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**Guíde 1. APT Project Definition**

**Capstone Course**

1. **PART I**

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| **1. Personal Background** |
| Below is a table where you must fill in the requested information. |

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| Student Name | **Ignacio Cisternas,**  **Patricio Suárez** |
| ID Number (RUT) | **20.561.192-4,**  **20.812.160-K** |
| Degree Program | **Computer Engineering / Information Technology** |
| Campus | **Puente alto** |

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| **2. APT Project Description** |
| In the description, you should briefly state the name of your APT project and the graduation profile competencies you will apply. If your degree program defines areas of expertise, also mention which areas of expertise are related to the project. |

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| Nombre del proyecto | *Gasway* |
| Area(s) of Expertise | *The APT Project will address the following areas of expertise from the Computer Engineering curriculum:*   1. ***Development and Maintenance of IT Systems****: Through the creation of the mobile application and its respective functionalities.* 2. ***IT Project Management****: By implementing agile and collaborative methodologies for the planning and execution of the project.* 3. ***Integration of Technologies and Software Tools****: Using technologies such as React Native, Expo, Clerk, Firebase, and Google Maps API for the development and deployment of the product.* 4. ***Technological Innovation****: Providing a more efficient and sustainable solution in the field of liquefied gas distribution in Chile.* |
| Competencies | *Regarding the competencies from the curriculum that will be addressed in the APT Project, they include:*   1. ***Design, Development, Implementation, and Deployment of IT Solutions****: A functional mobile application will be developed, from its conception to its deployment in a production environment.* 2. ***Evaluation and Application of Standards, Frameworks, and Technologies****: Appropriate technologies, such as Firebase and Google Maps API, will be evaluated and selected, following best practices in development.* 3. ***Culture of Innovation and Collaborative Work****: Teamwork, with defined roles for each member, will be essential for the successful delivery of the project.* 4. ***Professional Ethics and Continuous Learning****: Ethical standards will be upheld, particularly in the management of user data.* 5. ***Effective Communication in Various Contexts****: Project results and progress will be presented clearly and concisely to both the team and evaluators.* |

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| **3. APT Project Rationale** |
| Below are various fields where you need to provide the requested information. This section aims to have you describe your project in detail and justify its relevance and pertinence. |

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| Relevance of the APT Project | *Our APT project focuses on addressing a common issue in Chile related to the distribution of liquefied gas for home delivery, an essential service that, despite its importance, faces significant inefficiencies. These inefficiencies include difficulties in contacting distributors, lack of transparency in product pricing and delivery times, among others.*  ***Relevance to the Professional Field****: This project is relevant to the field of computer engineering because it allows the application of key knowledge and techniques in software development, technology project management, and cloud services integration. Specifically, it addresses the need to modernize a system involving logistical and commercial processes, leveraging digital tools to improve user experience and operational efficiency for distributors. It also integrates technologies such as geolocation (via the Google Maps API), cloud databases (Neon PostgreSQL), and modern authentication methods (Firebase and Clerk), all of which are essential to the computer engineering field.*  ***Context and Location****: The problem is situated in Chile, a country where liquefied gas use is common in households. It primarily affects urban and semi-urban areas where users rely on home delivery and independent distributors who lack efficient digital platforms. These distributors typically depend on phone calls, which results in a less reliable and competitive service compared to more technologically advanced solutions.*  ***Impact on Users****: The project would impact two key groups:*   * ***End users*** *(customers ordering home-delivered liquefied gas): They will be able to place orders through a mobile app, have transparency about delivery times and competing prices, and access safer and more convenient payment options.* * ***Independent distributors****: They will benefit from an efficient system that allows them to manage orders, optimize delivery routes, and compete more efficiently in the market.*   ***Value Proposition****: The APT project aims to deliver value not only at a technological level but also at a social level by reducing the environmental impact of traditional advertising methods and improving transparency between distributors and users. By modernizing the liquefied gas distribution system, operational efficiency and user experience could significantly improve, potentially replicating the model in other essential services sectors.* |
| APT Project Description | *The main objective of the APT project is to develop an efficient mobile application for managing and distributing liquefied gas for home delivery in Chile. The application seeks to modernize and optimize the ordering, distribution, and communication process between users and distributors to improve customer experience and the operational efficiency of distributors.* |
| Project Relevance to the Graduation Profile | *The APT Project is directly related to the graduation profile, particularly in the competencies of designing, developing, implementing, and deploying IT solutions. Creating a mobile application to manage liquefied gas distribution requires using modern technologies and tools such as React Native, Expo, and Neon PostgreSQL, applying programming, interface design, and testing knowledge, which are essential to ensure the solution is functional and efficient.*  *The project also promotes a culture of innovation and collaborative work. By addressing a traditional problem with an innovative technological solution, collaboration with distributors and users is required to optimize the system, enhancing the ability to manage interdisciplinary projects and adapt to the needs of the environment.*  *Lastly, professional ethics are fundamental to this project, ensuring transparency in data handling and transactions. The proposed solution benefits users and has a positive impact on the community by improving a critical service for many people in Chile.* |
| Relation to Professional Interests | *The APT Project strongly aligns with my professional interests in web, mobile, and cloud technology development. First, the project focuses on developing a mobile application using React Native, reflecting my interest in creating solutions for mobile devices. Additionally, the integration with cloud services such as Firebase and Neon PostgreSQL allows me to deepen my expertise in cloud technologies, handling authentication, data storage, and real-time synchronization, which are key aspects of any modern application.* |
| Feasibility of Developing the APT Project | *The development of the APT Project is feasible within the timeframe of one semester, considering a schedule of 3 to 5 hours of work daily. This allows us to efficiently distribute the workload between the design, development, and testing phases of the application.*  *The necessary materials include a computer with internet access, development tools such as React Native, Firebase, and Neon PostgreSQL, and a smartphone with internet access to download the Expo application, which allows for real-time viewing of application changes.*  *External factors facilitating development include the fact that we will work with technologies and tools we are already familiar with, allowing us to progress more quickly.*  *However, some external factors could hinder development, such as scheduling conflicts within the development team and unforeseen technical problems. To address these challenges, maintaining constant communication will be key.* |

1. **PART II**

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| **4. Objectives** |
| In this section, you should define both general and specific objectives for the APT Project. It's important to note that the objectives must be stated clearly and concisely, without further explanation. They should be self-explanatory, and it's recommended to write them using an infinitive verb, as it helps specify concrete actions. |

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| General Objective | *The general objective of the APT Project is to develop a mobile application that optimizes the distribution process of home-delivered liquefied gas in Chile, facilitating the connection between distributors and customers through an efficient and user-friendly platform. The goal is to enhance the user experience by enabling them to place orders, track deliveries in real time, and make secure payments, while providing distributors with a tool to manage their operations more effectively.* |
| Specific Objectives | ***1. Develop a mobile platform using React Native Expo****: Create an intuitive and efficient application that allows users to order liquefied gas, manage payments, and track the status of their deliveries in real time.*  ***2. Implement real-time geolocation****: Integrate the Google Maps API so that users can view the location of distributors and track their order's journey, optimizing the delivery experience.*  ***3. Manage data and user authentication through cloud services****: Use Clerk for authentication and Neon PostgreSQL for data management, ensuring a secure and scalable system that stores information about users, orders, and transactions.*  ***4. Improve communication between distributors and users****: Develop an interface that enables distributors to receive and manage orders in an organized manner, facilitating interaction and tracking of deliveries.*  ***5. Promote eco-friendly practices****: Reduce the use of printed coupons and promotional pins by replacing them with a discount and promotion system within the app, thereby decreasing environmental impact.*  ***6. Conduct continuous testing and feature adjustments****: Implement a testing cycle with real users and continuously adjust based on their feedback, ensuring the app adequately responds to the needs of customers and distributors..* |

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| **5. Methodology** |
| In the following section, you should describe the methodology, specific to your discipline, that you will use to solve the APT project described above, including the stages and working methods. |

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| **Methodology Description** |
| *To address the issue of inefficient liquefied gas distribution in Chile, we will use an agile methodology based on Scrum. This approach will allow us to iterate quickly and adjust development as we receive feedback from users and see project progress. The methodology involves planning short sprints of one or two weeks, at the end of which key application features will be delivered for testing and evaluation.*  ***Distribution of Roles and Responsibilities****:*   * ***Ignacio and Patricio*** *will focus on backend development, using Clerk for authentication and Neon PostgreSQL for database management. Their responsibility will be to ensure that order, user, and distributor data is securely and efficiently stored and processed.* * ***Ignacio*** *will oversee front-end development, including implementing the user interface in React Native and integrating the Google Maps API for geolocation. He will also handle user experience (UX) and interactions.* * ***Ignacio and Patricio*** *will manage the overall coordination of the project, sprint planning, and the integration between frontend and backend. They will also be responsible for testing, validation, and adjusting the application's functionality based on results from real user tests.* |

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| **6. Evidences** |
| Below, describes what evidence will be evaluated in the progress report and the final report of your APT project. These evidence should be agreed upon with your instructor. Evidence refers to the products developed during the project to showcase or document how the work has been implemented. |

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| **Type of Evidence** | **Name of Evidence** | **Description** | **Justification** |
| **Progress** | **Final User Module** | Delivery of a functional prototype showing the application interface, including login screens, home page, chat, profile, etc. | **It allows for validating the user experience (UX) and gathering initial feedback from users before continuing full development.** |
| **Progress** | **Distributor Module** | Delivery of a functional prototype showing the distributor's interface, including login screens, order requests, home page, chat, profile, etc. | **It allows for validating the user experience (UX) and gathering initial feedback from distributors before development continues.** |
| **Progress** | **Google Maps API Implementation** | Integration of geolocation in the app to show the real-time location of distributors. | **Ensures the key order tracking functionality is correctly implemented and allows for testing its effectiveness.** |
| **Progress** | **Client-Distributor Chat Module** | Creation of a real-time chat to enhance transparency and communication between the final user and the distributor. | **Ensures transparency for both end users and distributors.** |
| **Progress** | **User Authentication** | Creation of the authentication system using Clerk, allowing users to register and authenticate securely. | **A fundamental aspect to ensure the application's security and protect users' personal data.** |
| **Final** | **Complete Mobile Application** | Delivery of the mobile app with all implemented features: orders, geolocation, authentication, and data management. | **Final evidence of project objectives fulfillment, demonstrating that a technological solution has been developed to address the identified problem.** |
| **Progress** | **Final User Module** | Delivery of a functional prototype showing the application interface, including login screens, home page, chat, profile, etc. | **It allows for validating the user experience (UX) and gathering initial feedback from users before continuing full development.** |

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| **7. Work Plan** |
| In the following table, define the planning of your APT Project according to the requirements. |

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| **Work plan APT Project** | | | | | | |
| **Competency or Competency Units** | **Activity/Task Name** | **Activity/Task Description** | **Resources** | **Activity Duration** | **Responsible** | **Observations** |
| *Designs, develops, implements, and deploys IT solutions* | *UI/UX Design* | *Create prototypes of the application screens (home, registration, orders, tracking) using tools like Figma or directly in code.* | *Figma, Mockup Documentation* | *1 week* | *Ignacio Cisternas* | *May require adjustments based on user feedback.* |
| *Evaluates and applies standards, frameworks, and technologies* | *Authentication Implementation with Clerk* | *Set up the authentication system for user registration and login using Clerk.* | *Clerk, API Documentation, IDE* | *2 weeks* | *Ignacio Cisternas* | *Clerk integration needs to be reviewed to ensure security.* |
| *Designs, develops, implements, and deploys IT solutions* | *Google Maps API Integration* | *Implement geolocation functionality to display the location of distributors and track orders.* | *Google Maps API, IDE* | *3 weeks* | *Ignacio Cisternas and Patricio Suárez* | *Potential issues with geolocation accuracy.* |
| *Culture of innovation and collaborative work* | *User Testing* | *Conduct usability testing with a group of users in different phases of development to gather feedback.* | *Beta Users, Mobile Devices* | *2 weeks* | *Ignacio Cisternas and Patricio Suárez* | *Testing may require quick adjustments based on feedback.* |
| *Communication in diverse contexts* | *Project Presentation and Documentation* | *Prepare final project documentation and presentation for delivery.* | *Microsoft Word, PowerPoint* | *1 week* | *Ignacio Cisternas and Patricio Suárez* | *Clear presentation of the project's impact and benefits is necessary.* |
| *Collaborative work for evaluating IT projects* | *Project Management and Sprint Planning* | *Plan sprints, assign tasks, and monitor project progress using agile tools like Trello.* | *Jira, Documentation* | *Continuous (throughout the semester)* | *Ignacio Cisternas and Patricio Suárez* | *Coordination among team members is crucial to avoid delays.* |

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| **8. Gantt Chart** |
| Find a Gantt Chart format that suits you and organize the planned activities from the previous section within it, considering the assigned period for the development of your APT Project. You must adhere to the academic period timeline for the development of the three phases outlined in the Capstone Portfolio course. |

For better visualization and convenience for the reviewer, a link to the complete Gantt Chart will be provided on Google Drive.

**Link to the Gantt Chart:**

<https://docs.google.com/spreadsheets/d/1khLJWYx44pxpD9EKI4Yg6hr_pu-F2XNs/edit?gid=953088411#gid=953088411>