

Design Methodologies

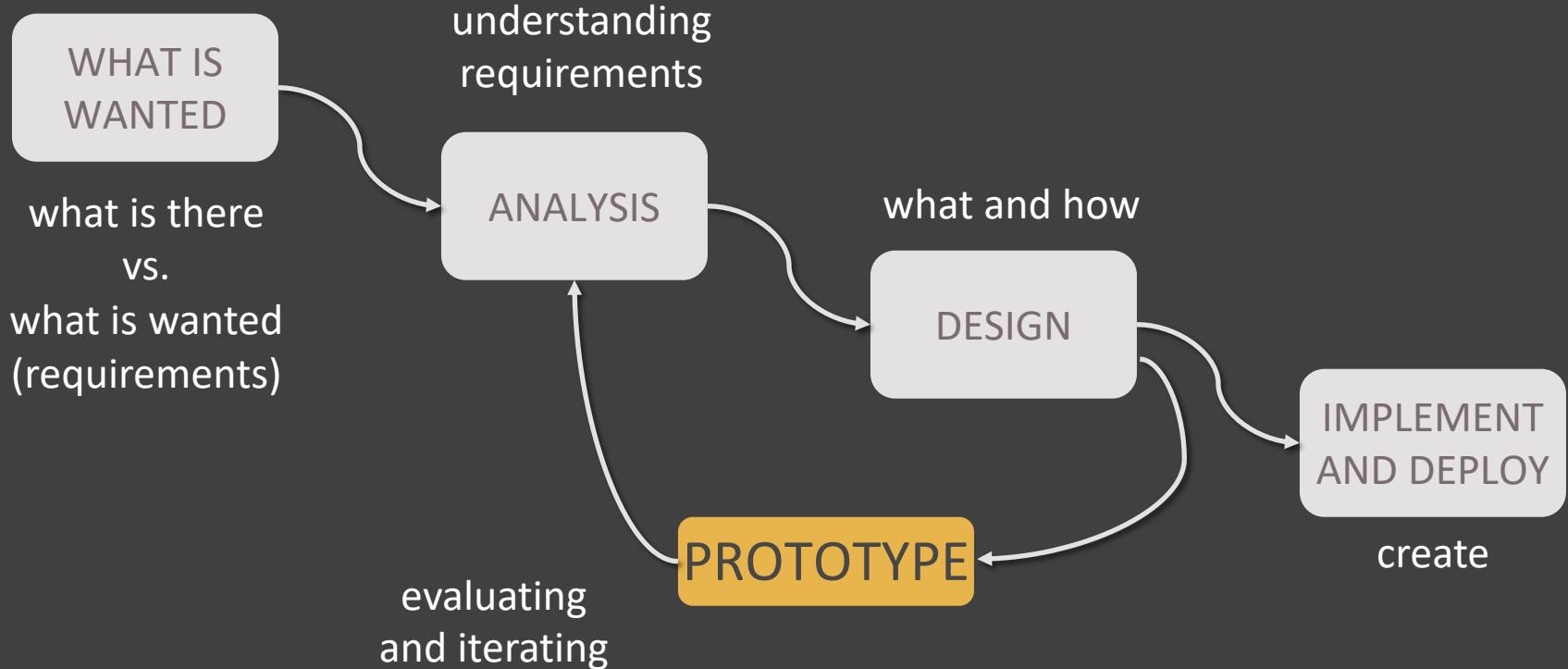
USER INTERFACE

COURSE 2020/2021

How to involve the user in the interface design?



The Design Process



p 195, Chapter 5, (Dix et al., 2004)

Know the user

- ❖ Stakeholders: people affected directly or indirectly by a system
- ❖ Who are they?
 - ❖ Probably not like you
 - ❖ Talk to them
 - ❖ Watch them
 - ❖ Use your imagination to identify and create profiles of users of the system
- ❖ <https://www.nngroup.com/articles/empathy-mapping/>

WHAT IS
WANTED

Know the user

- ❖ Personas are used to describe the user profiles
- ❖ Personas are rich descriptions of typical users of the product under development (core user group)
- ❖ Including
 - ❖ Goals
 - ❖ Skills
 - ❖ Attitudes
 - ❖ Tasks
 - ❖ Environment/Context



WHAT IS
WANTED

Example of persona

BACKGROUND

- 15, Female
- Ongoing Private Education
- Ambitious
- Comfortable using technology to communicate

MOTIVATIONS

- Keeping in touch with her network
- Fashion/street cred
- Keeping up with peers.

FRUSTRATIONS

- Sad people trying to be 'friends' on Facebook
- Having to be in bed @ 11pm
- Being swamped in friends updates
- Missing important status updates

Ginnie

Receives private tutoring in Maths and English as these are not her strong subjects. Enjoys playing for the school's 2nd teams for netball and Lacrosse and is good at art.

She loves recording her favourite shows: ER and Sun Valley High on Sky+ and spends some of her time on her Laptop that Daddy bought her watching videos on YouTube, downloading music, keeping up to date with her friends on Facebook and chatting via MS IM to her cousin who is at University in Leeds.

She loves Ugg boots and Abercrombie & Fitch and uses the Internet to shop and find the cheapest prices.

"I want to easily hook up with my friends whilst watching TV"

CAPLIN

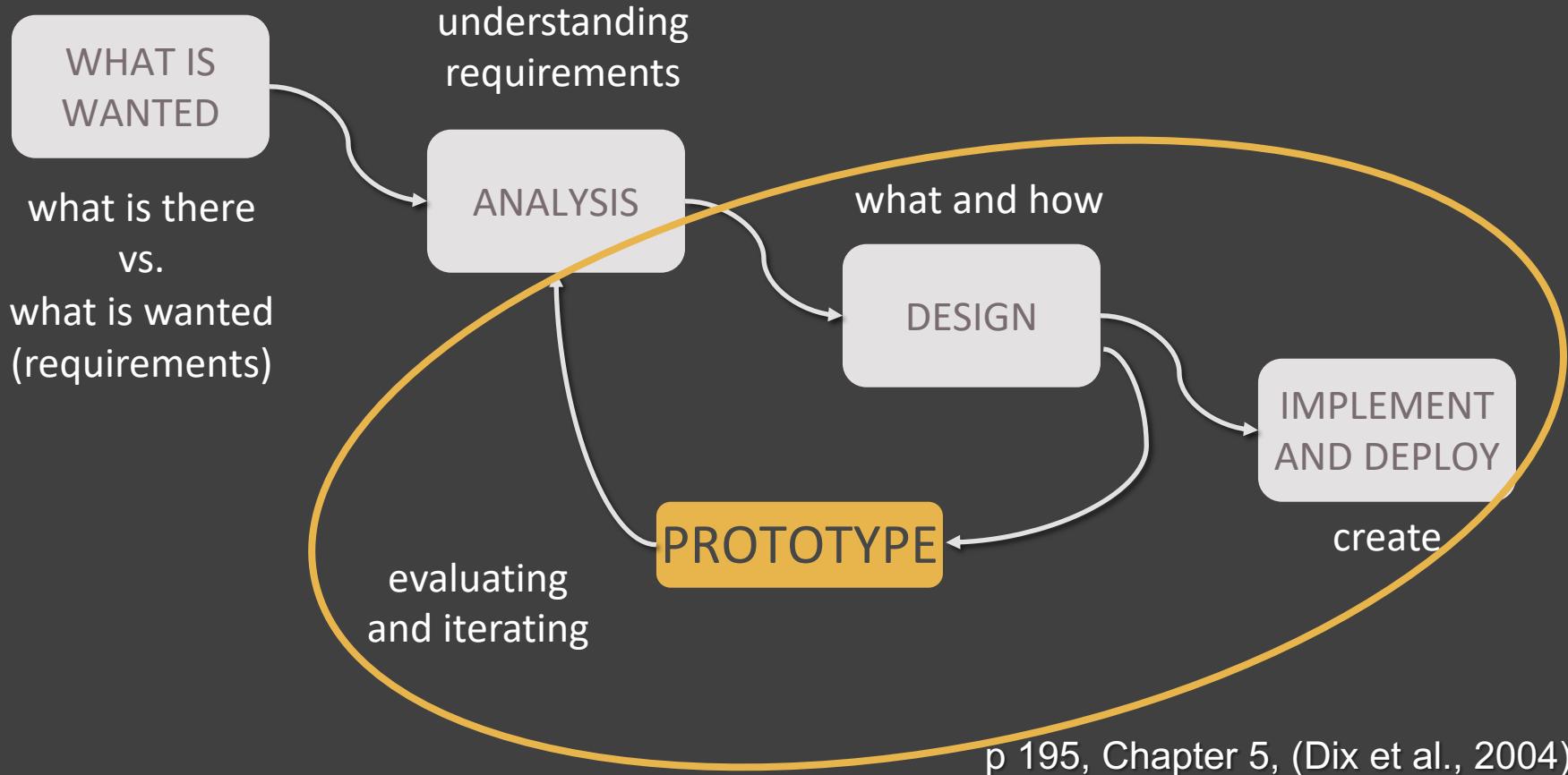
Ethnographic Methods

- ❖ An action is understood only in the place, in the social situation and at the time at which the action occurs
- ❖ Ethnographic methods are based on recording the interactions between people, and between people and their context, to take note of the most relevant information useful for the development of the system
 - ❖ Become familiar with the context in which the system is to be used
 - ❖ Define initial goals and questions for users
 - ❖ Observe and interview users in the context already established
 - ❖ Collect and analyze the results for use in system design
- ❖ The analyst is into the culture for observing and collecting relevant data
- ❖ The context may be related to the particular situation, such as the workplace/organization, or everyday life

Know the user

- ❖ Analyzing and organizing the results obtained during user observation and interviews
- ❖ Identifying key issues (factors) for the following design phase
- ❖ Carrying out task analysis of how people perform tasks with existing systems
- ❖ Using cognitive models to represent the interaction between users and systems
- ❖ Define **scenarios** as rich stories of how the interaction works

The Design Process



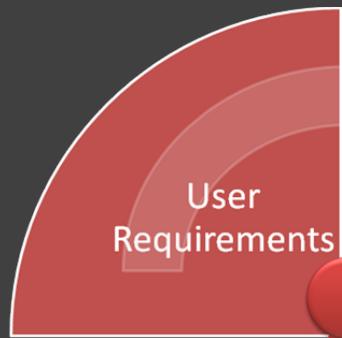
User Centered Design (UCD)

- ❖ The user is at the center of the design process
- ❖ The aim is to minimize the cognitive effort of the user
- ❖ The user has to understand the system image modelled by the designer in order to learn how to use the system



- Source: www.ucdgame.org -

User Centered Design (UCD)



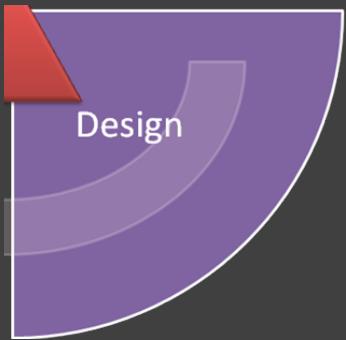
- ❖ Understanding and defining the context of use.
- ❖ Identifying
 - ❖ the users of the product
 - ❖ for what they are going to use it
 - ❖ in which context

User Centered Design (UCD)



- ❖ Specifying the requirements
- ❖ Identifying the needs of the user that the product has to satisfy
- ❖ It could be done involving the user in interviews, focus groups, questionnaires, ...

User Centered Design (UCD)



- ❖ Designing several solutions as iterative prototypes
- ❖ The prototypes can be designed focusing on different levels of details depending on the designer's needs

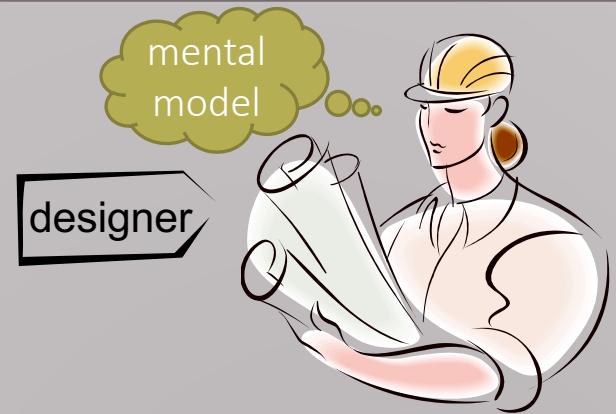
User Centered Design (UCD)



- ❖ The evaluation is the most important phase of the process
- ❖ The prototypes are evaluated to check if they satisfy the requirements or, on the contrary, there are usability problems
- ❖ It is possible to perform usability tests

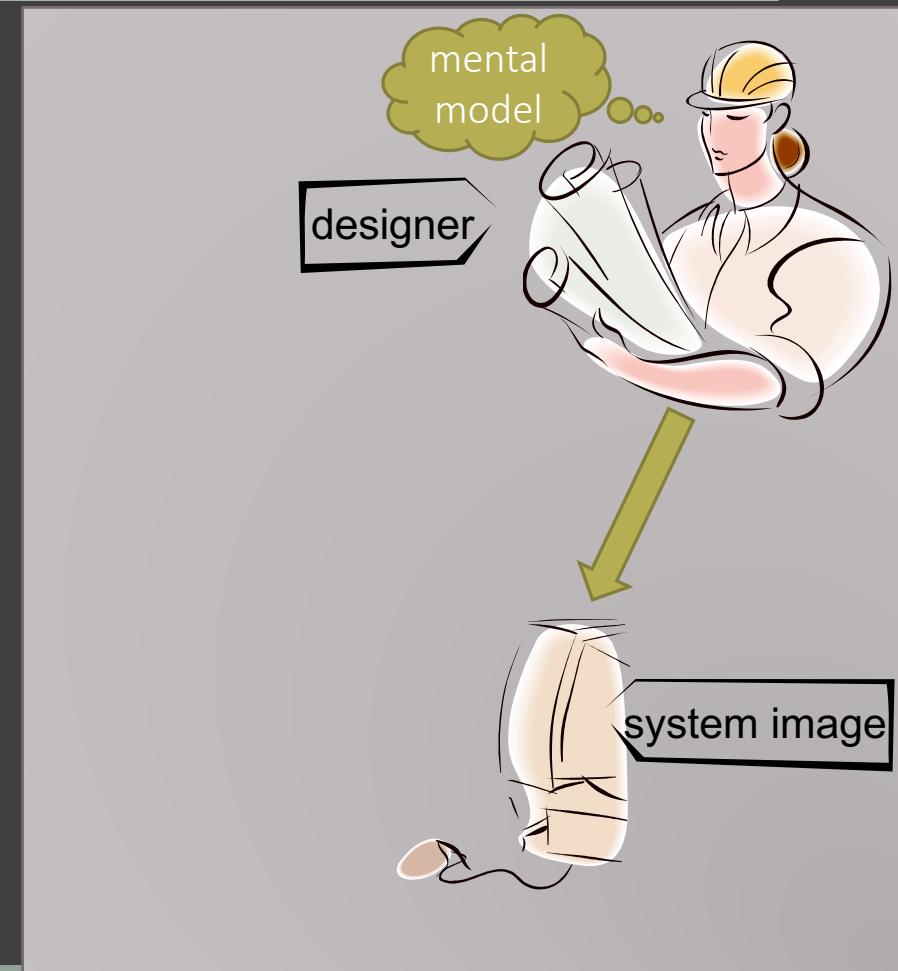
User Centered Design (UCD)

1. The designer builds a mental model from the analysis of the users' needs and tasks to perform



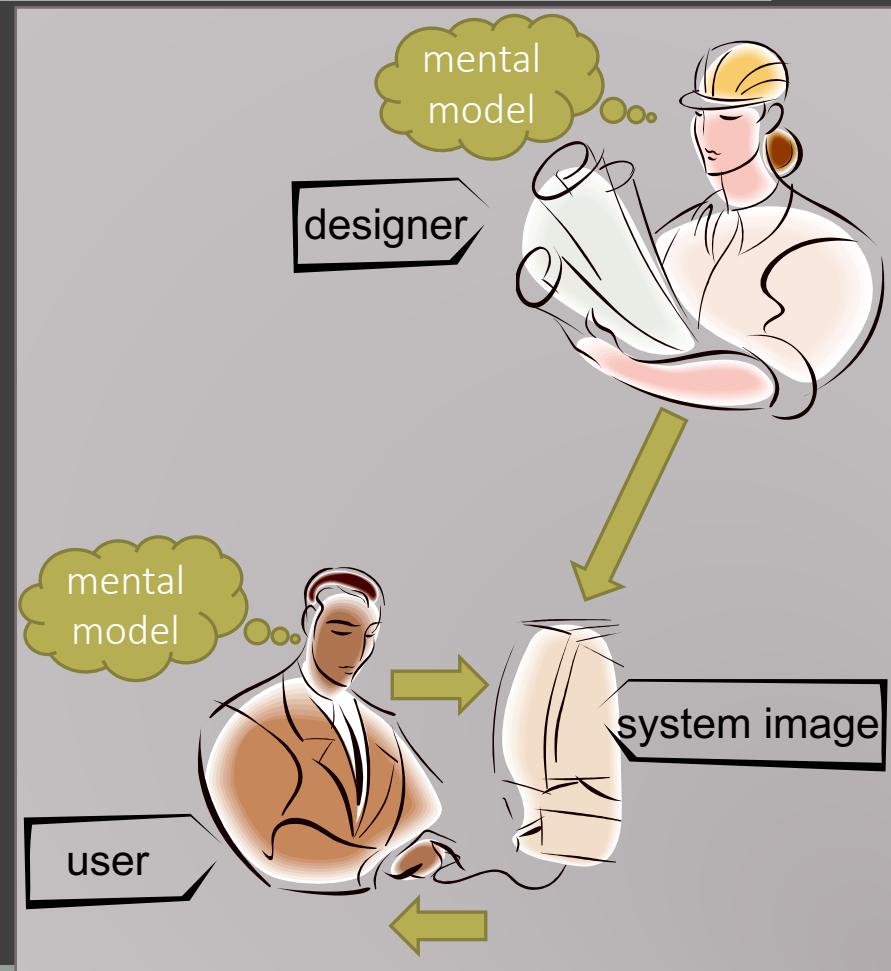
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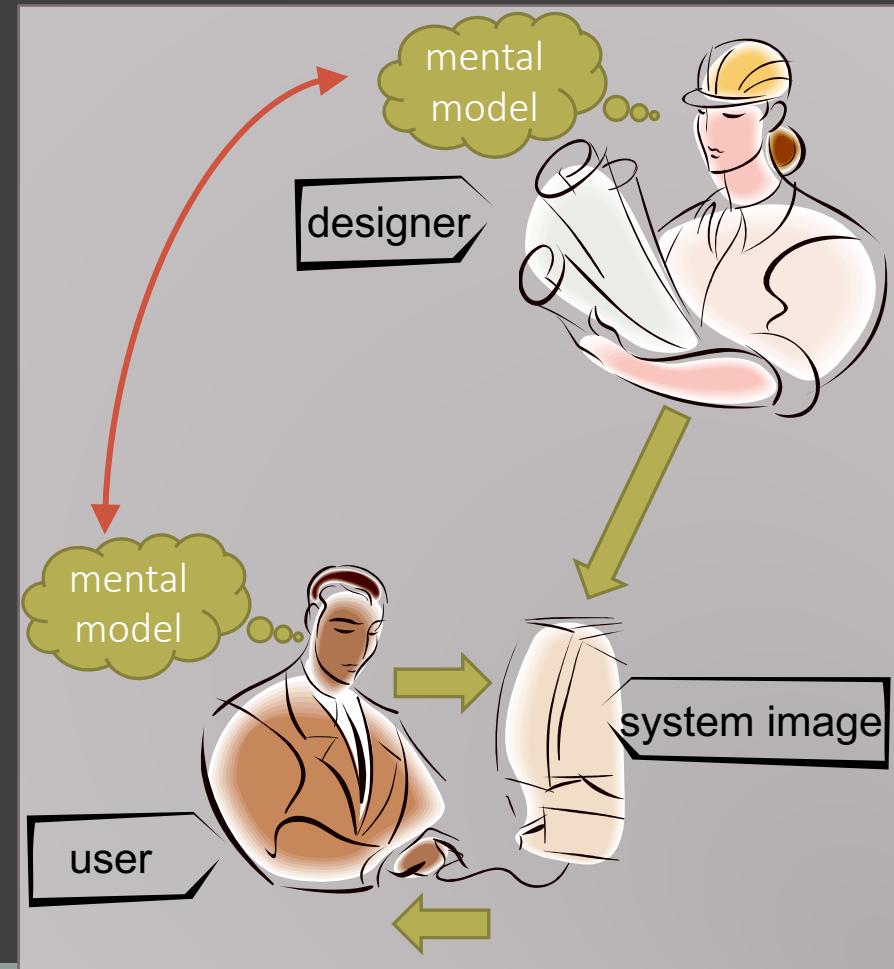
User Centered Design (UCD)

1. The designer builds a mental model from the analysis of the users' needs and tasks to perform
2. The designer translates the mental model to the design of the system and its interface (the system image)
3. The user interprets the system interface (the system image) and builds his/her own mental model of how the system works



User Centered Design (UCD)

- ❖ Problem: What if the user's mental model does not match the designer's mental model?



Example

The iPhone, Steve Jobs en MacWorld 2007



Full version: https://www.youtube.com/watch?v=t4OEsiOSc_s

Designing the iPhone

- ❖ Study of similar existing products: Smartphones in 2007
- ❖ Small keyboards, limited Internet connection, business-oriented, hard to learn and use, mental model gap, ...



Designing the iPhone

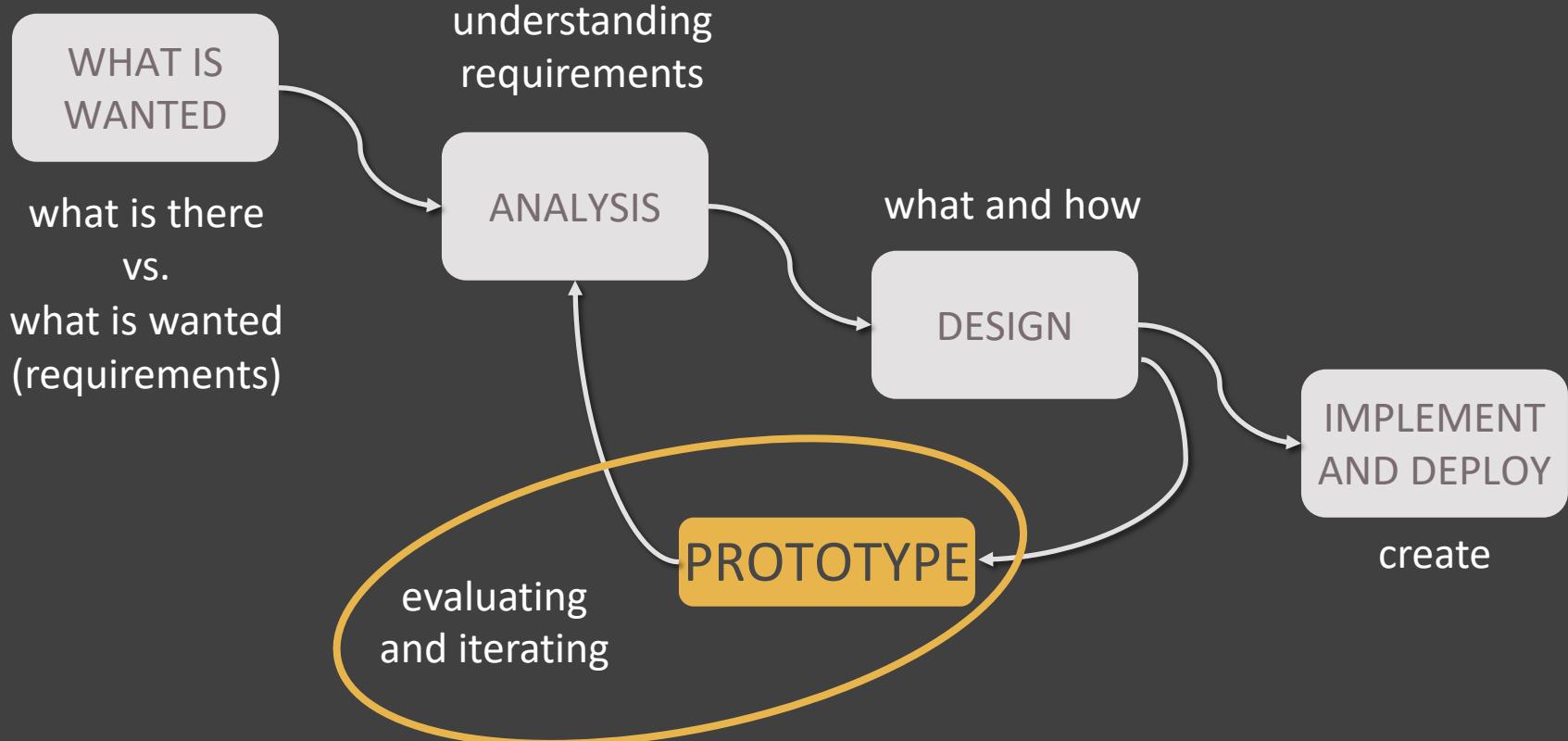
- ❖ Main iPhone innovations
 - ❖ No keyboards, just the home button
 - ❖ Thin with a giant high-resolution screen
 - ❖ The finger as pointing device (multi-touch / multi-finger)
 - ❖ OSX → multi-tasking, networking, audio, video, ...
 - ❖ One switch for sleep mode and wake mode
 - ❖ ...



"...something wonderful for your hand..."

Steve Jobs

The Design Process



p 195, Chapter 5, (Dix et al., 2004)

Prototype

- ❖ What is a prototype?
 - ❖ a series of screen sketches
 - ❖ a storyboard, i.e. a cartoon-like series of scenes
 - ❖ a Powerpoint slide show
 - ❖ a video simulation of how the system would be used
 - ❖ a physical object of some specific material, such as wood
 - ❖ a cardboard mock-up
 - ❖ a piece of software with limited functionality written in the target language or in another language



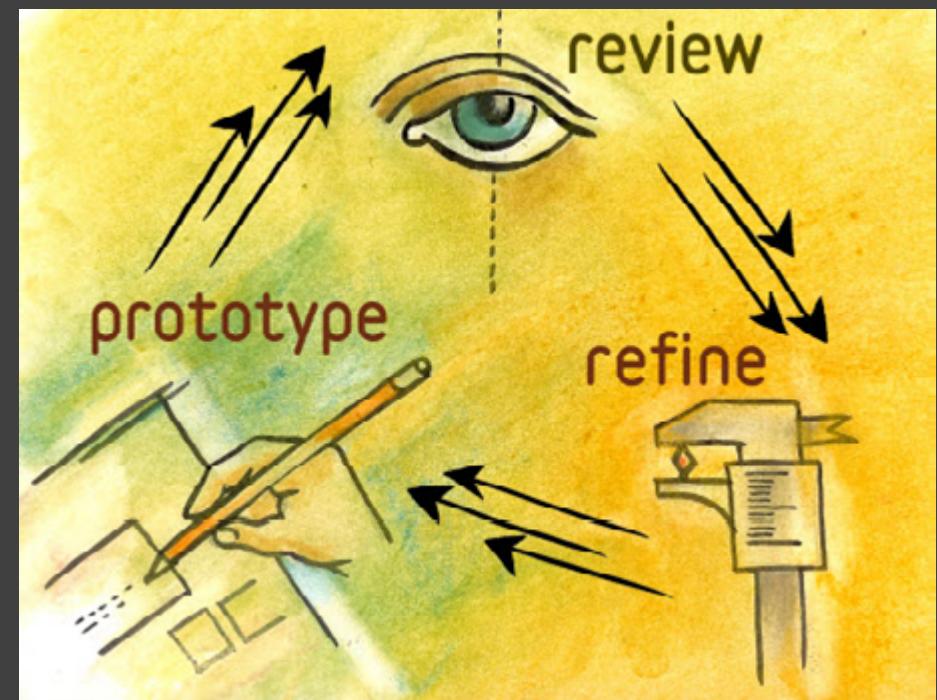
Prototype

- ❖ Why a prototype?
 - ❖ To evaluate the design ideas and receive feedback from the users
 - ❖ Stakeholders can see, hold, interact with a prototype more easily than with a document or a drawing
 - ❖ Members of the development team can communicate and take design decisions more easily if they have a prototype available
 - ❖ It allows testing ideas and encourages reflection

The Rapid Prototyping Process

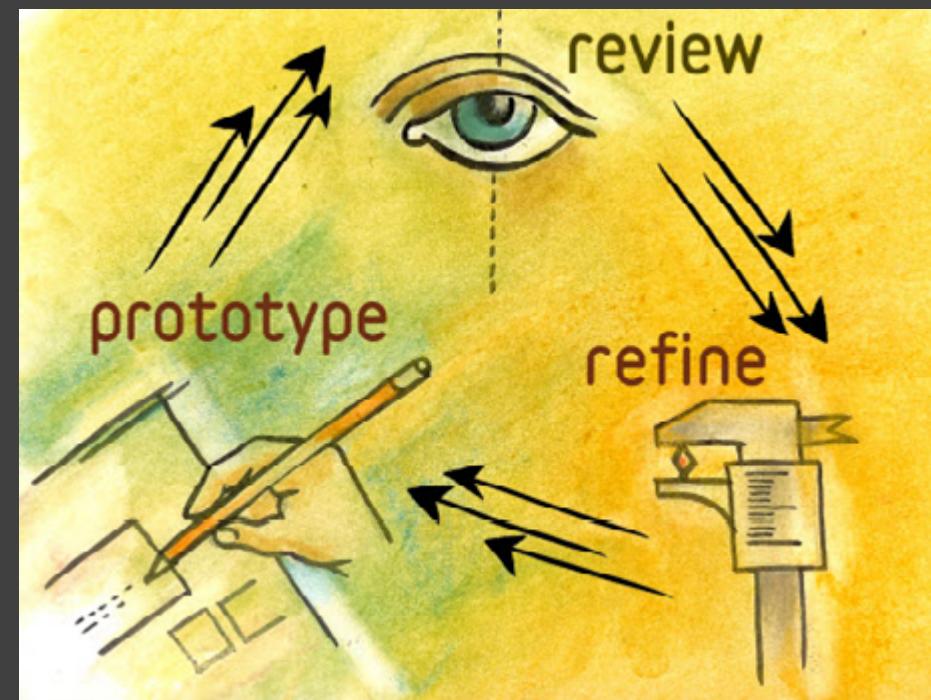
- ❖ A three-step process for quickly building and improving prototypes

1. Figure out what exactly you want to build. Any advanced functionalities or interactions, or changes to workflow and design will warrant prototyping.



The Rapid Prototyping Process

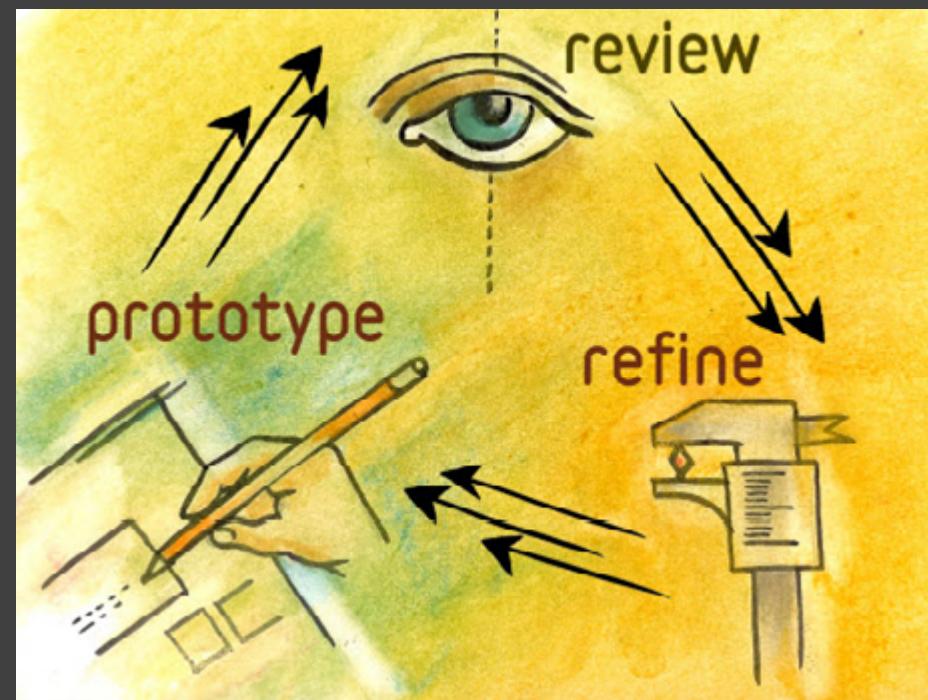
- ❖ A three-step process for quickly building and improving prototypes
- 2. Evaluate the prototype with or without users, depending on the context and the design phase.



The Rapid Prototyping Process

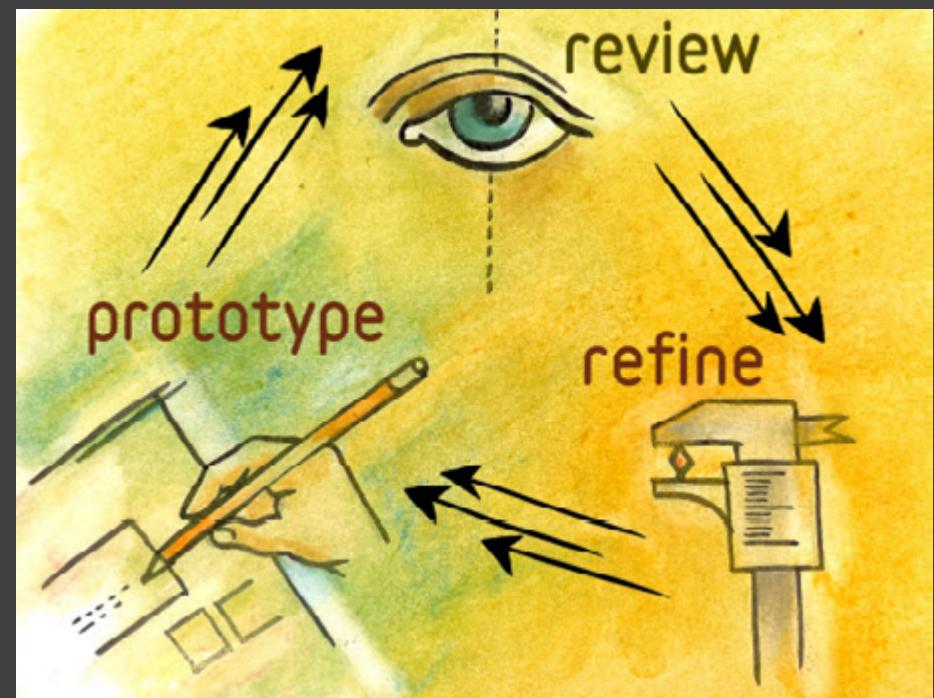
- ❖ A three-step process for quickly building and improving prototypes

3. Redefine the prototype. It is possible to add new functionalities or more details to already included functionalities.



The Rapid Prototyping Process

- ❖ A three-step process for quickly building and improving prototypes
- ❖ Iterate this process until the resulting prototype is useful for following up with the design process and implementing the final system
- ❖ <https://www.uxpin.com/studio/ebooks/guide-to-prototyping/>



Prototype

- ❖ Prototypes can be analyzed using four dimensions
 - ❖ **Representation** – the physical form of the prototype, whether a paper mobile device or a desktop HTML file.
 - ❖ **Precision** – “fidelity” in other words; this describes the level of detail and realism, from a rough sketch to a highly polished simulation of the real system
 - ❖ **Interactivity** – how much a user can interact with the prototype, ranging from a “watch only” presentation to complete interactivity.
 - ❖ **Evolution** – measures the expected lifecycle of a prototype, whether it’s meant to be quickly built and then thrown away (as with rapid prototyping), or whether further iterations will be built before getting to the final product.

Fidelity

- ❖ **Functional** Fidelity: also called horizontal prototypes. They generally have a greater number of functionalities but with a lower level of detail
- ❖ **Visual** Fidelity: also called vertical prototypes. They generally have a lower number of functionalities but with a higher level of detail

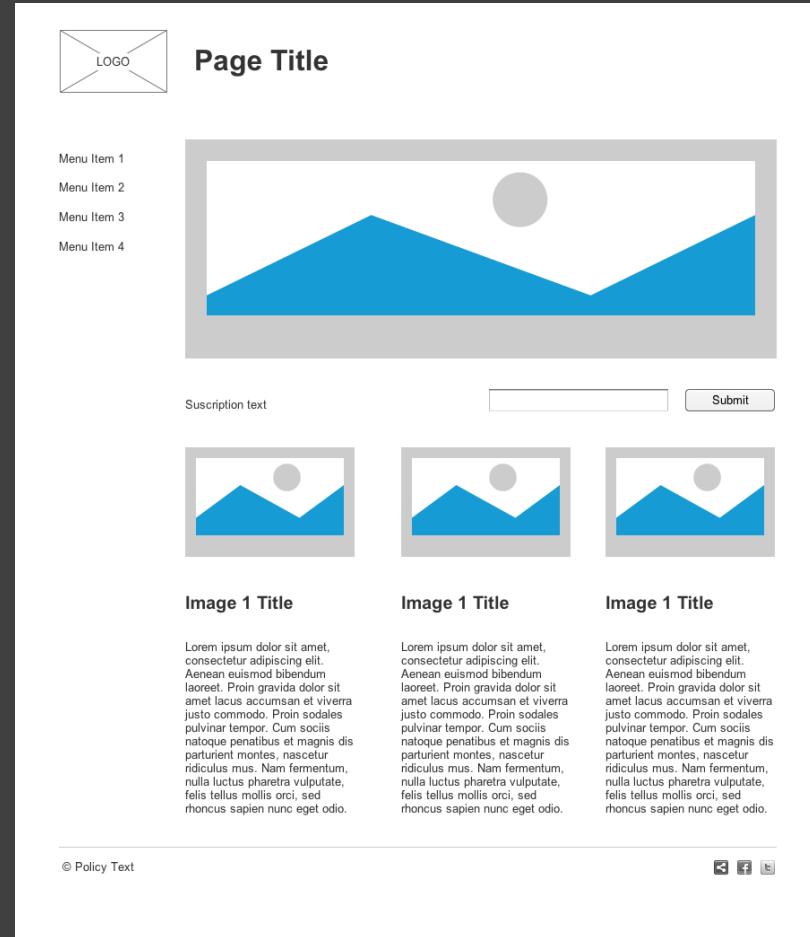
1. Low Visual + Low Functionality

- ❖ These prototypes can be made quickly and quite easily, and can be thrown away and replaced just as easily. They can be used during the early stages of the design process to define the functionalities and requirements of the system.
- ❖ A paper prototype is the perfect example: it's quick to make, doesn't have much functionality, but it allows you to have something physical in your hand to answer structural questions.



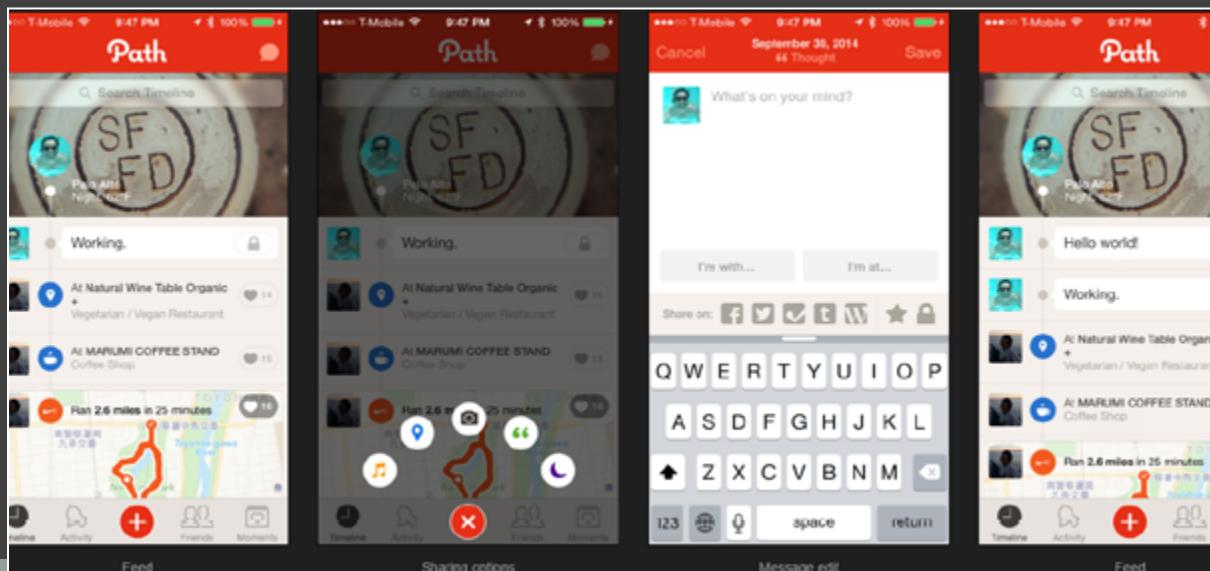
2. Low Visual + High Functionality

- ❖ Wireframes made by specific tools for guaranteeing some kind of basic interaction
- ❖ They allow evaluating system usability (with or without users), performing proof of concept tests and gaining validation from stakeholders
- ❖ For example, they are used for describing the exercises in the lab sessions



3. High Visual + Low Functionality

- ❖ Mockups with a more advanced interactivity
- ❖ They allow adding basic animations (like clicking to another screen) to an existing mockup
- ❖ Used for evaluating the system flow



4. High Visual + High Functionality

- ❖ Hi-Fi prototypes are just one step before the finished product with nearly complete visuals and functionality
- ❖ They are suitable for evaluating the usability of the functions and the interface with the final appearance of the system
- ❖ Examples:
 - ❖ <https://www.axure.com>
 - ❖ <https://www.invisionapp.com/>
 - ❖ <https://www.sketchapp.com/>

Bibliography

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- ❖ Material available on www.id-book.com
- ❖ The Ultimate Guide to Prototyping, available on AulaGlobal