

Report: Defining App Functions for Program Needs

Judo Intellectual Disability Project (JIDP)

2024-26

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1 INTRODUCCION

Obesity is a growing concern among children and adolescents with intellectual disabilities (ID), with a significantly higher prevalence compared to the typically developing population (Maiano, 2011; Segal et al., 2016). Various studies highlight that this population faces additional risk factors, such as alterations in body composition, motor skill deficiencies, barriers to physical activity, food selectivity, and the use of medications that contribute to weight gain (Bandini et al., 2021). Moreover, dietary patterns reveal low consumption of fruits and vegetables and high intake of fats, reinforcing the need for effective strategies to improve their nutritional habits (Skrzypek et al., 2021).

However, interventions specifically designed for young people with ID are scarce and often lack a comprehensive approach that combines diet, physical activity, and family involvement (Boutelle et al., 2017; Bandini et al., 2021). Current strategies often focus on dietary modifications, such as eliminating unhealthy foods, but rarely address how to incorporate nutritious foods into daily routines or promote sustainable habits in collaboration with families (Adolfsson et al., 2008; Mirza et al., 2022b).

In this context, the JIDP project, funded by the Erasmus+ Sport program, represents an innovative opportunity to address this challenge. This project combines a sports program based on judo with a comprehensive approach that includes nutritional habits and active family support. The project's methodology focuses on co-creating strategies that foster a healthy lifestyle, tailored to the needs of participants with ID.

The combination of a sports program, such as judo, with a nutritional approach offers multiple benefits. On one hand, it promotes regular physical activity, improving motor skills and overall health. On the other hand, nutritional interventions help establish healthy eating habits from an early age. By integrating families into this process, greater adherence and sustainability of interventions are ensured, as family environments play a crucial role in implementing lasting changes.



JIDP also provides a valuable framework for disseminating good practices and innovative strategies at the European level, promoting inclusion and the well-being of individuals with ID. This comprehensive approach not only addresses the specific needs of this vulnerable population but also contributes to obesity prevention and improved quality of life. Ultimately, this project aims to demonstrate that collaboration between sports, nutrition, and families can generate a positive and sustainable impact on the health and well-being of adolescents with ID.

2 MOBILE APP DESIGN PHASES

The design process for the mobile application is structured into several key phases to ensure its effectiveness, adaptability, and user-centric approach. The process begins with a **preliminary phase with programmers**, where the technical and functional requirements of the application are defined to establish a solid foundation. This is followed by **meetings with families**, including interviews and workshops to understand their specific needs and expectations, ensuring the app is tailored to the target users. Subsequently, **meetings with partner coordinators** are conducted to coordinate requirements across different countries and ensure the application is coherent and adaptable to diverse contexts. The **final meetings with programmers and developers** focus on making necessary adjustments, conducting thorough testing, and validating the application's functionalities. Lastly, the **final proposal** involves presenting the mobile application in a pilot phase, where it is tested in a real-world environment to refine and confirm its effectiveness before wider implementation. This comprehensive process integrates technical expertise, user feedback, and collaborative input to create a well-rounded and impactful application.

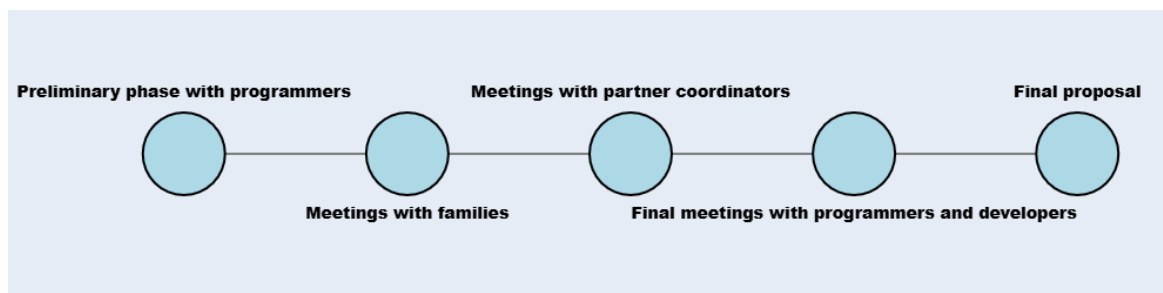


Figure 1. diagram representing the PHASES OF MOBILE APP DESIGN

3 PRELIMINARY PHASE: MEETINGS WITH THE PROGRAMMER

Following the establishment of the project's objectives, we organized an initial meeting with a programmer. The purpose of this meeting was to communicate the identified needs and assess the feasibility of creating a mobile application focused on nutrition. The rationale for this initiative was based on the increasing use of electronic devices among the target population. During this session, several critical ideas and questions emerged:

1. **Economic social network:** Exploring ways to integrate social interactions with minimal financial constraints.
2. **Usability:** Ensuring the app is as simple as possible, given the target users' limited technological skills.
3. **Funding:** Discussing potential sources of financial support for the app's development and maintenance.
4. **Existing solutions:** Evaluating whether similar apps already exist that could serve as a reference or foundation.
5. **Restricted registration system:** Ensuring controlled access to the app to maintain privacy and security.
6. **Dual accounts:** Enabling a single user to manage two accounts (e.g., for children and parents).

The programmer provided initial insights to guide the conceptualization process. Key points emphasized included:

a. **Registration:** Establishing a clear and secure user registration process. b. **Country-specific user setup:** Designing the app to allow user accounts to be grouped and managed by country. c. **Hierarchical roles:** Defining roles within the app, including super admins, admins, and participants, to ensure structured management. d. **Visual brainstorming:** Starting with a blank canvas to sketch and envision how the app should function and appear.

This meeting set the groundwork for further refinement of the app's structure and features.

Building on the outcomes of the first meeting, we reconvened with the programmer to present our preliminary vision for the app. This session focused on consolidating ideas and refining the app's design. Key activities and discussions included:

1. **Presentation of a draft:** We shared a basic mock-up illustrating our envisioned structure and functionality.
2. **Gamification elements:** The programmer introduced the idea of integrating point systems, such as belt colors and levels, to enhance user engagement.
3. **Social features:** Defining a feature where users could upload photos of themselves consuming specific foods, allowing peers to interact with these posts.
4. **Ranking system:** Discussing the creation of a ranking feature to incentivize participation, where users could progress through various levels based on their achievements.
5. **Sponsorship opportunities:** Exploring potential collaborations with sponsors to support the app.
6. **Privacy considerations:** Highlighting the importance of understanding different privacy requirements across countries.

7. **Multilingual support:** Addressing the need for the app to be accessible in multiple languages.
8. **Accessibility features:** Ensuring the app is user-friendly for individuals with varying abilities.

This iterative session allowed us to align our vision with technical possibilities and user-centric considerations, laying the foundation for a comprehensive and functional application design.

4 PHASE 2. MEETING WITH FAMILIES

Before continuing with development, we organized a meeting with the participants' families to gather their opinions and understand their needs and dynamics. During this meeting, the following key points were addressed:

1. **Single account:** It was established that each participant would have a single account, which could be managed by the children or their parents.
2. **No "likes" on posts:** Avoid this type of interaction to prevent frustration among participants.
3. **Visual content:** Prioritize a highly visual design.
4. **Reduced text:** Minimize text as some participants have difficulties reading.
5. **Communication with emojis and voice messages:** Facilitate simple and accessible interactions.
6. **Weekly challenges:** Propose three weekly challenges, planned from the first day, to help participants structure their activities.
7. **Judo-related challenge:** Incorporate a challenge within the judo activity to motivate participants.
8. **Personalized final goal:** Establish a personal challenge as a goal.
9. **Optional ranking:** Make the ranking visible only if the user wishes.
10. **Food preferences:** Define what foods participants would be willing to consume, which would also require parental support.

After gathering ideas and suggestions from the families, we met again with the programmer to integrate this information into the preliminary application design. During this meeting, the following aspects were defined:

1. **Single account with email:** Allow a single account to be managed by multiple users.
2. **Profile photo:** Include an initial photo of the user.
3. **Consent forms:** Add a screen for signing the necessary consents.
4. **Introduction screen:** Provide information about the project and the application.
5. **Levels screen:** Display the available levels.

6. **Access to challenges:** Allow users to access the list of challenges by selecting a level.
7. **Individual challenges:** Facilitate the completion and recording of each challenge individually.
8. **Challenge photos:** Upload a photo upon completing each challenge.
9. **Local and global rankings:** Reflect progress in both a national and global ranking.
10. **Web platform for coordinators:** Create a web platform where coordinators can manage users, supervise interactions, and control the application.

This phase allowed for the refinement of the initial app design, ensuring alignment with the needs and preferences of the end users.

5 PHASE 3. PARTNER MEETINGS ON APPLICATION DESIGN

The goal of these meetings was to review and refine the preliminary ideas for the application design, based on contributions from the project team and families. Questions were presented to gather suggestions and address key issues, ensuring the app aligns with the needs of all stakeholders.

Key Questions and Suggestions

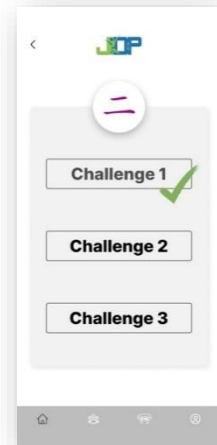
1. Design of the Challenges

- Suggestions included:
 - The design looks professional but not necessarily fun.
 - The challenges are inclusive and engaging, especially for those supporting individuals with disabilities.
 - The design is fine as presented.
- Additional inputs:
 - Define program duration.
 - Specify the number of challenges per level and per week.
 - Consider organizing screens by trimester.



2. Weekly Challenges

- Suggestions included:
 - Three weekly challenges might be too much, particularly during holidays when training sessions are less frequent.
 - Focus on school periods for challenges.
 - Consider what should be taught on each screen, including videos, photos, and explanations.



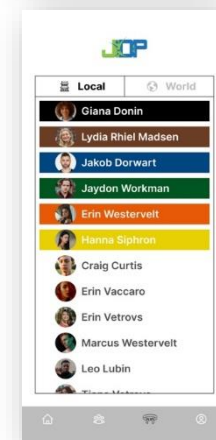
3. Instagram-Type Format

- Suggestions included uploading photos to verify and share challenge completion with others. However, no detailed responses were provided on this point.



4. Ranking System

- Suggestions included:
 - Add participant names and countries for identification.
 - Relate belt colors to healthy eating levels, such as linking fruits and vegetables with specific colors.

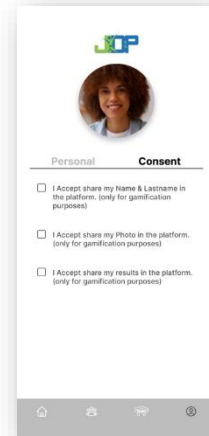


5. Local vs. Global Features

- Partners generally agreed on dividing functionalities between local (entity-specific) and global (all countries combined) levels.

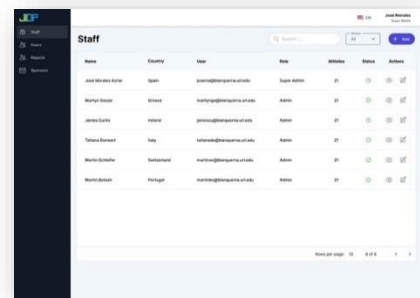
6. Permissions and Consent

- Partners confirmed that similar legal requirements apply across all participating countries (e.g., Spain, Italy, Greece, and Portugal).
- Suggested using parent names for consent, as participants are minors.



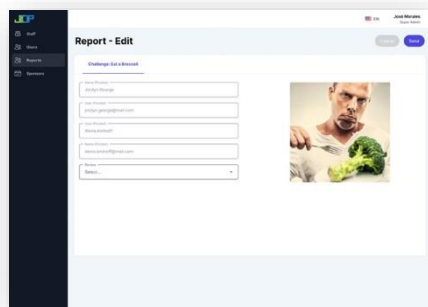
7. Administrative Structure

- Suggestions included:
 - A single super administrator for the entire project.
 - Local administrators for each participating country.



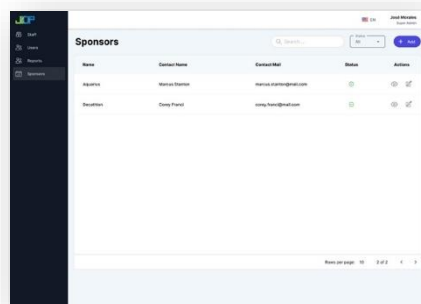
8. Photo Reporting

- Suggestions included:
 - Supervisors should handle photo reports to ensure quality and safety.
 - Concerns were raised about the time-consuming nature of supervision, with some advocating for parental training to delegate responsibility.
 - Opinions were divided on whether to keep or remove the option for participants to report inappropriate photos.



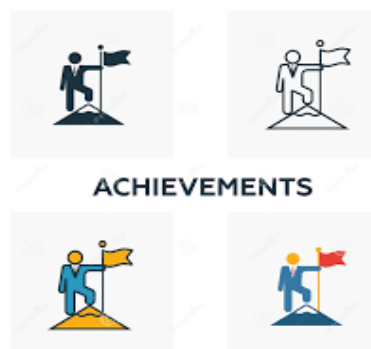
9. Sponsorship

- Suggestions included:
 - Using sponsorships to fund socially engaging activities.
 - Providing tickets for competitions or awarding judogi (judo uniforms) to participants.
 - Offering recognition to sponsors through awards.



10. Ranking Visibility

- Suggestions included:
 - Private rankings were preferred by some.
 - Others believed visible rankings would motivate participants.



11. Additional Contributions

- Suggestions included:
 - Incorporate more game-like challenges for judo training.
 - Encourage local administrators to upload judo videos to share fun exercises globally.

12. Conclusions

Based on the feedback from partners, the following decisions and refinements were made:

1. Define the program's duration, number of challenges per level, and weekly challenges.
2. Focus on school periods for activities.
3. Clarify the educational content for each screen, incorporating videos, photos, and explanations.
4. Make the initial screen more visually appealing.
5. Link levels with fruit colors corresponding to belt colors.
6. Remove the "like" feature from the social component to avoid frustration.
7. Prioritize videos and audio interactions over text-based features.
8. Make the ranking optional, allowing users to view it only if desired.



9. Assign a single super administrator and one supervisor per country, with flexibility to add members as needed.
10. Remove the option for participants to delete or report photos directly. Supervisors will handle reports and verify their validity.

6 FINAL PHASE WITH PROGRAMMERS AND DEVELOPERS

Overview

During this phase, all the information gathered from previous stages was shared with the programmer to finalize the app design. The following outlines the finalized structure and the steps taken to define the application's features and challenges for the first trimester.

Final Structure and Process

1. Quarterly Structure:

- The app will reset every trimester, starting fresh with new challenges. While users cannot revisit completed levels, their progress will still be recorded.

2. Initial Screen:

- The app will feature 10 levels:
 - **9 levels** correspond to judo belts, reimagined with fruit colors to promote healthy eating.
 - **1 bonus level** focusing on personal challenges, where participants can earn a trophy.

3. Challenges for Each Level:

- Each level includes 3 challenges.
- Every challenge offers 3 options, allowing participants to choose the one they prefer. Once chosen, the option is locked, and participants must complete the goal and upload a photo as proof.
- **Challenge explanation formats:**
 1. Voice instructions.
 2. Visual aids (images of food items).
 3. Videos or audio recordings explaining the task.

4. Educational Videos:

- Trainers and participants can upload videos explaining the nutritional benefits of the tasks. These videos will appear periodically on the initial screen and will include a "check" option to mark them as viewed.

5. Photo and Audio Reporting:

- Images and audios uploaded to the app can be reported if deemed inappropriate. The project organizers will decide whether to remove the content.
- Posts can include captions in text (with emojis) or audio format, and the same applies to interactions on each post.

6. Role of Trainers:

- Trainers can be granted permission by country administrators to participate in tasks and motivate users by setting examples.

7. Dynamic Food List:

- The programmer implemented a feature where consumed foods are removed from the pending list, ensuring varied challenges.

8. Level Overview:

- A settings screen allows participants to view their current level and track progress through completed trimesters.

Defined Levels and Challenges

Below is the structure for the first trimester's levels and challenges:

We asked the programmer to make a list of foods and that when eating one of them they would disappear from the list so that we could do various challenges.

Vegetables	Root Vegetables	Legumes	Fruits	Dishes / Recipes
Tomato	Tomato	Chickpeas	Apple	Salad, Soup, Puree
Vegetable Dish	Stews	Mix vegetables with eggs	Mix pasta with vegetables	Pasta Salad
Lentil Salad	Salad			
Bell Pepper (red, green, yellow)	Potato	Lentils	Banana	
Potato	Zucchini	Green beans	Orange	
Onion	Onion	Beans	Strawberry	
Garlic	Lettuce	Peas	Kiwi	
Zucchini	Carrot	Broad beans	Pineapple	
Eggplant	Cucumber	Garrofón	Mango	
Asparagus	Asparagus	Soybeans	Peach	
Artichoke	Eggplant	Azuki beans	Pear	
Lettuce	Green bean	Kidney beans	Watermelon	
Spinach	Broccoli	Broad beans	Melon	
Broccoli	Cauliflower		Lemon	
Cauliflower	Spinach		Mandarin	
Green bean	Artichoke		Grapefruit	
Pea	Pumpkin		Plum	
Carrot	Pea		Cherry	
Pumpkin	Radish		Fig	
Cucumber	Beetroot		Papaya	
Celery	Garlic		Pomegranate	
Leek			Avocado	
Mushroom			Passionfruit	
Wild Mushrooms			Blackberries	
Beetroot			Persimmon	
Cabbage			Date	
Chard			Quince	
			Chili Pepper	
			Loquat	



Level 1:

Challenge 1: Eat a salad containing at least one of the following ingredients:	Challenge 2: Bring and eat fruit during training, choosing from:	Challenge 3: Eat a vegetable dish containing one of the following:
- Lettuce	- Apple	- Green beans
- Tomato	- Banana	- Broccoli
- Cucumber	- Grapes	- Spinach

Level 2:

Challenge 1: Eat one of the following nuts as dessert:	Challenge 2: Bring and eat fruit during training, choosing from:	Challenge 3: Mix one of these vegetables with eggs:
- Peanuts	- Orange	- Zucchini
- Walnuts	- Strawberry	- Asparagus
- Almonds	- Watermelon	- Cherry tomato

Level 3:

Challenge 1: Eat a pasta salad containing:	Challenge 2: Bring and eat fruit during training, choosing from:	Challenge 3: Eat a dish containing:
- Lettuce	- Mandarin	- Lentils
- Onion	- Kiwi	- Potatoes
- Carrot	- Pear	- Chickpeas

Level 4:

Challenge 1: Eat a soup containing at least one of the following ingredients:	Challenge 2: Bring and eat nuts during training, choosing from:	Challenge 3: Eat a dish containing at least one of these ingredients:
- Peas	- Pistachios	- Quinoa
- Onion	- Cashews	- Green beans
- Potatoes	- Hazelnuts	- Corn



Level 5:

Challenge 1: Eat a puree containing at least one of these ingredients:	Challenge 2: Bring and eat fruit during training, choosing from:	Challenge 3: Mix potatoes with one of these vegetables:
- Potatoes	- Pineapple	- Cauliflower
- Zucchini	- Apple	- Broccoli
- Carrot	- Plum	- Chard

Level 6:

Challenge 1: Eat a salad containing at least one of these ingredients:	Challenge 2: Bring and eat fruit during training, choosing from:	Challenge 3: Eat a dish containing:
- Brown rice	- Pear	- Green beans
- Quinoa	- Strawberries	- Chickpeas
- Whole wheat pasta	- Apple	- Lentils

Level 7:

Challenge 1: Eat a vegetable dish containing at least one of these ingredients:	Challenge 2: Bring and eat fruit during training, choosing from:	Challenge 3: Eat a dish containing at least one of these ingredients:
- Broccoli	- Cherries	- Peas
- Spinach	- Banana	- Carrot
- Green beans	- Melon	- Potatoes

Level 8:

Challenge 1: Eat a dish containing at least one of these ingredients:	Challenge 2: Bring and eat at least one of the following nuts during training:	Challenge 3: Mix a pasta dish with at least one of these ingredients:
- Celery	- Peanuts	- Cherry tomatoes
- Leek	- Pine nuts	- Mushrooms



Challenge 1: Eat a dish containing at least one of these ingredients:	Challenge 2: Bring and eat at least one of the following nuts during training:	Challenge 3: Mix a pasta dish with at least one of these ingredients:
- Pumpkin	- Macadamia nuts	- Peppers

Level 9:

Challenge 1: Eat a salad containing at least one of these ingredients:	Challenge 2: Bring and eat fruit during training, choosing from:	Challenge 3: Eat a dish containing at least one of these ingredients:
- Beetroot	- Orange	- Brown rice
- Cucumber	- Strawberry	- Quinoa
- Corn	- Apple	- Whole wheat pasta

Level 10: Free Challenge: For this final level, challenge yourself to eat a food you have never tried before. By completing this, you will become a SUPERHERO (accompanied by a superhero drawing).

Prototype Proposal

Following the summer, the programmer presented an updated prototype for the app based on these specifications:

- **Consent:** A parental consent form will address privacy concerns.
- **Image Bank:** A shared repository of images will represent all foods listed in the challenges.
- **Advertising:** No advertisements will appear in Spain; decisions regarding other countries remain pending.
- **Backend Management:** Project coordinators will register participants and manage the app through the backend.
- **Dynamic Food List:** Once a food is selected for a challenge, it will disappear from the pending list. A separate screen will show completed and pending foods.
- **Settings:** Participants can check their current level and trimester progress in the settings.
- **Video Uploads:** Trainers will upload videos directly through the backend.



This comprehensive approach ensures the app is engaging, accessible, and aligned with the project's goals of promoting healthy habits through interactive challenges and activities.

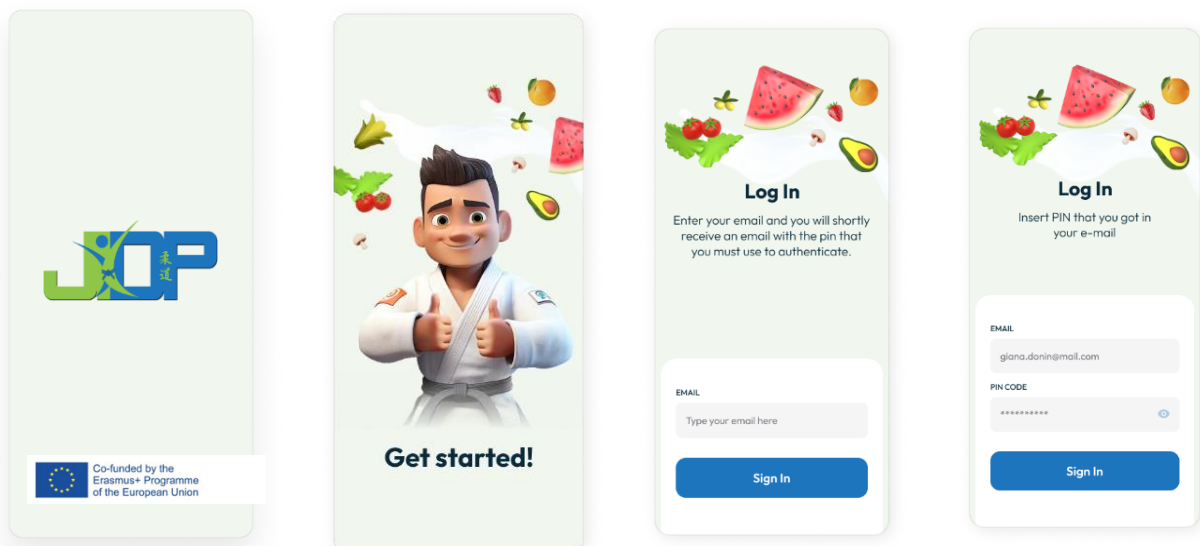
7 CONCLUSIONS. FINAL PROPOSAL

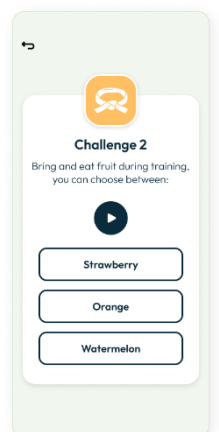
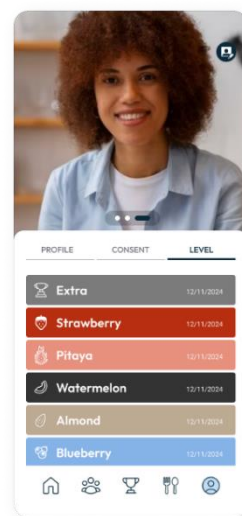
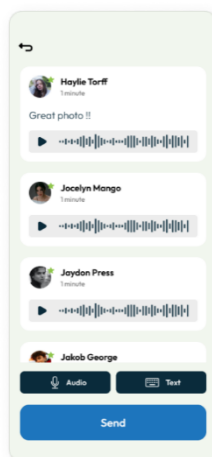
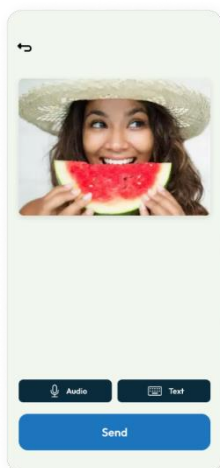
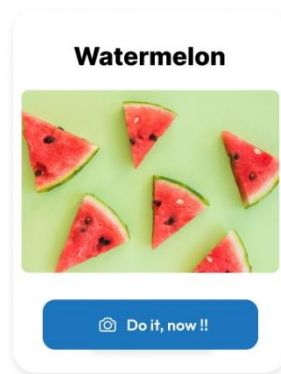
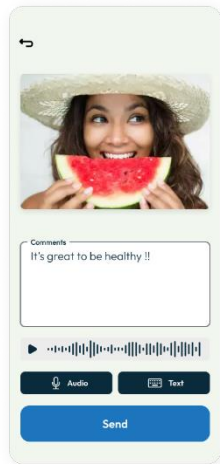
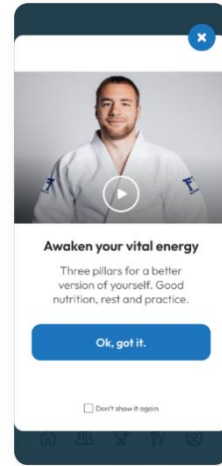
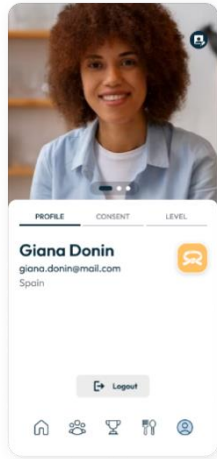
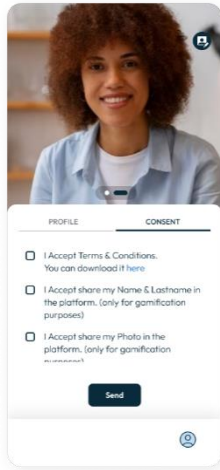
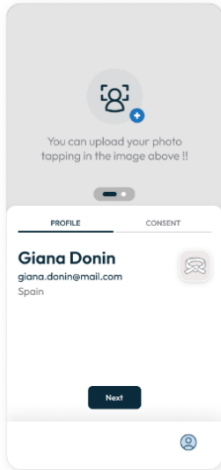
The application prototype operates on a trimester basis, with one level available each week, culminating in a total of 10 levels. Each level unlocks at the start of the week, allowing participants to organize their time to complete three challenges. For each challenge, three options are provided, enabling users to choose the one that suits them best, fostering a sense of ownership and engagement. Challenges must be completed sequentially, meaning participants cannot proceed to the second challenge without completing the first. To complete a challenge, users select a specific food item and upload a photo of themselves consuming that item to the social network screen. This screen serves as a platform where participants can post their progress and interact with others by exchanging written messages or voice recordings.

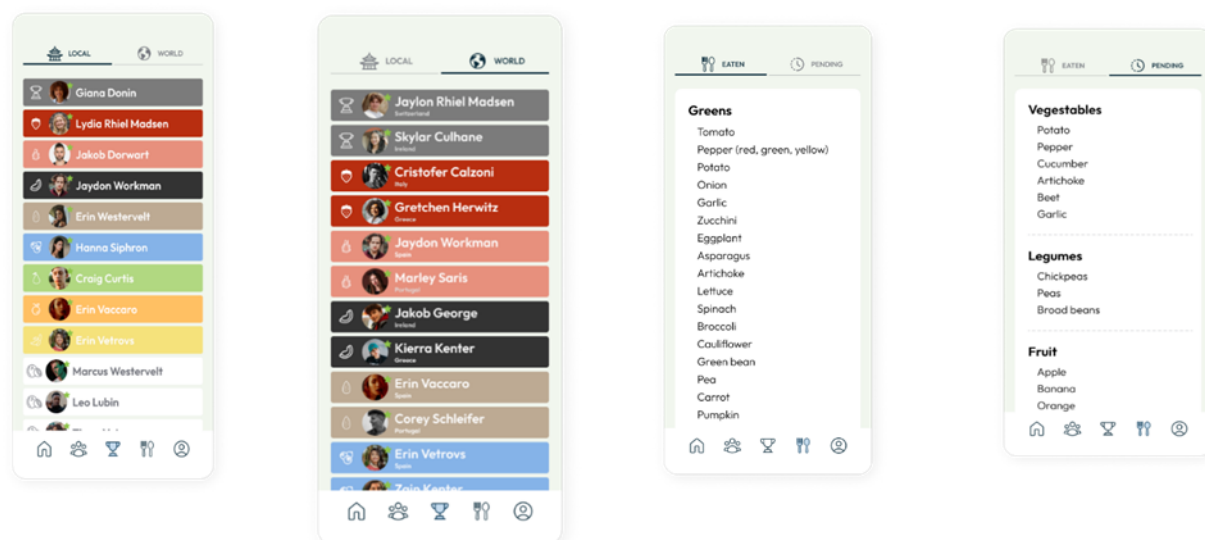
The app features two rankings: one tracks individual progress to see which level each participant has completed (with the expectation that all participants will align by the end of each week), and a second global ranking aggregates data across all countries and partners involved. Additionally, a settings screen allows users to review the consent agreements they have signed.

Professionals managing the app will have access to a dedicated web platform. This platform will enable them to oversee all aspects of the application, including user registration, onboarding new participants, organizing app functionalities, monitoring its performance, and sending messages to users. This comprehensive setup ensures effective management and support for participants while fostering collaboration and engagement across the program.

Below are the screenshots of the prototype proposed for development:







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