

| **1. Final APT Project Report** |
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| The objective of this report is to describe the most relevant aspects of your APT Project. It is important to provide justification for the decisions you made throughout the process.  Below, you will find various sections that you must complete with the requested information, summarizing your APT project and its main results. |

| Project Name | Teamfit |
| --- | --- |
| Area of Performance | Data analysis, data science, programming, databases, business intelligence, etc. |
| Competencies | Develop a Software solution, build data models, build routines and programs of varying complexity and manage IT projects. |

# Relevancia del proyecto APT

* *Indicate the problem your project aimed to solve and its relevance to the professional context. Some questions that may help you address this section are:*
* *Why is this topic relevant to your career?*
* *Where is the situation you are gonna address? (ie.: Country, region, municipality or institution) What are the main characteristics of this place?*
* *Who is affected or impacted by this situation (ie.: Age group, users of some service, etc.).*
* *What is the value (real or simulated) of your APT Project for the work or social context in which it was situated?*

A) Relevance of the problem addressed in the project and its relation to Software Engineering

The project is centered around trying to solve a critical problem of time allocation at Roda, a company dedicated to audits and energy system management for other companies. The objective being to optimize the use of each employee as a resource, ensuring that they’re working when needed and that they can rest at appropriate moments. This is relevant because it affects both the company’s operation and the wellbeing of the employees.

From the perspective of Software Engineering, this project is key, as data collection, transformation and cleaning are fundamental processes developing a prediction system. This involves applying advanced data analysis techniques and machine learning to more efficiently optimize human resources. These types of solutions are not only relevant in the field of engineering but are also highly sought-after skills in today’s job market, where companies seek to automate and optimize processes through technology.

The problem we are addressing takes place in Santiago, Chile, specifically at Roda, an energy management company that works with other major companies to monitor and optimize energy consumption. The characteristics of this field demand a high precision when allocating hours, both due to the nature of the work as well as the need to keep energy efficiency high.

This project directly affects the employees at Rods, who will benefit from better organization of their work schedules, as well as the company itself which will improve its efficiency and productivity. Additionally, it indirectly affects every company that receives Roda’s services, as a better management of it’s human resources translates to more efficient and better services.

The value of our APT project lies in the predictive capabilities through data compilation and processing, which will let Roda make more informed decisions about its work distribution among its employees. This technological solution will help the company reduce costs and improve employee satisfaction, employees will work in a more balanced way, making the company a more suited competitor within its sector.

# Objectives

This project has as its main objective to improve the accuracy when estimating work hours, using a machine learning algorithm to avoid overuse and underuse of hours during a semester. To achieve this, this project must meet the following objectives:

* Improving the accuracy of man hour prediction by 20% using a Machine Learning algorithm during the first 6 months after implementation.
* To give information about the state of the clusterization understandable by 80% of users, using messages and visual registry for the user, taking into account 20 users.
* Having an interface easy to use and intuitive for 70% of users, using descriptive text, tooltips and intuitive icons, considering 20 users total.

# Methodology

The system was developed with agile methodology, specifically using SCUM in sprints of 2 weeks each, using the last 2 days of every sprint to make the sprint planning of the following one. Additionally there were weekly meetings every Thursday to verify the progress of the team and that the long term work was coming along. Something worth mentioning is that in this methodology the team “works on its own” giving flexibility to how the job is done, working autonomously and nicely if the team is able to organize itself.

The phases of each sprint were daily meetings in which the progress and difficulties of the team during the sprint were reviewed. On top of this process we have Sprint Reviews, where feedback was given from the client to the development team. Another process was Sprint Retrospectives, where the team verifies what went well and what didn’t during the sprint in order to improve them in future sprints. The last process was Sprint Planning, where the stories to be developed during this sprint are selected from the Backlog. Each of these processes happen every sprint.

This Methodology was chosen as the right one for our project as we didn't have all resources needed for the project at the start, some missing projects were apis for integrations, what type of prediction was to be used, etc. This made it necessary to start by developing the web page and more basic “secondary” functions before working on more important functions. On top of being a comfortable way to work, where activities are assigned by ourselves every sprint, letting everyone work on that where they had more knowledge or that was necessary, giving flexibility to the team.

# Development

## Developed Activities and functionalities.

This project took a total of six two-weeks sprints to deliver the final result. These sprints had on average a total of 72 story points.

Los distintos sprints se han desarrollado de esta manera:

* Sprint 1:
  + Points: 110 User Story Points.
  + Main Functions: Log in, user creation, user deletion, file uploading and clustering.
* Sprint 2:
  + Points: 74 User Story Points.
  + Main Functions: Parameter selection, history deletion, log out, automatic log out, correcting mistakes from the previous sprint.
* Sprint 3:
  + Points: 53 User Story Points.
  + Main Functions: Integrating the projects API, integrating clustering, visualizing main page dashboard.
* Sprint 4:
  + Points: 45 User Story Points.
  + Main Functions: Make integration with clustering, see classified projects characteristics, configure automatic log deletion and updating parameters.
* Sprint 5:
  + Points: 81 User Story Points.
  + Main Functions: Solving previous sprint errors, password changing and integration with Odoo APIs.

## Dificultades y Facilitadores.

During development we’ve found many difficulties and facilitators.

Some facilitators have been the team being hard working and capable of self-assigning tasks. This has made it so no time is wasted giving out tasks.

Another facilitator is the team being capable of constantly advancing each task, allowing them to not leave the hardest tasks for the end, but working on them constantly.

Some difficulties were the team not being able to focus on working on their tasks, talking about themes unrelated to the project, on top of not advancing tasks for some time.

## Adjustments Made.

During the work plan there has been only one change or adjustment in planning. During sprint 4 it was mentioned that the project must be almost done for sprint 5, leading to some activities from sprint 4 being left incomplete, limiting their scope.  
  
About difficulties related to concentration problems, these were solved by choosing one member to manage and maintain concentration on activities.  
  
Apart from these changes there have been no other changes to scope or functionalities.

# Evidence

For this project the next evidence is considered.

* Github: Source code, taking into account Requirements.txt for installation. This is relevant as is the main result of the project.
* Backlog: User stories and functionalities of the project. This lets us validate the progress and final delivery of the project.
* Data Base: It's the relational Database used by the system. Allows to validate and facilitate the organization of the used data.
* System Architecture: Architecture used by the system. It considers the understanding and interaction between different parts of the system.
* Burndown Chart: Registry of the activities made during the project and the progress made. It’s relevant as it allows us to know the progress and problems that have happened during development.

# Intereses y proyecciones profesionales

Now is presented the different reflections and professional projections of every group member.

Reflexion about APT project in the development of professional interests:

*¿De qué manera tu Proyecto APT te sirvió para tener mayor conocimiento de tus intereses profesionales? Luego de terminar tu Proyecto APT, ¿tus intereses profesionales siguen siendo los mismos que planteaste al comienzo de la asignatura?*

*In which way your APT project helped you to have more knowledge about your professional interests? After completing your APT project. Your professional interest keeps being the same you proposed at the beginning of the course?.*

Jeremías Canto: This project helped me review and deepen my abilities and knowledge in web development using Python and Js, and in a lower level in Database and Machine Learning. About my professional Interests, as in the beginning I still have some doubts, but with some ideas to guide them, not a lot has changed in this.

Marcelo Criado: Work in this project has allowed me to explore and develop my skills in different areas taught in the IT engineering classes. This also helped me to improve my skills for teamwork and agile framework. Finally I have identified which areas of knowledge are weaker.

My professional interests keep being the same I presented at the beginning of the project, but I had the opportunity to identify new interests I think might be included later.

Felipe Díaz: This project helped me because it has data analysis, which I find very interesting and is one of my professional interests. Considering this I think I’ve learned about how to solve problems using different methods, as not every tool is always useful, as sometimes you need to understand the whole context of the company, projects and used data. Also, the development of the of the web system using Python, specifically using Django as a framework, which helped me to understand, learn and apply good practices while programming,

Currently, I think my professional interests are still the same, as I keep liking data analysis. Also, I like programming, which are my professional interests, so don’t think there was any change to them.

Javiera Marchant: This project has helped me to explore different areas of knowledge in IT engineering, which gave a better understanding of how to apply my skills in different contexts. Even though I didn’t have a definite idea of which way I should orient my professional interests, I still think it is important to keep informed in different IT areas.

During this project I’ve worked in Data analysis, information gathering, development and design. Thanks to this I've shown the ability to adapt and learn what’s needed to solve problems in different areas.

Job projections based on the APT project:

*Which professional interests would you like to explore or keep deepening?*

*How do you project yourself after finishing your APT project?*

Jeremías Canto: I want to keep learning overall, but in a career, I would like to keep learning new languages and get more experience. Begin to develop different tools and programs to keep expanding my language skills. Related to my job, I plan to take anything that’s related to an area I like, as I keep doing things I like as personal projects, even if I’m not able to make them as I want, I still want to make them the best I can.

Marcelo Criado: I would like to keep deepening and improving my knowledge in different programming languages. as some of them keep improving and are really useful to show them as a skill when finding a job. I would also like to keep learning about programming related to video games of any platform, along with Virtual Intelligence and assistants.

My job projection is that after I complete my APT project I’ll get a programming related job, being frontend or backend, as I’m comfortable as I do my work in this project. Another option is that I create my own projects that are going to be used for people as I work at my own pace.

Felipe Díaz: I would like to keep improving my knowledge related to Machine Learning and Data Analysis as I consider I still lack knowledge in this area, so I think I have to keep learning about this so I can get a job related to this. On the other hand, I think I would like to keep learning about different ways of working and using different frameworks and tools to develop different apps. Currently I think I’ll get job related to programming as I have experience with this in different projects.

Javiera Marchant: After participating in this project, I consider my interests still being diverse, but with a clearer focus to keep learning and improving my technical skills. I want to continue developing my abilities in data analysis, artificial intelligence and process optimization, as I recognize its growth and application potential in today’s market.

Personalmente me proyecto como un profesional versátil y adaptable. Siento que aún debo trabajar en la confianza y en mi capacidad de afrontar proyectos que requieran aprender y aplicar nuevas tecnologías y quizás desarrollos más complejos y con enfoque en lo profesional. Para mi futuro planeo continuar siendo flexible y proactiva en el aprendizaje, para poder aportar valor donde sea necesario y buscar un lugar cómodo para mi.  
I personally see myself as a versatile and adaptable professional. I feel like I still have to work up my confidence and my capacity to affront projects that require learning and applying new technologies and that have more complex developments with a more professional focus.  
For my future I plan to keep being flexible and proactive in my learning, so I can give value wherever necessary and find a comfortable workplace for me.