpen the focus
6. Use warm-up exercises and make the session fun

Bringing requirements to life

- Augmenting the basic requirements expressed as user stories
- Personas
  - Rich descriptions of typical users, not specific people
- Scenarios
  - An informal narrative story, simple, ‘natural’, personal, and not generalizable

Persona

Chapter 11

Personas

- Capture a set of user characteristics (user profile)
- Synthesised from real people based on user research
- Typical, not idealised
- Bring to life with name, characteristics, goals, and personal background
  - Relevant to product under development
- Two goals of persona
  - Helps **designer** with design decisions and
  - Reminds **team** about who will use the product
- Develop a small set of personas with one primary

Example Persona #1

Ben "Beginner"

Single worker

Ben is 25 years old and lives at home with his parents. He is low skilled, has little experience and doesn't cook very often. Instead Ben eats out quite a lot or his mum cooks for him. When cooking he uses his parents' kitchen and gets inspiration from TV, online, or when eating out with friends. Ben likes to keep things quick and simple and does not have much time to learn or practice.

Goals

Ben wants to have a good standing with his peers. He wants to be social and become more independent whilst showing self improvement. He would like to learn to at least cook nutritious and reasonably tasting food.

Where we can help

- Encourage to cook more often – remind him about when he last cooked.
- Help him remember/access previous advice given for dish or technique.
- Filter recipes searched for online to be quick and simple. (Personal filter of recipes)
- Give reminder to go to supermarket and obtain ingredients quickly and easily.
- Help him use right amount of ingredients when cooking.
- Let him be aware what others in house are planning to cook – so knows what to do with leftover meat etc.
- Make recipe more accessible – reduce need to go back and forth repeatedly to check.
- Inform him that food is properly cooked.
- Track his progress in learning and give encouragement.
- Facilitate fun cooking with partner or friend.

Olive "Older expert"

Married, 50 yrs old

- Mother of 3 grown up children
- Very proficient
- Cooks fairly often

Olive is a personal achiever

- Loves to learn new ideas and increase knowledge, but is not so interested in passing on her knowledge.
- Enjoys cooking as a hobby and attends cooking courses.
- Likes to reminisce with cooking
- Wants to look after immediate family
- Demands high standard of cooking.
- Wants to be as healthy as possible.

(a) One primary (beginner) persona and (b) one secondary (older expert) persona for cooking in Singapore

Source: Kerr et al. (2014).

Example Persona #2

Family traveler

"I want a travel organiser that will offer me a range of potential vacations that suit our needs"

Age: 35
Work: Plumber
Family: Married, two children

Personality

Introvert	Extrovert
Thinking	Feeling
Sensing	Intuition

Organised | Practical | Expects high standard

Goals

- To book comprehensive travel quickly
- To find a trip that meets the needs of the whole family
- To feel supported and guided from the beginning of the booking experience right to the end.

Frustrations

- Wasting time filling in forms
- Too much irrelevant information
- Existing systems tend to be too diverse and complicated

Bio

Will loves to take his family on adventure holidays to explore new challenges. His children, Sky (8) and Eamonn (15) are old enough to take part in several sporting activities and he wants to make the most of this before they no longer want to go on trips with him and his wife, Claire. He likes the fact that choosing travel options is so much easier than it used to be, but is frustrated by the many different sources and disjointed options that this can result in. He wants a travel organiser that can provide clear support for family holidays while offering as wide a choice as possible.

Motivation

Price
Comfort
Choice

Favourite destinations

Young traveler

"I want a travel organiser that will allow all of us to choose the vacation together"

Age: 8
Work: Schoolgirl
Family: Mum Dad and Eamonn (15)

Personality

Introvert	Extrovert
Thinking	Feeling
Sensing	Intuition

Energetic | Inquisitive | Likes reading

Goals

- To find a good vacation without any fuss
- To find a destination with other children her age
- To make sure that the travel time is short

Frustrations

- Sitting around discussing things for too long
- Not getting clear answers to her questions
- Feeling that everything is organised for adults and not children her age

Bio

Sky likes having adventures. She is very energetic and takes part in lots of sporting activities at school, such as gymnastics and swimming. She enjoys playing games with her older brother, Eamonn. Sky is keen to make new friends, but is also happy sitting reading a book, painting or making a model. She likes going to visit new places but expects to see something familiar, such as playground or food that she recognises!
The most important thing for her is that she can go on vacation with her family where there will be something for everyone to do - but especially for her and Eamonn.

Motivation

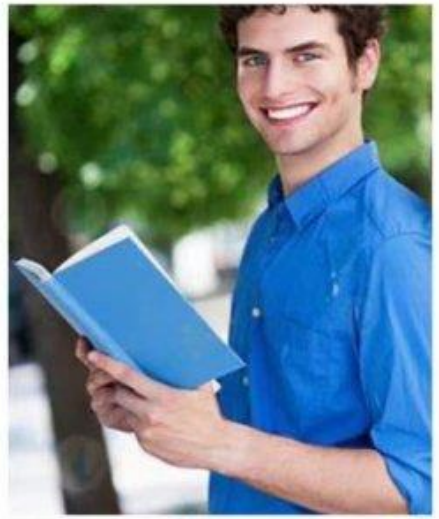
Fun
Comfort
Choice

Favourite destinations

Two personas for the group travel organizer
Developed using [Xtensio Templates]

Example from last year

User Persona



A college student with C

Age: **20**
Work: **College student**
Location: **Suzhou, Jiangsu**
Character: **Lack of time management ability,Poor execution**

Personality

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

weak scheduling skills | poor execution

Goals

- Get the appropriate schedule.
- Get advice to improve execution.
- Have a better college experience.
- Make a better balance between life and study.

Frustrations

- Poor usability.
- User inertia and avoidance of the idea of using the product.
- Problems with privacy and security issues.

Bio

Mark is a junior at A University. He majored in economics and finance. Since entering the university, Mark has been very distressed about his lack of motivation and difficulty in making an efficient and suitable plan for his study and life.At the same time, due to the lack of time management ability and poor execution, it is often difficult to implement what Mark thinks or intends to do. For example, when the time of going to the teacher's office hour and going to the gym conflicted, he was at a loss and finally failed to do both things. With the help of our product, as long as Mark expresses what he is going to do, our product will automatically arrange appropriate and non-conflicting time, and even adjust the plan according to Mark's daily work and rest.

Motivation

Incentive
Fear
Growth
Power
Social

Ideal Schedule

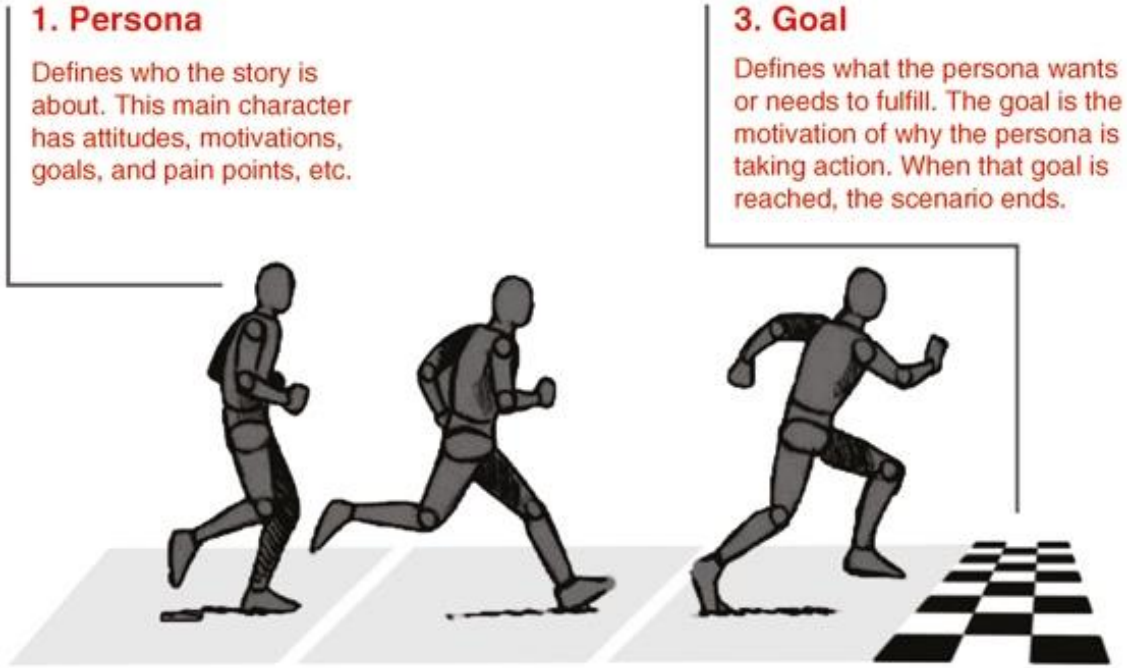
Preferred Channels

Traditional Ads
Online & Social Media
Referral
Guerilla Efforts & PR

Scenario

Chapter 11

Scenarios and personas



Scenario for group travel organizer

“The Thomson family enjoy outdoor activities and want to try their hand at sailing this year. There are four family members: Sky (8 years old), Eamonn (12 years old), Claire (32), and Will (35).

One evening after dinner they decide to start exploring the possibilities. They want to discuss the options together but Claire has to visit her elderly mother so will be joining the conversation from her mother’s house down the road. As a starting point, Will enters an idea they had been discussing over dinner – a sailing trip for four novices in the Mediterranean.

The system supports users to log on from different locations and use different devices so that all members of the family can interact easily and comfortably with it wherever they are. The system's initial suggestion is a flotilla, where several crews (with various levels of experience) sail together on separate boats.

Sky and Eamonn aren't very happy at the idea of going on vacation with a group of other people, even though the Thomson’s would have their own boat. The travel organizer shows them descriptions of flotillas from other children their ages and they are all very positive, so eventually, everyone agrees to explore flotilla opportunities.

Will confirms this recommendation and asks for detailed options. As it's getting late, he asks for the details to be saved so everyone can consider them tomorrow. The travel organizer emails them a summary of the different options available.”

Scenarios

- Textual descriptions
- Animations, audio or video
- Example animation scenarios

Source: Keirnan et al. (2015)

Example from last year

Alaina

Age: 7

Work: primary school student in the second grades

Family: Mum Dad and elder brother (13)

Location: London, England

Personality

Personality:

introvert (65%) extrovert (35%)

Thinking (30%) feeling (70%)

Sensing (70%) intuition (30%)

Judging (20%) perceiving (80%)

User story

As a <child>, I wanted to be able to see the paintings in a non-boring way, and my parents wanted me to have a better understanding of art. I wanted it to not be all text, and I could understand the paintings on my own without my parents or a guide. I wanted it to be as fun as a playground, not a rigid lecture hall to introduce me to the paintings.

She likes art and is curious about AR technology. When she heard of an AR painting exhibition, she was very excited and hoped to visit it. For this exhibition, Alaina hopes to see some novel and creative works. She also hopes that these works can inspire her imagination, make her feel curious, excited, and stimulated.

In this exhibition, Alaina wants to see some practical AR works, such as works that can be displayed from different angles through AR technology, or works that can interact with AR technology. In addition, Alaina also hopes that these works can bring her some interesting stories and plots, allowing her to feel the profound and cultural connotations contained in the artistic works while watching them.

In short, Alaina has great interest and expectations for this AR painting exhibition, and she wants to see some interesting, creative works that can bring her more experience through AR technology.

Use Cases

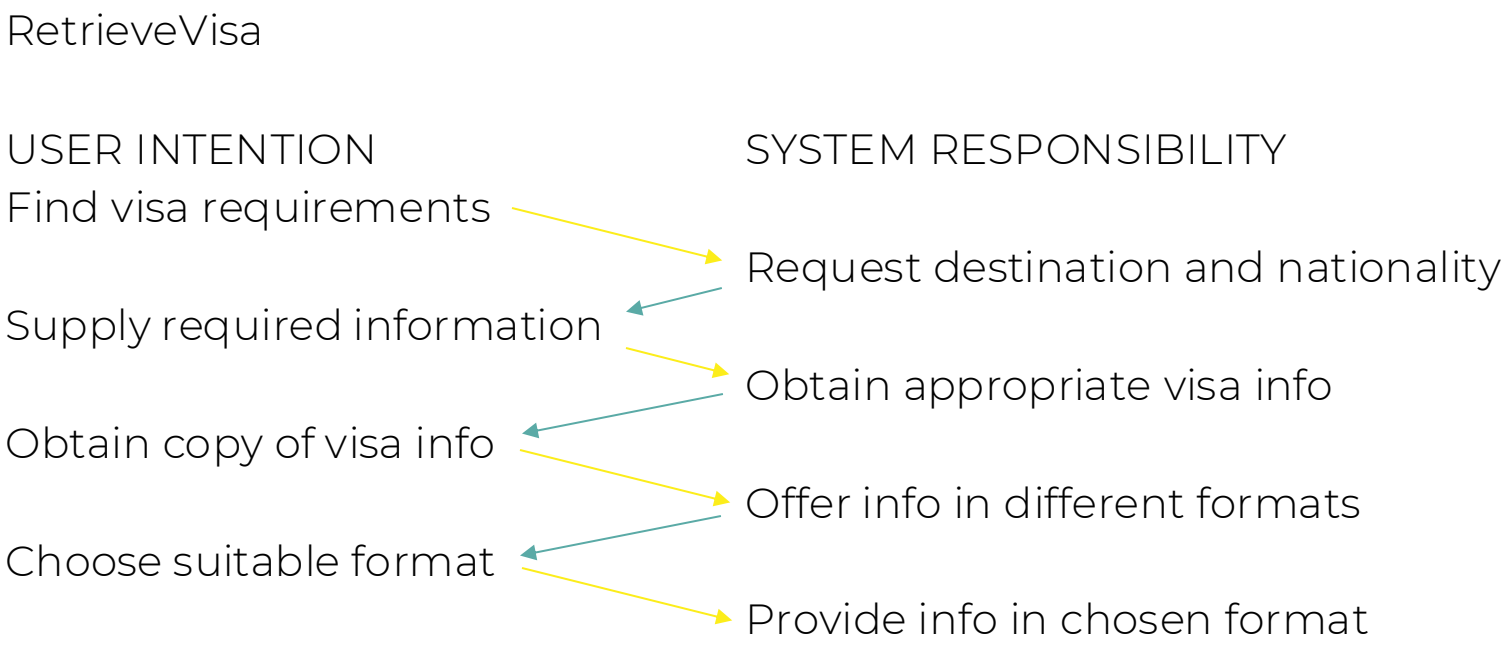
Chapter 11

Use cases

- Focus on functional requirements and capture interaction
- Can be used in design or to capture requirements
- Use cases are step-by-step descriptions of interactions, user stories focuses on outcomes and user goals
- Two styles:
  - Essential use cases: division of tasks, no implementation detail
  - Use case with normal and alternative courses: more detail

Essential use case example

RetrieveVisa



Note: The user intention and system responsibility are offset vertically, showing a sequence of interactions

Use case for travel organizer

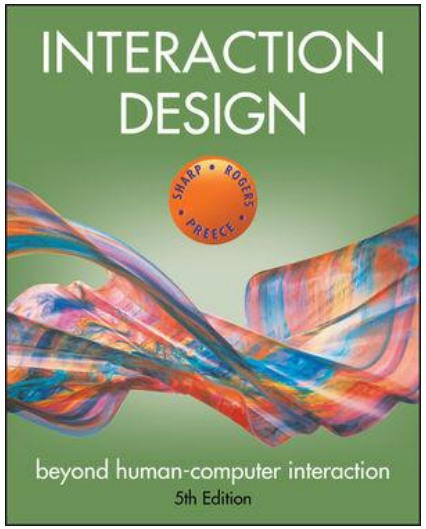
1. The product asks for the name of the destination country
2. The user provides the country's name
3. The product checks that the country is valid
4. The product asks the user for their nationality
5. The user provides their nationality
6. The product checks the visa requirements of that country for a passport holder of the user's nationality
7. The product provides the visa requirements
8. The product asks whether the user wants to share the visa requirements on social media
9. The user provides appropriate social media information

Alternative courses for travel organizer

Some alternative courses:

- 4. If the country name is invalid:
  - 4.1: The product provides an error message
  - 4.2: The product returns to step 1
- 6. If the nationality is invalid:
  - 6.1: The product provides an error message
  - 6.2: The product returns to step 4
- 7. If no information about visa requirements is found:
  - 7.1: The product provides a suitable message
  - 7.2: The product returns to step 1

Suggested Readings



- Chapter 1: What is Interaction Design?
- Chapter 2: The Process of Interaction Design
- Chapter 11: Discovering Requirements
- Complete Beginner's Guide to Interaction Design https://www.uxbooth.com/articles/complete-beginners-guide-to-interaction-design/
- Bad Design vs. Good Design: 5 Examples We can Learn From https://www.interaction-design.org/literature/article/bad-design-vs-good-design-5-examples-we-can-learn-frombad-design-vs-good-design-5-examples-we-can-learn-from-130706
- 16 Important UX Design Principles for Newcomers https://www.springboard.com/blog/design/ux-design-principles/

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