H4PRO

PROJECT MANAGEMENT

REPORT

JUNE 2023

COMPANY OVERVIEW

- H4PRO's vision is well defined, to revolutionize how people interact with sports and **enhance the experience** of playing and watching sports worldwide.
- The company understands its position and has a clear map of how it's going to establish itself.
- Every role is assigned to at least two people.
- Our goals are aligned internally and with our main partner **MOG**.
- Main challenges:
  - Understanding the position our company is inserted in, namely the Padel world;
  - Catching up with the details and best practices of Smartwatch app development;
  - Grasp MOG's goals, company vision, and products.

COMPANY DESCRIPTION & ORGANIZATION

- We are a software company that focuses on bridging the gap between **technology** and **sports**, with a focus on wearable and phone app development. We are currently working alongside MOG Technologies on our product, PADEL4PRO.
- Our partner MOG is a provider of **media technology** that focuses on distribution and creation, and currently branching into the sports world focusing on Padel and providing media support with **recording** and **highlighting** plays on a professional level for the casual players.

TEAM COORDINATION AND WORK PLANNING

We assigned five different roles for our company: **CEO**, **COO**, **CTO**, **Project Manager**, and **QA Director**.

- **CEO**: responsible for setting and giving strategic directions to the company.

- **COO**: responsible for maintaining business operations and developing strategies to improve management practices.

- **CTO**: responsible for developing, implementing, managing, and evaluating the company's technology resources.

- **Project Manager**: responsible for setting priorities and managing communication and stakeholder relationships.

- **QA Director**: responsible for establishing and maintaining a quality system to ensure a company's facilities, equipment, personnel, methods, processes, and procedures.
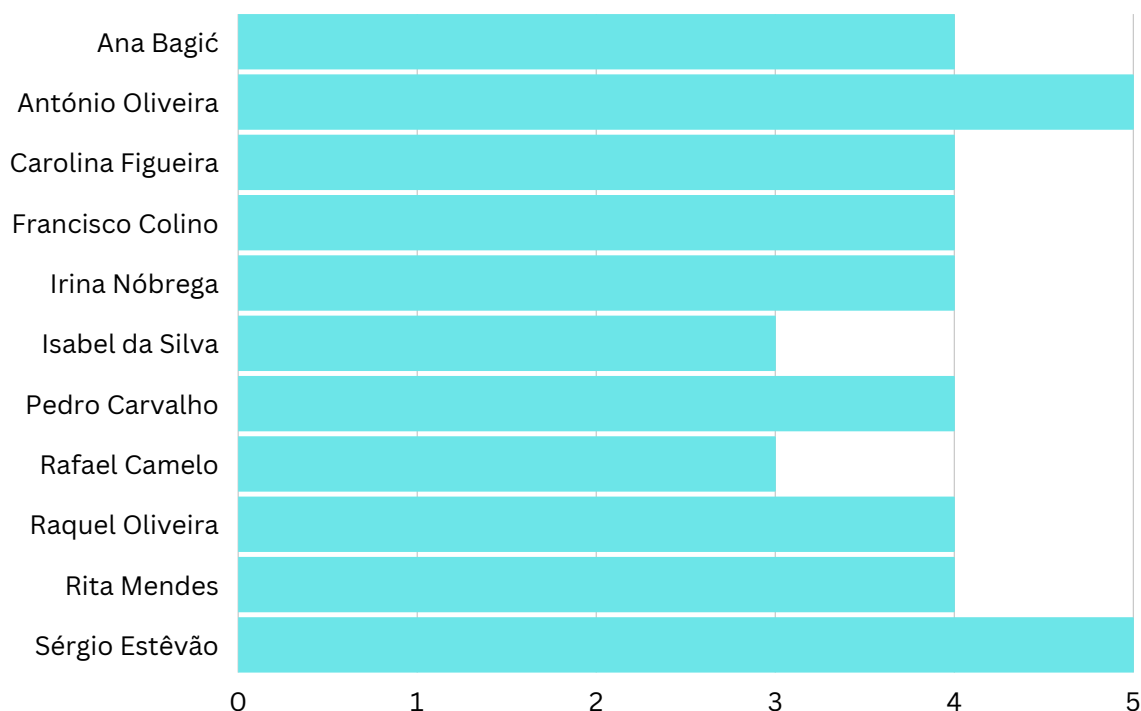
TEAM COORDINATION AND WORK PLANNING

RACI MATRIX

Project Tasks	CEO	COO	CTO	Project Manager	QA Director
Management					
Project Monitoring	A	I	I	R	I
Definition of project vision and goals	A	I	I	R	I
Connect/contact with customers and stakeholders	A	I	I	R	I
Support the delivery of value	A	I	I	R	I
Development					
Android Smartwatch App Development	R	A	R	I	R
Apple Smartwatch App Development	R	A	R	I	R
Phone App Development and Networking	R	A	R	I	R
Validation and Documentation	A	R	R	R	R

Responsible — Accountable — Consulted — Informed

TEAM COORDINATION AND COMMUNICATION MECHANISMS

- **Meetings with MOG**: we agreed that every sprint should last **2 weeks**, so the meetings with MOG are expected to happen before the end of each sprint, on Wednesdays, as is already happening.

- **Work Plan**:
  - Launch: between 10 and 17 of February;
  - Ideation: between 24 February and 17 March;
  - Build-Measure-Learn: between the 24 of March and the 26 of May;
  - LGP challenge: 2 of June;
  - Closure: between 9 and 16 of June.

- **Software used for planning and communicating**:
  - GitHub for version control;
  - Discord for communication;
  - Kanban is used to help organize what each member of the team is assigned to do in each sprint, as well as the current state of each task is in.

- Our main **organizational guideline** for the development of this project is Scrum.

- The **company's self-evaluation** for the ideation and review phases was as follows:

MAJOR RISKS & LESSONS LEARNED

H4PRO

Risk	Impact	Severity	Mitigation strategy
Project Management			
Communication problems	Can affect the completion of some deliveries		Prioritize regular contact between all team members
Lack of motivation	Productivity can be affected as well as the overall quality of the deliveries		Develop a work plan, tailored to the team working on the project
Limited time frame	Can affect the quality of the deliveries.		Unexpected changes can affect some stages of the project, which can affect the completion in the time expected
Limited availability	Can affect the quality of the deliveries		Establish an early internal deadline that allows the review of the deliveries in useful time
Resource constraints	Affect the schedule, planning of the project and overall quality.		Leverage the existing resources and prioritize tasks.
Organizational			
Team has limited experience developing smartwatch apps	Team members may need to dedicate some time to the familiarization with practices for the development of these apps		Plan initial training with the practices required to fulfill the project with the quality expected
Slow start to the development phase	Directly related to the previous risk. Can impact the schedule of the project and the delivery in useful time		Plan the project considering any changes that may happen

05

MAJOR RISKS & LESSONS LEARNED

Risk	Impact	Severity	Mitigation strategy
External			
Difficult integration of technology into the casual sports	It can lead to a limited user base of the app, impacting the overall success		Conducting thorough research, involvement of customers in the development process and testing can help reduce this risk. Promotion and marketing play a key role.
Wearable apps aren't very well-known in the market	Impact the customer base and market awareness among potential users.		Further market research and leverage user feedback through development. Promotion and marketing play a key role.
A low number of early adopters	Reduced revenue and market impact.		Focus on the user experience; smart use of social media and other marketing channels.
Technological			
No option for cross-platform development in iOS and android smartwatch apps	Having to work separately on both iOS and Android versions of the app can be more time-consuming		Split the team into two teams - one for iOS and one for android - allowing for a better focus on the task.
Integration issues MOG services	Can affect the provision of the full range of functionalities expected.		Establish clear communication channels with the stakeholders

MAJOR RISKS & LESSONS LEARNED

With this project, the main risks faced were related to the **technologies** used and the **project management** aspects, both involving new concepts for the team members. The main risks that turned out to happen and needed to be managed and the lessons learned to mitigate them are:

- **Resource constraint**
  - **Planning** - resources should be assured and allocated as soon as possible and tasks must be organized and evaluated to assess resource dependencies;
  - **Resourcefulness** - faced with a lack of resources, some measures should be investigated to work around these roadblocks, such as rethinking the plan or finding innovative ways to substitute the missing resources (ex.: temporary/experimental mocks);

- **Limited Experience**
  - **Practice** - extra time is needed to be considered when allocating tasks that involve new technologies, to counterweight the learning curve;
  - **Cooperation** - it is essential for the team to cooperate and communicate: share learning resources, not be afraid to ask questions, be proactive;

PROJECT DESCRIPTION AND CLIENT

PROJECT DESCRIPTION

The main goal of **PADEL4PRO** is to create a **smartwatch app** and a **phone app** with various features that integrate with the **MOG's media service** and enable dynamic media sharing and recording.

The main features requested are:

Record and Review Highlight
- During a game, the user should be able to press a button on the smartwatch and record the last play in PADEL4PRO's system.

Tracking Game Statistics
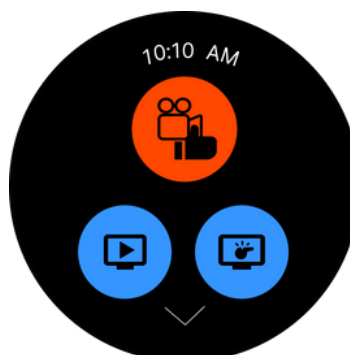- provide information about the player.

Support Decision Making
- the user is able to request the display of replays to verify possible fouls to assist in-game decisions.
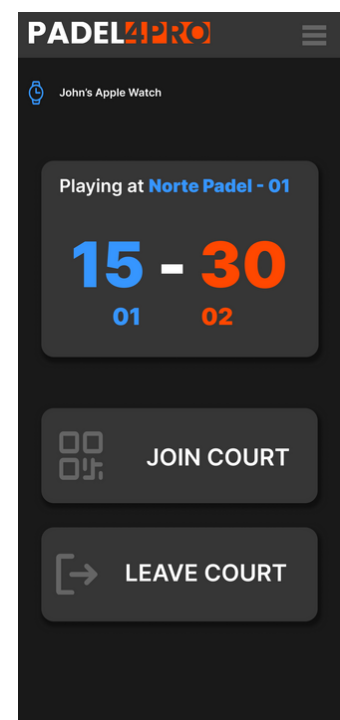
Mock-ups for the smartwatch and phone applications have been created in order to give a better understanding of how our applications will look and be used.

Display for the game score

Display for the video menu

Phone app main menu

PROJECT DESCRIPTION
AND CLIENT

CLIENT

We will work alongside our client, **MOG Technologies**, to achieve our goals in this project. They will develop the AI to detect highlights and provide the media service, **MEM4PRO**, from where our applications will communicate to save and request highlights, and game footage, as well as keep track of game statistics.

ARQUITECTURE

MEM4PRO SERVER

CAMERA SYSTEM

COURT'S TV

H4PRO'S APPS
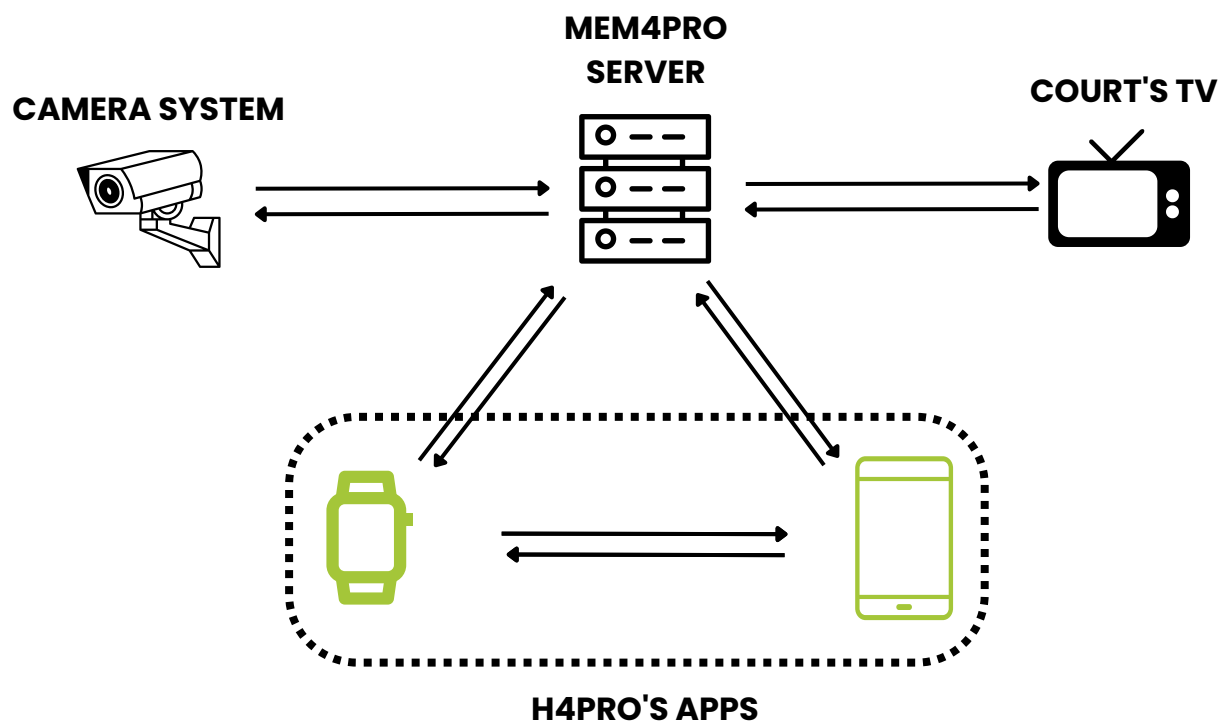
PROJECT MANAGEMENT PRACTICES

During the course of the project, we integrated, learned, and improved our project management practices (PMPs) to aid and guide our development. Compared the intermediate report, these are the PMPs implemented:

✅ Implemented

- Clear project vision and business case; **NEW!**
- Mockups of the user interface; **UPGRADE!**
- Detailed software specification;
- On-field interviews to end-users for gathering stakeholder needs; **NEW!**
- Architecture and design documents;
- Communication plan to ensure regular team communication and task synchronization; **UPGRADE!**
- Weekly feedback and progress meeting with Client; **NEW!**
- Detailed stage delivery plan with milestones (holidays considered);
- Detailed project task list and detailed development plan, dividing the sprints and setting specific deadlines for delivery; **UPGRADE!**
- Plan for controlling changes to software's specification;
- Planning materials and status information are available to all team members; **NEW!**
- Dingle key executive who has decision-making authority, a risk officer, and a technical leader; **NEW!**
- List of current risks and weekly risk monitoring; **NEW!**
- Improved experience in the business environment in which the software will operate; **NEW!**
- Quality assurance process by using code reviews and direct testing to ensure the correct execution of new changes. **NEW!**

PROJECT MANAGEMENT PRACTICES

Besides the ones implemented, there were still some PMPs that ended up not being implemented. The anonymous feedback channel and change control board due to the lack of necessity, although both are certainly useful and should be implemented in the future. The automated testing was not entirely implemented due to a lack of time.

To-Do

- Anonymous feedback channel for reporting problems to managers;
- Change control board with final authority to accept or reject proposed changes;
- Source code is not placed under automated revision control or source code control.

SCHEDULE PROGRESS

At the Start:
- We assumed that we would mostly be working on the AI aspect of the project (making models for recognition of player gestures and ball position).

Beginning of Development:
- After further discussion with the client, MOG Technologies, we found out that our focus would be on smartwatch apps, a respective phone app, and synchronization with the court session and MOG's API via the phone app.

Currently:
- During the Build-Measure-Learn phase, we were able to successfully develop the two intended applications (for smartwatch and smartphone) with the main visual required functionalities;
- Game statistics were not implemented, since it was not essential for an MVP;
- The connection with the MOG's API was not implemented, since it ended up not being provided;
- We created and planned an API architecture with the knowledge we had of the full product, and mocked its connection with our applications through commented endpoints in the source code;
- The connection between the smartphone and smartwatch applications was not possible due to a lack of resources (no physical smartwatch for us to test) and lackluster information online about Bluetooth connection between apps on different devices.

PLANNED VS ACTUAL RESOURCING

Planned Resourcing:

- After the initial meetings with the client, MOG Technologies, they ensure that we would be provided with an API to connect our product to their servers;

- Any needed hardware or accessories, including smartwatches, which none of the development team had, could be provided, if necessary;

- Further down the development process, there was a need to have a MacOS so the app for the iOS smartwatch could be implemented since Swift can only be used in iOS systems. It was planned to be given to us a MacOS device for remote access.

Actual Resourcing:

- The API was not developed, and neither were the endpoints. Our development team ended up designing the endpoints, to facilitate the integration process as much as possible;

- A smartwatch was provided close to the end of the Build-Measure-Learn phase, but it did not have WearOS. Since installing different operating systems on smartwatches is unreliable and even has legal implications, there were no tests conducted on a real smartwatch. The testing only occurred on virtual devices;

- A MacOS to develop the Swift app was only made available 2 sprints away from delivery.

Resourcing Allocation Mistakes:

- While waiting for a response regarding the availability of the MacOS, the Swift development team was put on hold, on the premise of doing extra work in the next sprint. This ended up not being reliable.

PLANNED VS ACTUAL RESOURCING

SPRINT PROGRESS

- **Sprint 1:**
  - Code boilerplate;
  - Phone: Join + Leave court buttons;
  - Smartwatch: homepage, scoreboard (without the increments).

- **Sprint 2:**
  - Smartwatch: sync screens (without the logic), started tiling, main menu updates;
  - Phone: multi-language support, login page mockups.

- **Sprint 3:**
  - Smartwatch: UI/UX improvements, tiling fixed;
  - Phone: QR code reading;
  - Attempts to install the smartwatch application on TyzonOS;
  - Attempts to establish communication between the smartwatch and phone apps.

- **Sprint 4:**
  - API architecture;
  - Mock endpoint calls on the apps;
  - Smartwatch: "waiting for phone sync" screen, debug mode;
  - Phone: menu;
  - Continuing the investigation on establishing communication between the smartwatch and phone apps.

FINAL SCOPE COMPARED TO PLAN

Initial Scope:
- Application for Android and IOS;
- Application for wearOS and watchOS;
- Connecting the smartwatch app with the smartphone app;
- Integration with MOG's API.

Some **Out-of-scope features** that are not part of the project are:
- Highlight detection using AI;
- AI enhancement of captured footage;
- Physical framework: composed of cameras and monitor for highlight displays;
- Development of MOG's API.

The **available resources changed**, and the development had to be done without:
- Smartwatch for physical testing;
- API to communicate and test the server integration;
- MacOS devices (unavailable up until the 3rd sprint).

It was delegated that MOG would provide access to a MacOS device by a physical device or virtual connection to a device in MOG's HQ. For Android/WearOS development (without a physical smartwatch) the personal computers of the team were used.

The scope **changed** over time, with the changes being:
- No application for IOS or watchOS. The access to a MacOS came too late, and it was deemed unnecessary for the MVP so the development was canceled;
- No testing of the smartwatch app on a physical device. The device given to the team was not compatible with the OS previously agreed upon with the client;
- No integration with MOG's API. Instructions for the integration with the API only came in the last sprint with the team having to define the requirements for the endpoints. The engineering of such conditions and integration was deemed not feasible in such a short timeframe.

CURRENT QUALITY FINDINGS

Smartwatch:

- Due to the lack of a smartwatch device, all the testing was done via an emulator, which allows testing with different smartwatches with different screens, through this we know the design holds.

- It is hard to validate the UX of the app since it is done for a dynamic environment, to properly validate the app we would need to simulate this environment. Without a physical watch, this becomes a speculative task and so the UX might have issues.
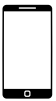
Phone:

- For testing an emulator was used, but also tested with different phones of the team, and so both the UI and UX were validated with a variety of screens and OS's.

Product:

- **Popularity:** during our public assessment, we confirmed the relevancy of our features and the likableness of our UI/UX design;

- **Scoreboard**: during our public assessment, the interactive scoreboard was a feature that had great feedback;

- **Selling Strategy**: during our public assessment, the vast majority of the public said they would not pay an extra amount for a padel court that had the PADEL4PRO system installed, however, they said they would prefer a padel court that had this system installed over one that didn't, which give good information on how the selling strategy for the product could be executed.

LESSONS LEARNED

👍 **Strengths:**

- Features approved by the target segments of the product;
- Good UI/UX design;
- Easily scalable for other sports;
- Incrementable code base;
- Innovative product;

📉 **Weaknesses:**

- No testing in the field was performed;
- No communication between the smartwatch and phone apps, and furthermore this is also complex to implement as our team came to conclude;
- No communication with an API;
- Not ready for the market yet;

✨ **Improvements:**

- Cleaner code;
- Coherent design for the applications,
- The phone app supports the required features (login, settings, quality of life improvements), and has the mocks for the API calls
- API architecture;
- Working Smartwatch app;
- Smartwatch app tests.

;

PLAN FOR THE HANDOVER

- **1º** – Give the client access to the code base and documentation;

- **2º** – Conduct transition meetings, if needed;

- **3º** – Plan for Ongoing support, including clear points of contact for any future inquiries or issues related to the project;

- **4º** – Close the procedure: update any documentation needed and archive files;

- **5º** – Evaluate the handover process: conduct a final review meeting to evaluate the handover process.