

Interaction Design Studio 2023-2024 - Applied Informatics

# Technical documentation

## Modeling User Requirements, Scenarios, Tasks, Technological Architectures

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# Technical Documentation

WHY

WHAT

HOW

# Technical Documentation: WHY



A project team for a technological project is **multidisciplinary**:

- Different Backgrounds
- Different Knowledge and Expertise
- Different Languages
- Different Goals/Roles in the project

# Technical Documentation: WHY

# Technical Documentation



# Technical Documentation: WHY



- Bridging the UX design process with the implementation process
- Building a shared body of knowledge between UX designers and ICT engineers
- Keeping track of the design decisions

(Also: one of your **mandatory** deliverables in this course)

# Technical Documentation: WHAT

# TECHNICAL DOCUMENTATION: WHAT

A distillation of the key results of your UX design process (for the purpose of this course)

Main contents

High level specifications of:

- The problem you want to solve (User Requirements)
- What the user does with the product (User Activities)
- Enabling technology (Technological Architecture)

+ exemplification of your design for the interface and the interactions (Design Scenarios)

+ state of the art (Competitor) analysis

# Report structure – it must be followed

- **Cover** (with course name, names, ID, and email of all group members) + Each members' picture + **Abstract** (max 150 words)
- **TABLE OF CONTENTS with page numbers**
- **Introduction**
- 1. **User Requirements**
- 2. **User Activities**
- 3. **Examples of the Design Solution (Design Scenarios)**
- 4. **Technological Architecture**
- 5. **Competitors Analysis**
- 6. **Conclusion (Value proposition)**
- 7. **Annex (optional)**

# Technical documentation: details about specific sections of the report

- **Introduction:** An executive summary of what your project is about (max 1 pag)
- **User requirements**
  - **UNG** Model diagram
  - A **concise** representation of: User “Profiles” (i.e., the types of users and the general characteristics of each type); for each user profile, its NEEDS and GOALS (what they want to achieve); CONSTRAINTS of the users and the entire project. The representation can use **diagrams** (e.g., the UNG conceptual model) + Short **textual** explanation
- **User Activities**
  - Commented Diagrams describing the users’ “process”, i.e., the main activities performed with the system, and related tasks

# Technical documentation: details about specific sections

## **Examples of Design Solutions (Scenarios)**

3-4 design scenarios

## **Technological Architecture**

One or more diagrams describing your system works from a technological perspective:

- Data and Functional Components
- «Collaborations» among the above pieces, i.e., which components communicate with which other elements and which data they share
- Hardware devices (e.g., user devices, external services, sensors and actuators)

# Technical documentation: details about specific sections

- **Competitors Analysis**

State of the art review of products/prototypes/research projects that address a similar problem

- **Conclusion (Value proposition)**

Sum-up and short discussion of why your project is unique and what is the main value of it

- **Annexes (optional)**

- Any relevant contents e.g., Figma diagrams, images, etc..)

# Technical Documentation: HOW to create it

# Shared body of knowledge

→ must have a shared language and vocabulary



# A shared language

A “model-based” approach

MODEL= a LANGUAGE

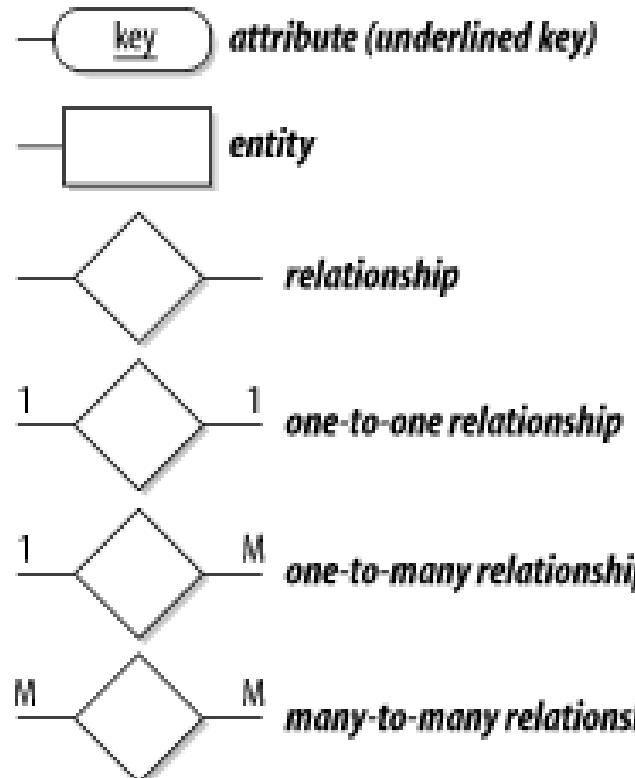
set of **concepts, terms, notations (and rules to use them)** to  
**describe something in a concise way**, highlighting the salient  
features

In our case: different models to describe different **OUTPUTS** of  
your **UX DESIGN PROCESS**

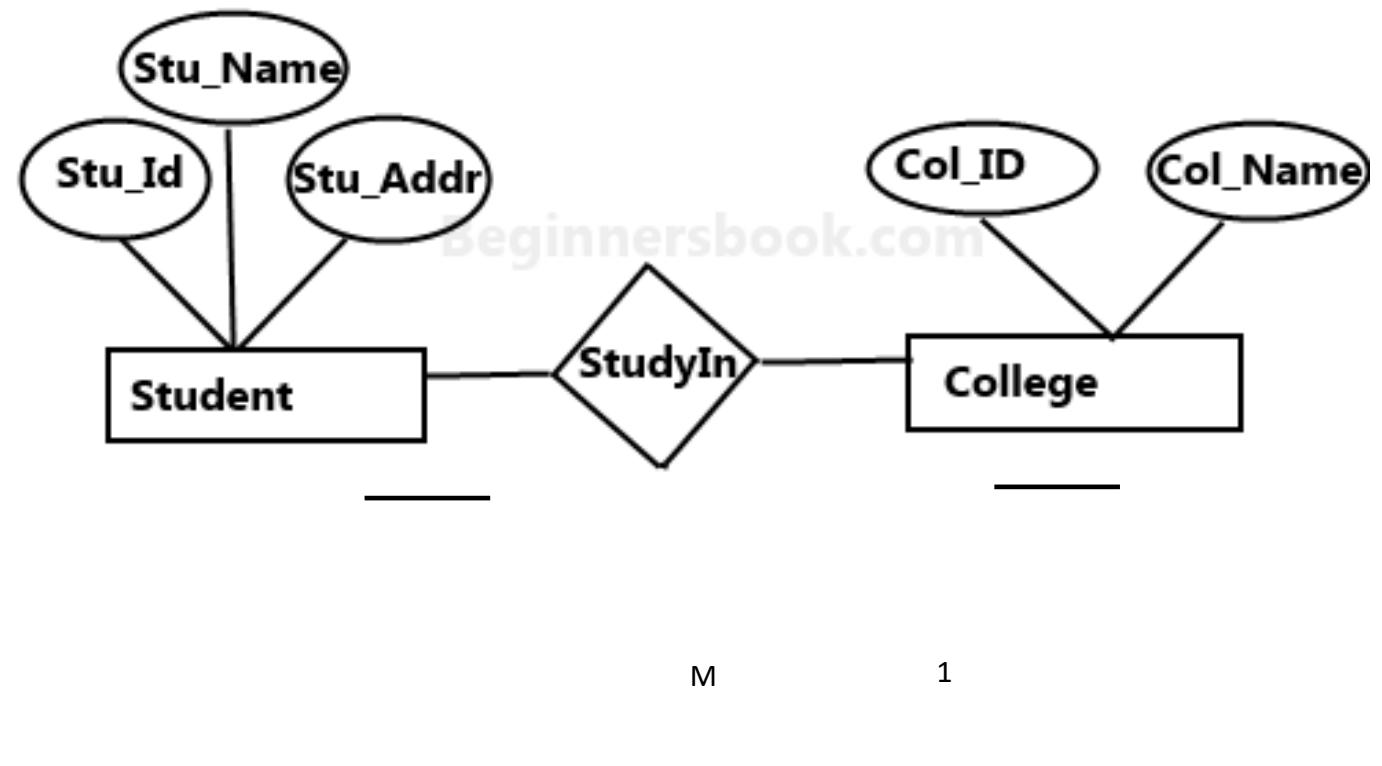
**IMPORTANT:** the term MODEL is also used for the actual  
representation of «the something», i.e., for the specifications of  
«the something» using a specific «model»

# Example: ER (Entity Relationship) Model for Data Bases

Terms of the ER model: Entity, Relationship, Attribute, Cardinality, and rules to combine them



Representation (“model”) of the data for a university app



# ICT Engineers use models for several purposes

Mainly

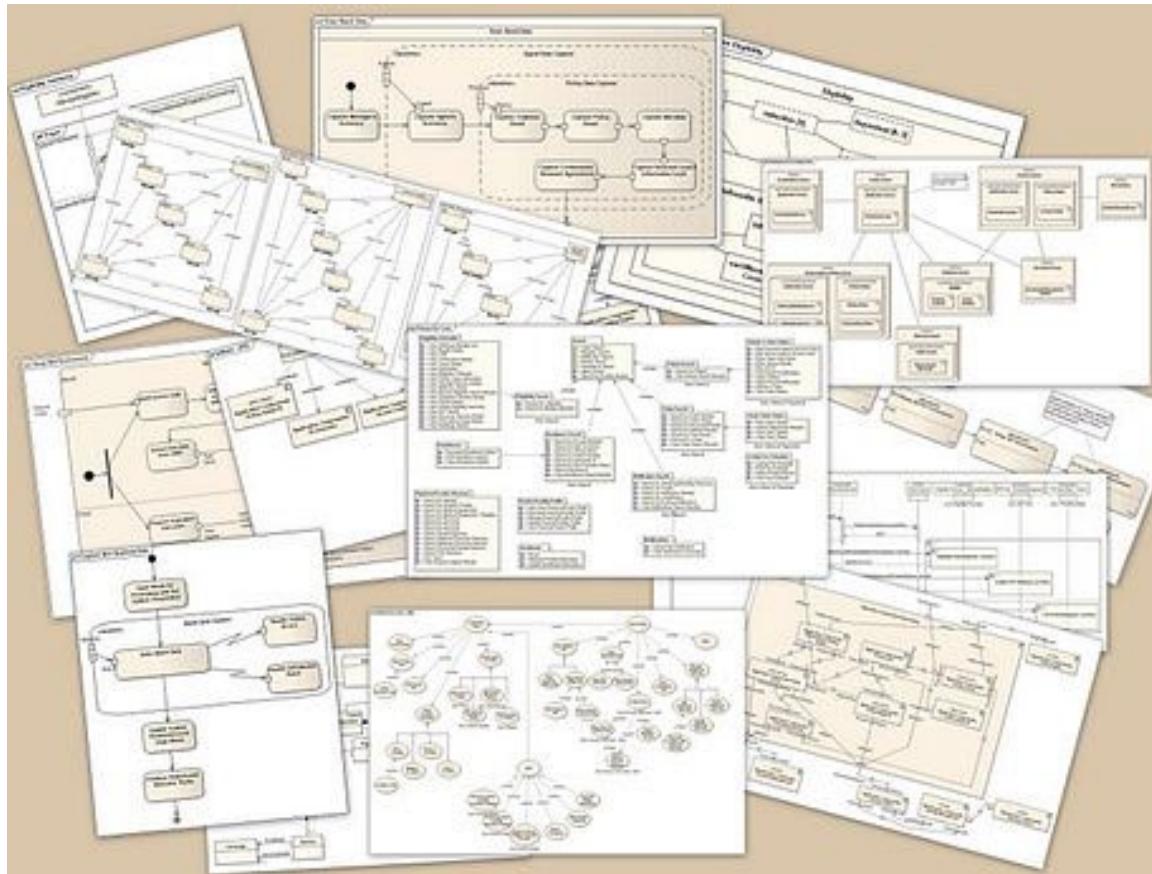
- To describe data (e.g., using Entity Relationship Model – ER)
- To describe system functionality (e.g. using UML – Universal Modeling Language)



# UML

UML - Unified Modeling Language for software engineering design

It is intended to provide a standard way to **visualize** the design of a **software system**





# UML

A modeling language to create **diagrams** to represent **two** different **views** of a system

- Static (or *structural*) view: emphasizes the **static** structure of the system using **objects, attributes, operations** and **relationships**.
- Dynamic (or *behavioral*) view: emphasizes the dynamic behavior of the system by showing **collaborations** among objects and **changes to the internal states of objects**.

UML has multiple sub-languages for **two** categories of diagrams:

- To represent *structural* information about the system: [class diagrams](#) and [composite structure diagrams](#).
- To represent *behavior of the system*: [sequence diagrams](#), [activity diagrams](#) and [state machine diagrams](#).

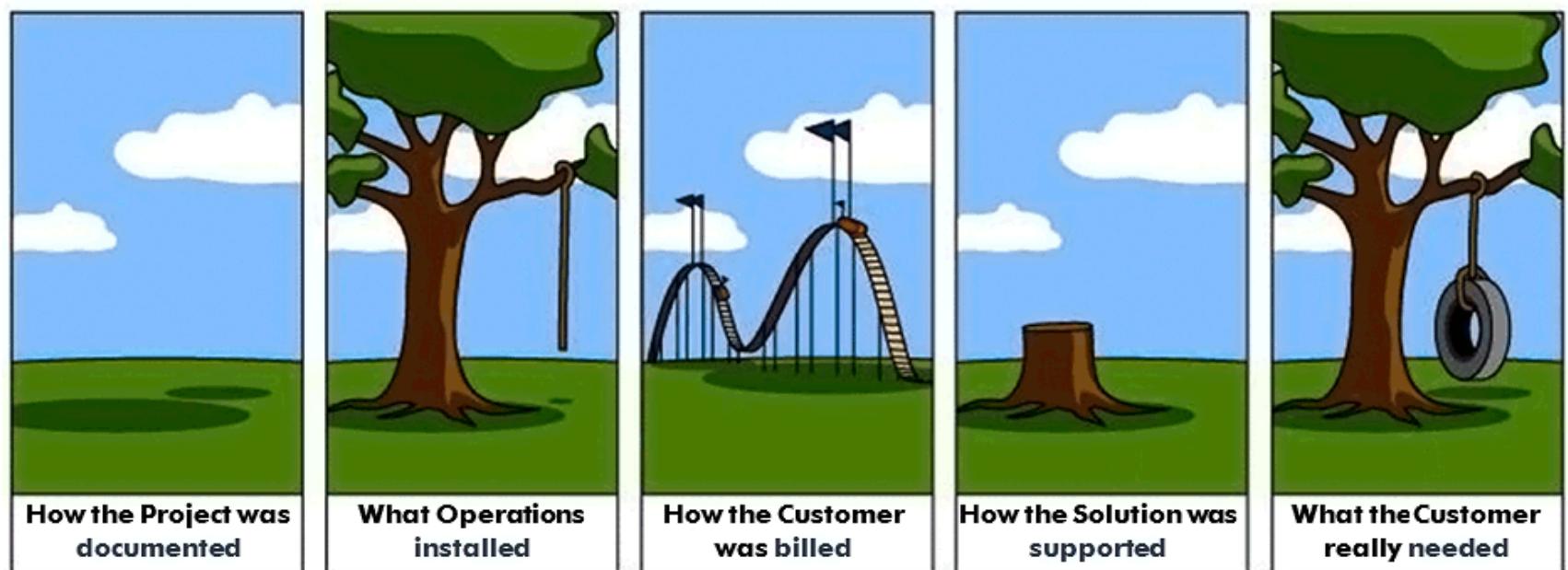
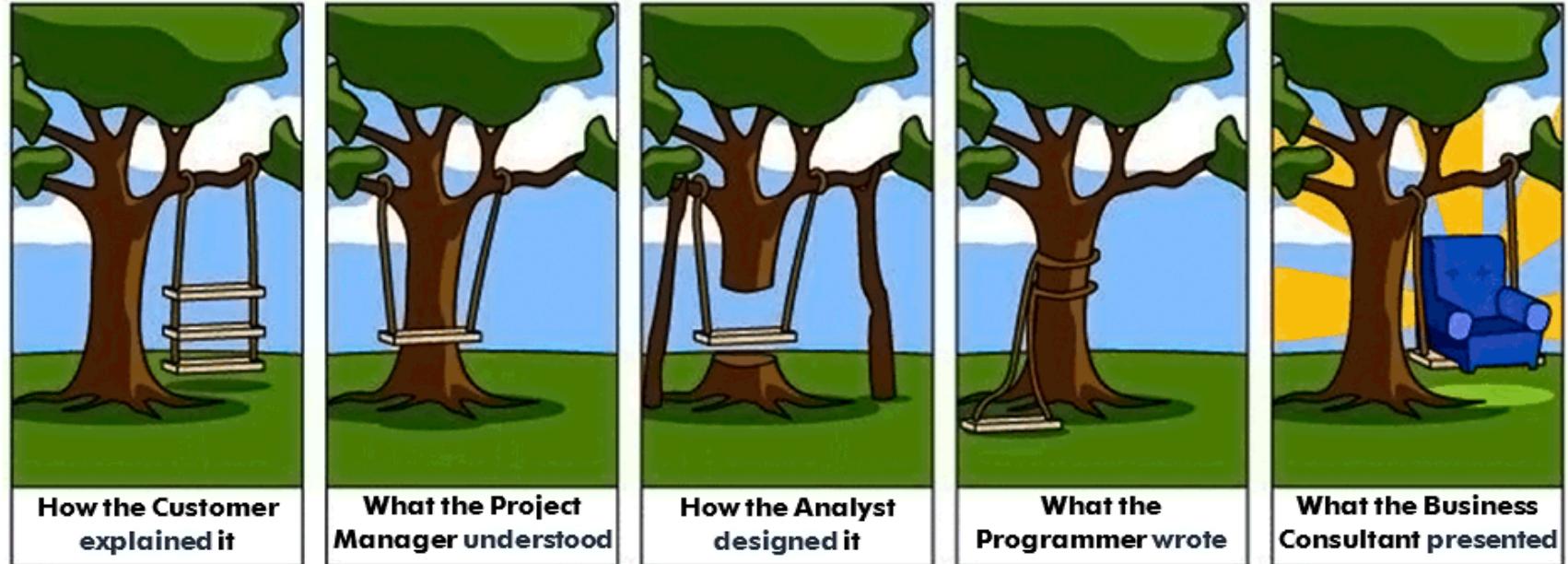
# Models in UX design: Why?

Models are **communication tools to improve mutual understanding** among **ALL STAKEHOLDERS**: all the members of the **design/development team and CUSTOMERS**

Models help to

- Do **brainstorming** and discussion
- **Externalize ideas** about problems and solutions
- **Represent** solutions
- **Analyse**, reflect, and evaluate
- **Provide systematic specifications** to different team members

Models would mitigate risks like these



# In UX design: modeling what?

- A. The key output of **user research**
- B. The **human process(es)** supported by the technology to be designed
- C. The users' **activities** performed with the technology
- D. (Examples of) detailed **interactions**
- E. The **technological architecture**

# Describing the key output of User Research

WHAT IS THE MAIN GOAL  
OF  
YOUR USER RESEARCH?

Main goal of user research:

**PROBLEM UNDERSTANDING**

# Describing the output of User Research

**PROBLEM UNDERSTANDING → PROBLEM REPRESENTATION**

To describe a problem (PROBLEM REPRESENTATION) you need  
a **USER REQUIREMENTS MODEL**

Describing the output of User Research:  
Problem representation

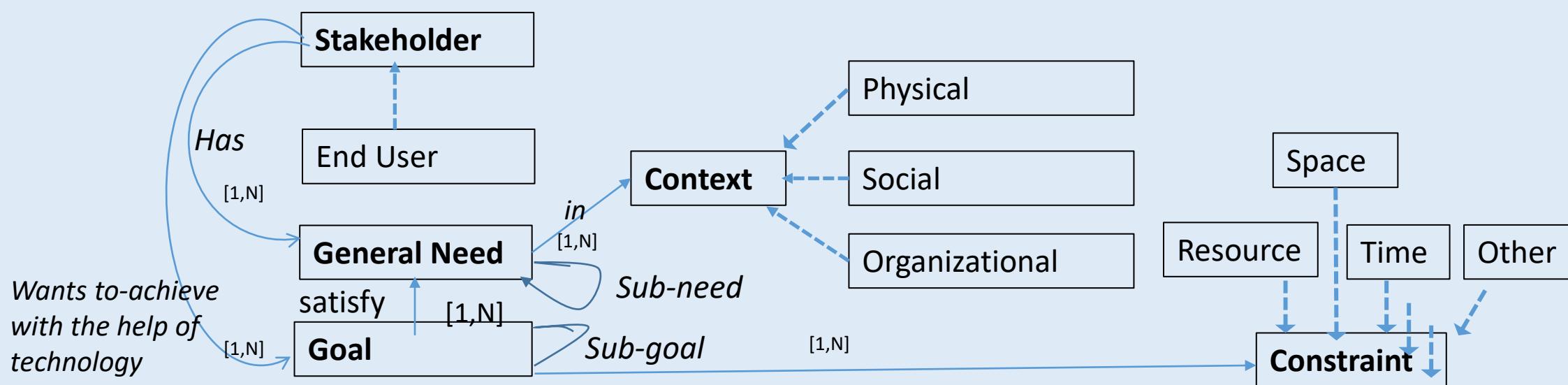
Our **language** to describe user requirements:

**UNG**

USERS NEEDS GOALS

**UNG= a User Requirements Model**

# UNG Model



LEGEND

↑ “is-a”

↑ X  
Relationship X

[1,N]  
Cardinality (How many)

distill your **understanding of the problem** based on the information you gathered from user research (Surveys, Interviews, Contextual Inquiry, Observations, Focus Groups...)

# UNG Terminology: User and Stakeholder

## User

Three categories of “users” (Eason, 1987):

- primary users: persons who would have **frequent** hands-on the “system”
- secondary users: **occasional** use the system or use it via someone else
- tertiary users: are **affected** by the system introduction, or influence its adoption

Our terminology: End users (users for short): primary or secondary users

## Stakeholder

Any subject how is **interested** to the interactive product – directly or indirectly

- The term includes all kinds of users (primary, secondary or tertiary)

# UNG Terminology: Needs

A high level concept

*a lack of something requisite, desirable or useful for the user*

# UNG Terminology: Goal

Something that the SYSTEM is expected to achieve for the user

- Improvement of a process/task (e.g., in learning, communicating, socializing, job, ...)
- Improvement of a human capability
- Reducing a burden
- ...

# UNG Terminology: Context

**Where** technology is going to be used

Physical Space

Outdoor? (e.g., in an archeological park)

Indoor? (e.g. museum entrance)

**“Organizational”** Space

At which step of a user process or activity  
technology is going to be used

**When** technology is going to be used

# UNG Terminology: Constraint

*“something that limits or restricts someone or something” (Webster Dictionary)*

**Additional** condition that **must** be considered

- Those elements that **can't be changed** and must be considered
  - Financial and human resources
  - Time
  - Politics
  - Competition
  - Technology (availability, devices, ...)
  - “Special” desires or deficits of the users
  - ...
- Constraints must be captured since the beginning to stay in the right track

# Needs vs Goals

Needs are more general and abstract

Needs are “properties” of the users

Goals are more concrete

Goals are “properties of the system”

## **WARNING**

Different stakeholder may have multiple and contradictory needs and goals

Solving **conflicting requirements** is difficult

# Needs vs Goals

Example:

- Children with autism need to be helped to develop socialization and communication skills (**NEED**)
- The system should enable children with autism to perform simple game based tasks that require mutual communication with peers (or caregiver) in order to be completed (**GOAL**)
- (the system must be cost-affordable and usable at home, school, and therapeutic center: *CONSTRAINTS*)

# Examples of UNG specifications

## Stakeholders

Teachers Secondary stakeholder	Therapists Secondary stakeholder	Typical Children (6-12 y.o.) Primary User	Atypical Children (6-12 y.o.) Primary User	Parents Indirect stakeholder
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## Needs

Support and improve therapy sessions

Raise their children

Have fun

Unlock cognitive rigidity in the active user

Stimulate sense of agency and cause-effect understanding in the active user

Stimulate explorative and adaptive behavior in the active user

Develop soft skill in the active user  
(communication, problem solving, collaboration)

## Goals

Generate engaging visual content and activities

Provide activities based on cause-effect rules/patterns unknown to the user

Provide environments to explore, full of serendipitous events

Provide tasks that stimulate collaboration

## Constraints

**Time**  
Duration of a single game must be 10-15 minutes

**Human/Resource**  
We are a limited amount of students, disposing of limited time

**User**  
Can be easily scared

**Physical**  
Limited space of movement (4 x 4.20 m<sup>2</sup>)

**Tech**  
The Magic Room capabilities (Kinect, controllable lights, touch sensors)

**Social**  
There must be exactly two active users

## Context

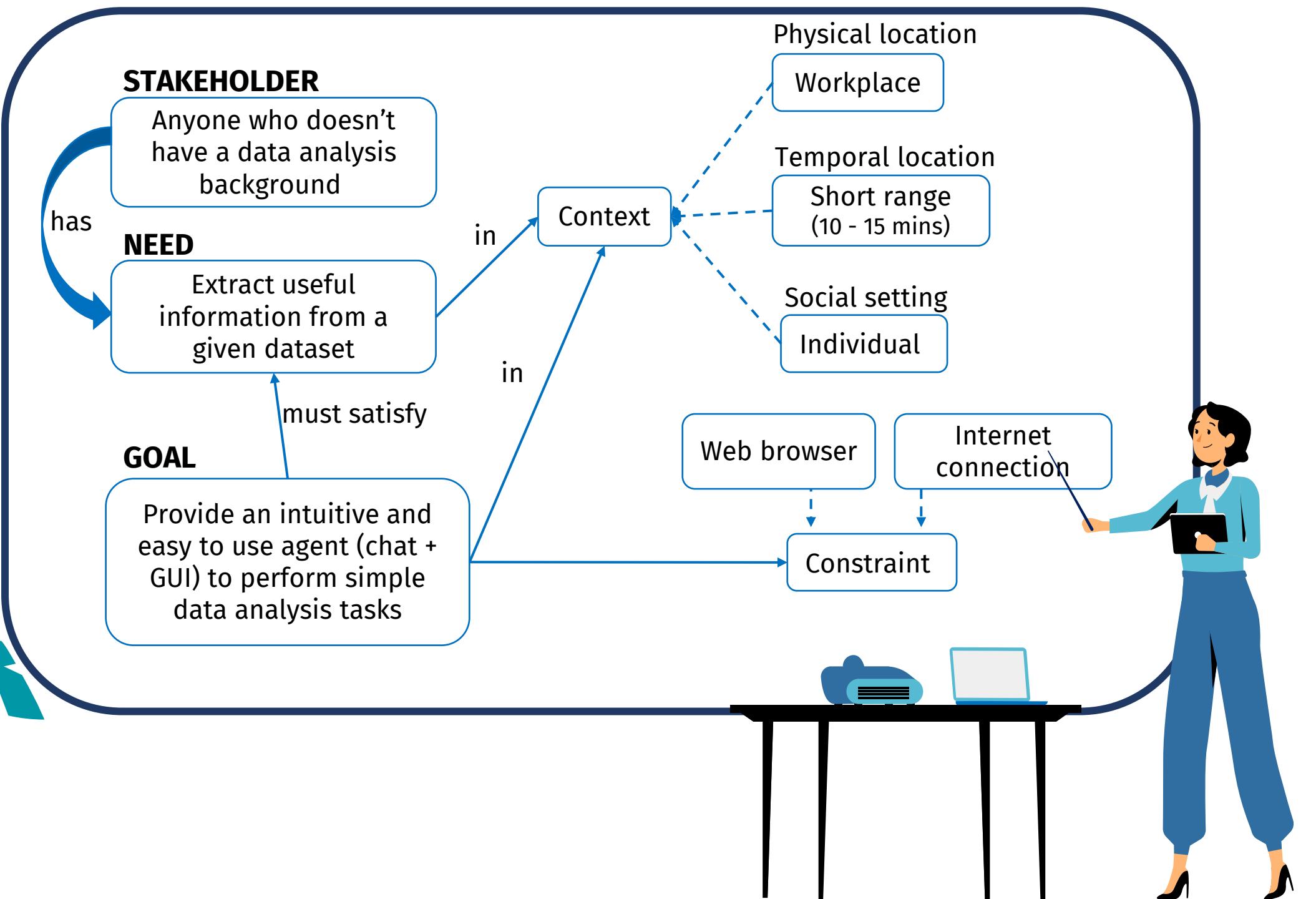
**Temporal**  
During therapy or playtime sessions

**Organizational**  
During school

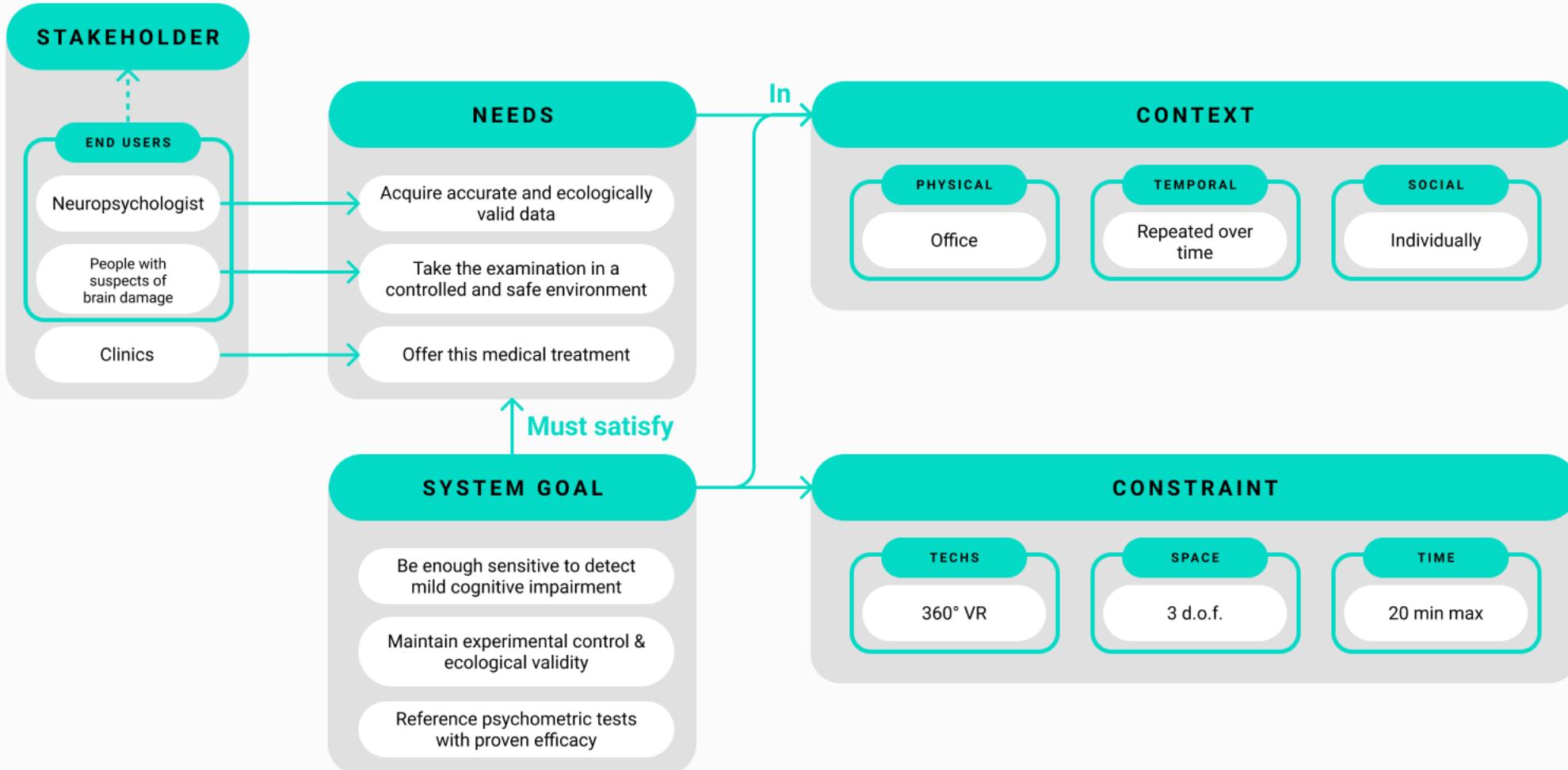
**Social**  
Two active user and a secondary user

**Physical**  
Inside the Magic Room

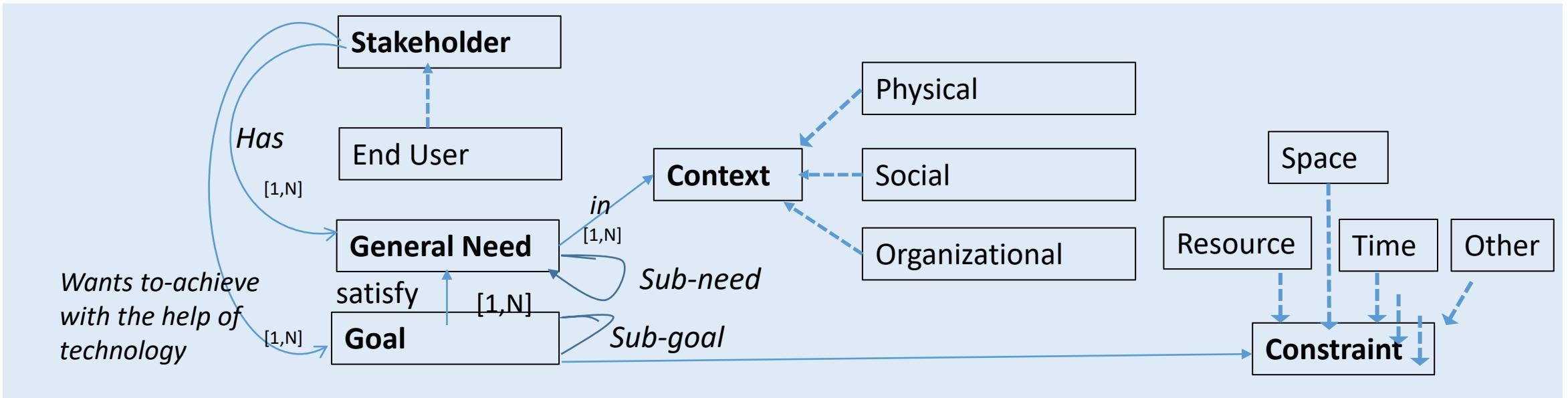
# UNG Model



# UNG



# To sum up



- distill your **understanding of the problem** based on the information you gathered from user research (Surveys, Interviews, Contextual Inquiry, Observations, Focus Groups...)
- **represent** such understanding in an **ABSTRACT** way using UNG Model concepts
- Report these results (with comments) in **Section 2 “User Requirements”**

# User Activities (section 2 of the tech doc)

User Activities = **What the user does with the technological system in order to satisfy their needs and achieve specific goals**

User Activities can be described at multiple levels of abstraction

- **Process** level
- **Task** level
- **Interaction** Level

# User Activities: Process level

## PROCESS

“a series of actions that you take in order to achieve a result” (Cambridge Dictionary)

Many process models

- Flow diagrams
- BPMN
- UML Activity Diagrams
- (User Journey Maps).....

# Examples



A very simple process representation (3 sequential steps)

# Examples

A very simple process representation enriched with visual elements

**1. Process Order**



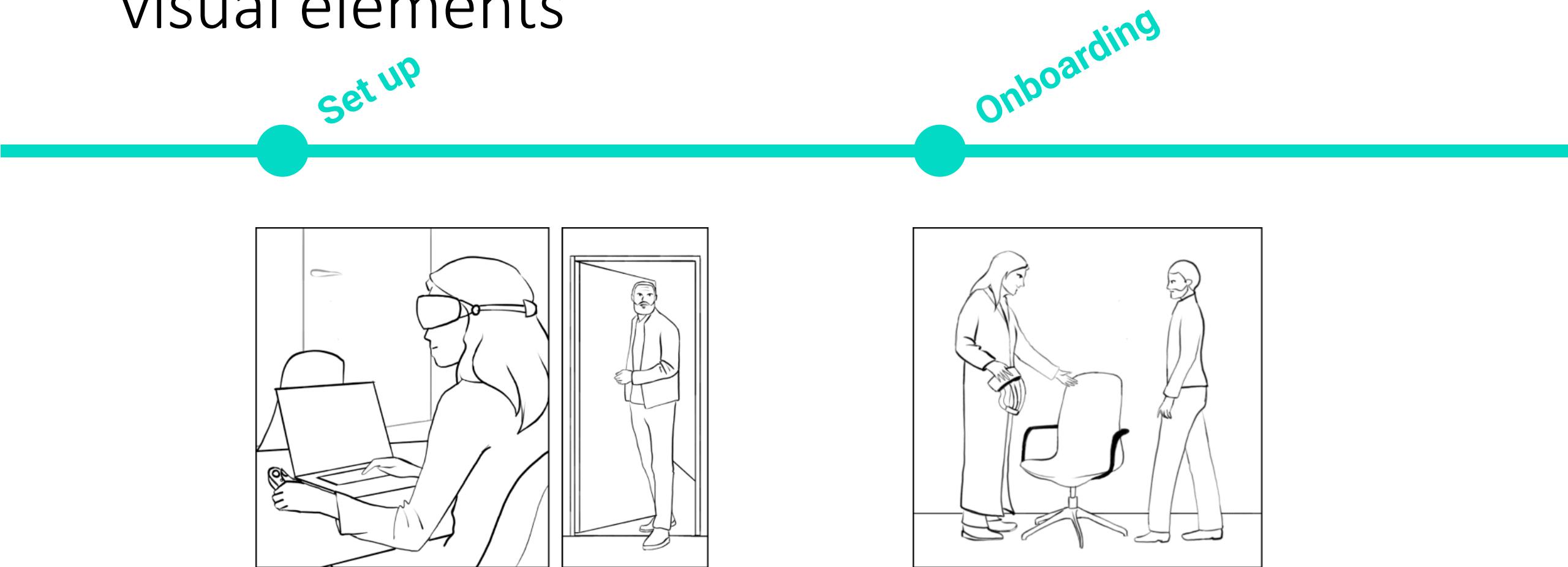
**2. Pack Items**

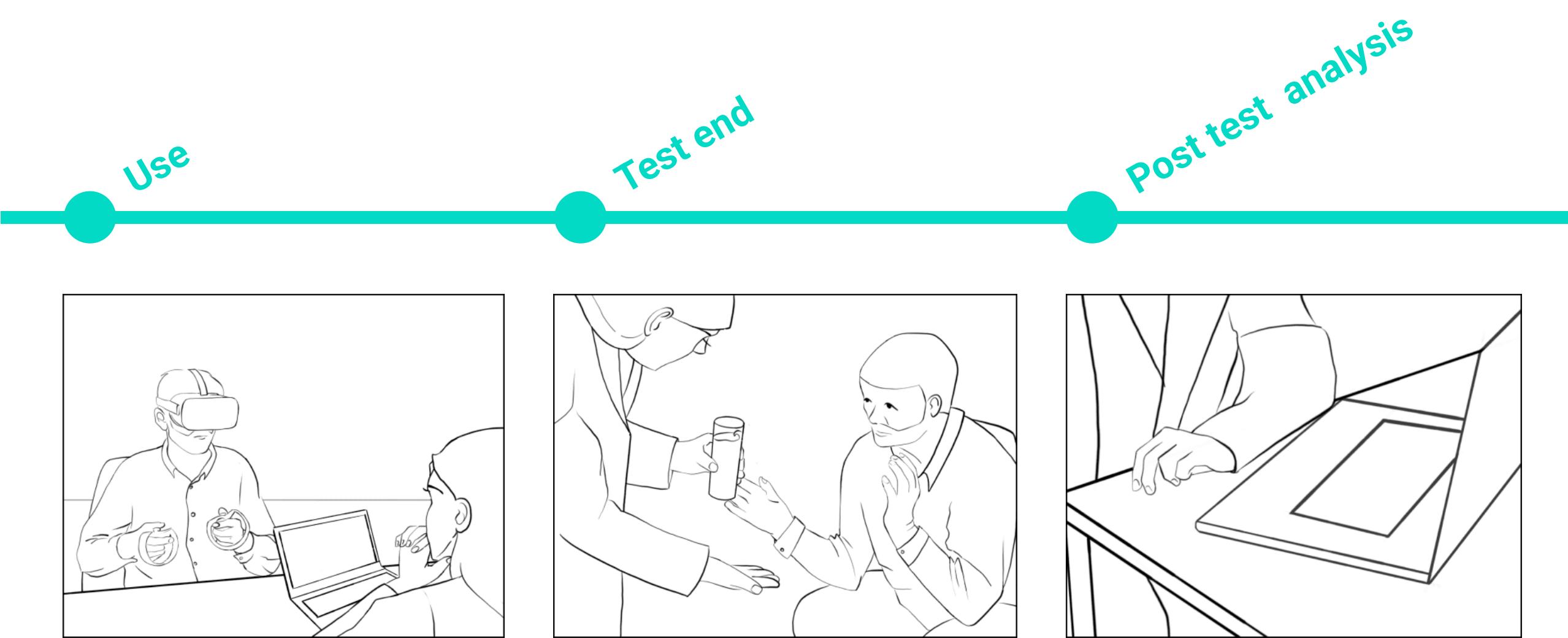


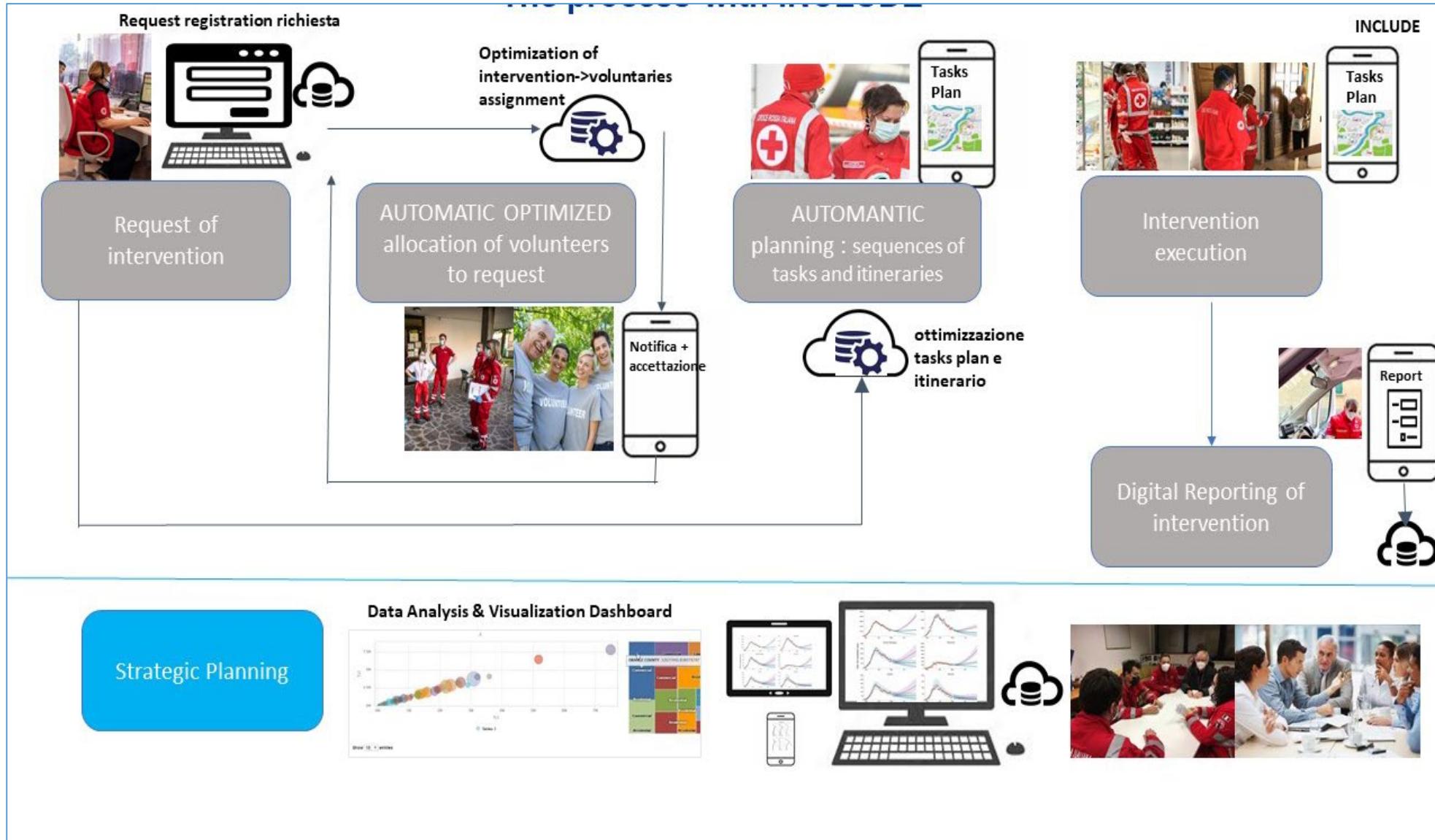
**3. Deliver Items**



# Simple process representation enriched with visual elements







# User Activities: Process level

A **process model** typically gives you

- The concept of “PHASE” (or “STEP” or “STATE”)
- The concept of temporal relationship among “STEPS/PHASES/STATES” (a phases occurs “AFTER” another one)
- “boxes and arrows” GRAPHICAL NOTATION to describe steps and their **temporal dependencies**

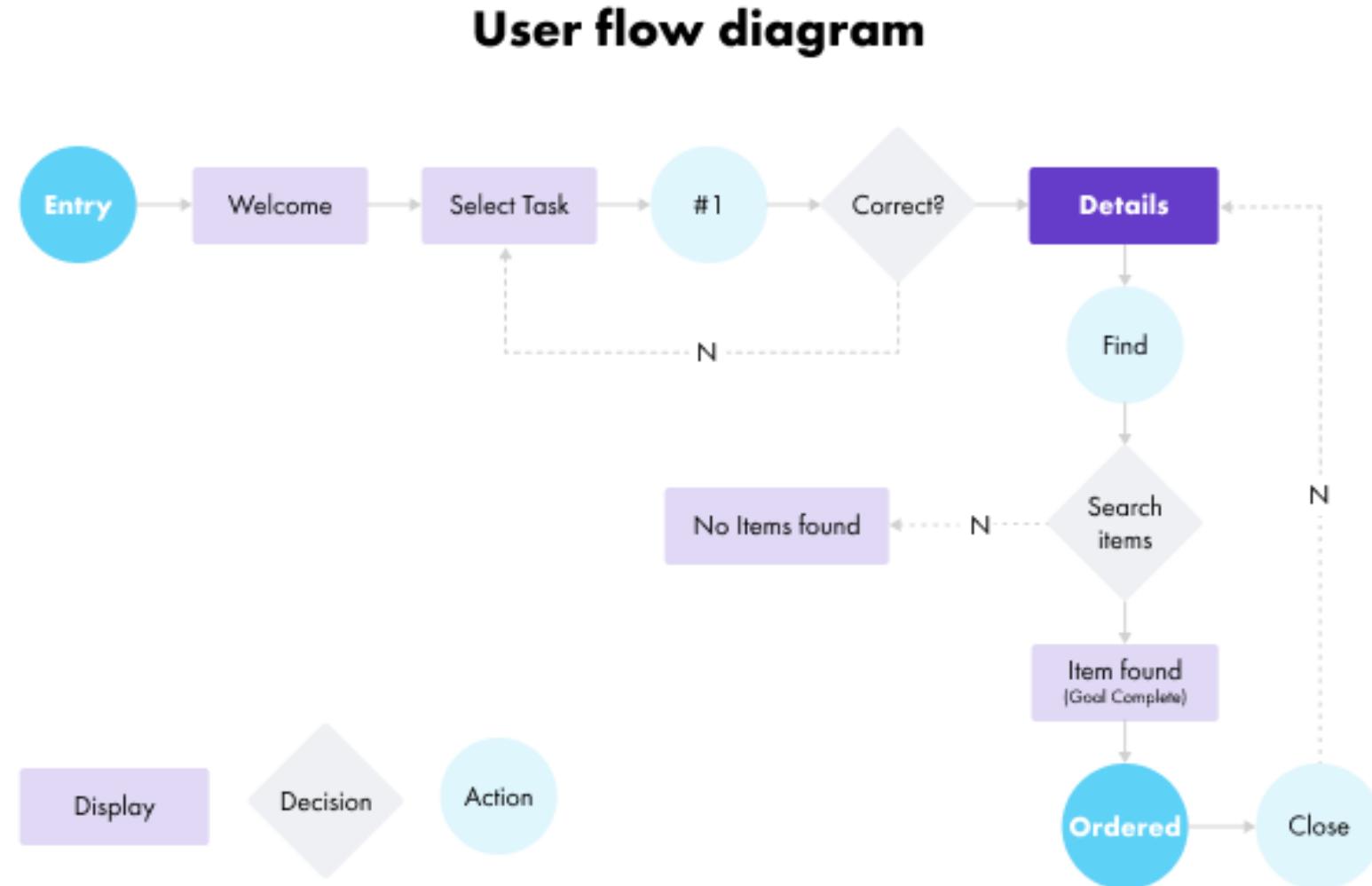
# User Activities: Process level

More sophisticated process model have also other concepts used to described more complex activities.

The following are used to describe **NON LINEAR user flows**

- **CONDITION:** depending on the value of the condition (e.g., true/false) the user can or cannot proceed to the next “STEP/PHASE/STATE”
- **LOOP:** indicates that a phase can be **repeated** (possibly under certain conditions)
- **JUMP:** indicates that after a phase is complete, the user can perform a **previous** phase or a phase that is not the “next” one

# Example: using Flow Diagram Model



# Modeling processes with BPMN

BPMN (Business Process Model and Notation)

[https://en.wikipedia.org/wiki/Business\\_Process\\_Model\\_and\\_Notation](https://en.wikipedia.org/wiki/Business_Process_Model_and_Notation)

<https://www.omg.org/spec/BPMN/2.0/>

- Business Process Model and Notation has become the de-facto standard for business processes diagrams.
- BPMN has an easy-to-use flowchart-like notation that is independent of any particular implementation environment.
- It can be adopted also to model technology- enhanced user's activities (at process and task levels)

# BPMN concept: Control Event

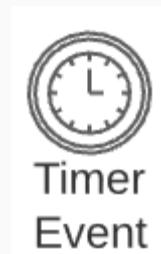
## Flow Control Primitives



- A **Start Event** indicates the beginning of a task flow



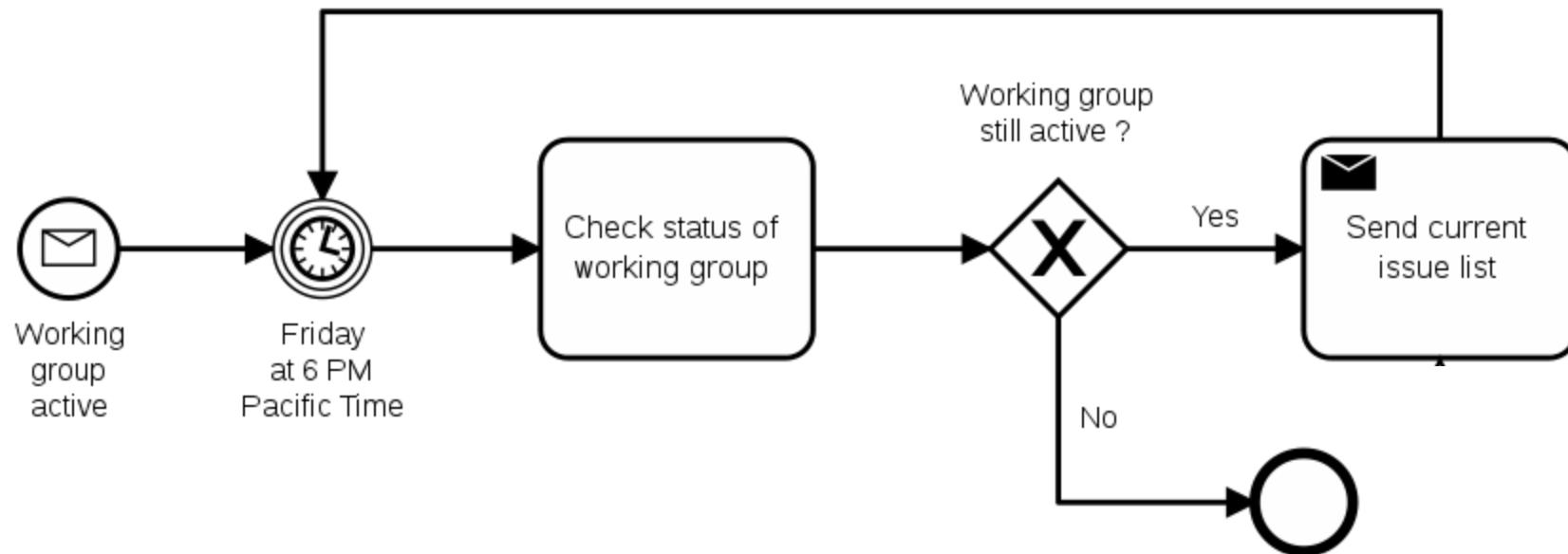
- **End Events** indicated the end of a task flow. Once the flow reaches an End Event the process terminates



- **Timer Event:** it is used to represent the need **to wait some time** before continuing the flow, or a **timely repetition**. Wait duration (e.g., 5 seconds) and repetition properties (e.g., every 10 minutes) must be reported below the circle

- .

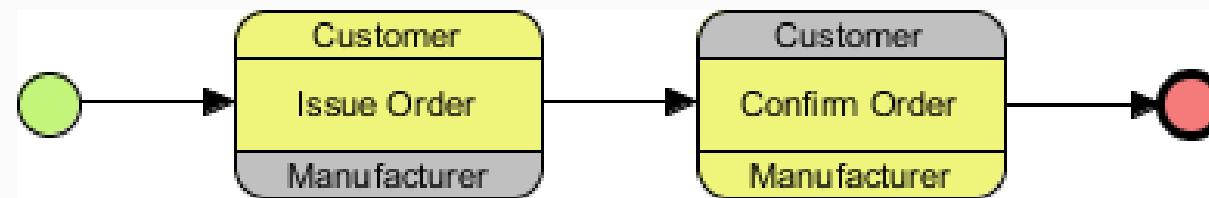
# Example of simple process modeled by a BPMN diagram



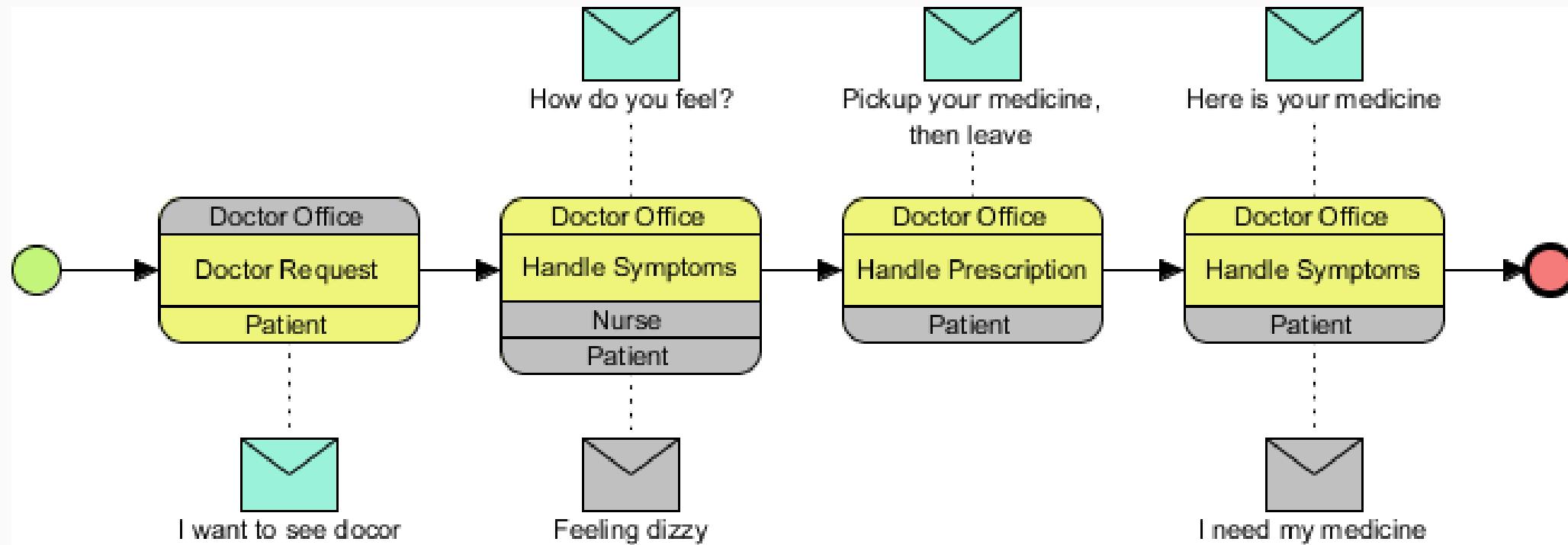
# BPMN Choreography Diagrams

<https://www.visual-paradigm.com/guide/bpmn/bpmn-orchestration-vs-choreography-vs-collaboration/>

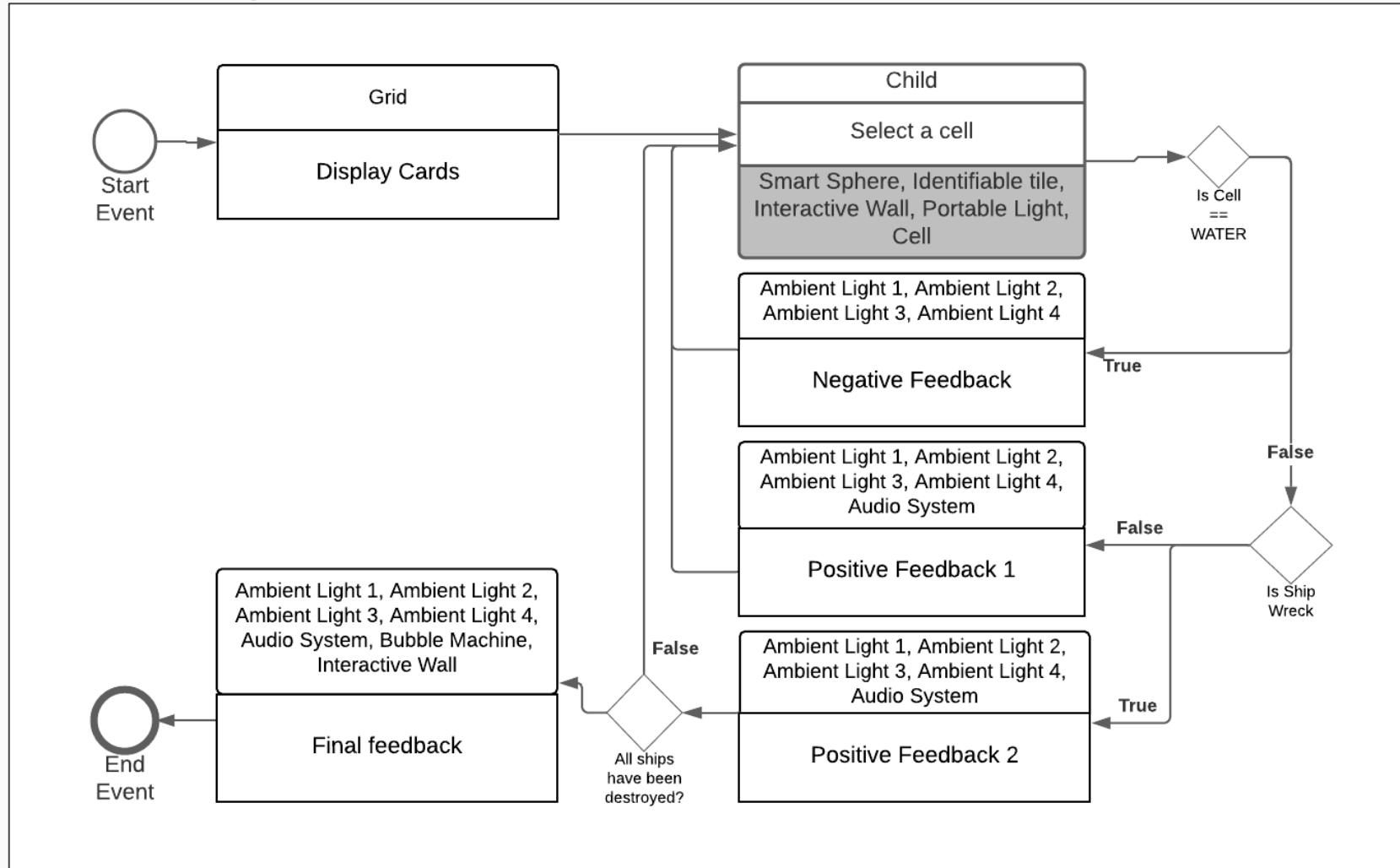
Choreography diagrams describe what a process does AND which different ACTORS (human actors or technological services) participate in each phase and what they mutually communicate



# BPMN Choreography Diagrams: Example



# BPMN Choreography Diagrams: Example (Smart Space)



# User Activities: TASKS

Tasks describe what happens inside a phase

TASK= “a piece of work to be done” (Cambridge Dictionary)

Tasks representations “refine” the description of a process, ZOOMING-IN each single phases

# User Activities: Tasks

The same process models can also be used to describe tasks

**IMPORTANT: TASKS MUST BE CLEARLY ASSOCIATED TO SPECIFIC PHASES OF THE PROCESS**

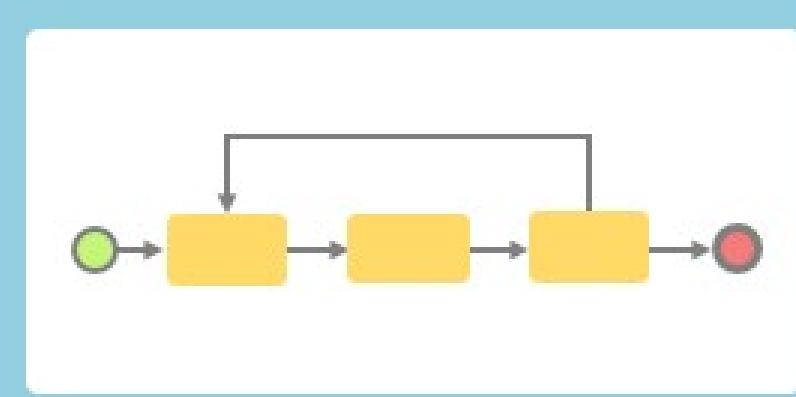
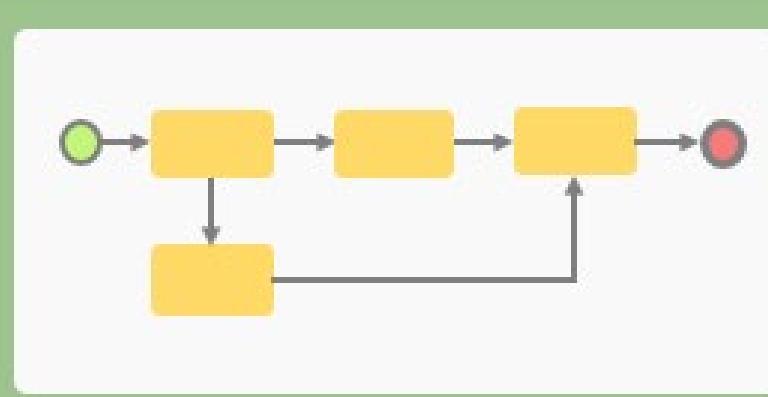
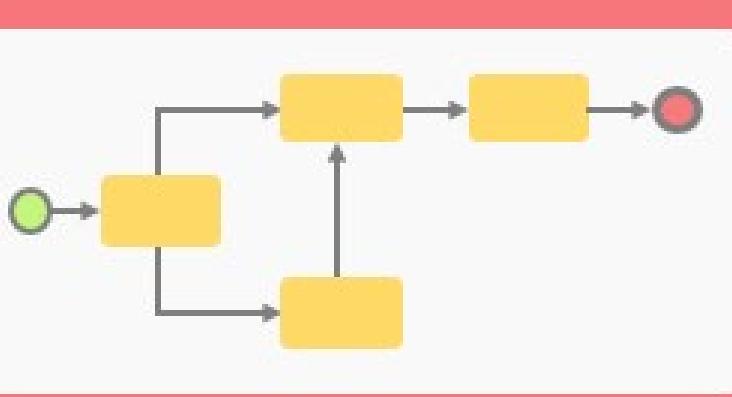
### 1. Process Order



### 2. Pack Items

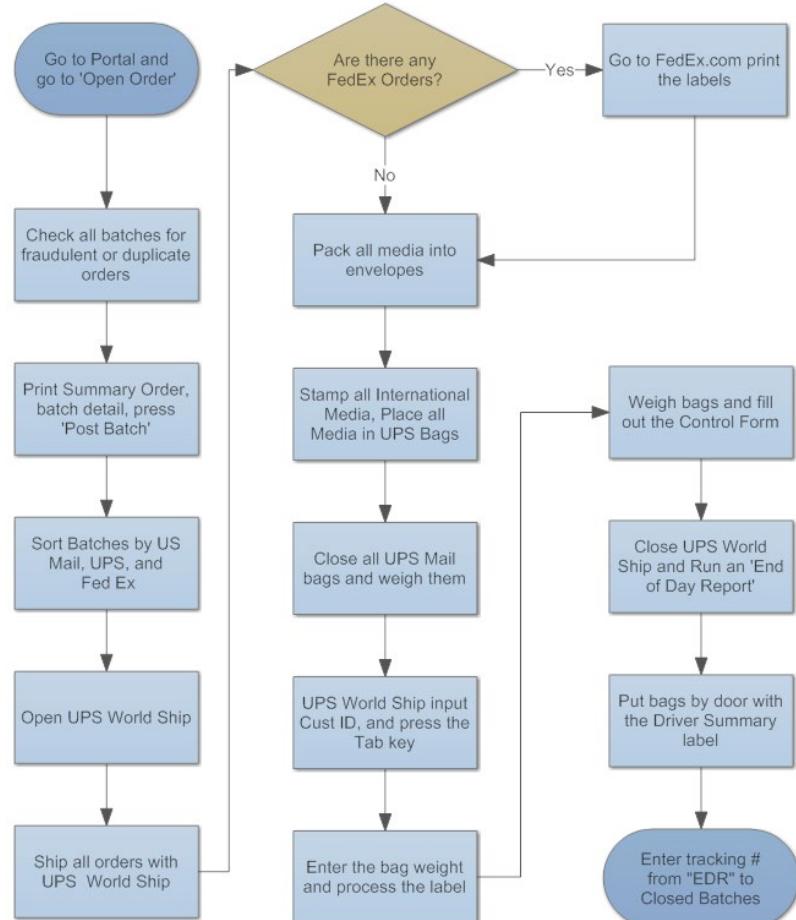


### 3. Deliver Items

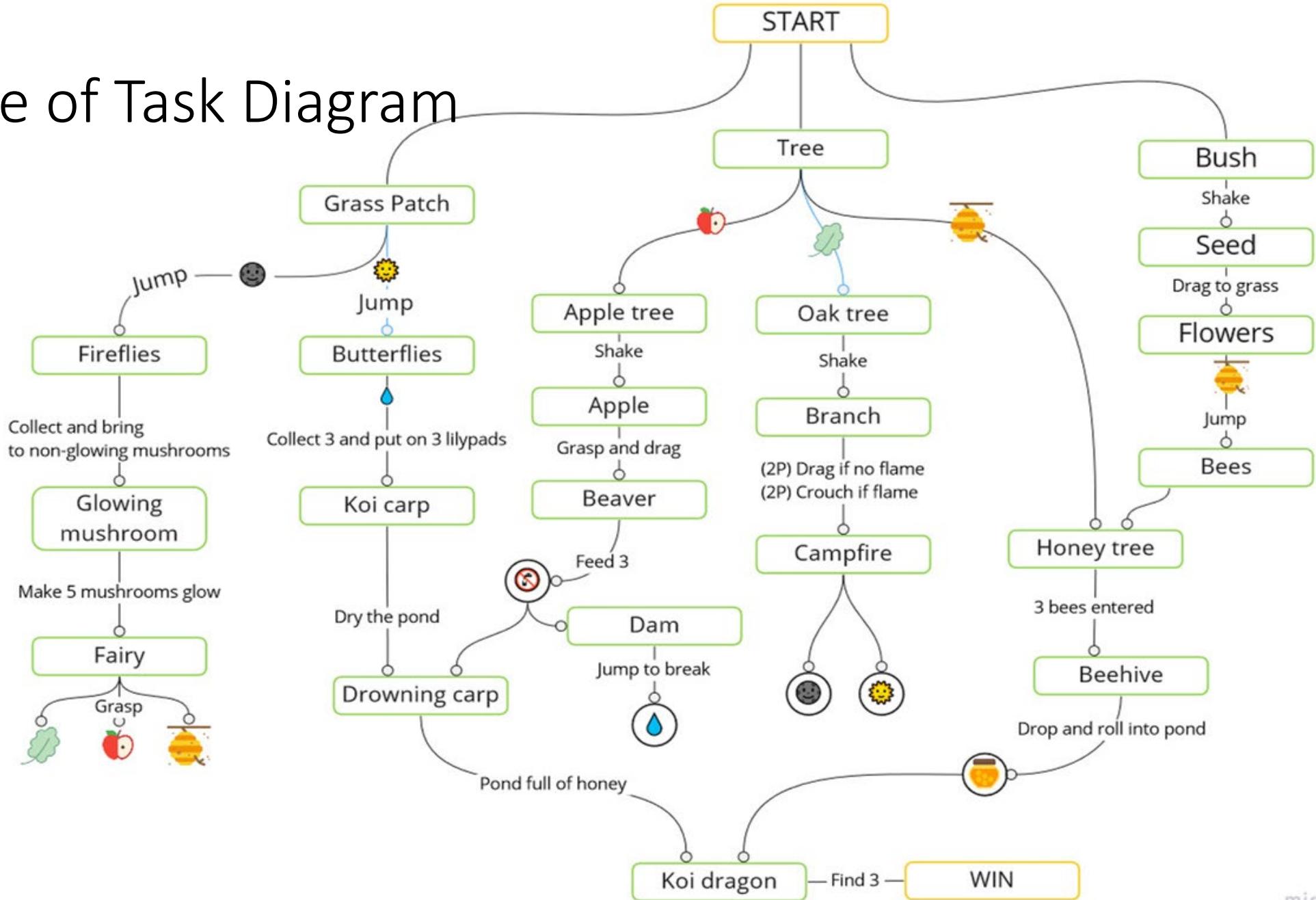


# EXAMPLE OF TASKS DIAGRAM

Phase: Product Shipping



# Example of Task Diagram



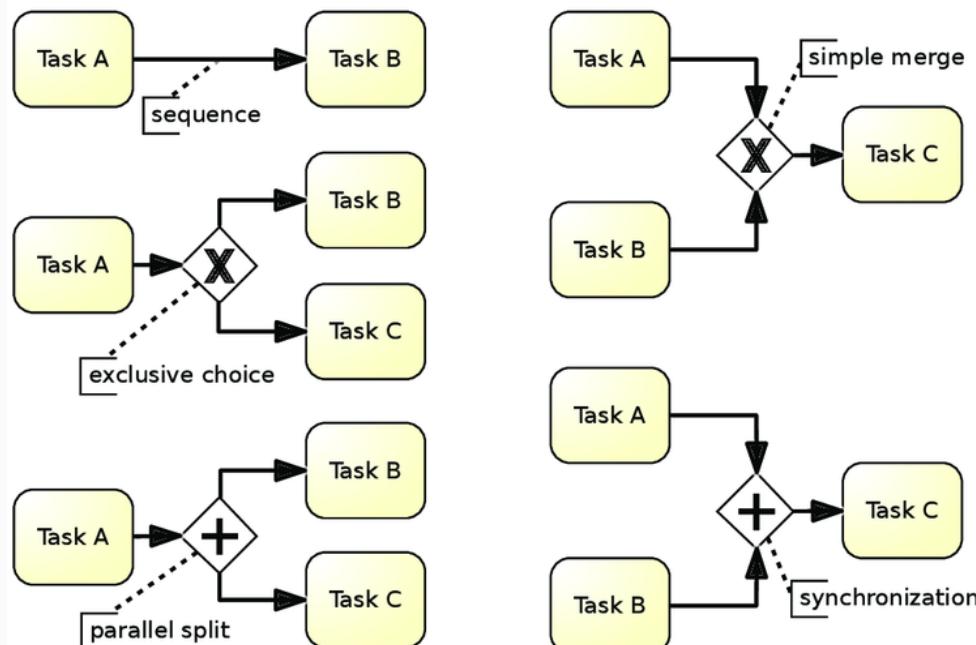
# BPMN: Connecting Elements and Gateways for tasks modeling

Connecting Element



indicates a constraint for Tasks and can be combined with gateways + and X

- **Sequence:** task B begins only after the conclusion of task A.
- **Exclusive Choice:** after task A is completed, either Task A or Task B can be executed (for example: Task A= “User selects on wall by point”; Task B= “Select on wall by touch”; when a Task (e.g., A) is being executed, the other one (e.g., B) if started, is ignored; the flow continues after the former (Task A) is completed).
- **Parallel Split:** after task A is completed, Task B and Task C are executed in parallel; in ISS, this construct is typically used for EFFECTS only (to play them in parallel); this construct can also be used when multiple users are required to perform different USER TASKS in parallel.
- **Simple Merge:** if one of the two tasks (e.g., A and B) is completed, the other task is stopped and control passes to the next item (e.g., Task C).
- **Synchronization:** only when both task A and B are completed, control passes to the next item (e.g., Task C)



NB: Simple Merge and Synchronization can also be omitted when obvious.

# NOTE: TASKS MODELING in CONVERSATIONAL SYSTEMS

In conversational interaction, the tasks flow is a **dialogue process** in which TASKS are the concepts expressed at a given point of the conversations and INTERACTIONS are the specific UTTERANCES.

hen conversational interaction is combined with other interaction modes (e.g. GUIs) the challenge for the designer is to model a task flow that encompasses **multimodal tasks**

# User Activities: Interactions Level

Interactions are ACTIONS that the system interface can sense

Examples:

Selection of an interactive element with the mouse (or the finger)

Drag& Drop an element on a touch screen

Mid-air gestures in a motion-sensing system

Physical button click on a joystick

...

# User activities: Interactions Level

Described using **visualizations of interfaces** that show all **FLOWs of USER ACTIONS** and highlight the actions performed by the user on the interfaces

E.g. FIGMA mock ups, highlighted screen shots , ...



# User Interactions: what to include in your report?

Complete specifications of user interaction do not need to be included in the deliverables of this course (to alleviate the burden of the exam ☺)

Still, they must be **EXEMPLIFIED** in **Section 3: SCENARIOS**

In this respect, what you have to deliver for the exam is slightly less than what is needed by ICT developers (they need complete interaction specifications)

## Exemplifying the design of interface and interaction: Scenarios

Section 3 of your technical documentation

Scenario: broad concept

A “**story about use**”

(Carroll, J.M. Scenarios and Design Cognition, 2002)

A **narrative of one situation of use that exemplifies** how a “typical” user (“persona”) is going to use the application

Developed by the design team; iteratively refined with the stakeholders

# Scenario: Similarities with other concepts

- Use cases (see UML – Unified Modeling Language)
- User stories
- Storyboards
- ....

Different names, similar general meaning, different representations and uses depending on the development stage

# When using scenarios

Scenarios are useful in the **whole** product lifecycle:

- **requirements elicitation**
- **design**
- **evaluation** of prototype or implemented system: to focus the inspection or decide the tasks to do
- **prototyping and implementation**: to guide and establish priorities in the development
- **demonstration**: to plan a **DEMO** of an interactive system (e.g., to a customer, at a fair)

# Different kinds of scenarios at different levels of abstraction

Depending on the product development stage

- Requirements scenarios
- Design Scenarios
- Prototype Scenarios
- Demo scenarios
- Evaluation Scenarios

**In this course we use scenarios mainly during requirements elicitation (if performed) and during DESIGN**

# How to tell “the story”?

Depending on the scenario’s goals:

The story can be narrated using (a combination of) **different media**:  
text, images, diagrams, videos, animations

The story can be very structured or minimally structured

# When using scenarios

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# Different kinds of scenarios at different levels of abstraction

Depending on the product development stage

- Requirements scenarios
- **Design Scenarios**
- Prototype Scenarios
- Demo scenarios
- Evaluation Scenarios

Different types of scenarios have different formulations

We user **design scenarios** to **exemplify** design solutions

# Design Scenarios (sometimes referred to as “Interaction Scenarios”)

## STRUCTURE

**End User profile:** main characteristics of who will use the system

**Goal(s)** – problems, intentions, motivations, needs of the user

**Context**- situation of use of the application

**Task:** a narrative description of the **interactions** (i.e., the user’s actions on the system and how the system reacts) needed to complete a task

# Design Scenarios

Multiple ways to describe the **TASK** in the scenario

**Textual description** – a **textual** description of interactions

**Visual description** – a **visual, static** description - sequence of (miniaturized) images (e.g., sequence of screenshots)

*A sequence of (miniaturized) images (e.g., screenshots) that - step by step- **highlights** how the user interacts with the interface system (e.g., where she/she clicks) and how the system reacts*

**Video description** – a **visual, dynamic** description of what the user does

Design Scenarios (sometimes referred to as “Interaction Scenarios”)

## **THE STRUCTURE YOU MUST USE**

1. **End User profile:** main characteristics of who will use the system
2. **Goal(s)** – problems, intentions, motivations, needs of the user
3. **Context-** situation of use of the application
- 4.1 Task-textual narrative
- 4.2 Task-Visual narrative

# Example

- *The website for a Milan Museum Exhibition*

A high school teacher from Milan...

1. User profile

... comes to know about the exhibition on Garibaldi at the Risorgimento Museum in Milan. She thinks might be nice to visit it with her class, as the subject is connected with the history program of this year.

2. User Goal

Thus she wants to understand if the exhibition can be useful and stimulating for her students to visit the exhibition

3. Context

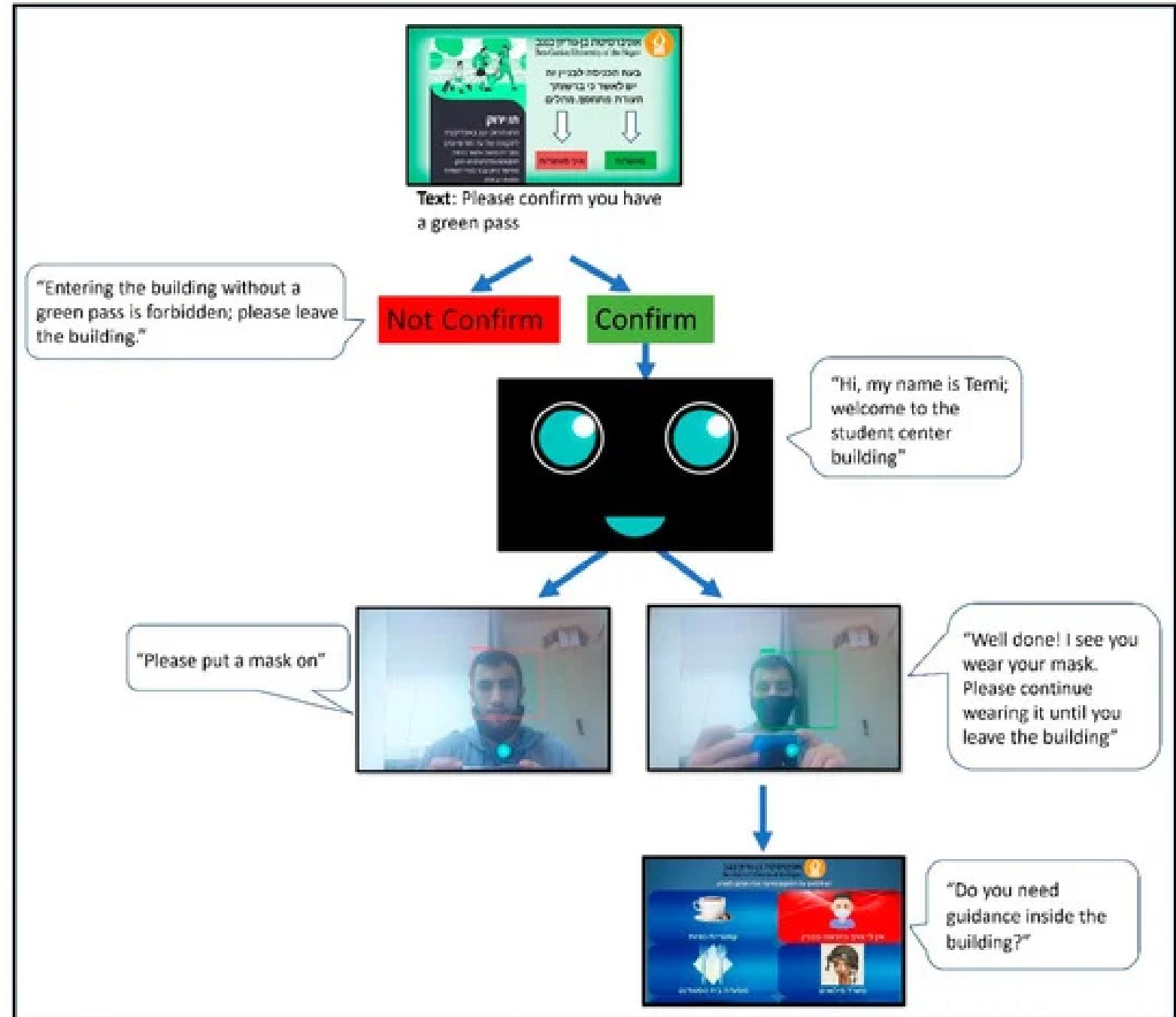
While on the metro, she connects to the exhibition website

4. Tasks:  
Textual narrative

She reads the introduction to the exhibition, looks at the list of key exhibits (documents, paintings, and other historical objects), and browses the details about them. She also discovers that some guided tours are available for school classes. She finds out opening days and hours, and how to make a group reservation for entrance and guided tour

5. Tasks: Visual Narrative omitted for lack of space

# Scenario Tasks: visual narrative



**USER PROFILE:** A guy from a Human Resources department of a competitive company providing logistic solutions

**GOAL:** to hire a more competent employee, preferably a person met at a intelligent logistics exhibition whose name he does not remember (but he does remember that he works at a company named Smart Solver)

**Context:** in the office

## Tasks: textual narrative

The guy enters Smart Solver web-site and start looking in All People landmark. The guy thinks he see the person he is looking for and press on that employee card. It is the wrong person.

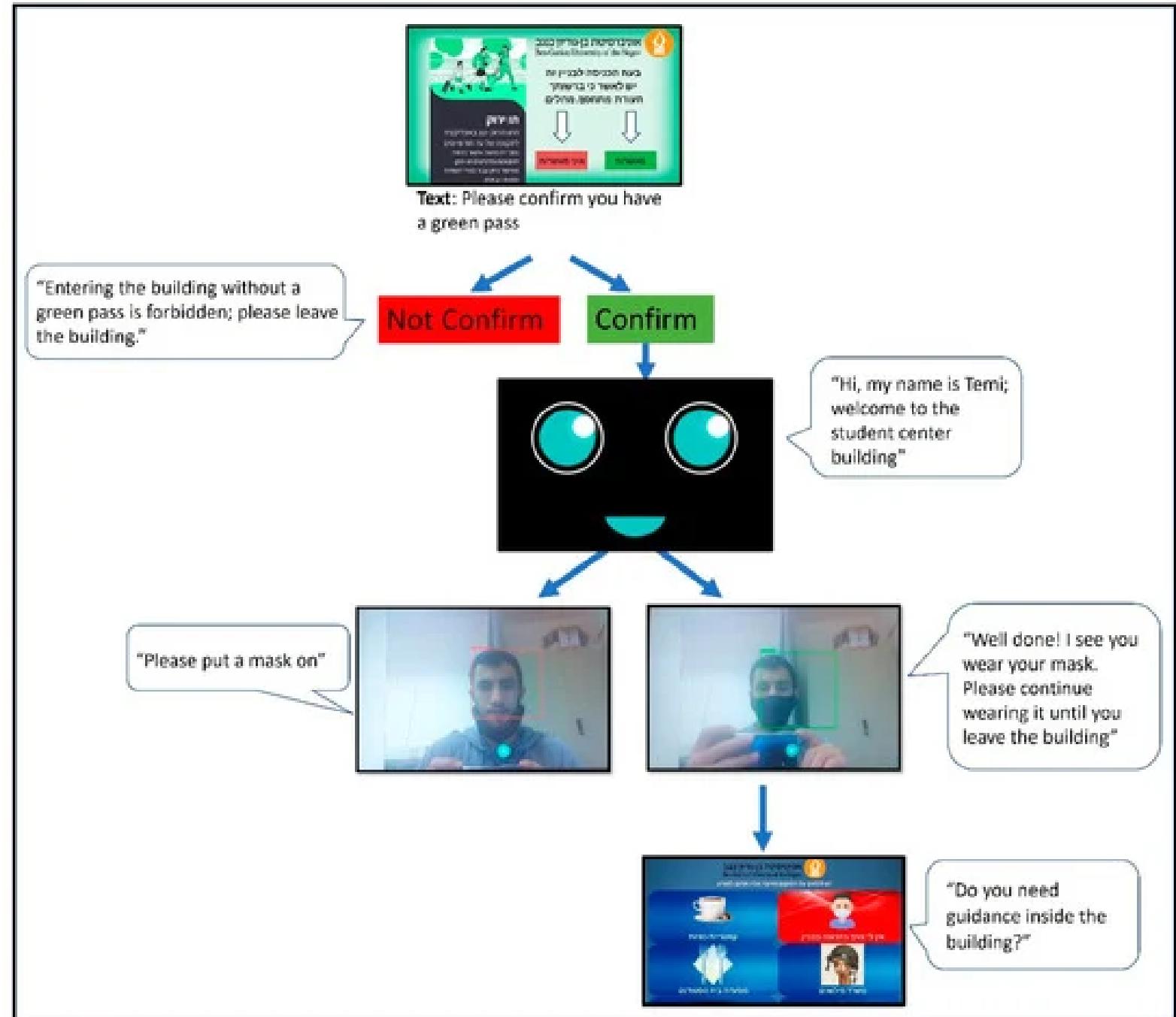
The human resources guy makes another try, goes back to All People page and press another card that with a face that seems familiar, and finds the guy.

## Tasks: visual narrative (with comments)

The image shows a sequence of five screenshots of a website for 'Smart Solver' illustrating a user task. Each screenshot includes a red arrow pointing to a specific element or action.

- (a) Press link at People in the landmark.** The screenshot shows a landing page with a banner for 'Smart Logistics Solutions' and a section titled 'People'. A red arrow points to the 'People' link in the top navigation bar.
- (b) Press a employee card.** The screenshot shows a 'Meet our employees' section with several cards. One card for 'Anne Thurius' is highlighted with a red border, and a red arrow points to it.
- (c) Wrong employee card. Uses the orientation/Group link to go back to All People.** The screenshot shows the same 'Meet our employees' section. A red arrow points to the 'Orientation/Group' link in the top right corner of the card for 'Anne Thurius'.
- (d) Press another different employee card.** The screenshot shows the 'Meet our employees' section again. A red arrow points to another employee card, specifically the one for 'Kris Van Ryder'.
- (e) Finds the right employee.** The screenshot shows the final result where the card for 'Kris Van Ryder' is highlighted with a red border, indicating the user has found the correct person.

# Scenario Tasks: visual narrative



# Scenario: Visual narrative

What the user does with the system by means of concrete **interfaces** (e.g. screenshots) **highlighting** the user's **actions** (e.g., clicks, gestures, movements) to interact with the system



# Scenario Tasks: visual narrative

The screenshot shows the homepage of the Leonardo da Vinci High School website. At the top left is a decorative logo featuring a stylized letter 'A' with wings. To its right is the school's name, "Leonardo da Vinci High School", with "Leonardo da Vinci" in a large script font and "High School" in a smaller serif font. To the right of the name is a portrait of Leonardo da Vinci. Below the header is a red navigation bar with five tabs: "Students", "Teachers", "Prospective Students", "Parents", and "School". The "Students" tab is highlighted. The main content area features a large image of a brick school building under a blue sky. Above the image, the word "Welcome!" is written in a large, stylized font. To the left of the image is a black arrow pointing upwards, with the number "1" next to it. Below the image, the text "Last News: 17/05/2020 h.10.00 Open day" and a link "News & Events" are visible. At the bottom is another red navigation bar with four tabs: "Contacts", "Calendar", "Bureaucratic Info", and "Partners".

↑  
1

Welcome!

Last News: 17/05/2020 h.10.00 Open day  
News & Events

Students Teachers Prospective Students Parents School

Contacts Calendar Bureaucratic Info Partners



# Leonardo da Vinci

## High School



Students

Teachers

Prospective  
Students

Parents

School

2

**Welcome to the Student Area:**

If you want to find your Class Subjects, Teachers and Material:

[Classes](#)

For information at the end of your Career at our school:

[Outgoing Students Orientation](#)

[School Rules](#)

For information on our Extra-Activities:

[Extra Activities](#)

For information about the Student support services we offer:

[Students Support](#)

[Student Association](#)



Contacts

Calendar

Bureaucratic Info

Partners



# Leonardo da Vinci

## High School

[Students](#)[Teachers](#)[Prospective Students](#)[Parents](#)[School](#)[Home](#)>[Students](#)>[All Courses](#)

3

**Courses:**

- [Aerospatial](#)
- [Computer Science](#)
- [Chemistry](#)
- [Electronics](#)
- [Electrotechnics](#)
- [Mechanics](#)
- [Telecommunications](#)
- [Technological Lyceum](#)

[Contacts](#)[Calendar](#)[Bureaucratic Info](#)[Partners](#)

# Additional material

See video, links, and further information explanations here:

<https://www.interaction-design.org/literature/topics/user-scenarios>

Reporting technological architecture  
(section 4 of your technical documentation)

The architecture of a software system defines that system in terms of computational components and interactions among those components

(from Shaw and Garlan, Software Architecture, Perspectives on an Emerging Discipline, Prentice-Hall, 1996.)

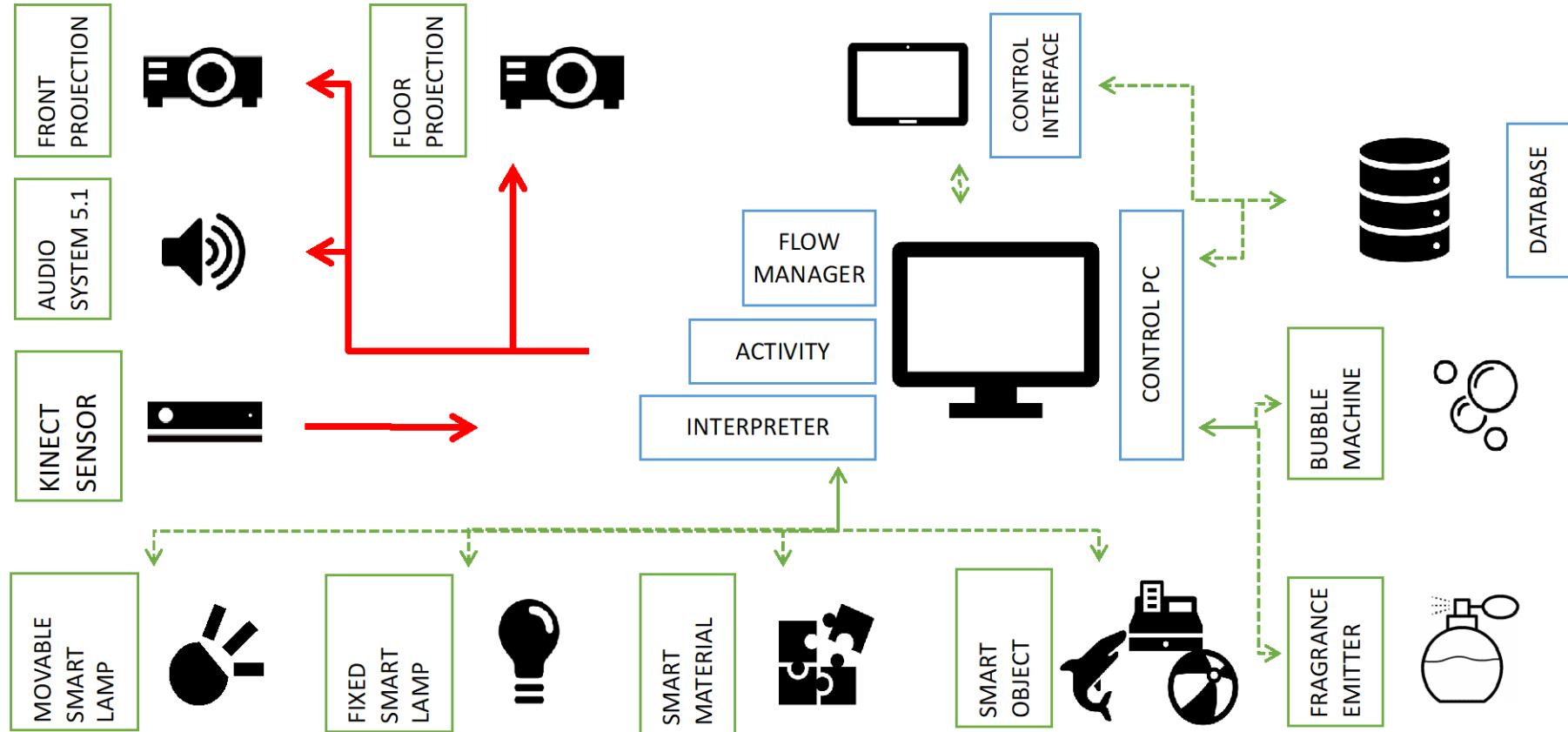
**High Level Architecture**



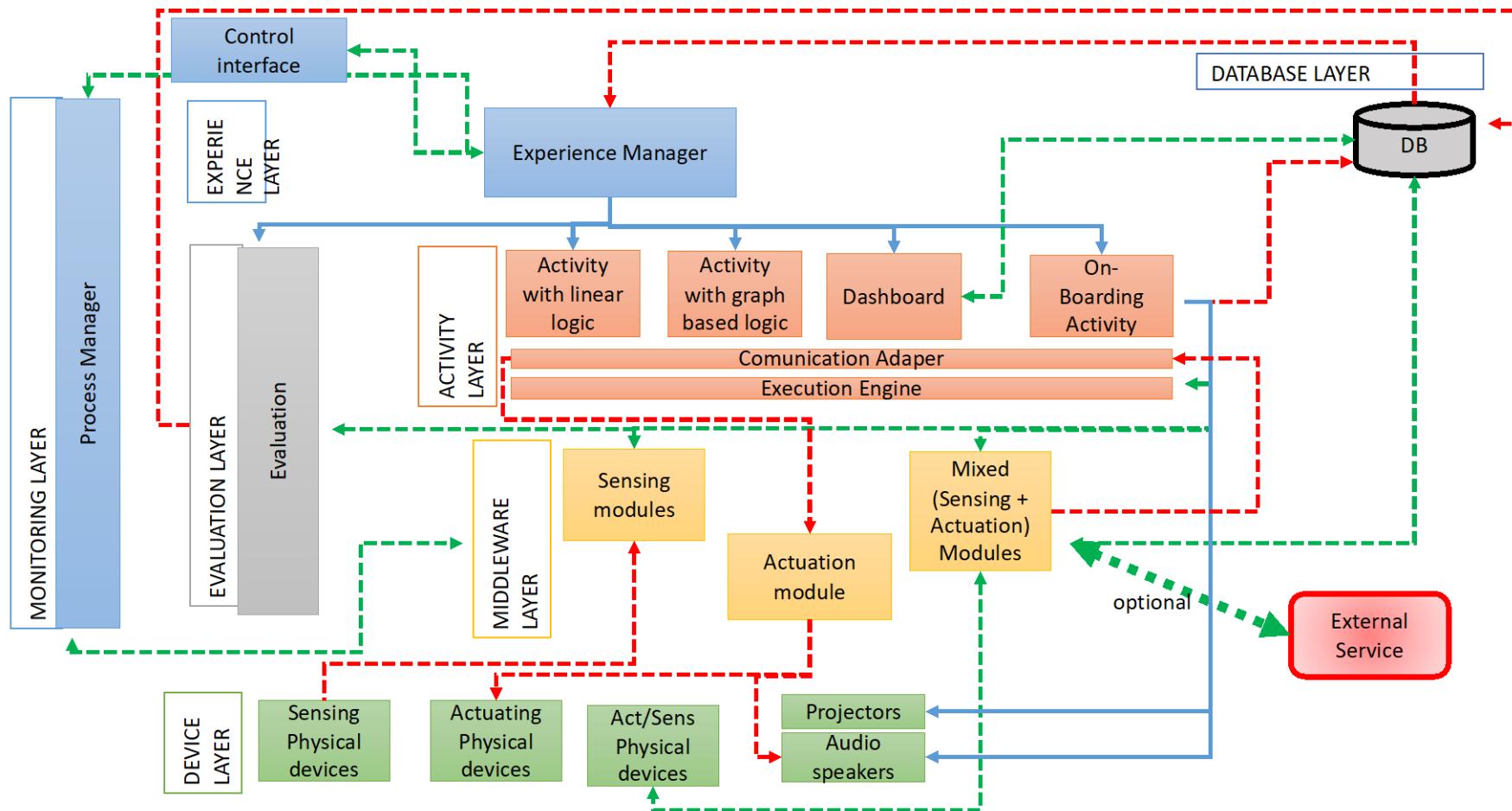
**Low Level Architecture**



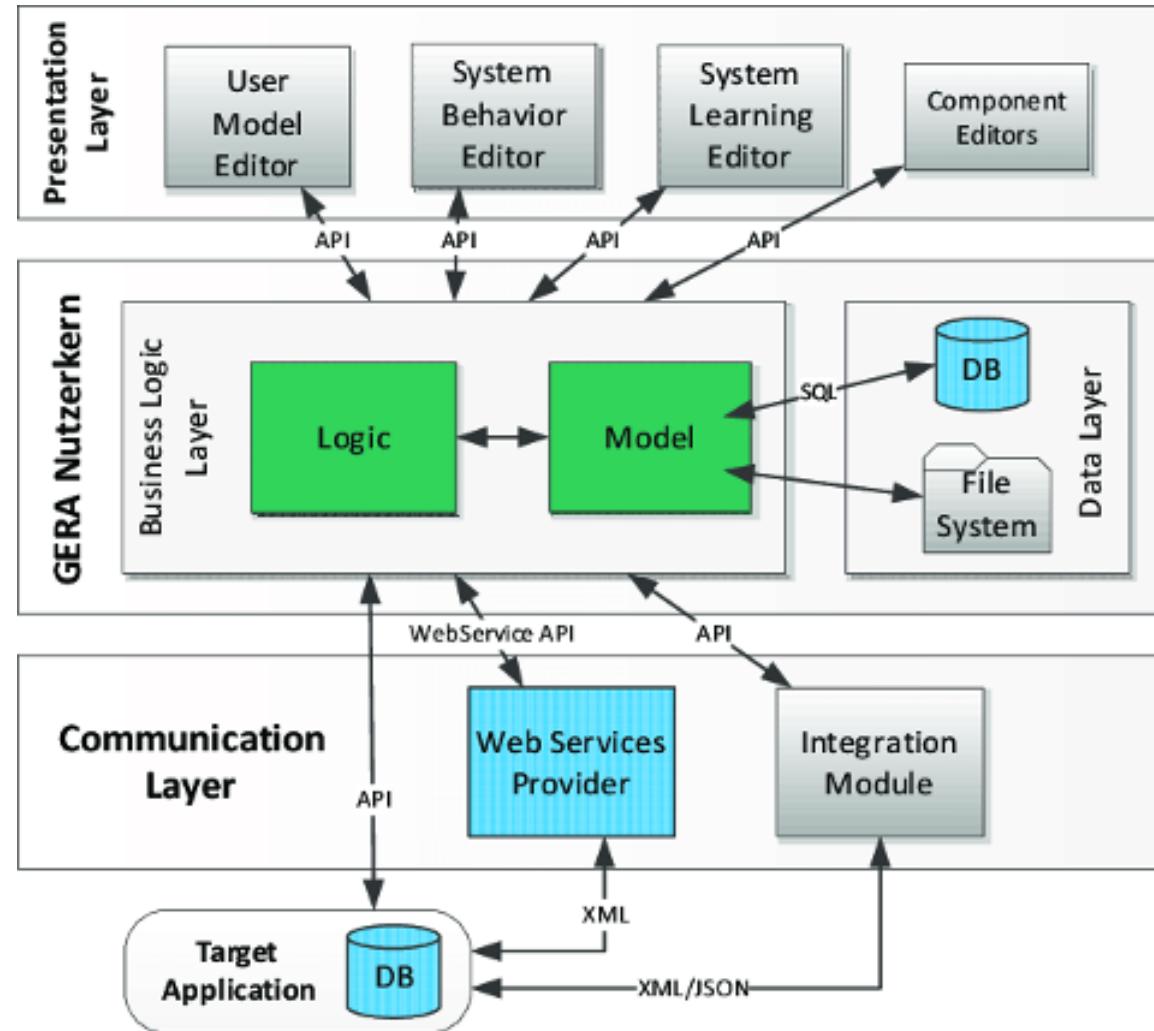
# Magic Room – High Level Architecture



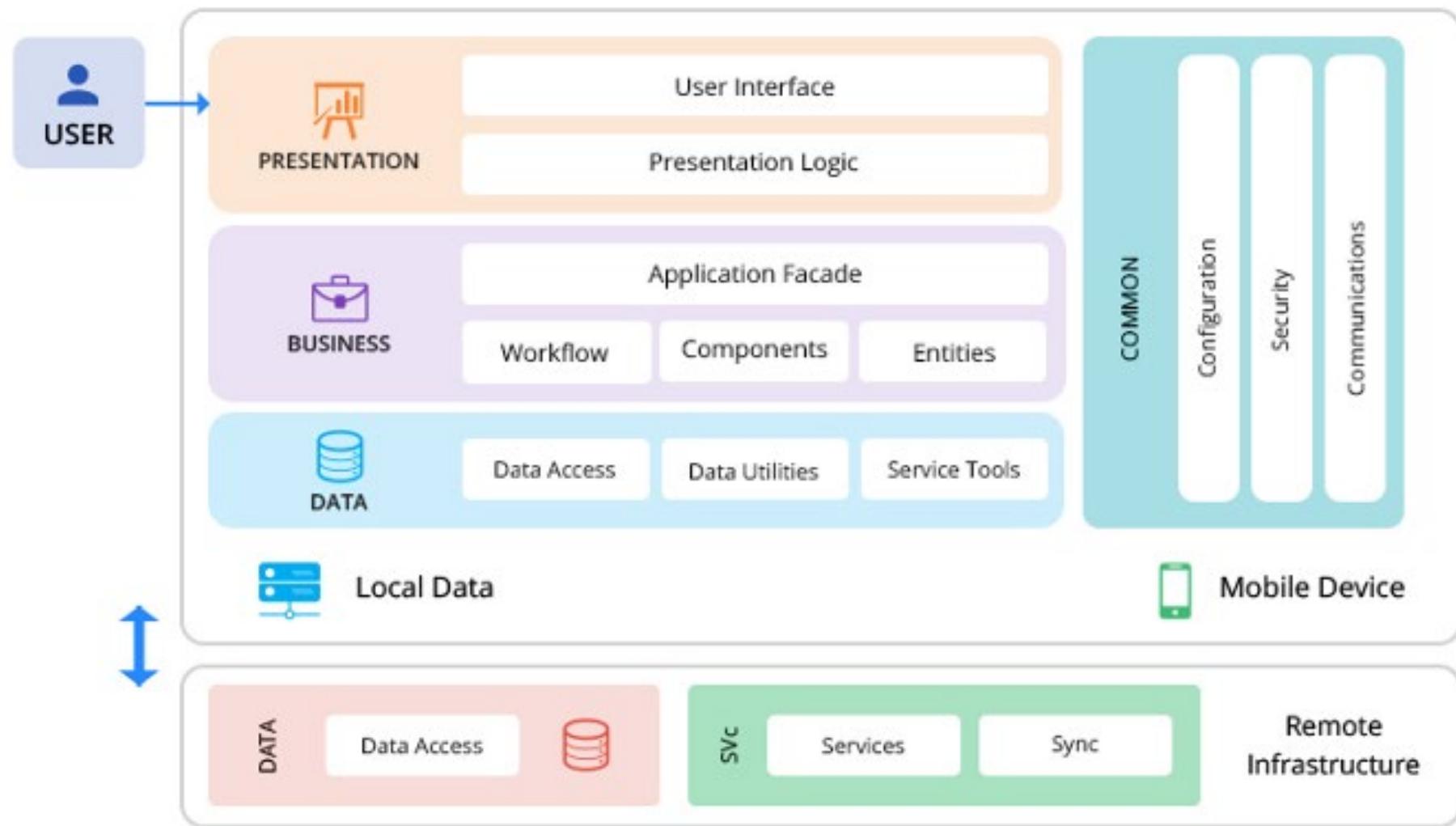
# Magic Room – Low Level Architecture



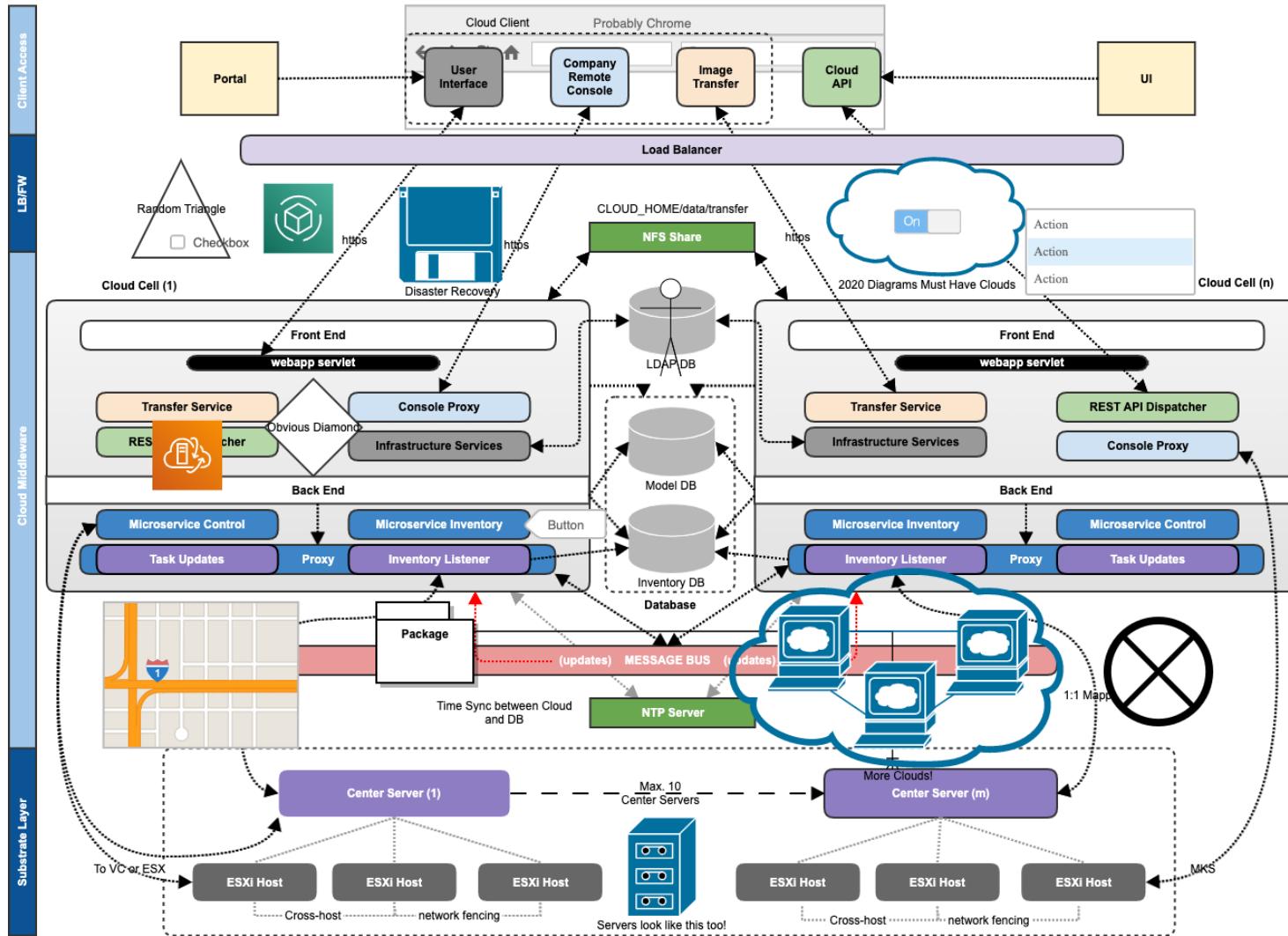
# Web App – High Level Architecture



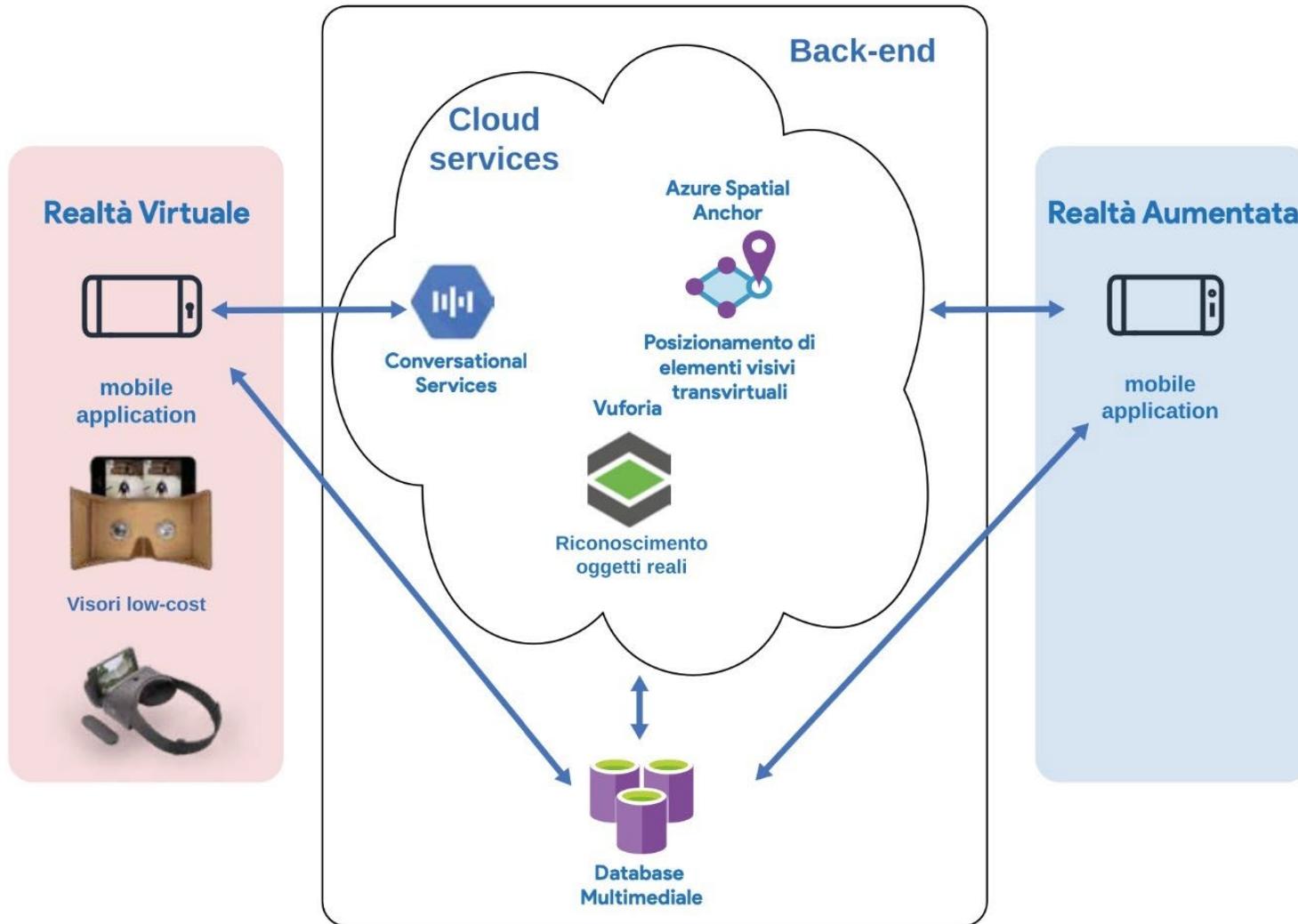
# Web App – High Level Architecture



# Web App – Low Level Architecture



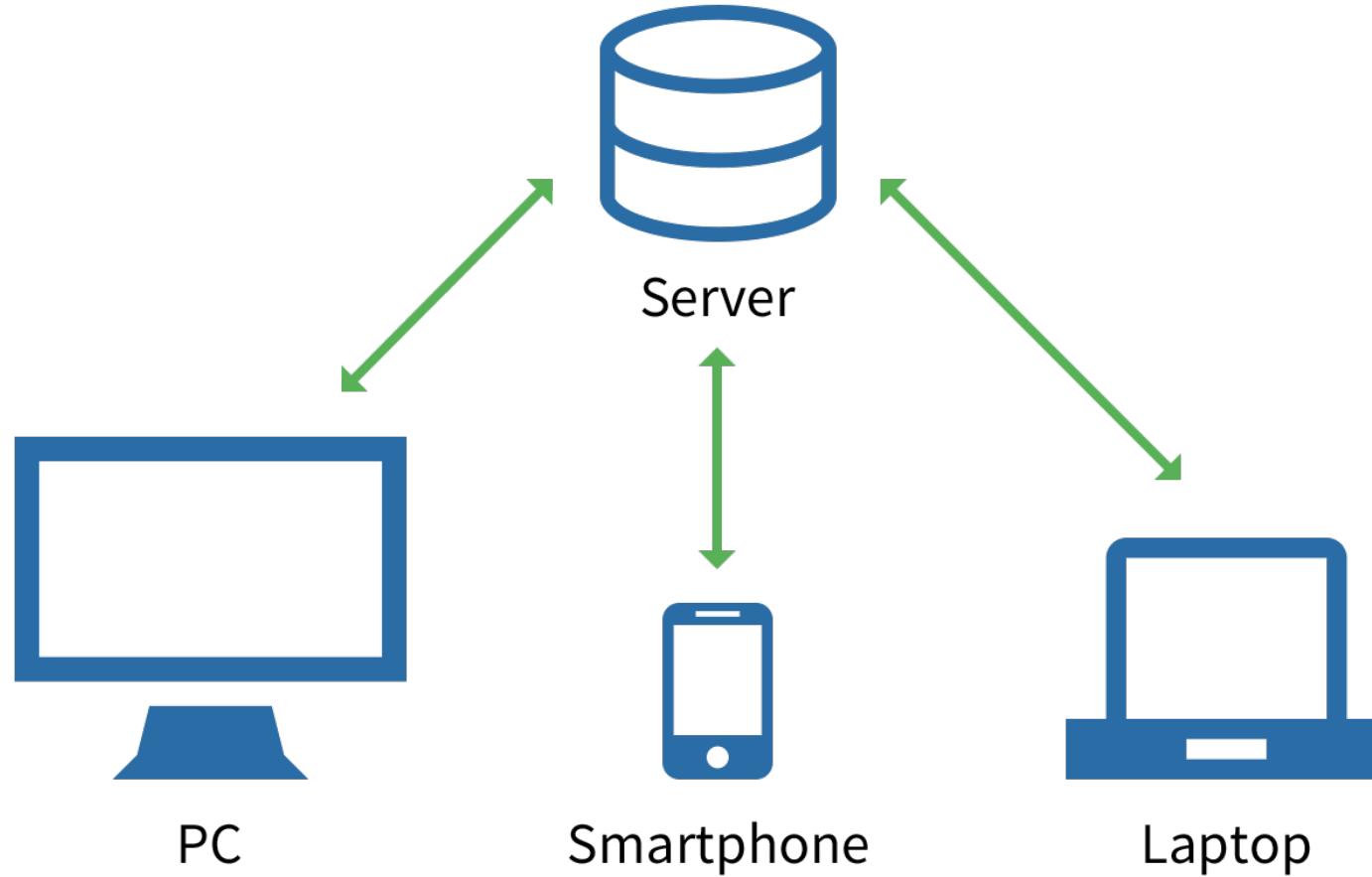
# AR/VR App – High Level Architecture



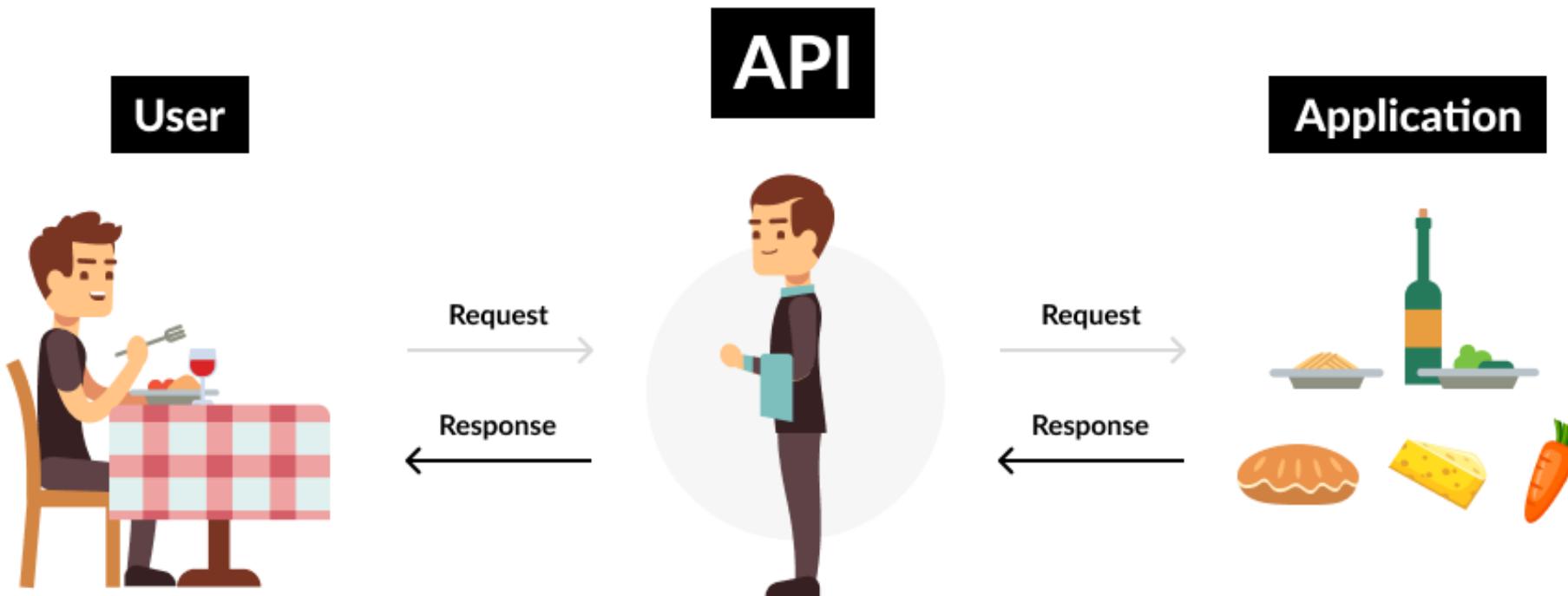
# High Level Architecture

(in your project you will only focus on this)

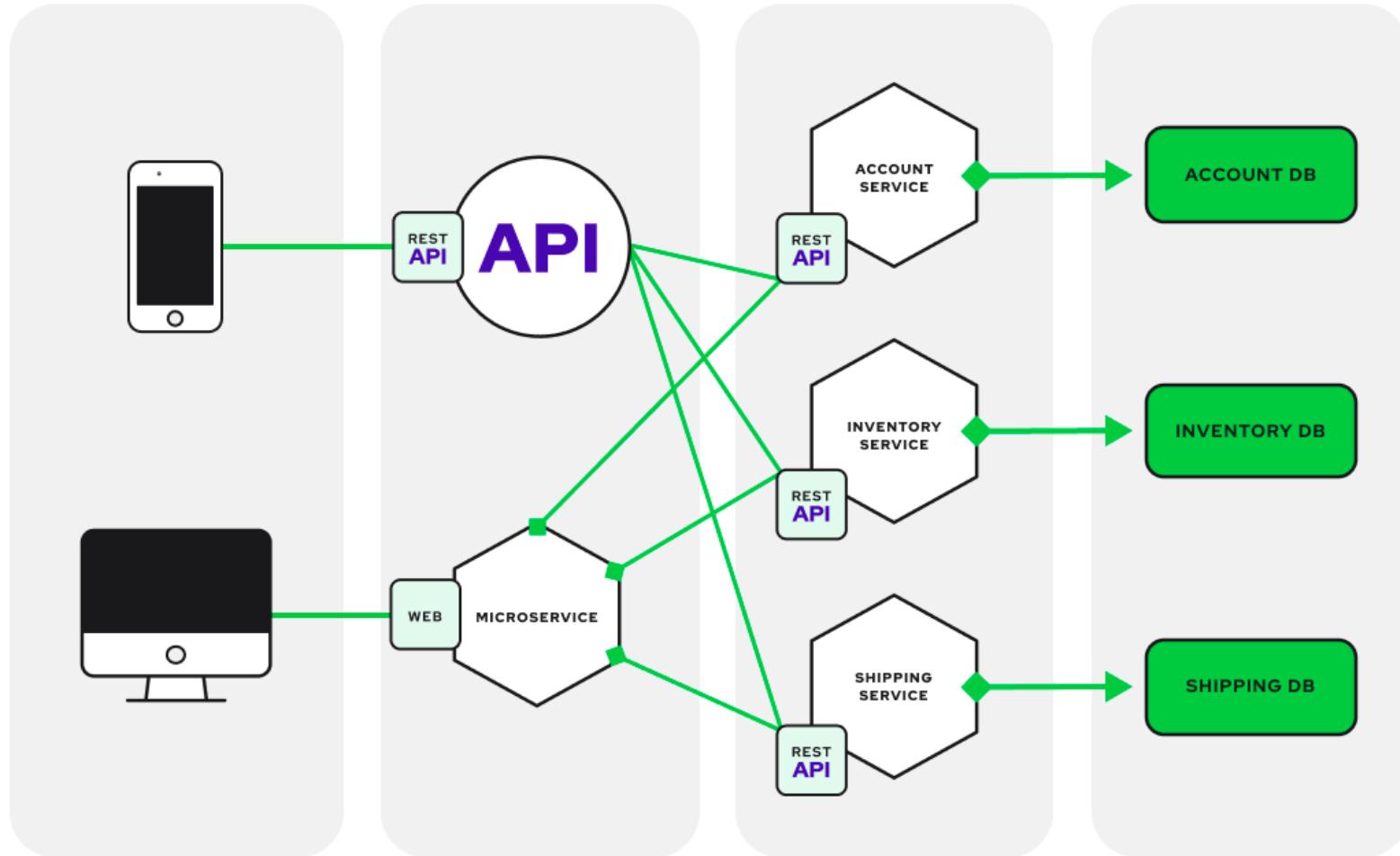
# The base: Client-Server



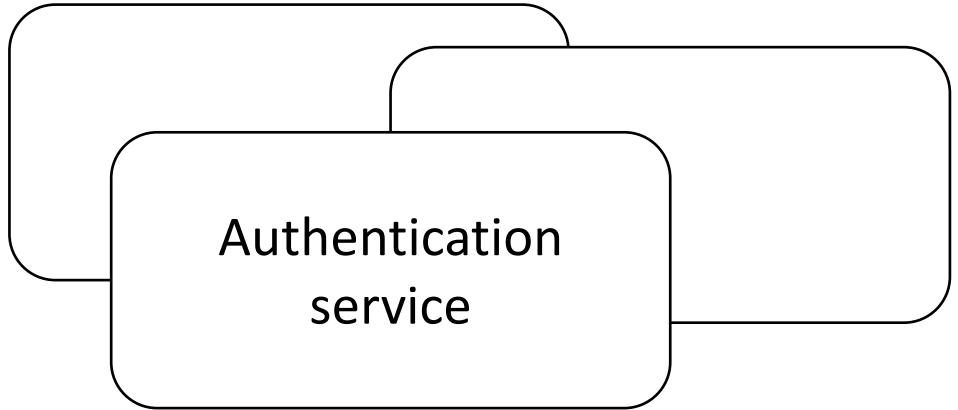
# The base: API



# The base: Microservices



# The tools

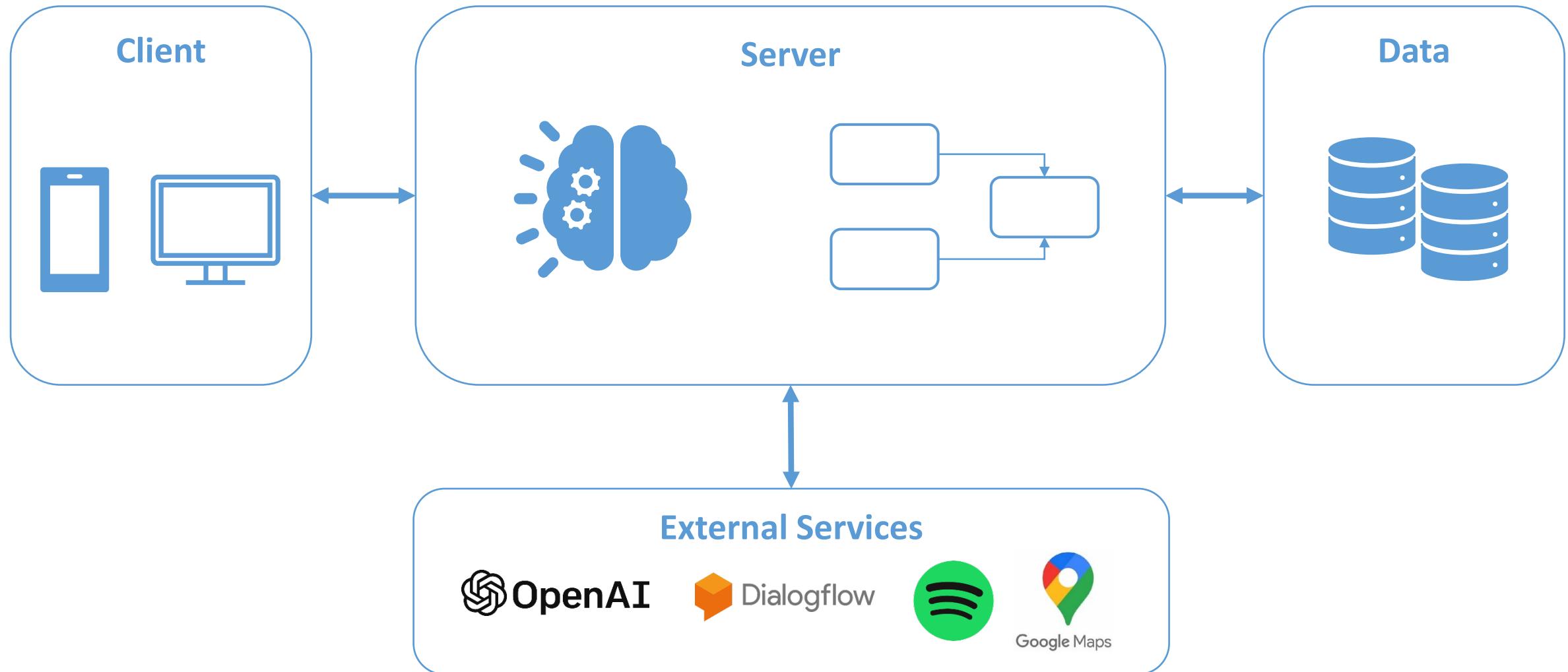


**BOXES**  
functional components



**ARROWS**  
communication components

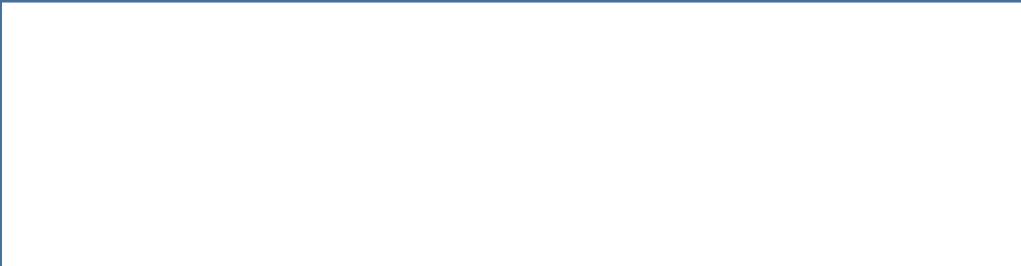
# The overall scheme



# Examples from last year projects



App.ease





# Three scenarios

Three personas have been built starting from the data gathered during the research phase. These three personas have been used to identify as many paths/scenarios inside of the application, each one of them underlining features central to the app.

## SCENARIO 1

Here the user has to face an uncomfortable situation caused by an **off-line** situation: public transport. Our user decides to use the **Calm Down Room** to wind down. This scenario showcases, as mentioned, the Calm Down Room as well as the **chatbot** and the personal **diary**.

## SCENARIO 2

The second scenario is useful to identify the "**communities**" function of the app, together with the "**time thresholds**" associated with post chats. These thresholds are useful to autistic people in order to assess whether or not the chat might be compatible to their needs.

## SCENARIO 3

The third scenario is focused on **chats** and how the tagging could work. Here we see our user interact with other people in a safe environment: the **tags** nudge her in the right direction when it comes to approaching the meaning of things.

## Scenario 1

### "THE HOMEBODY"

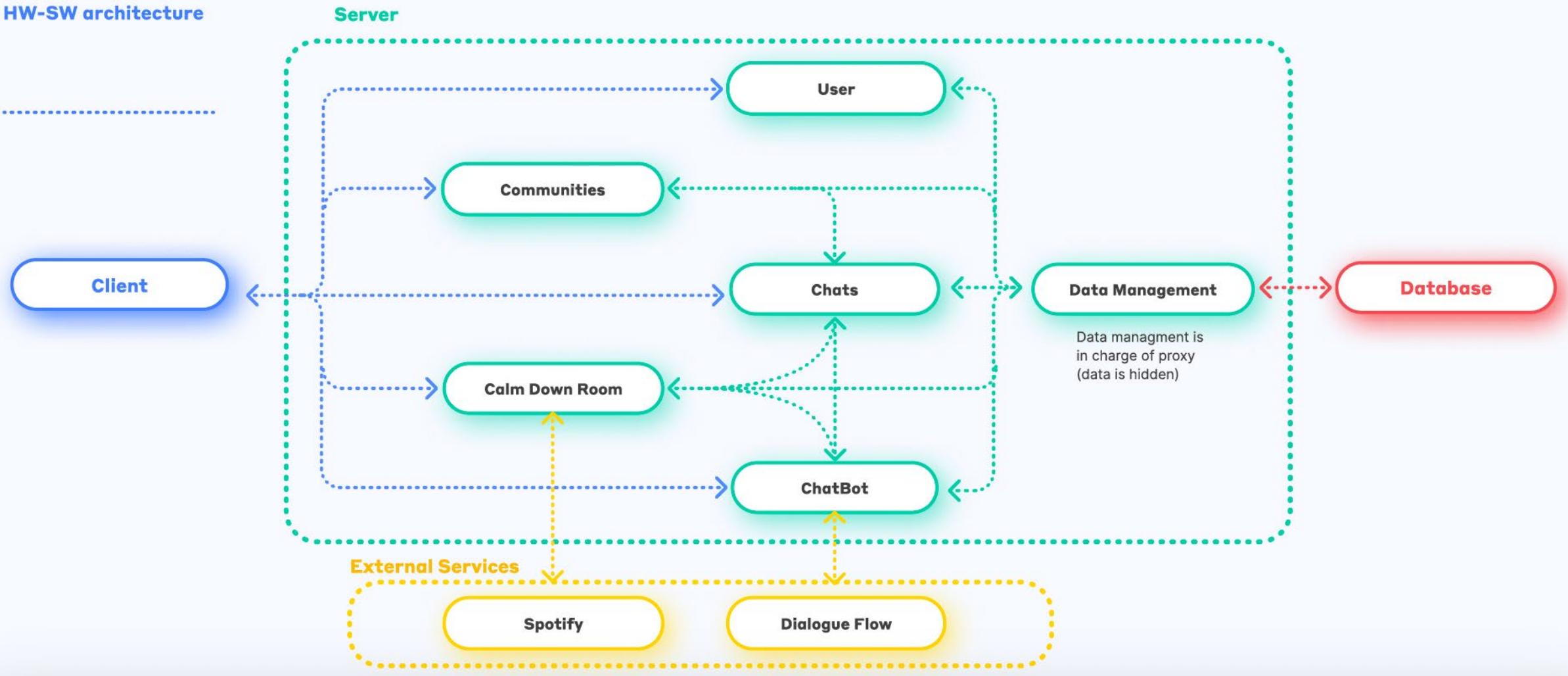


"I'd like to release offline tension"

#### USE OF THE APP:

They use it mainly for its social features, but sometimes they use the **Calm Down Room** in **real-life** situations to unwind.

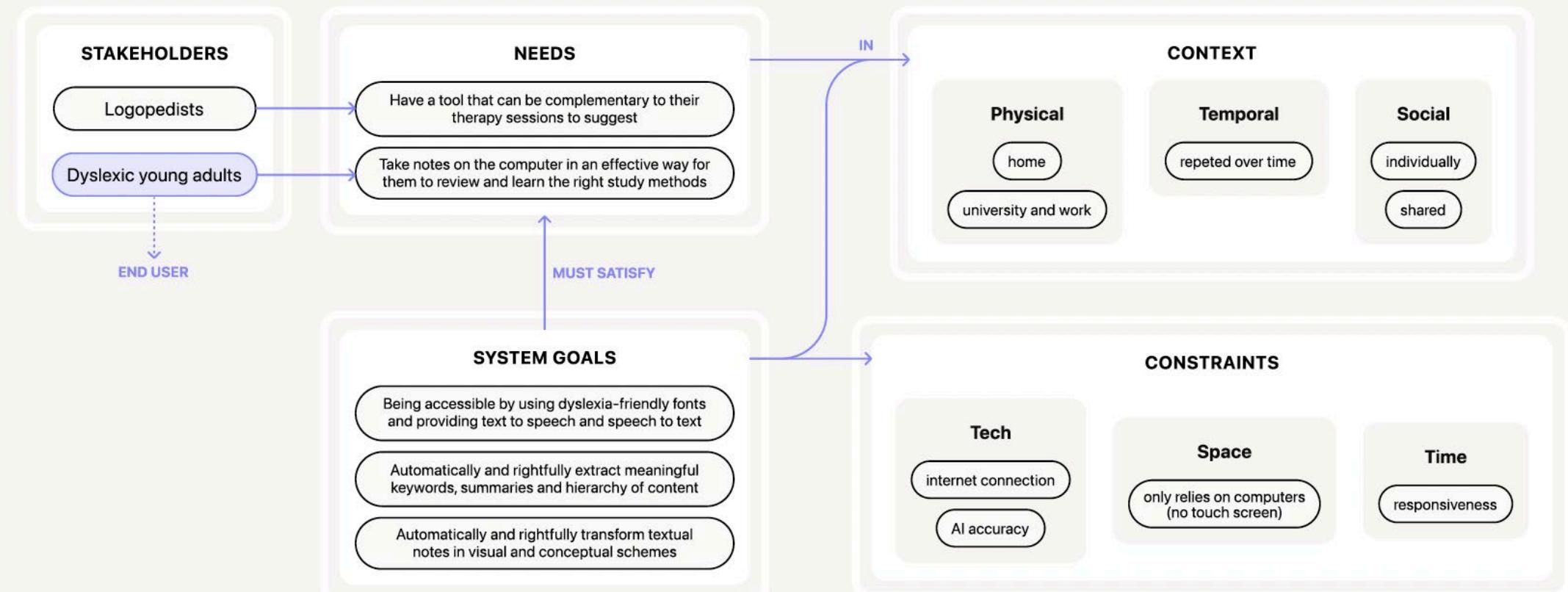
## HW-SW architecture





bear  
in mind

# UNG Model



# Andrea



## PROFILE

21 years old  
Computer Science University Student  
Copenhagen, Denmark

**Diagnosed with Dyslexia at 15**

GAMER

TECH SAVVY

ARTSY

## READING



## NEED TO TAKE NOTES



## WRITING ON COMPUTER



## MAIN GOAL

Keep a high GPA in order to enter in the most renowned exchange program of her university.

## MAIN CONCERN

She doesn't want to use compensatory tools because she doesn't want other people to think she's different.

## MAIN NEED

Have an efficient study method and find the best way for her to memorize what she studies.

## SCENARIO 1

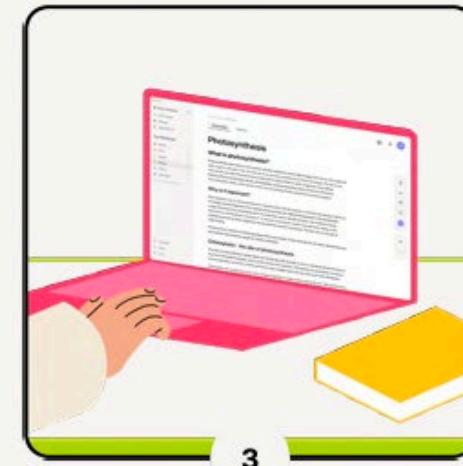
### Andrea studies from her notes for an exam



1



2



3



4

Andrea opens **Bear in Mind** and enters her **School Workspace**

She enters her **Biology Notebook** to check her notes

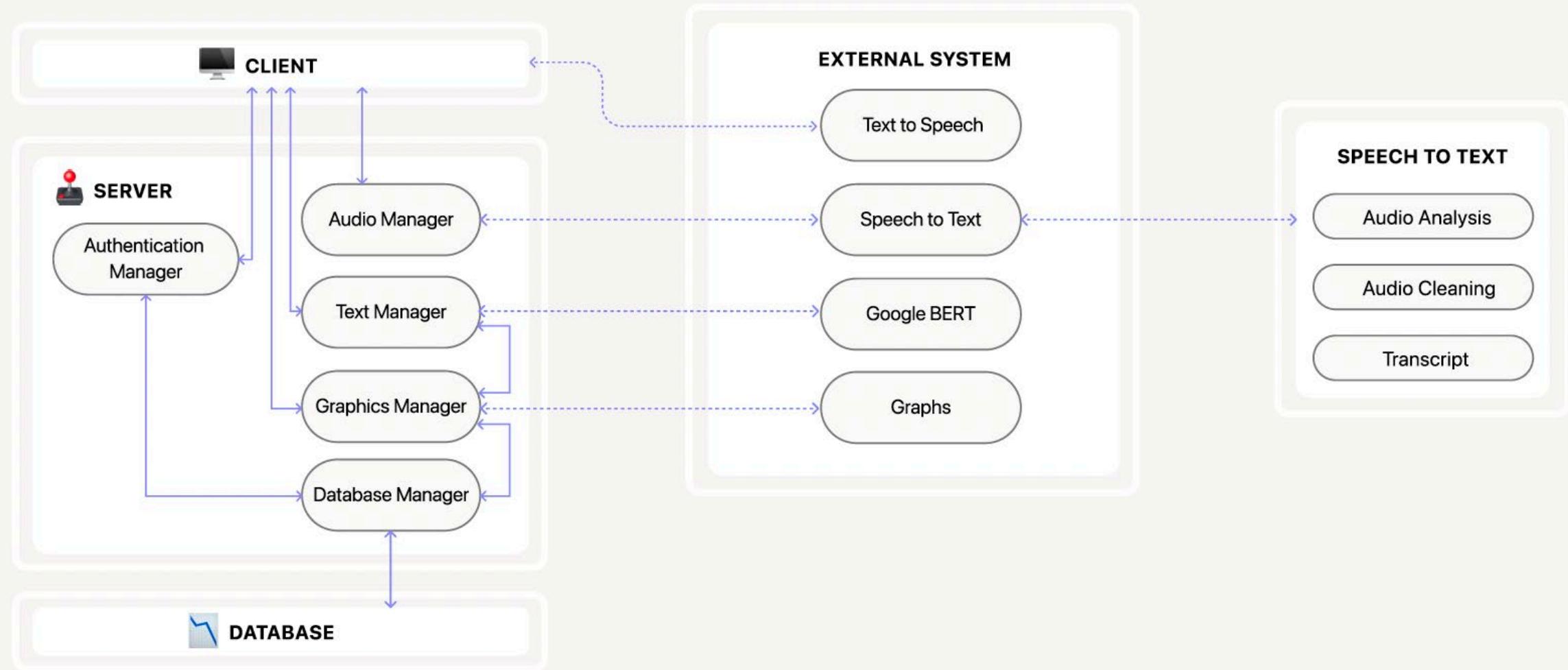
She sees the **summaries** with the highlighted keywords

Then, she goes to the **diagrams** of the page to study

#### ⌚ User goal

She wants to quickly organize her notes so that she can assimilate them better and pass any exam with ease.

## TECHNOLOGY ARCHITECTURE



**BEATBLOCK**  
**UNLOCK**  
**THE BLOCK!**

<b>STAKEHOLDERS</b>	<b>NEEDS</b>	<b>CONTEXT</b>	<b>CONSTRAINTS</b>
Municipality and institutions e.g. Comune di Milano, Scuola Media, Scuola Civica di Musica	Close proximity with social aggregation places Supporting network of people with similar interests Relieving one's feelings and creative potential	Organizational Teens: Discovery & Decision phase; Engagement & Participation phase Planners: Organization phase; Promotion Phase	Resources Low budget and low maintenance; free activities
Local associations e.g. Oratorio, Mare Culturale Urbano, Neighborhood Associations		Physical Outdoors and in suburban areas, especially those that would benefit from a renewal and represent potential social gatherings hot-spots.	Technology Physical Hubs: Speaker, Distributed Control System, Connection, Touch sensor, Mobile App: GPS, Internet Connection, Connection to the Hub
<b>END USERS</b>	<b>GOALS</b>	Social Hub: gathering around the physical touchpoint, which is made by one central 'Core', 5 playable 'Blocks' and an extra seating structure. App: social media interaction dynamics	Interaction Jam Session Events App (meant for individual use)
Primary Performers: Teenagers looking for self-expression music activities Admins: teens, educators, volunteers and activity planners from local associations	Make every place a potential gathering place Create a community Allow everyone to actively participate in music production, regardless of their experience level	Temporal Hub: session duration max: 40 minutes; inactive during nighttime. App: short and repetitive interactions.	
Secondary Teenagers looking for any kind of stimuli as well as social gathering opportunities			
Tertiary Community of reference, neighborhood			

# Design scenarios

As displayed in the previous sections, Beatblock's design takes into consideration different kinds of users who bring along several distinct needs. In order to gain a better understanding of the system's possible uses, this section will be focusing on three use case scenarios.

It is fundamental to keep in mind the context in which Beatblock is situated: outskirts areas that show a lack of offer for self expression activities for teens or areas where building relationships around constructive activities for personal growth is quite difficult. In an environment such as the one described, many different actors try to fit into the complex scene and at some point, struggle with reaching their goals. These pain points will be made explicit in each scenario presented.

The following use cases are tailored on three specific user profiles, defined on the base of the information gained during an on-field research phase. Three different experience journeys will be described, showing functionalities and interactions useful to the targeted users.

## Scenario 1 Carlo creates an event

### User profile

Carlo is a 25 y.o. activity planner for a youth association in Giambellino. He's been working for a few years with teens and has loved his job since. The main difficulty in his occupation is finding the way to get in contact with kids who do not participate in neighborhood life. When he finds out about the Beatblock initiative he sees it as a great opportunity to include teens in recreational activities outside the association walls and boost the association's networking strength.



### User goal

Carlo has mainly three aims: he would like to reach kids of the neighborhood directly, he intends to promote self-expression activities and encourage the use of free public spaces for constructive purposes. It could be said that Carlo's general goal is to create a connection between educators and planners like him, and teens who hang out in the area.

### Context of use

While at home, he downloads the Beatblock app and checks out how everything works.

### Carlo's task

Once he understood Beatblock's dynamics Carlo decides to create an event in Giambellino's hub. To do so he clicks on the "+" button and starts defining the event's details. First, he chooses the name, date and time of the event, next he selects the hub in which he wishes to have the performance. He then proceeds to write a description of his idea for the event, he wants to propose a catchy style for teenagers, so he goes for a rap soundset. After the main library has been chosen, he browses the illustrations and picks a cover for the event. Lastly he sends invitations to some friends he already follows on Beatblock app and shares the event on other social media.

Once the event is set up, Carlo only has to wait for the day to arrive. On the day of the event he goes to the hub and scans the QR code on the core, this way he has access to the hub settings. He decides not to play as a performer, but to let the participants take part in the music production, so he limits himself to managing the participants and the sound requests that arrive.

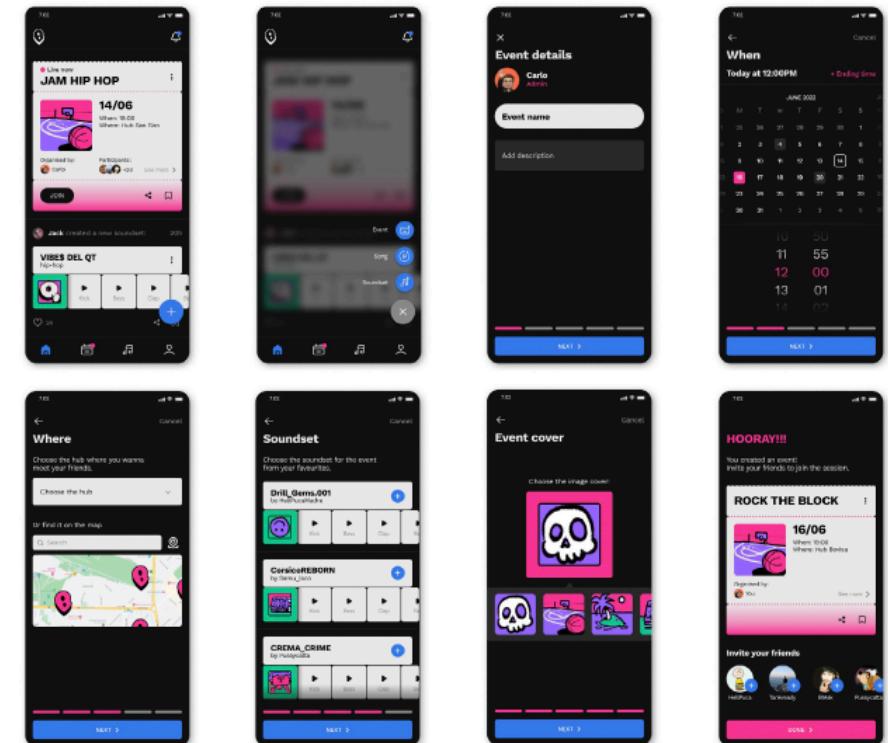
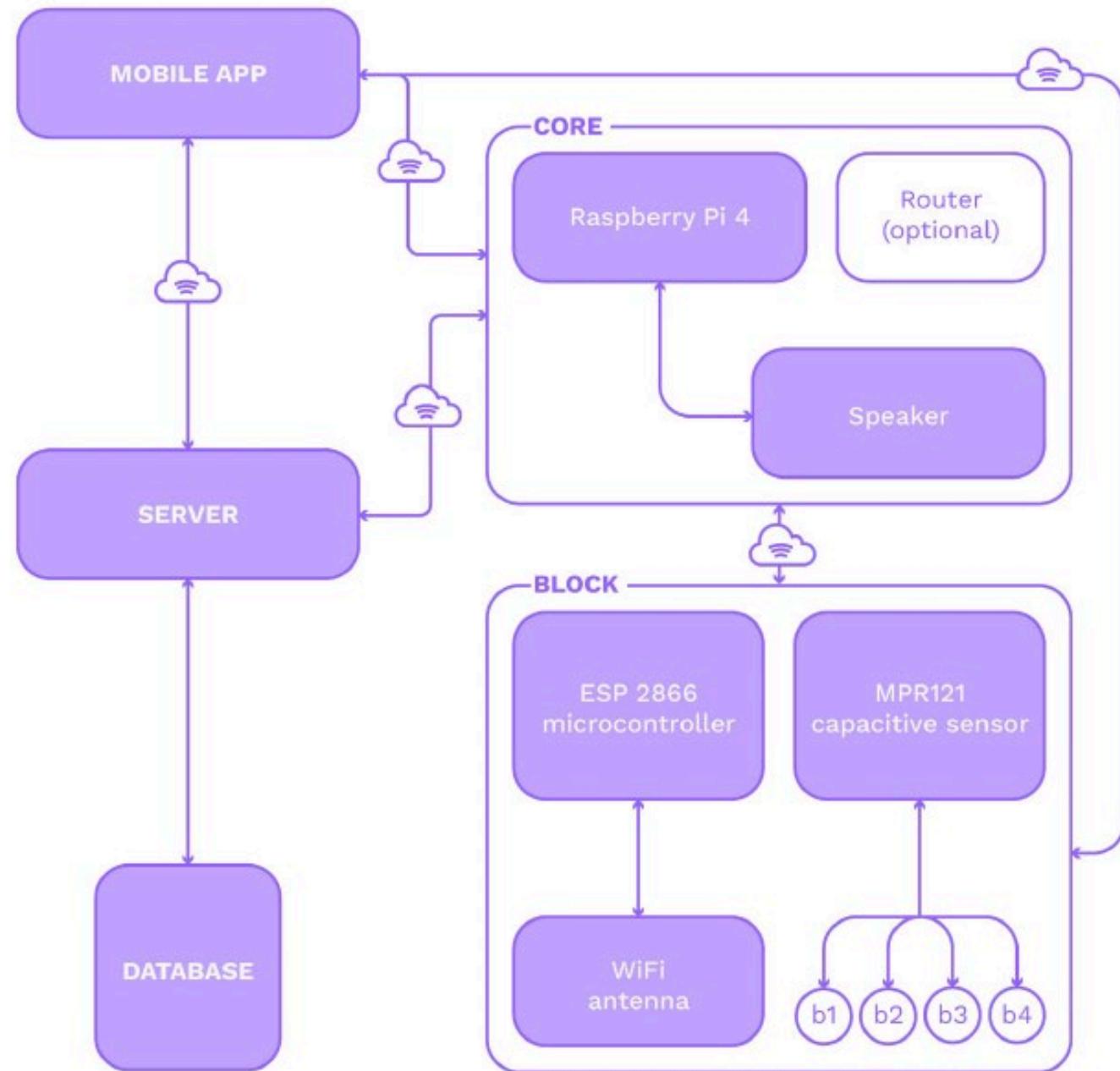
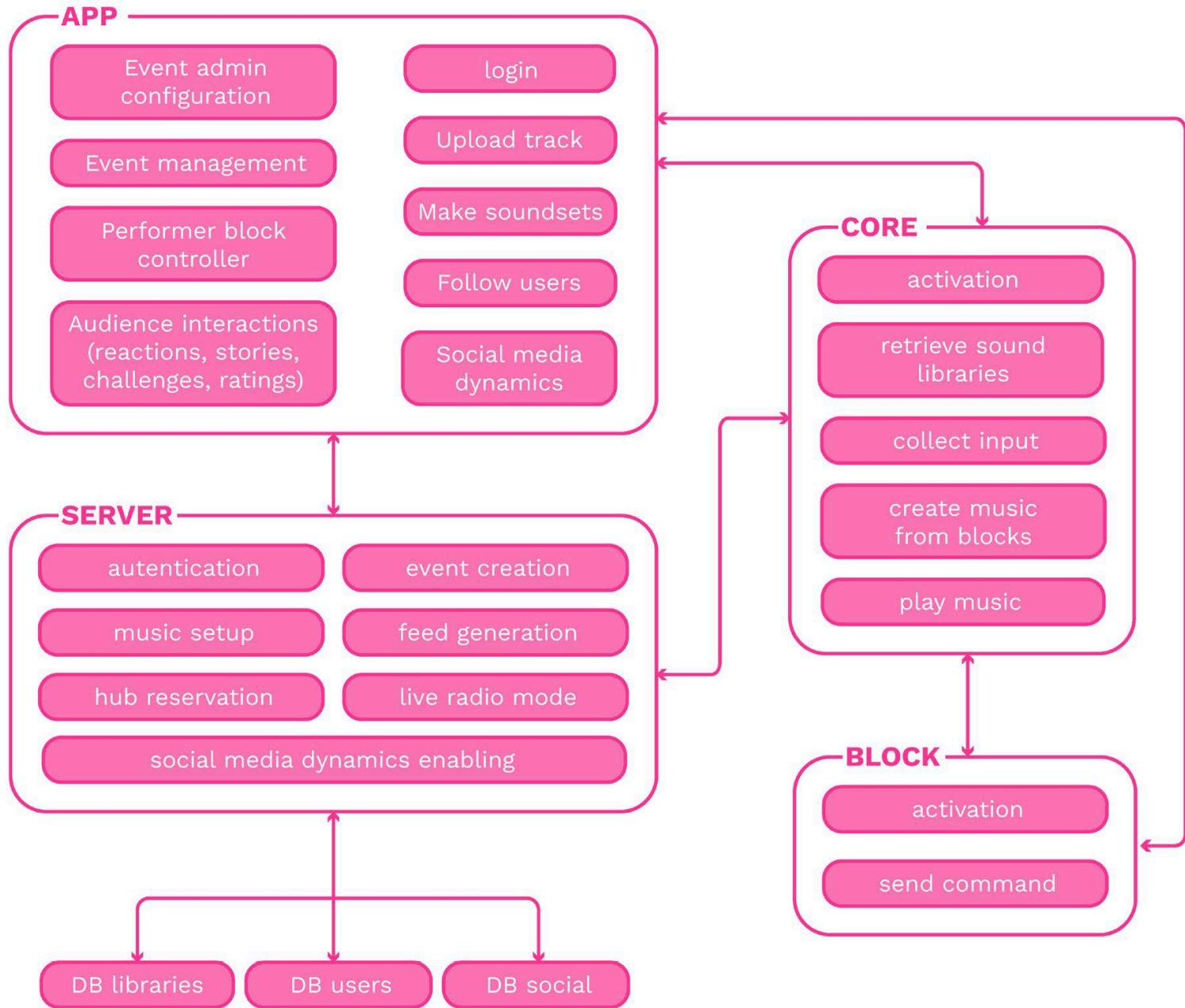


Fig. 8 to15 - Phase 1: Carlo creates an event on the Beatblock app





# Recap: Technical Documentation

*“repetita iuvant”*

# TECHNICAL DOCUMENTATION

A report that distills the key results of your UX design process

Main contents

**High level specifications of:**

- The **problem** you want to solve (**User Requirements**)
- What the user does with the product (**User Activities**)
- Enabling **technology**

+ **exemplification** of your **design** for the **interface** and the **interactions** (**Design Scenarios**)

+ **state of the art review**

# Report structure – must be followed

- **Cover** (with course name, names, ID, and email of all group members) + Each members' picture + **Abstract** (max 150 words)
- **TABLE OF CONTENTS with page numbers**
- **Introduction**
- **User Requirements**
- **User Activities**
- **Examples of Design Solution (Design Scenarios)**
- **Technological Architecture**
- **Competitors Analysis**
- **Conclusion (Value proposition)**
- **Annex** (optional)

# Technical documentation: details about specific sections of the report

- **Introduction:** An executive summary of what your project is about (max 1 pag)
- **User requirements**
  - **UNG** Model diagram
  - A **concise** representation of: User “Profiles” (i.e., the types of users and the general characteristics of each type); for each user profile, its NEEDS and GOALS (what they want to achieve); CONSTRAINTS of the users and the entire project. The representation can use **diagrams** (e.g., the UNG conceptual model) + Short **textual** explanation
- **User Activities**
  - Commented Diagrams describing the users’ “**process**”, i.e., the main activities performed with the system, and related **tasks**

# Technical documentation: details about specific sections

## **Examples of Design Solutions**

3-4 design scenarios

## **Technological Architecture**

One or more diagrams describing your system works from a technological perspective:

- Data and Functional Components
- «Collaborations» among the above pieces, i.e., which components communicate with which other elements and which data they share
- Hardware devices (e.g., user devices, external services, sensors and actuators)

# Technical documentation: details about specific sections

- **Competitors Analysis**

State of the art review of products/prototypes/research projects that address a similar problem

- **Conclusion (Value proposition)**

Sum-up and short discussion of why your project is unique and what is the main value of it

- **Annexes (optional)**

- Any relevant contents e.g., Figma diagrams, images, etc..)

# HANDS-ON

Describe the current output of your user research using UNG Model

# Exercise: Modeling Requirements

Define the UNG model for INCLUDE - a multiplatform application for charities (e.g., the Red Cross) *that* facilitates and makes more efficient the **management of resources**, while offering a data visualization tool to monitor the needs of disadvantaged people (see next slide)

The platform allows operators to insert requests and assign to volunteers the requests collected from people in need, while providing support in the assignment phase in order to perform the most efficient allocation of resources (e.g., volunteers) to satisfy such requests. In addition, the platform must support high-level policy makers in making decisions, offering the possibility to analyze the data about the support needs of disadvantaged people

## The process with INCLUDE

