Sprint 2

Commed

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- GitHub backend
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2 Planification

2.1 User Stories

The first thing that was done regarding the planification of the project was to define the behavior of the application in a list of user stories. The next list exposes all of the actions that the user can do with it as well as different ways of interacting with it.

2.1.1 Sprint 1

- **US1:** As a guest, I want to register in the application
- **US2:** As a user, I want to log in to the application.
- **US3:** As a registered user, I want to create a profile of my company.
- **US4:** As a guest, I want to search for services or products so that I receive said list.
- **US5:** As a guest, I want to have a detailed view of the product/service.
- **US6:** As a registered user who has a company profile, I want to create services/products.
- **US7:** As a user, I want to be able to *connect* with a company that has made a publication.
- **US8:** As a user, I need to be able to speak in a chat with the company that I connected.
- **US9:** As a company, I want to respond in the chat with the users that have sent messages.
- **US10:** As a company, I want to send a Formal Offer which contains a contract as a PDF through the chat.
- **US11:** As a company, I want to digitally sign contracts.
- **US12:** As a user, I want to digitally sign contracts.
- **US13:** As a user, I want to receive evidences of the process when a contract is signed.
- **US14:** As a user, I want to receive billing and invoices regarding the signed commercial transaction contract.

2.1.2 Sprint 2

2.2 Scrum - Sprint 2

3 Requirements - Product

In this section the list of requirements that the application has to offer to the user will be detailed:

Sprint 1:

Functional Requirements:

- The application has to let all kinds of users search for products or services.
- The application has to let users register into the application.
- The application has to let users log in to the application if they have an active account on the system.
- The application has to let users create an enterprise profile if they are logged in.
- The application has to let logged users publish products or services.
- The application has to let logged users interested in either a product or a service to start a chat with the owner of it.
- The application has to let logged users who are owners of a given product to chat with said interested users through a chat.
- The application has to let logged users send a commercial transaction contract when an agreement has been reached.
- The application has to let logged users sign a commercial transaction contract sent by the owner of a product that they are interested.
- The application has to generate the evidences for both sides of the commercial agreement.

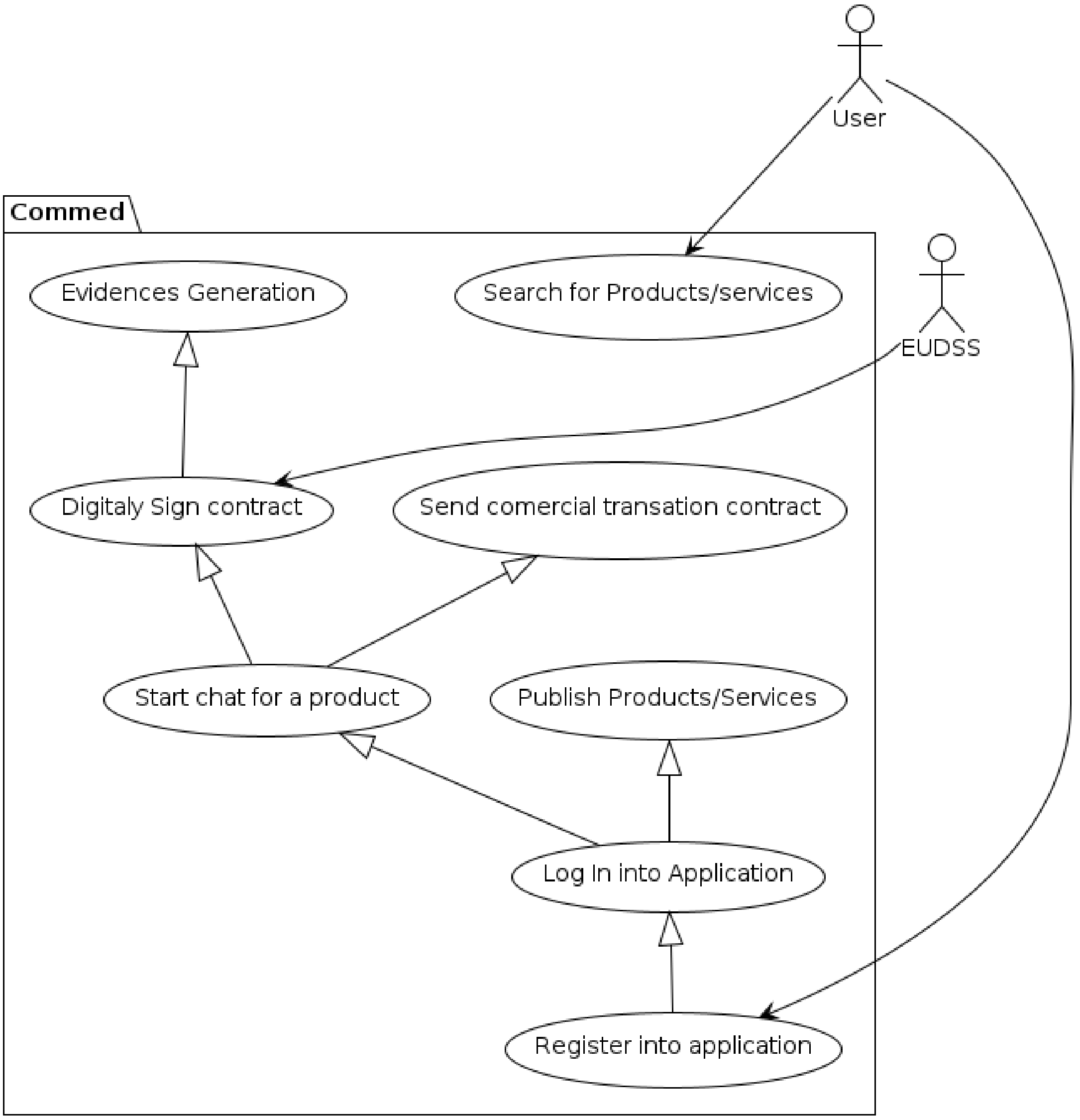
Non Functional Requirements:

- The application has to be the most usable possible.
- The application has to be compliant and respect the laws that run in each country that it's available in.
- The application mustn't have large waiting times for the client.
- The application has to be portable and easy to deploy.
- The application has to be scalable and always leave the code open to the possibility of adding new features in the future.

Sprint 2:

Functional Requirements:

4 Main use cases



User
Commed
EUDSS
Evidences Generation
Search for Products/services
Digitaly Sign contract
Send comercial transation contract
Start chat for a product
Publish Products/Services
Log In into Application
Register into application

Figure 1: Use case diagram of the application.

4.1 Sprint 1

- **Register into application**
  - **Actors:** User
  - **Purpose:** Let a user register into the application system

  - **Description:** Provides a screen with a form in which the user is able to fulfill it and send the information to the system in order to be registered.

- **Log In into Application**
  - **Actors:** User
  - **Purpose:** Log in to the application to be able to use some of the application services.
  - **Description:** Provides a screen with a form in which the user will put its email and password. Then, they will log into the application so that they can start using the services that it provides.

- **Search for Products/services**
  - **Actors:** User
  - **Purpose:** Search for any product or service the user is interested in.
  - **Description:** Provides a searcher for every user so that they can look up the products or services that they are interested in.

- **Publish Products/Services**
  - **Actors:** User
  - **Purpose:** Publish services or products in order to be sold to other users.
  - **Description:** Lets a logged user publish the products and services that they offer in order for them to be sold to other interested users.

- **Start chat for a product**
  - **Actors:** User
  - **Purpose:** Users can start a chat when they are interested in a product
  - **Description:** Lets a logged user start a chat with the owners of either a product or a service that they are interested in, so that they can start a negotiation.

- **Send commercial transaction contract**
  - **Actors:** User
  - **Purpose:** Send a formal offer with a commercial transaction contract.
  - **Description:** Lets the owners of given products or services send a formal offer containing a compliant commercial transaction contract within the chat in which the negotiations are taking place.

- **Digitally Sign contract**

  - **Actors:** User EUSSD
  - **Purpose:** Sign a commercial transaction contract sent within a Formal Offer.
  - **Description:** Lets the users of the application sign digitally the contract that was sent as a Formal Offer in the chat in which the negotiations took place.

- **Evidences Generation**
  - **Actors:** User
  - **Purpose:** Provide users with evidences and the billing of a business transaction
  - **Description:** The system will generate for both parts the commercial transaction with all the evidences and the billing of the contract.

4.2 Sprint 2

5 General architecture

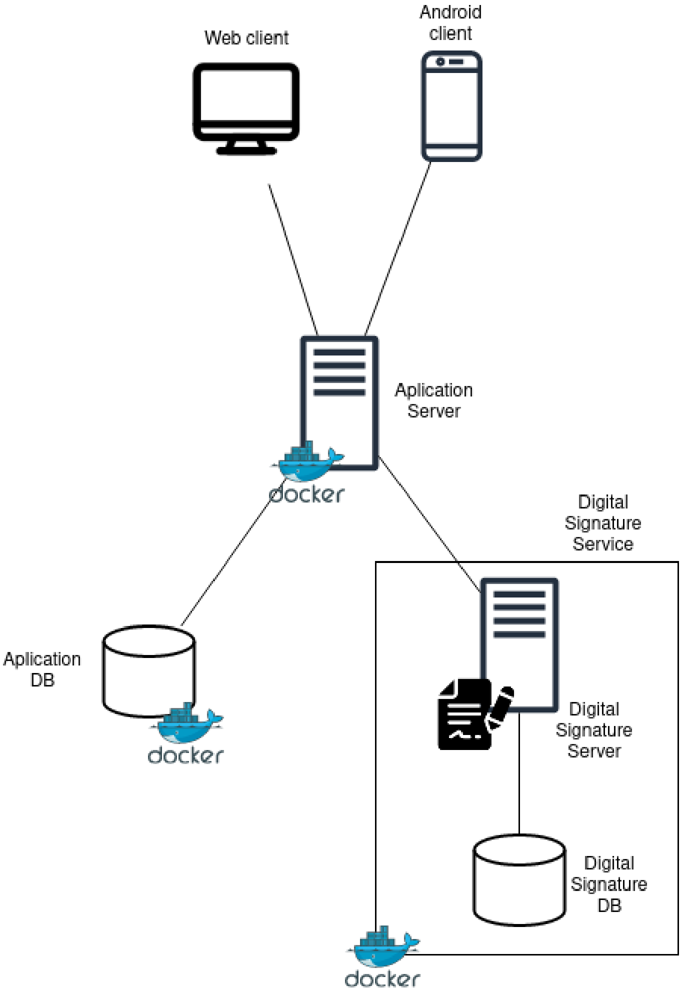


Figure 2: General architecture of the application.

5.1 Mobile app architecture

In this subsection, the decisions regarding the architecture of the mobile app will be explained, but not those that regard the user experience of the mobile. This will be explained in more detail at 7.

First, why we chose flutter and not other frameworks, as Android or React Native, will be explained. Then, it will be introduced the Redux for the state management of the app.

5.1.1 Flutter

Flutter is a multiplatform framework aiming to become a standard for building apps that have to work on either Android or iOS, as well as the web, desktop, and embedded operative systems.

As a tool, it has been proven that it can build more resilient and optimized apps than its counterparts, like React Native, while still being multiplatform. Even though it was taught how to work with native Android Applications, it was decided to choose this tool against it as the team had already some experience with it.

Even if the framework is young, the community behind flutter is active and has several repositories that have some application examples, as well as a libraries showcase that has and will help the development of the app.

5.1.2 Redux

State management in applications is a hot topic, and although both frameworks used by the clients in this project have some way to implement it, it was preferred to use a third-party option that is well consolidated, easy to use, and easy to manage.

Redux is an abstraction that provides a way to implement easier a reactive pattern, that is, instead of having the typical Model-View-Controller, it has a way of drawing a State, the buttons can launch actions, that is taken by reducers along the actual state, and return the next state, as shown at 3.

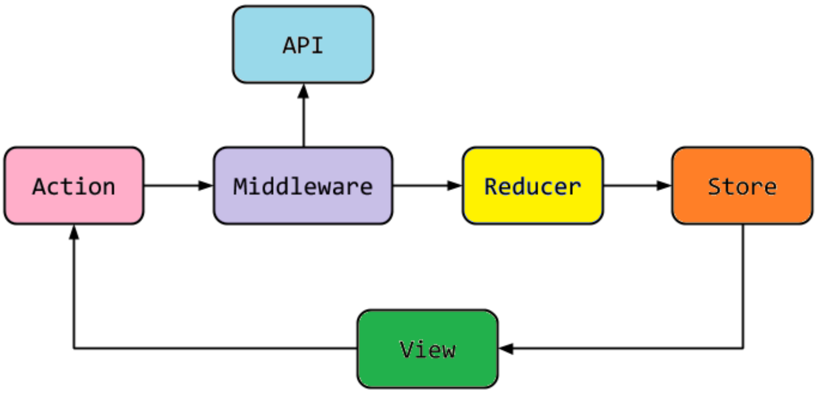


Figure 3: Redux Diagram.

This makes the components stateless, which makes it easier to work with them and provides a way of mesmerizing them so they aren't computed that many times, making them faster than their counterparts.

This also helps to have a way of monitoring the changes that the state has suffered, as you can keep the states and the actions in a list for debugging, so it can be traced easily the changes. This adds when you have to have a shared object that won't be modified easily, but has to be read by most of the components, as an API token or a theme object.

Finally, as it was also used in the web applications, it makes the team be able to change quickly between the two frameworks, as the most difficult part is done the same way.

5.2 Reason on implementing a Web Client

As the application has his target user in the administrative world, we decided to implement a web alongside the mobile application that will make easyer the usage of our servies to our customers in administrative enviroments. We though that the mobile app can be a really usefull for doing little tramits, for chatting with some customers, for quick searches of products/services and enterprises... But we felt that in order to make it more usable and accessible for administrative porpouses we should create a web client also.

Furthermore, the implementation of the web client showed some light on how to communicate with the backend and has lead us to iterate a little bit on the API endpoints that were implemented last sprint. This is nice because now on the third sprint the integration of the mobile app with the backend will be a lot more straightforward.

5.3 React

For implementing this Web Client we used React, which is a library built in javascript for creating User Interfaces. To be more precise we used React becouse it gives the oportunity of working with Hooks. Hooks are functions that comprehend inside him inmutable components with independent states, wich makes the code a lot more clean and structured and simplifyes the amount of chaos that we have to deal usually when we program with vanilla javascript.

Also React has a huge community, and it has a lot of libraries that have been key for making a lot more easyer the programming task. Some examples can be:

- react-router-doom
- react-modal
- redux-react-session
- react-bootstrap
- ...

5.4 Web Client Architecture

By now This Web Client is still in a development phase, so for now we are using the default testing server that React provides to us. Although, we expect to use a nginx+docker when deploying our application to a production enviroment.

Right now the application is able to fully connect with the backend, beeing able to Register, SignUp and interacting with all the different features that our application provides.

5.5 Redux

In this part of the project, we also used redux. In fact we use a react library called redux-react-session, that builds a store to mantain the state of our session. Also it creates the correspondig Session Cookie to mantain the value of the authorization token provided by our backend. This way, every time we have to make a request that needs authoritzation, we will be able to pass within the request the value of the token stored in the browser cookie.

6 Database model

The database model can be seen at figure 4.

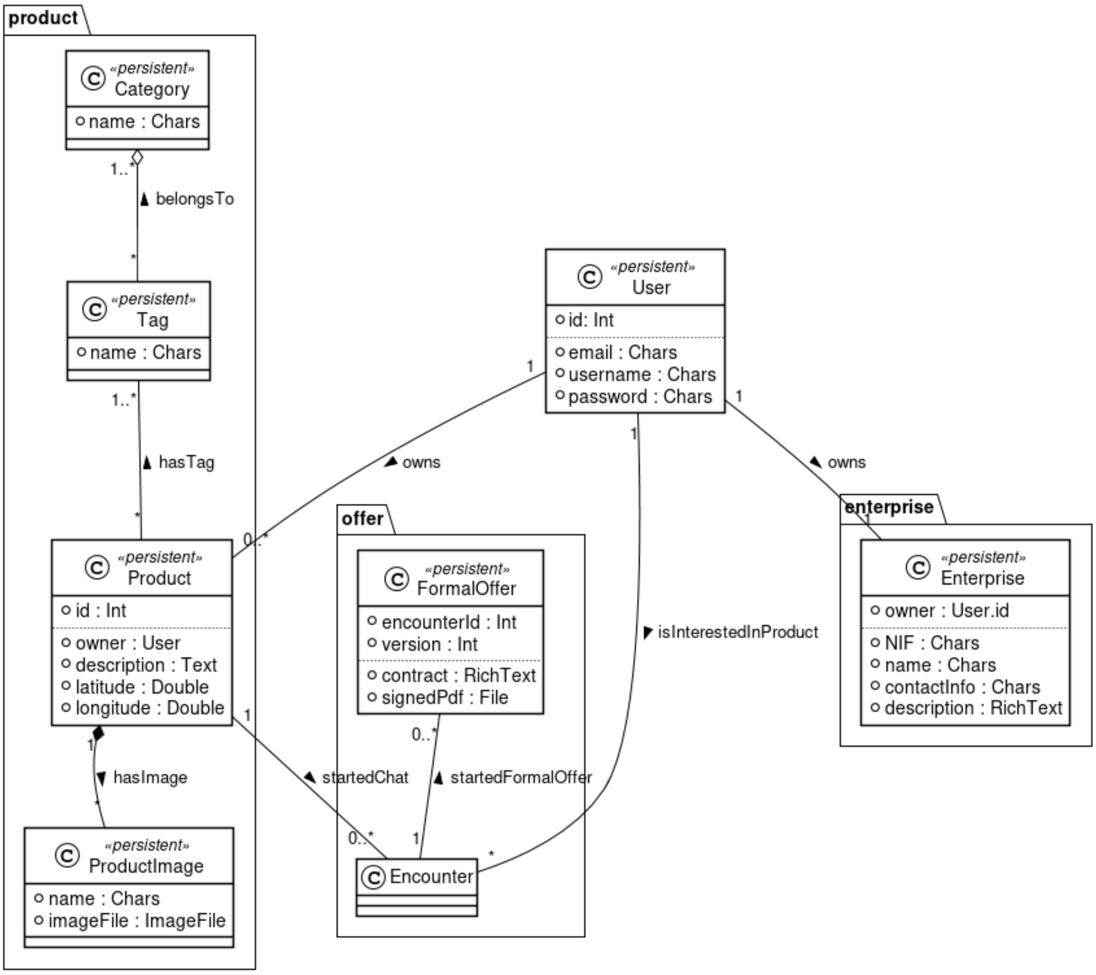


Figure 4: UML diagram of the models.

6.1 Modifications on the models

7 Main Screens

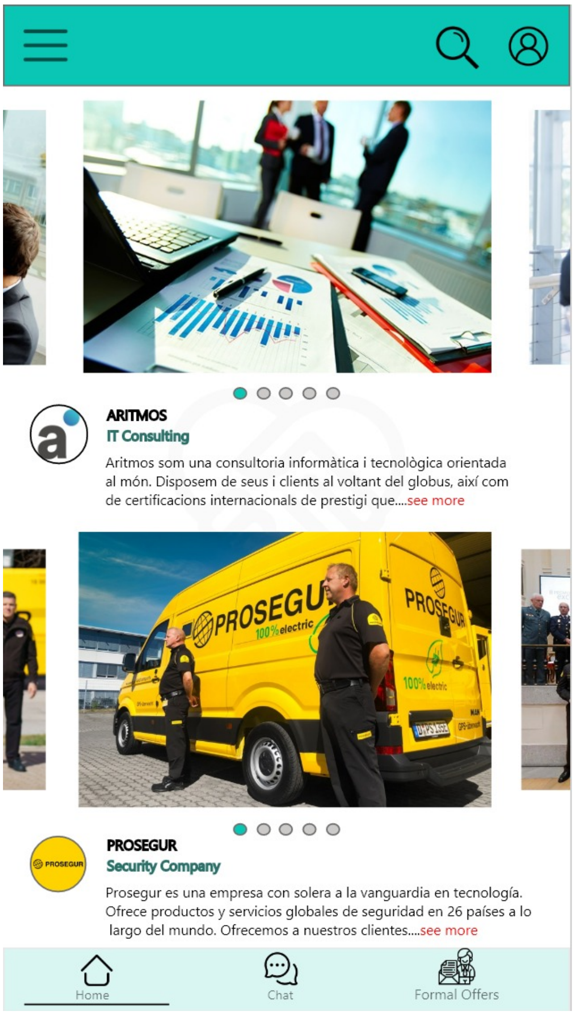
7.1 Mobile Application

7.1.1 Wireframe

It can be seen in the next images the main screens of the wireframe. At first, it can be seen a list of product as the main page of the application, in the image 5. The next image 6 contains the login screen, which can be accessed by clicking on the user icon the image before. The register 7 is accessed by clicking at the sign-up option.

The image 8 contains the list of chats that you currently have for every product or service, and the 9 has the detail of a particular chat, that can be seen when clicking in a item from the list of chats. The next image contains the list of formal offers 10. Both lists can be accessed when clicking on the icon in the bottom menu if the application.

The last two images contains the detail of an enterprise 11 and a submenu for things related to the user 12. The first image can be accessed when clicking the logo of an enterprise, and the last one can be seen when clicking on the user logo.



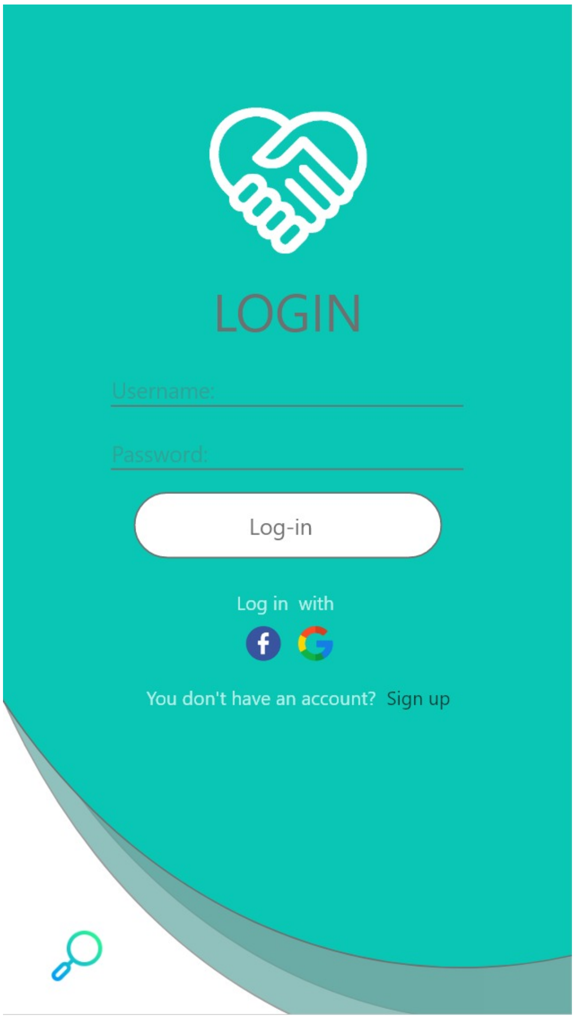
ARITMOS
IT Consulting

Aritmos som una consultoria informàtica i tecnològica orientada al món. Disposem de seus i clients al voltant del globus, així com de certificacions internacionals de prestigi que....see more

PROSEGUR
Security Company

Prosegur es una empresa con solera a la vanguardia en tecnología. Ofrece productos y servicios globales de seguridad en 26 países a lo largo del mundo. Ofrecemos a nuestros clientes....see more

Figure 5: Home mobile screen, it lists the products



LOGIN

Username:

Password:

Log-in

Log in with

You don't have an account? Sign up

Figure 6: Login view

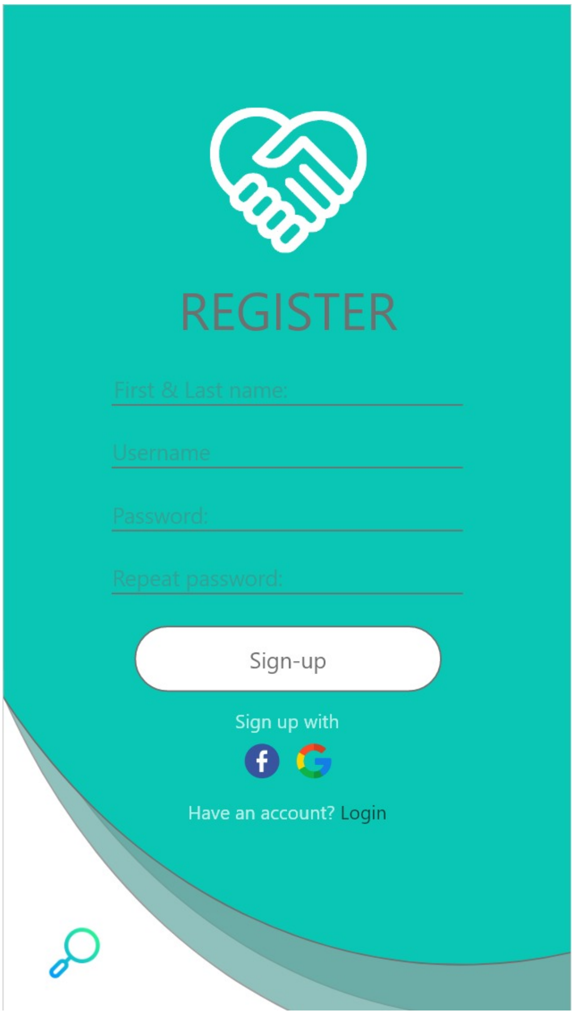
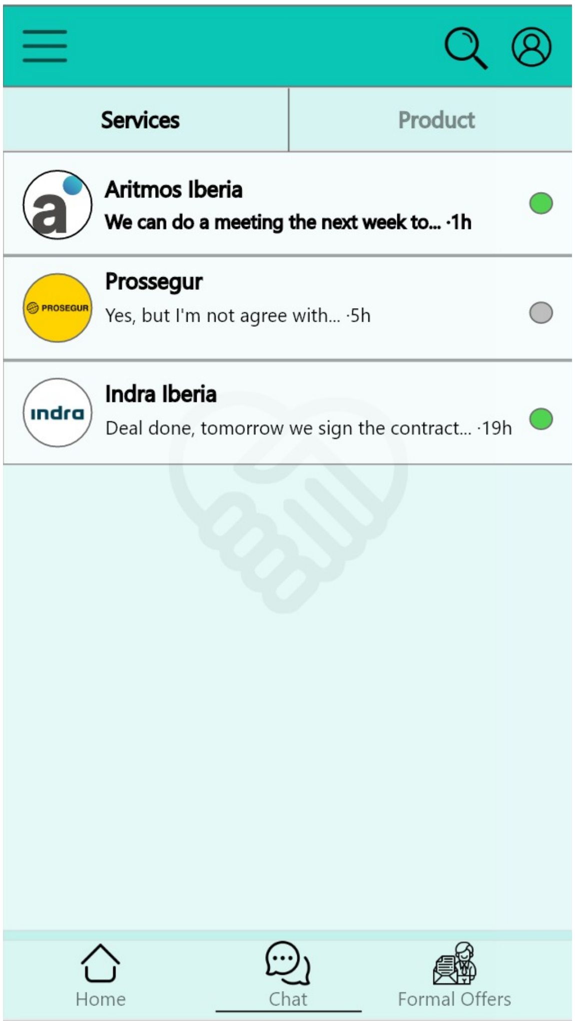


Figure 7: Register view

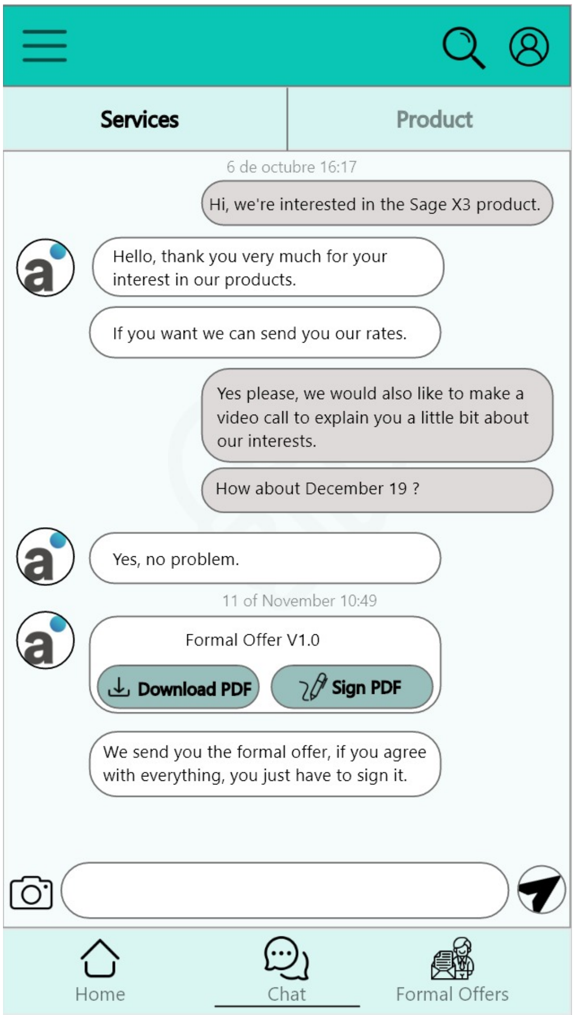


Aritmos Iberia
We can do a meeting the next week to... ·1h

Prossegur
Yes, but I'm not agree with... ·5h

Indra Iberia
Deal done, tomorrow we sign the contract... ·19h

Figure 8: List of the current chats.



6 de octubre 16:17

Hi, we're interested in the Sage X3 product.

Hello, thank you very much for your interest in our products.

If you want we can send you our rates.

Yes please, we would also like to make a video call to explain you a little bit about our interests.

How about December 19 ?

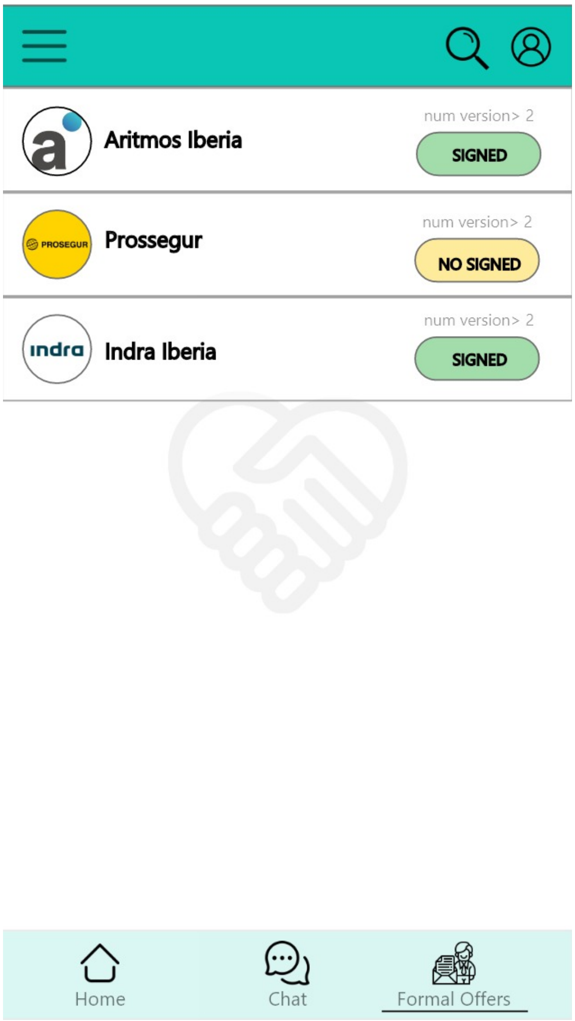
Yes, no problem.

11 of November 10:49

Formal Offer V1.0

We send you the formal offer, if you agree with everything, you just have to sign it.

Figure 9: A chat conversation.



Aritmos Iberia

num version> 2

SIGNED

Prossegur

num version> 2

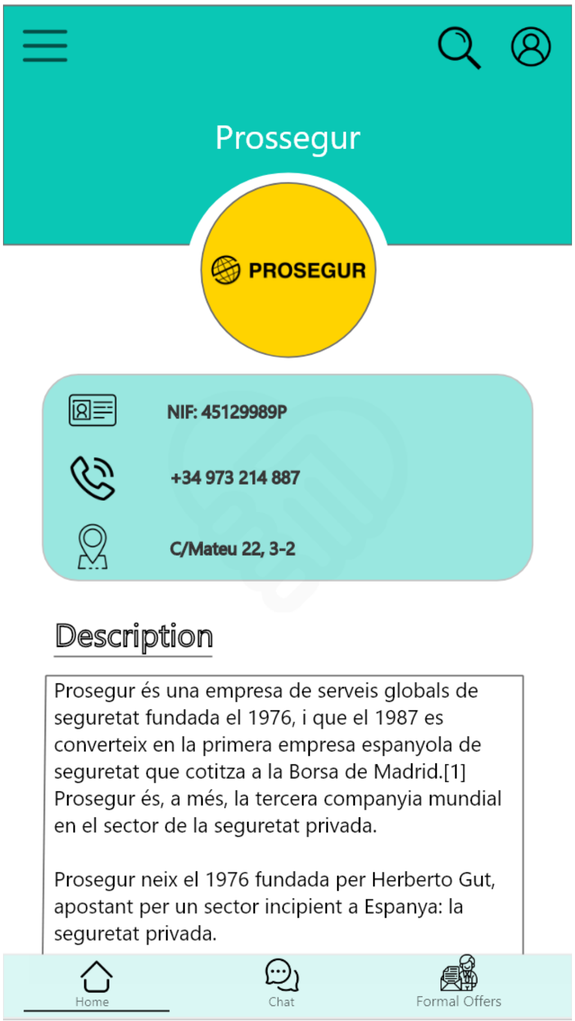
NO SIGNED

Indra Iberia

num version> 2

SIGNED

Figure 10: List of formal offers.



Prossegur

NIF: 45129989P

+34 973 214 887

C/Mateu 22, 3-2

Description

Prosegur és una empresa de serveis globals de seguretat fundada el 1976, i que el 1987 es converteix en la primera empresa espanyola de seguretat que cotitza a la Borsa de Madrid.[1] Prosegur és, a més, la tercera companyia mundial en el sector de la seguretat privada.

Prosegur neix el 1976 fundada per Herberto Gut, apostant per un sector incipient a Espanya: la seguretat privada.

Figure 11: An enterprise profile.

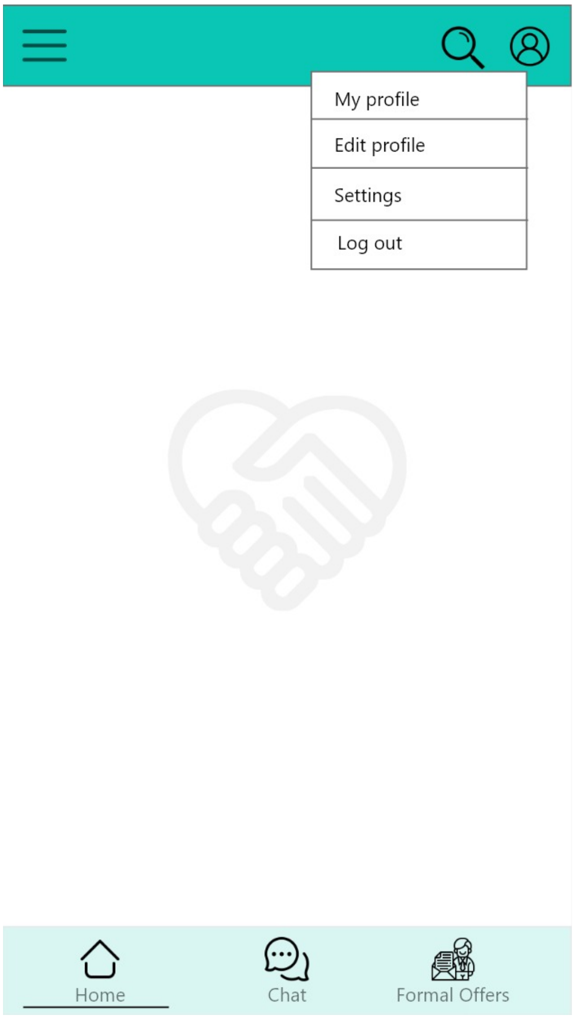


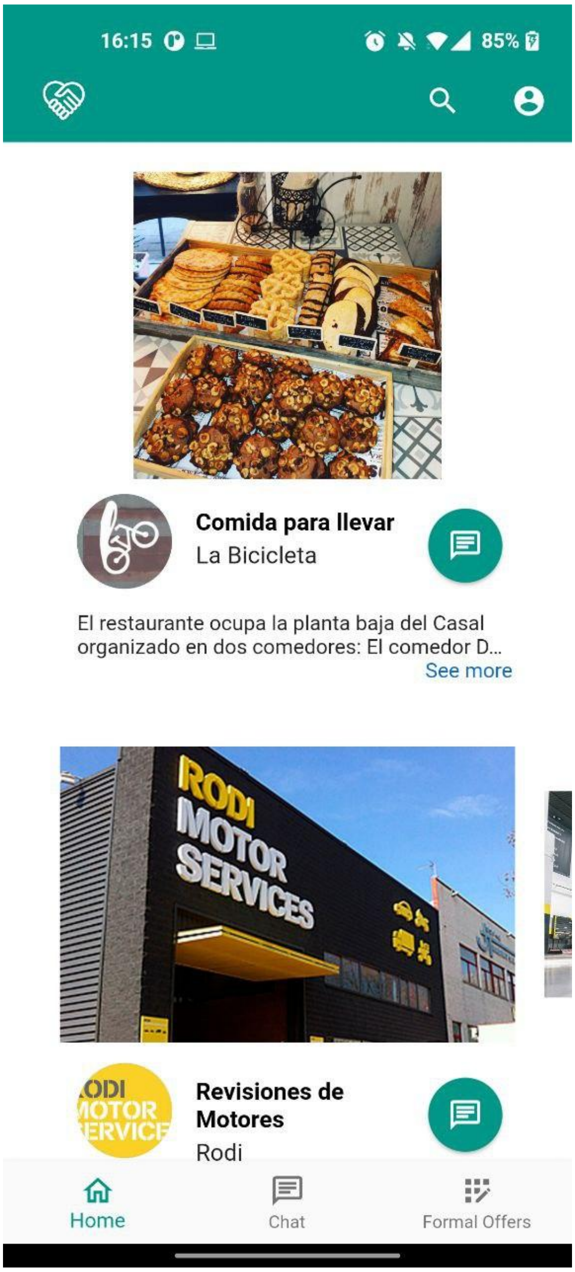
Figure 12: Menu Profile.

7.1.2 Application

In this section, you will encounter all the screens that the application has currently. The first three images correspond to the home, which lists some products, the list of chats, and the list of formal offers. This can be accessed when clicking at the bottom view. It can not be slides, as it was found confusing when using the images' carousel.

The next page 16 is the profile of an enterprise, which is triggered when clicking a logo of the enterprise, in the pages before. In the figure 17, the chat between two users can be seen. It also can be seen a formal offer version, and although a formal offer version can only be send by the owner of the product, it was though that showcasing both items in the mock would be better. The next image 18 is the searcher of the app, that can be triggered when clicking the magnifying glass icon. It has the history of the items searched, which can be deleted when clicking the trash button, or replicated when clicking the text.

Finally, in the images 19, 20, it is shown the registration and the login screens.

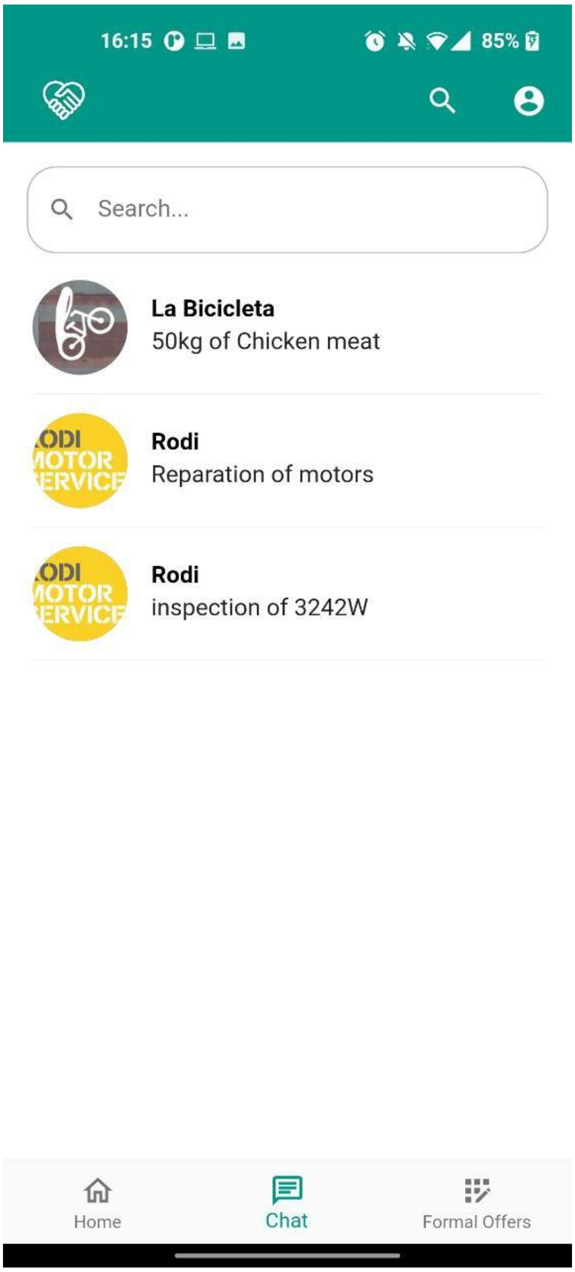


Comida para llevar
La Bicicleta

El restaurante ocupa la planta baja del Casal organizado en dos comedores: El comedor D...
See more

Revisiones de Motores
Rodi

Figure 13: Home mobile screen, it lists the products



16:15

85%

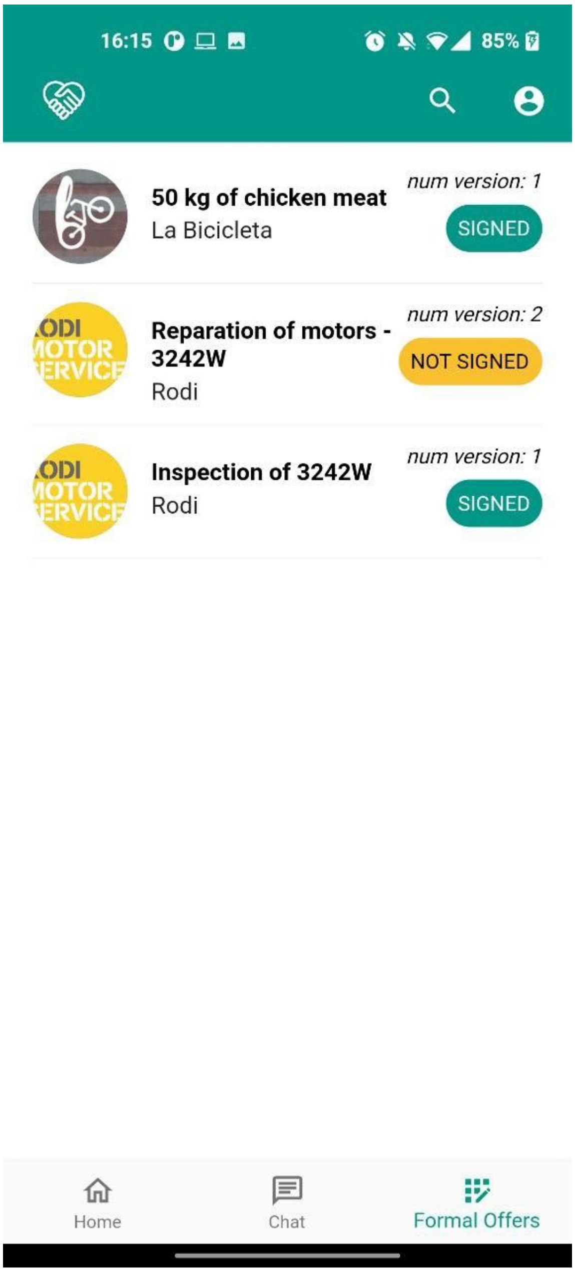
Search...

La Bicicleta
50kg of Chicken meat

Rodi
Reparation of motors

Rodi
inspection of 3242W

Figure 14: List of the current chats.



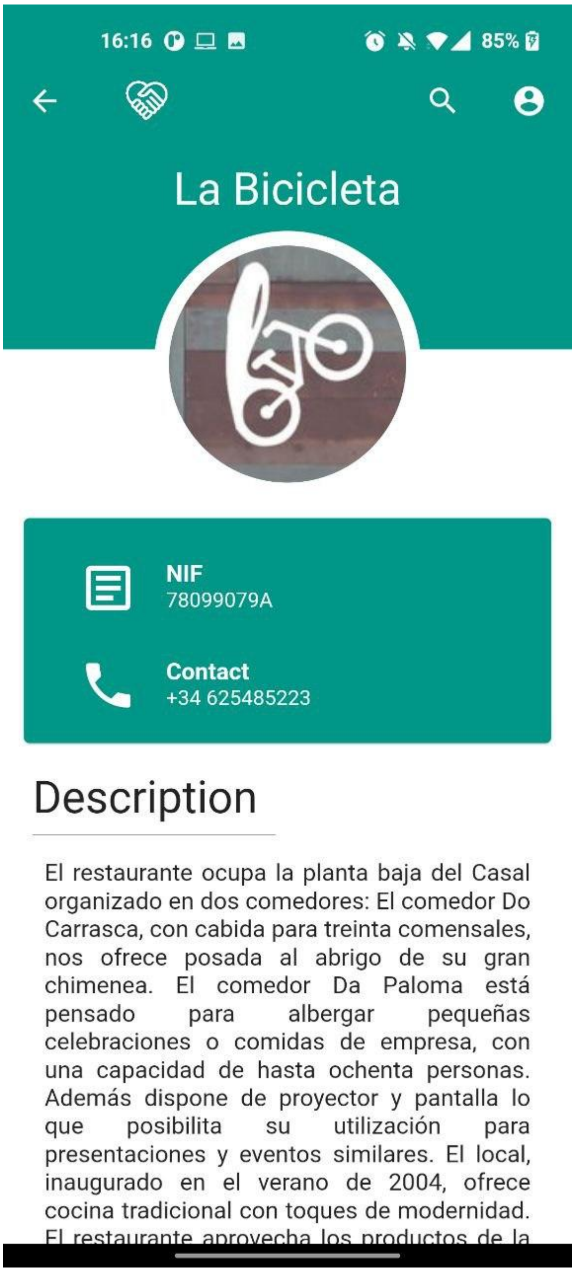
16:15 85%

50 kg of chicken meat
La Bicicleta
num version: 1
SIGNED

Reparation of motors - 3242W
Rodi
num version: 2
NOT SIGNED

Inspection of 3242W
Rodi
num version: 1
SIGNED

Figure 15: List of the current formal offers.



16:16 85%

La Bicicleta

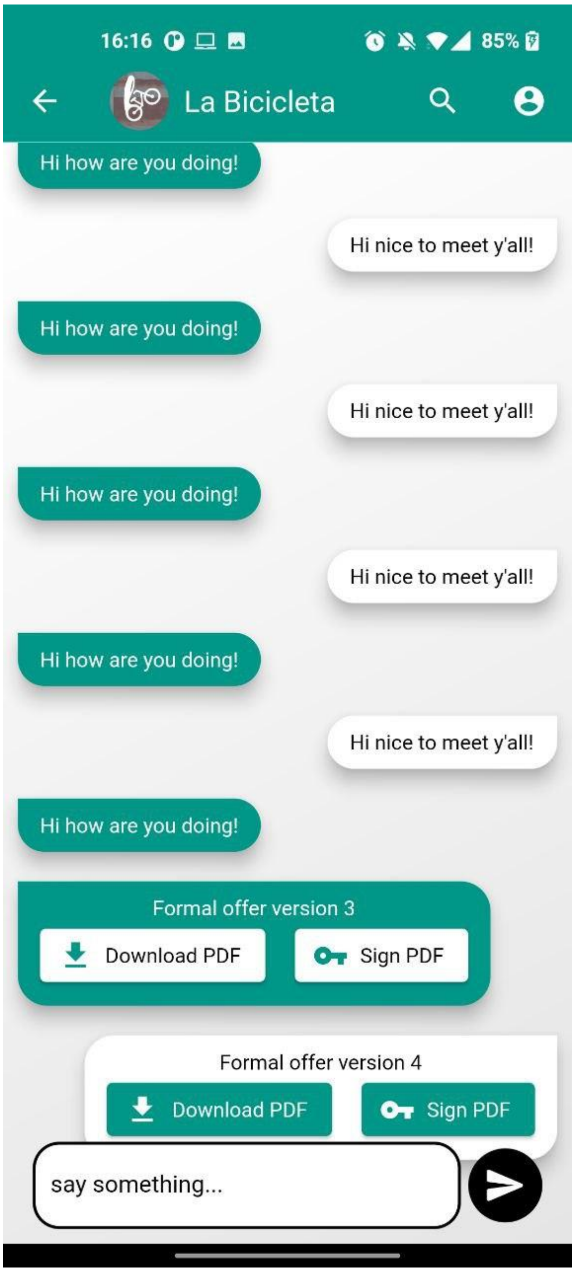
NIF
78099079A

Contact
+34 625485223

Description

El restaurante ocupa la planta baja del Casal organizado en dos comedores: El comedor Do Carrasca, con cabida para treinta comensales, nos ofrece posada al abrigo de su gran chimenea. El comedor Da Paloma está pensado para albergar pequeñas celebraciones o comidas de empresa, con una capacidad de hasta ochenta personas. Además dispone de proyector y pantalla lo que posibilita su utilización para presentaciones y eventos similares. El local, inaugurado en el verano de 2004, ofrece cocina tradicional con toques de modernidad. El restaurante aprovecha los productos de la

Figure 16: Detail of an enterprise, it can be found when clicking the logo of it.



Hi how are you doing!

Hi nice to meet y'all!

Hi how are you doing!

Hi nice to meet y'all!

Hi how are you doing!

Hi nice to meet y'all!

Hi how are you doing!

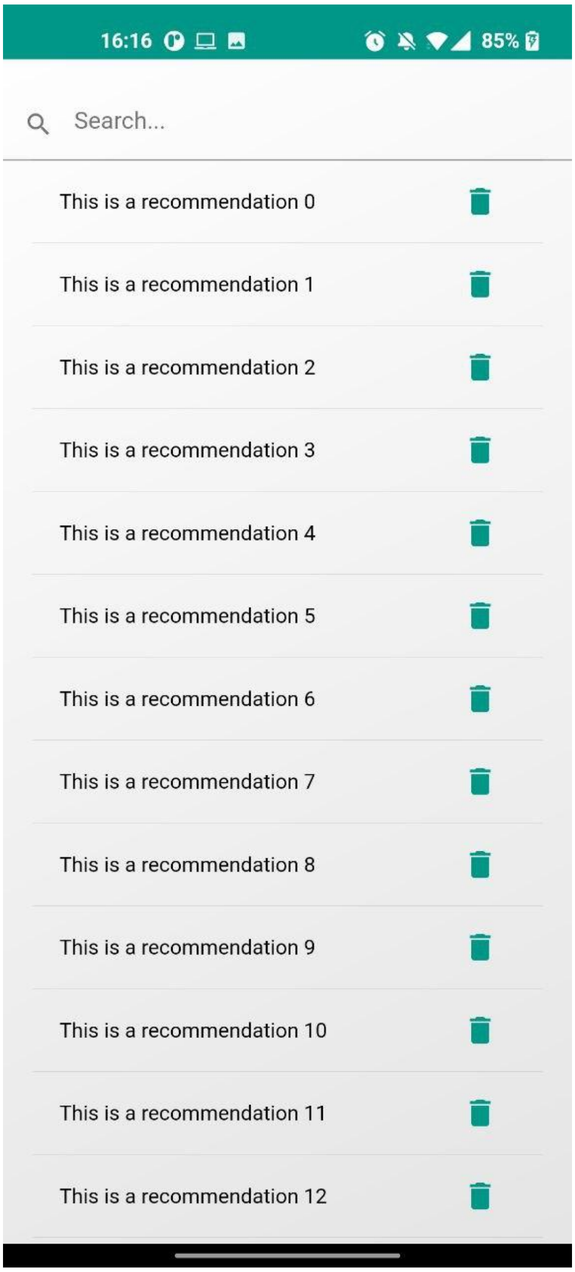
Hi nice to meet y'all!

Hi how are you doing!

Formal offer version 3

Formal offer version 4

Figure 17: Chat screen.



This is a recommendation 0

This is a recommendation 1

This is a recommendation 2

This is a recommendation 3

This is a recommendation 4

This is a recommendation 5

This is a recommendation 6

This is a recommendation 7

This is a recommendation 8

This is a recommendation 9

This is a recommendation 10

This is a recommendation 11

This is a recommendation 12

Figure 18: Recommendations screen.

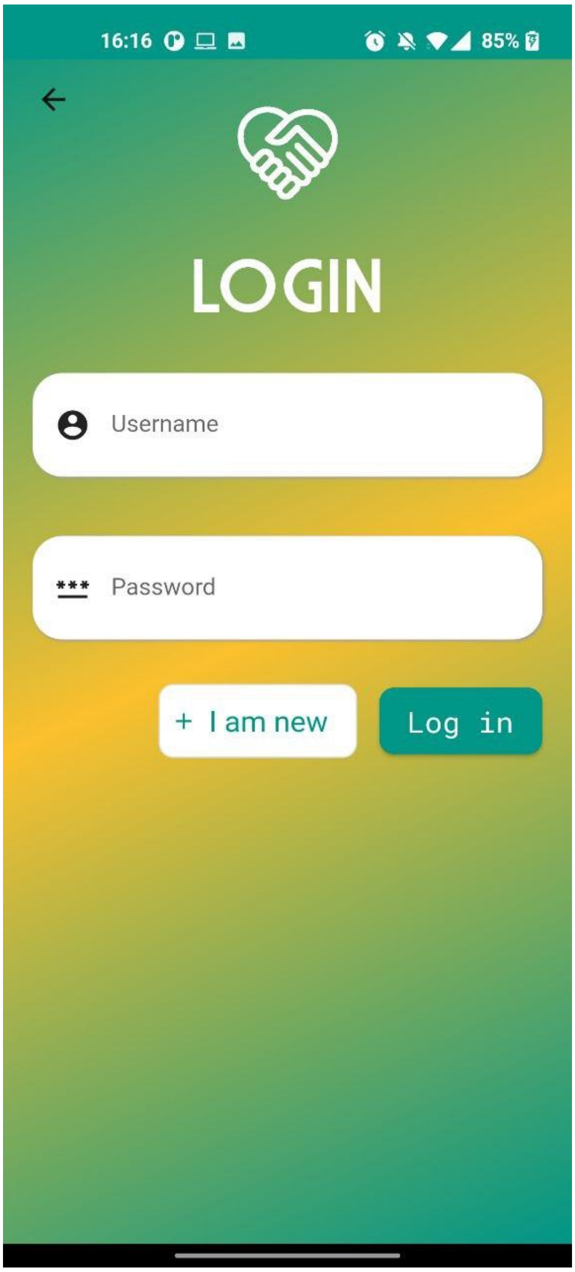
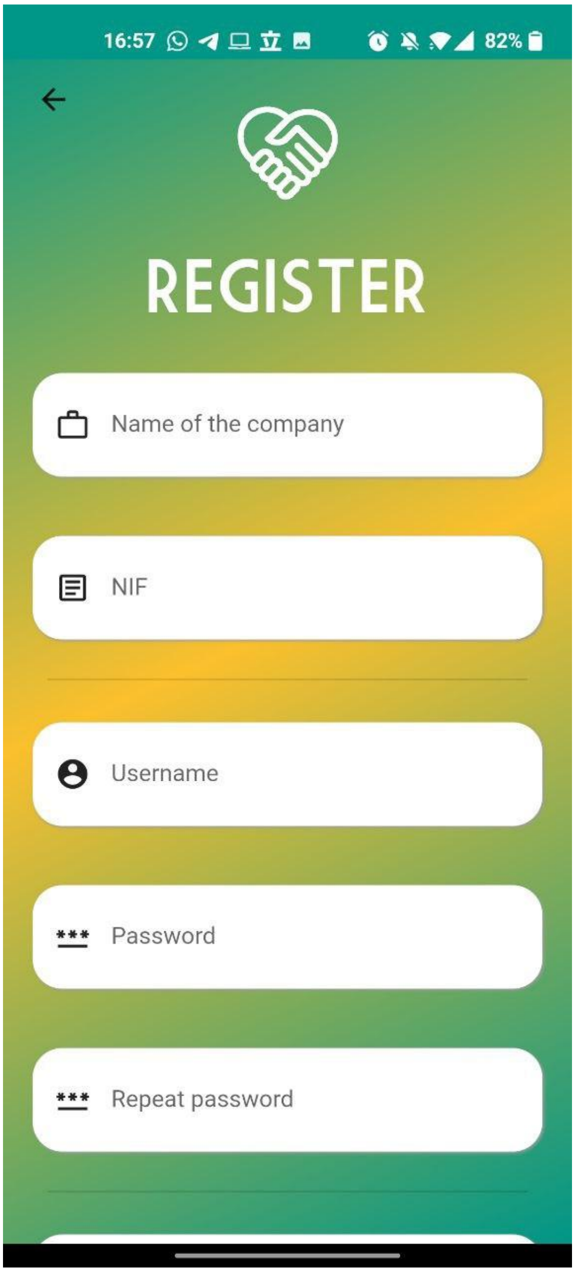


Figure 19: Login view.


16:57 82%

REGISTER

Name of the company

NIF

Username

Password

Repeat password

Figure 20: Registration screen.

7.2 Web Client

8 Financial Case

8.1 Monetization Strategy

The monetization strategy of Commed is mainly based on a percentage of the value of the commercial agreement contracts. When a contract has been finally set, an invoice will be generated. The value of the invoices depends on the value of the generated contract in order to make the invoices affordable for all types and sizes of companies. Therefore, in the first four years, the search of the companies and the other features will be free. After these beginning years, it is something to study and plan if some other features can become freemium.

In order to get more publications in the first few years and popularize our service quickly, the first three publications will be free for any company. The next ones will cost 250 € per year, which will not depend on the size of the company publishers. In addition, any kind of publication could get a better position in the search by paying monthly. The fee of this kind of advertising will be up to 450 € per month and the position will depend on how much the company pays for that advertising.

Therefore, there are three possible incomes:

- 5% commission of each contract generated.
- Publish a 4th, 5th,..., nth offer cost 250 € per new offer each year.
  Publishers have 3 free publications.
- Payments for advertising by month, the payment will be chosen by the customer in the same way it is done on instagram and facebook. The more the company pays for the advertising, the more the offer will appear. The maximum fee should be 450 € per month.

As the search will be free, the companies could be able to negotiate and set the contract out of our reach. In order to sort this inconvenience out, Commed will finally generate the contract making this process so easy and the invoice very affordable as the payment is only the 5% of the contract.

8.2 Marketing Strategy

According to the marketing strategy, it has been set that the main focus in the first years will be getting the small and medium sized companies, in order to quickly popularize the platform and create small business ecosystems. For example, the main ecosystems to focus on in the first year will be in order of importance:

- Restoration, butchers and other food providers.
- Food industry and supermarkets.
- Organizations for seasonal work to get temporary contracts.
- Cleaning services.
- Security services.
- Logistic services.

After creating the small ecosystem, the focus will be on strengthening the ecosystem and widening the smaller ones in order to join with the others and make them become a greater one.

We choose to operate a door-to-door strategy to convince our first clients. Our sales mans will convince them by proposing the pros of using our service, and state our welcome offer. As for the advertising channels, we have chosen Linkedin, because we are in a B2B market, so our target are companies. As things progress, we rely on word of mouth to acquire more customers, both publishers and service seekers.

8.3 Speculation and flow chart

In order to create the simulation of the revenue, a speculation has been done on how many contracts will be held by our application in a month. This conjecture has been simulated over the first four years of the company. The revenue functions consists on these three variables:

- The income from the percentage of the contract between the entities. This variable has the main weight of the function as it is the main income generator. Mean value for small business contracts : 1000€. Mean value for big business contracts : 4000€.

- The revenue from the paid publications. In order to ease the simulation and know how many publications will be paid, a relaxation of the problem has been made. The paid publications ratio has been calculated with an approximation, which also is directly correlated with the amount of contracts held.

- The income from the payments for advertising a publication. This variable has also been approximated making a correlation from the number of contracts. We assumed that 5% of the publications are ads, for a cost of 30€ each.

According to the costs, its function depends on these variables:

- The cost of paying developers, which can be splitted into junior or senior developers.

- Marketing cost.

- As the platform will be growing, the costs of the server will be higher. Despite that, it is thought about creating a serverless backend using AWS Lambda to minimize this cost and only pay for the requests.

Three scenarios have been made in order to show a possible but different projection of the incomes generated by the platform:

- A pessimistic scenario, where the number of contracts increases in a linear way amongst the four years.

- An optimistic scenario, in which the contracts' function has an exponential form.

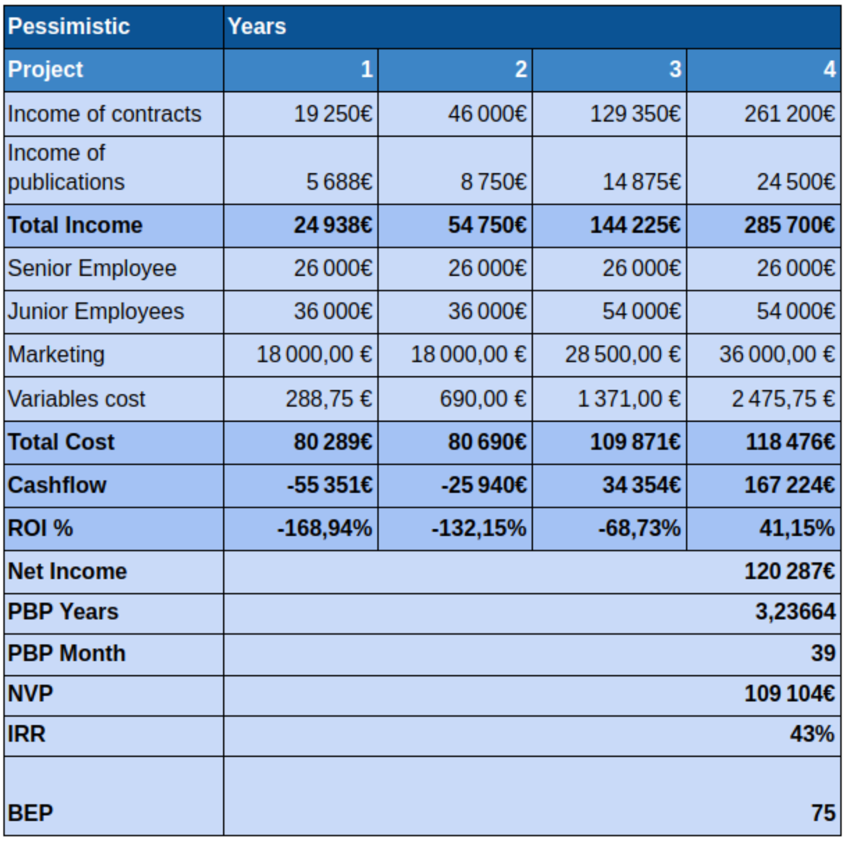
Year	1	2	3	3
Small Business Contracts	65	100	170	280
Big Business Contracts	0	0	40	73

Year	1	2	3	3
Small Business Contracts	77	160	230	412
Big Business Contracts	0	0	60	137

- A more realistic scenario, which also has linear function in the first years but in the lasts, it gets more the way of an exponential function.

8.4 Pessimistic Scenario

Number of contracts at the end of each year : In this scenario, the number of contracts increase linearly.



Pessimistic	**Years**			
Project	**1**	**2**	**3**	**4**
Income of contracts	19 250€	46 000€	129 350€	261 200€
Income of publications	5 688€	8 750€	14 875€	24 500€
Total Income	**24 938€**	**54 750€**	**144 225€**	**285 700€**
Senior Employee	26 000€	26 000€	26 000€	26 000€
Junior Employees	36 000€	36 000€	54 000€	54 000€
Marketing	18 000,00 €	18 000,00 €	28 500,00 €	36 000,00 €
Variables cost	288,75 €	690,00 €	1 371,00 €	2 475,75 €
Total Cost	**80 289€**	**80 690€**	**109 871€**	**118 476€**
Cashflow	**-55 351€**	**-25 940€**	**34 354€**	**167 224€**
ROI %	**-168,94%**	**-132,15%**	**-68,73%**	**41,15%**
Net Income	**120 287€**			
PBP Years	**3,23664**			
PBP Month	**39**			
NVP	**109 104€**			
IRR	**43%**			
BEP	**75**			

Table 1: Pessimistic Cash Flow

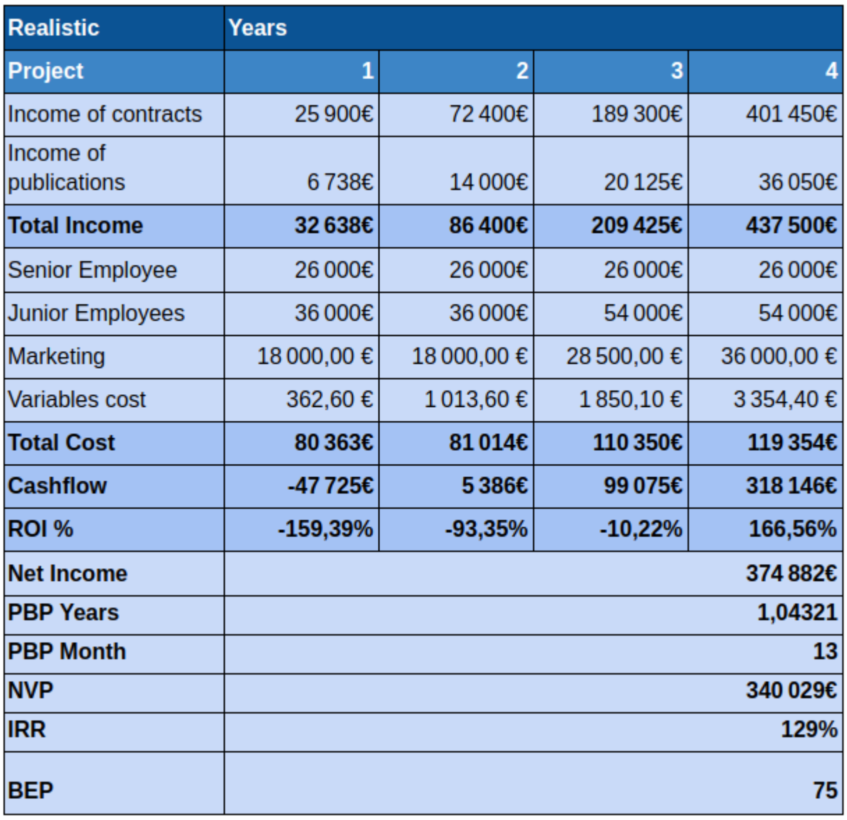
ROI = (Total Income - Total Cost) / Total Cost

8.5 Realistic Scenario

Number of contracts at the end of each year : In this scenario, the number of contracts is the mean

Year	1	2	3	3
Small Business Contracts	85	200	270	500
Big Business Contracts	0	0	74	180

between the pessimistic and the optimistic scenarios.

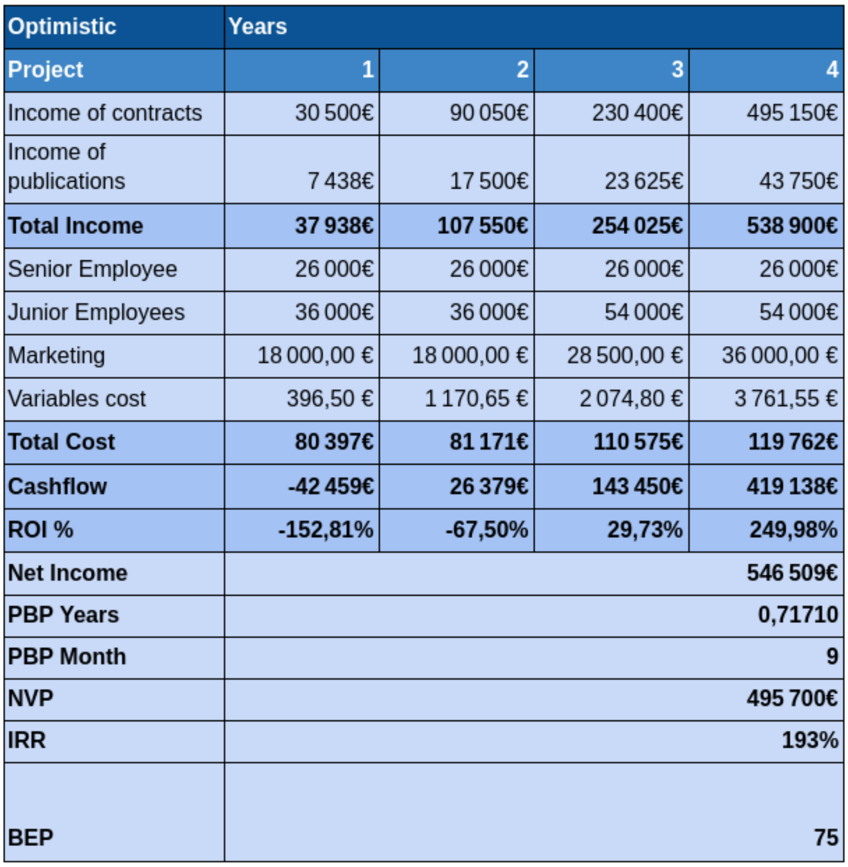


Realistic	Years			
Project	1	2	3	4
Income of contracts	25 900€	72 400€	189 300€	401 450€
Income of publications	6 738€	14 000€	20 125€	36 050€
Total Income	**32 638€**	**86 400€**	**209 425€**	**437 500€**
Senior Employee	26 000€	26 000€	26 000€	26 000€
Junior Employees	36 000€	36 000€	54 000€	54 000€
Marketing	18 000,00 €	18 000,00 €	28 500,00 €	36 000,00 €
Variables cost	362,60 €	1 013,60 €	1 850,10 €	3 354,40 €
Total Cost	**80 363€**	**81 014€**	**110 350€**	**119 354€**
Cashflow	**-47 725€**	**5 386€**	**99 075€**	**318 146€**
ROI %	**-159,39%**	**-93,35%**	**-10,22%**	**166,56%**
Net Income				**374 882€**
PBP Years				**1,04321**
PBP Month				**13**
NVP				**340 029€**
IRR				**129%**
BEP				**75**

Table 2: Realistic Cash Flow

8.6 Optimistic Scenario

Number of contracts at the end of each year : In this scenario, the number of contracts increase exponentially.



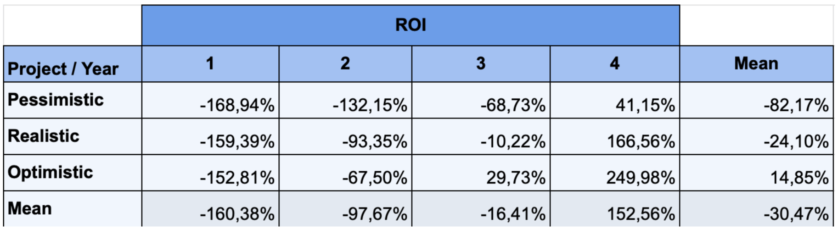
Optimistic	Years			
Project	**1**	**2**	**3**	**4**
Income of contracts	30 500€	90 050€	230 400€	495 150€
Income of publications	7 438€	17 500€	23 625€	43 750€
Total Income	**37 938€**	**107 550€**	**254 025€**	**538 900€**
Senior Employee	26 000€	26 000€	26 000€	26 000€
Junior Employees	36 000€	36 000€	54 000€	54 000€
Marketing	18 000,00 €	18 000,00 €	28 500,00 €	36 000,00 €
Variables cost	396,50 €	1 170,65 €	2 074,80 €	3 761,55 €
Total Cost	**80 397€**	**81 171€**	**110 575€**	**119 762€**
Cashflow	**-42 459€**	**26 379€**	**143 450€**	**419 138€**
ROI %	**-152,81%**	**-67,50%**	**29,73%**	**249,98%**
Net Income	**546 509€**			
PBP Years	**0,71710**			
PBP Month	**9**			
NVP	**495 700€**			
IRR	**193%**			
BEP	**75**			

Table 3: Optimistic Cash Flow

8.7 Economic indices comparison between scenarios

All information related to the simulation and prediction about the first four years of the platform can be found in the spreadsheet attached to this document. Even though, the cash flows of each scenario can be found in *Tables 1, 2 and 3.* In this section, we will begin by comparing the three scenarios using the different indexes calculated above.

First, we want to show you the `ROI` index between the different scenarios, which can be found in Table 4. The `ROI` has been calculated every year, as it is more significant to us to analyze this information. Although it can be found that the `ROI` index in the first year is similary between the scenarios, the pessimistic scenario has some challenges to increase the ROI so as to be positive while optimistic and, actually, the realistic appear to have a better return on investment.

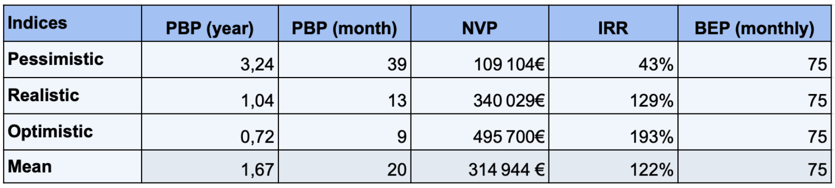


	ROI				
Project / Year	1	2	3	4	Mean
Pessimistic	-168,94%	-132,15%	-68,73%	41,15%	-82,17%
Realistic	-159,39%	-93,35%	-10,22%	166,56%	-24,10%
Optimistic	-152,81%	-67,50%	29,73%	249,98%	14,85%
Mean	-160,38%	-97,67%	-16,41%	152,56%	-30,47%

Table 4: ROI Index comparison between the three scenarios

According to the other indices, mostly all of them have better values in the optimistic scenario. One of the most valuable indices is the PBP in terms of months. Here, we can see that the optimistic has only 9 months of PayBack Period. On the other hand, realistic scenario is a promising case, as in only one year and a month we would be able to recover the cost of the investment.

Although ROI gave us bad values, specially in the pessimistic scenario, we can see that in all the scenarios the IRR is positive. For the interest rate, we chose 1,05, that is quite similar to the inflation rate. That gave us good information to know if someone is going to invest on the company. The only one index that has the same behaviour in all the cases it is the BEP, which is calculated monthly. That is because the costs are fixed, as the lifecycle of the software would be large.



Indices	PBP (year)	PBP (month)	NVP	IRR	BEP (monthly)
Pessimistic	3,24	39	109 104€	43%	75
Realistic	1,04	13	340 029€	129%	75
Optimistic	0,72	9	495 700€	193%	75
Mean	1,67	20	314 944 €	122%	75

Table 5: Indices comparison between the three scenarios

In Figure 21, we can see the contracts' function of all the scenarios and the total cost function, which is the same in all scenarios. In the optimistic scenario, we will start to recover the initial investment at the beginning of the first year whereas in the worst case, we will start generating benefits at the beginning of the third year.

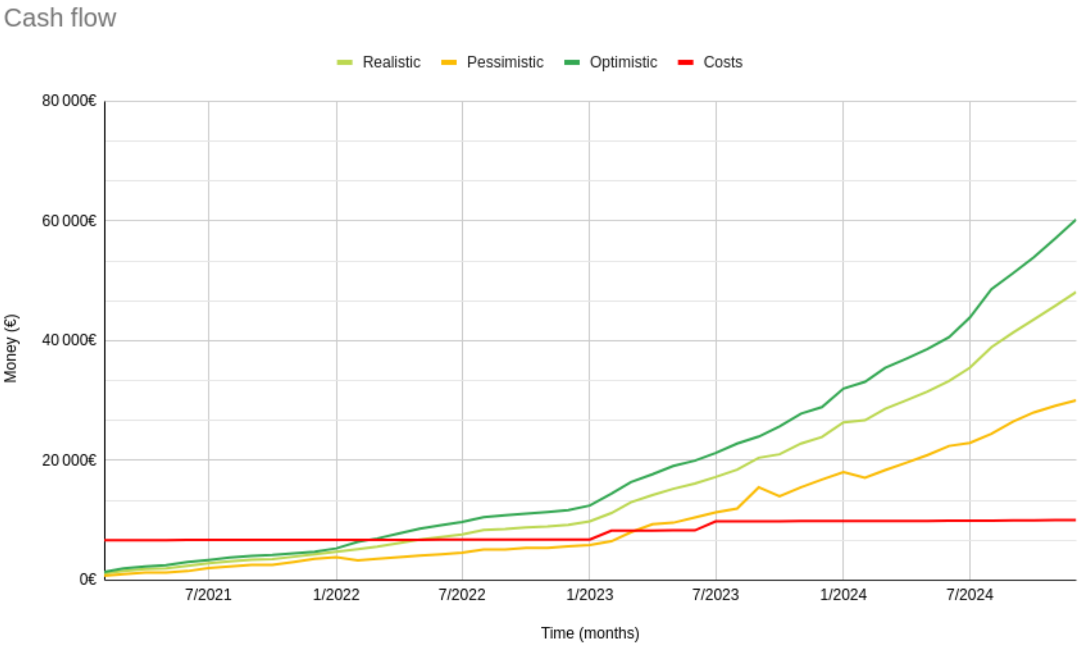


Figure 21: Cash flow of the different revenue function from scenarios and cost function