



CaixaBank



Chill Inc. presents Dory

Project Charter



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1. Executive Summary

Dory is a Chat Bot created in order to improve the final user experience while using bank applications.

By using Bots, we get to interact with the users and maintain a conversation in order to help them with their doubts, acquire information they want and/or redirect them to another application or service, perhaps even to sell something to them.

The demo that Chill Inc. developed for “La Caixa” is service where users can interact with a Smart Bot, ask FAQ’s(Frequently Asked Qustions) and obtain graphical responses to their queries. For example, with this Smart Bot, users can ask via text messages or voice questions how much money they have wasted on something, display the graph of their bills in a specific topic, organize their outcomes by graphical topics, and compare their incomes vs outcomes, also graphically.

We will also be able to offer some advices during the course of the month, and provide tips in order to help them save money.

Chill Inc. has developed a useful product which has few competitions in the market. Although some banks have similar services, with Dory we intend to provide a fresh approach wile counting on the youth opinion.

Bots are and will be more present every day in our life, so we think that introducing a bot for banking will be very useful and at the same time a good experience for the final user. Definitely Dory is a must for new banking apps time.



2. Project purpose and justification

2.1 Product Need

Currently, many routinely tasks have been simplified with the help of smartphones. The clients are used to have many facilities at their disposal and in a more advanced society where lack of time, among other factors, can harm your own financial control, CaixaBank offers access and functionalities such as an ATM through *Línea Oberta* which aim to ease the procedures and control over current accounts from home using a computer. Therefore, the aim of the Caixa is to provide customers with easy and quick access to their financial information.

Caixabank has about 13.4 million users and it is important to offer the best customer service to all of them. The purpose of this project is to improve the user's experience by making use of the technological advances that smart Bots provide: creation of an intelligent Chat Bot with whom the users can interact and provide financial information and advices in a fast and more intuitive way.

By 2020 it is expected that 85% of the interaction between companies and customers won't be through humans. Creating a Chat Bot which is able to assist customers and process their information, will give CaixaBank an advantage over their rivals.

Chat Bots are in their early phases, which makes it a perfect moment to invest in this kind of technology. In the next 10 years experts predict that Smart Chat Bots will be as common as apps are nowadays.

Once this project is finished, the chance of focusing into other branches of CaixaBank opens the doors to new projects of great interest, such as, for example, an stockbroker assistant to keep track of all the operations and offer tips and advices according to defined parameters.

2.2 Product Objectives

The main objective of this project is the creation a Chat Bot, called Dory, addressed to customers in order to answer their questions and show the information required about their bank account.



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Customers can ask their doubts through text or voice.

Examples of possible queries we have considered:

- How much money have I spent on a topic.
- Show me a bill of a certain or multiple topics.
- Organize my outcomes graphically by topics.
- Graphically compare revenue with expenses.
- Offer advice throughout the month with tricks to save money.

The advantages provided by Dory should improve the relationship between the bank and its customers.



3. Project Description

Dory is a Chat Bot for personal banking assistance. It is a project developed during the course of the Advanced Engineering Project in the Polytechnic University of Catalonia and carried out by a team of 13 students.

As a team we have identified the goals and requirements for the proper termination and been divided into several subgroups:

- The Project Leader is in charge of the organization, management and project control.
- The Programming team is formed by 8 persons, who have been divided into different subgroups, such as the Front End, the part in charge of developing the main core of the Bot, Database and Final Display of the data.
- The Documentation team will be responsible to write up all the documents necessary to make a proper documentation of the project, business plan, presentations and project reports.
- There's a specific group which focus in the transmission from voice to text, studying and decoding what the users may say.

3.1 Project Objectives and Success Criteria

The product requested is a Smart Bot to assist customers in personal banking. The objective of Chill Inc. is to provide a platform from where customers can ask questions about information and applications of their bank account. The complexity of the questions will be determined according to the level of comprehension of Dory, the Chat Bot.

The goal is that it could be used in English, Spanish and Catalan. Ideally, it is intended to have the option of input and output text and/or voice for all the languages, but due to limitations on the software used for the voice/text and text/voice conversion, we are uncertain about this feature. It would also be interesting to implement a function which enables blind people to use the SmartBot, because CaixaBank has the foundation which helps people called "Obra Social La Caixa" and this feature would fulfil the social philosophy of the company.



From a simple point of view, to make the product competitive enough to take on the market, we have to meet certain specifications (which are detailed in Requirements and Specifications). In this section we define what our objectives are and how we will deploy them into Dory.

Each task has a certain timeline to be completed. By having different teams dealing with different tasks, it will be easier to carry them out if there is not any delay in any task and people is able to help the others when it is needed to speed some other tasks up.

In order to measure and monitor fulfilment or not of the specifications and good project tracking, different criteria detailed below will be used:

Criteria	How is it measured	When it is measured	Who is responsible to verify it
The project meets the specifications	It is checked that our product meets is explained in this Project Chart	Each time that a task is completed	The responsible of each part of the project and the Project Leader
The project is delivered on time	The Gantt chart is properly followed and the project is delivered within the deadline	Taking a weekly check of performed work and in the end of the project	Project Leader
CaixaBank satisfaction	They will tell it to us.	During each of the meetings we have with CaixaBank representative	Project Leader
The Business Plan is delivered correctly	Is checked that fulfils what the teacher asks	Once delivery is complete	Project Leader

3.2 Requirements

This section describes the high-level requirements of the project. They are described from a theoretical point of view of what is needed to be done to make the product.

The order of the tasks does not correspond to their priority, since many of them are dependent on each other fulfilment, some can be completed independently.



It is Required to:

- Design a Smart Bot capable to understand questions related to banking issues, which can transform human questions into machine requests, so they can be automatically processed. In case of failure, Dory will try to reformulate the information received.
- The information requested will be extracted from the database, in determinate cases, if it is no graphical display needed.
- Implement various input methods: text, voice and touch (select options on screen).
- The Bot must be able to return the information by text or graphically.
- The user should be able to make a safe login.

Being these the initial requirements, it would be nice to improve the system and bring it further, just to enhance the user experience. Here there are some examples that we would like to implement:

- The Bot must be able to correct simple spelling errors.
- Create a mobile app, so it can be easily used from a smartphone.
- Design a simple artificial intelligence that is able to see changes or trends and will be able to offer advice regardless of requests by the user.

3.3 Constraints

Our biggest constraint for this project is the time. We aim to create a new product within approximately 4 months; it must be functional and it must meet the specifications provided by CaixaBank.

Remarkable restrictions and complications which we think we can come into are:

- The multi-language option for Bots systems is complicated and expensive to make.



- The speech to text systems currently have certain limitations and are not ideal.
- It is an innovative technology in development; we do not know how far we can find restrictions on the understanding ability of the bot.
- We must develop a system that CaixaBank will offered for free. So we have to take into account the cost of private licences.
- CaixaBank is very thorough with the security of their systems, so everything is needed to use in any application, it has to be hosted in their servers, but also, has to accomplish with that precise security requirements. This make that the “easy solutions” such as working with google applets, Facebook, or api.ai, are discarded. It is a shame because maybe, it would have been useful to make a more competitive product, in less time.

To close this section, it should be noted that the organization of a group of thirteen people require greater control and management, as we will perform many different tasks at once.

3.4 Assumptions

From the Business Plan point of view, we assume that:

- The product will meet the specifications Caixabank wants to be completed.
- We will test the bot to check its proper performance to make a successful demo in CaixaBank.
- We will ensure there is no legal restriction so, therefore, Caixabank will be able to launch Dory without restrictions and much more swiftly.

From the theoretical point of view and assuming that is true for the bot to properly work, we assume that:

- The user is a client of CaixaBank and has access to *Linea Oberta*.
- They know how to ask basic questions in text.



- The *log in* and protection of customer data is secure.

3.5 Specifications

This section provides detailed technical specifications. Apart of the information which themselves contribute, we will use them to verify that the proposed requirements are met.

Dory is a Chat Bot working through Linea Oberta. Users can communicate with the bot via text, voice or touch inputs, and in three languages; Spanish, Catalan and English.

Users can ask questions on different topics like, for example:

- Have I received my wage?
- How much have I spent this month?
- Show me the phone bills from January to March.
- How much have I spent this month on petrol?
- See the phone amounts per month of 2015 and 2016.
- How much have I spent the last 6 months?

The system also will recognize different ways of expressing the same question and return the same result.

- How much money do I have?
- Show me the balance in the account.
- I want to check my balance.
- How much do I have in the account?
- Show me the money from my account

The system will have a 90% success rate in recognition of the user's intentions, if the bot doesn't understand a question, it will engage in a conversation to try to figure out the user's intentions. Then the bot transforms the question in a query with which knows what data should look for. User data is treated in a database using MySQL, so it is efficient and secure. The

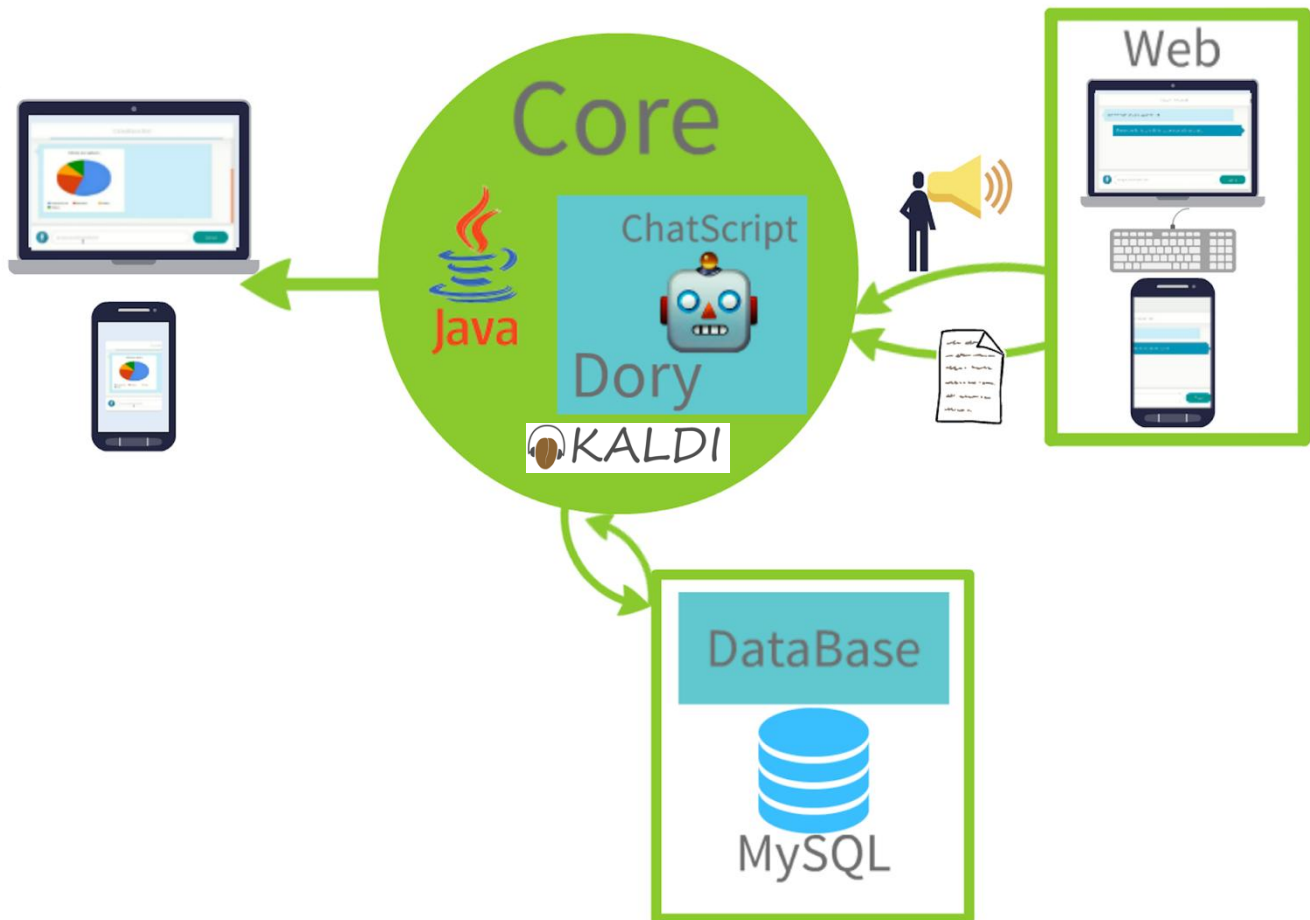


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desired information is returned to the customer through text and using graphics to simplify displayed data.



The system will use open source software, so it would be safe to be running on CaixaBank servers. Initially no module will use proprietary software licenses or so legally the project is covered. This project is a scalable system, so the final owner will always have the option of investing on its development to improve, enhance or modify open performances.



This is the entire system. It is the chain where the user asks the bot anything required via the application running through Linia Oberta. Then this input is processed differently if is voice or text. If it is voice, it is transcribed using KALDI, and if it is Text, it is directly sent to the Server, which is programmed in Java. This is because the Text has to be processed by Dory, which is programmed in ChatScript. Dory obtain the main words of the phrases and this “tags” determine the query that has to be answered. Depending on the question the answer will be displayed graphically or just will be shown an explanation text. If it is required a graphical response, Chatscript will connect to the DataBase in order to get the information of the bills, the monthly expenses, the movements...Then the user will finally obtain the information in their devices.



4. Project Deliverables

The customer will receive a complete documentation of the project and its implementation:

- Project Charter Template
- Project Management plan template
- Project report
- Final report
- Business plan
- Weekly meeting minutes
- Drive Folder
- Manuals: Chatscript
- Maintenance service
- Few presentations of how does the codes work



5. Project Approval Requirements

This project will be completed after the team has made several checks and after that we will proceed with the demo to our client.

This test plan will be accepted if it meets the requirements and if it provides a good representation or answer to the query that the user proposes.

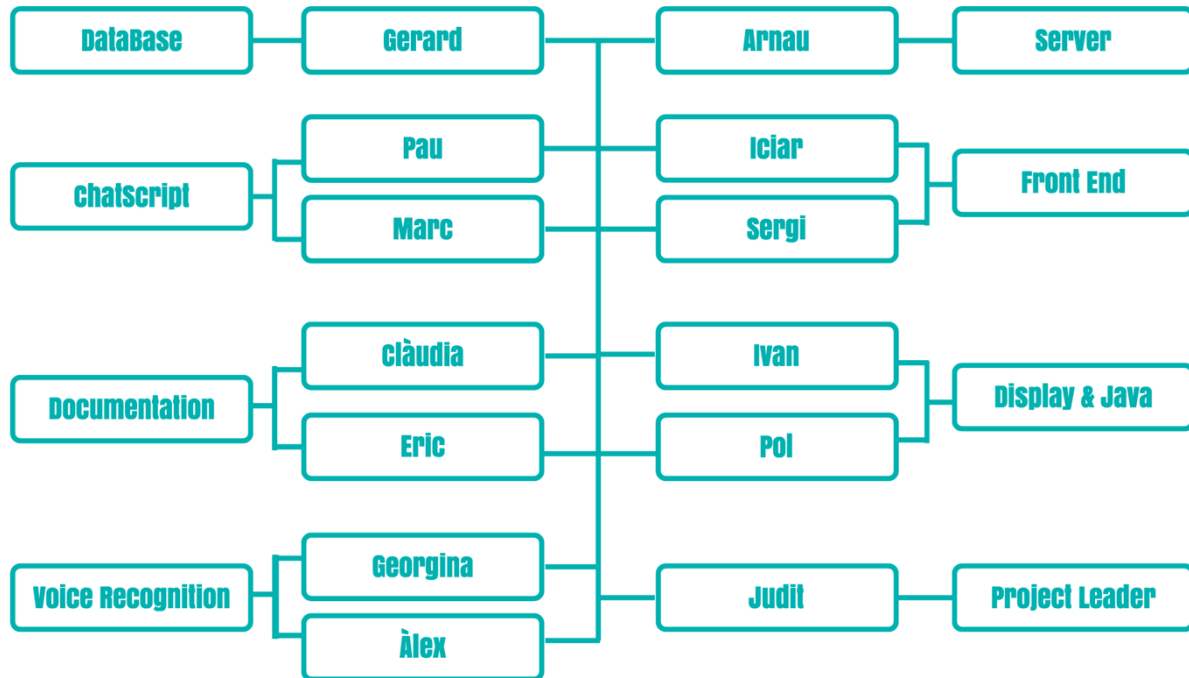
In order to ensure the system works properly, we will test each of the modules of the project individually and finally the whole system together. The responsible for the development of each of the parts is in charge to verify its operation. Once validated, it is confirmed and guaranteed that it is fully functional and it can be inserted in the system.

To measure the results, we will apply different criteria depending on the module. For the part in charge to transcript Voice to Text, we will count the percentage of words that are transcribed correctly. The bot has to transform the questions into tags, and then answer the queries or, possibly, ask to the Data Base the proper response. The database has to be tested to see if it is efficient, has all the necessary information and check if it is safe enough. The website should be responsive and functional; it should display the information in a usable interface. The graphics of the answers to determinate queries, facilitate the understand the information, which is a need for the costumer.

Once the entire system is completely assembled it will be tested to see if it fulfil properly with all requirements specified in Section 3.5.



6. Project Manager and Team Description



Person	Role	Description	Responsibility level
Judit Bastida	CEO	Organize the team Review the	1
Sergi Mas	CTO & Programmer	Front-end	2
Eric Marín	Documentation	Business Plan & Documentation	3
Iciar Puigpelat	Programmer	Front-end	3
Pau Vidal	Programmer	Bot	3
Pol Carballo	Programmer	Final display	3



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Arnau Estebanell	Programmer	Bot	3
Marc Armenter	Programmer	Data base, support bot	3
Ivan Rusi	Programmer	Final display	3
Gerard Mynes	Programmer	Data base, support bot	3
Georgina Dorca	Speech recognition and language	Create text from voice	3
Alex Andreu	Speech recognition and language	Create text from voice	3
Claudia tarrés	Documentation	Project charter & management plan	3

The responsibility level is considered from 1 to 3, being the 1, the highest position