



DEPARTMENT OF COMPUTER SCIENCE

TDT4252 - ENTERPRISE ARCHITECTURE FOR ENTERPRISE
INNOVATION

CASE STUDY
Salesland and Carrefour

Author:
Sofía Xiaofan Fernández Marín

Table of Contents

List of Figures	ii
1 Introduction	1
1.1 Case description	1
1.1.1 Case main process	1
1.2 Purpose and goals of the model	2
2 Enterprise Modelling	3
2.1 Design of the model	3
2.2 Enterprise models (Archimate and 4EM)	3
2.2.1 Model in 4EM	3
2.2.2 Model in Archimate	8
2.3 Using the model	11
2.3.1 Stakeholders	11
2.4 Choice of modelling language/tool	11
3 Open service innovation and service design	12
3.1 Method	12
3.1.1 Discover	12
3.1.2 Define	12
3.1.3 Develop	12
3.2 Customer journey	13
3.2.1 Working with tablets	13
3.2.2 Implementing the application Carrefour	14
3.3 Service Blueprint	16
3.4 Reflections	16
4 Business modelling	17
4.1 Business Model Canvas	17
4.2 Description of the Business Model	17
4.2.1 Delivery	17
4.2.2 Value	18
4.2.3 Customer	18
4.2.4 Financial	19
5 Redesigned enterprise models	20

5.1	Describing the changes model	20
5.1.1	The Organizational Model Re-designed	20
5.1.2	The Goal Model Re-designed	21
5.1.3	The Processes Models Model Re-designed	21
5.1.4	The 4EM Model Re-designed	22
5.2	Relation between the Enterprise Model and Enterprise Architecture	24
5.2.1	Model structure according to TOGAF	24
6	Evaluation of models	25
7	Reflections	26
	Bibliography	27

List of Figures

1	4EM - Actors and resources	3
2	4EM - Goal Model	4
3	4EM - Goal Model with process	5
4	4EM - Process Becoming a member	6
5	4EM - Process Apply discount to members	6
6	4EM	7
7	Archimate - Organizational Model	8
8	Archimate - Goal Model	8
9	Archimate - Process Becoming A Member	9
10	Archimate - Process Paying A Shopping bag	9
11	Archi	10
12	Customer Journey - Before starting to work with tablets	13
13	After starting to work with tablets	14
14	Customer Journey - Before implementing the application	15
15	Customer Journey - After implementing the application	15
16	Blueprint	16
17	Business Model Canvas	17
18	Organizational Archimate Model Redesign	20
19	Goal Archimate Model Redesign	21
20	Process Archimate Model: Becoming a new member Redesign	21
21	Process Archimate Model: Paying A Shopping bag Redesign	22

22	Archimate Model Redesign	23
23	TOGAF - ADM	24

1 Introduction

1.1 Case description

Salesland is a Spanish-speaking company focused on selling. Specialized in salesforce, marketing, remote and online sales, and points-of-sales.

The salesforce consists of accompanying our clients in all the procedures until the moment they obtain their product or service. In the marketing department, they design marketing actions, from the strategy, the development until is ensured the goal is achieved. The remote and online sales are departments where they are specialized in selling online and where they sell stuff remotely using sophisticated systems of sales systems and using diverse databases and contacts.

The point-of-sales consists on attract new customers for a company Salesland has been hired. I am going to focus on this last part, as is the one I have worked on last summer. I worked as a sales representative, role explained later.

It is composed of four main actors:

Salesperson: In charge of negotiating the point-of-sales and promotions with an external company.

Human resources: This person oversees some coordinators and contact the sales representatives. They also must oversee the physical assets.

Coordinators: Oversee over the sales representatives and manage the way the point-of-sale works.

Sales representative: In charge of trying to reach and register as many members as they can.

The campaign I have been working on was a collaboration with a store chain called Carrefour. This store sells many things like food, clothes or electronic devices. Our goal was to get as many new members to the "Club Carrefour" as we could.

The users could join the club if a sales representative stopped them at a Carrefour store. The sales representative had to ask for some information to fill a form and after that, the person has given a card with an identification number and the new members of the club could use the card one working day after they receive it.

This is because after a day of filling forms, we had to give all the forms to the coordinators and they had to send them to the external company office. In this office, they had to scan all the forms to register all the persons in the database of Carrefour.

With this membership card, the customer can access special offers and promotions.

1.1.1 Case main process

The main process consists of the following processes:

First, the customer enters the store, and then the sales representative approaches them. The sales representative asks the customer if he or she is interested in being part of "Club Carrefour". If the customer says yes, the sales representative starts asking questions to fill a form.

After that, the form is kept by the sales representative and at the end of the day, they give all the forms to the coordinators and then, they will give the forms to the carrier, that will take the forms to the central office for there to scan the forms and get register the customers into the database.

From this point forward, the customer can use the membership card.

1.2 Purpose and goals of the model

The purpose of the model is to display an overview of the company and how it works in this specific scenario. It shows how the architecture of the enterprise is made and the relations between the actors of Salesland, Carrefour, and external organizational units are. It also presents how the most important processes are made, like the process of becoming a member or when a client pays a shopping bag using the membership card. It also helps to understand the internal processes and the connection to each other.

The model will be useful for the management and workers as they can see challenges to face and new ways of innovating in the company.

In the model, we can also observe the goals of the company and new ones, as creating a more technological business.

The goal of the model is to create a more visual canvas of how Salesland works with other companies and visualize the internal processes of the enterprise. It will also let us innovate easily, as we will enhance the campaign by creating new goals. With this model, we have a complete view of how the company is distributed until this moment, so it will not be difficult to implement innovations.

2 Enterprise Modelling

2.1 Design of the model

The design of the model has been focused on the business process. We have represented how can a client become a member of "Club Carrefour" and how after that, a discount is applied when they hand the membership card to the cashier. We have chosen those processes to model as they are the main processes that are different from a person that does the shopping without being a member and one that is.

Besides the business process, there are also models of the actors and resources and a model of the goals of the enterprise. The actors and resources model shows how Salesland is built and how it relates with Carrefour and other organizations. The goal model is made to provide a more visual idea of the concept.

2.2 Enterprise models (Archimate and 4EM)

In this section, we will expose the different models made for understanding how the campaign works.

2.2.1 Model in 4EM

- **Actors and resources Model**

The following model shows how the enterprise is organized. Here we can see the actors of Salesland explained in part 1.1 and which is the role of each one. We can also see their relationship with the actors of Carrefour and the External Transportation Company. In addition to this, we can also observe that some roles require to oversee some resources.

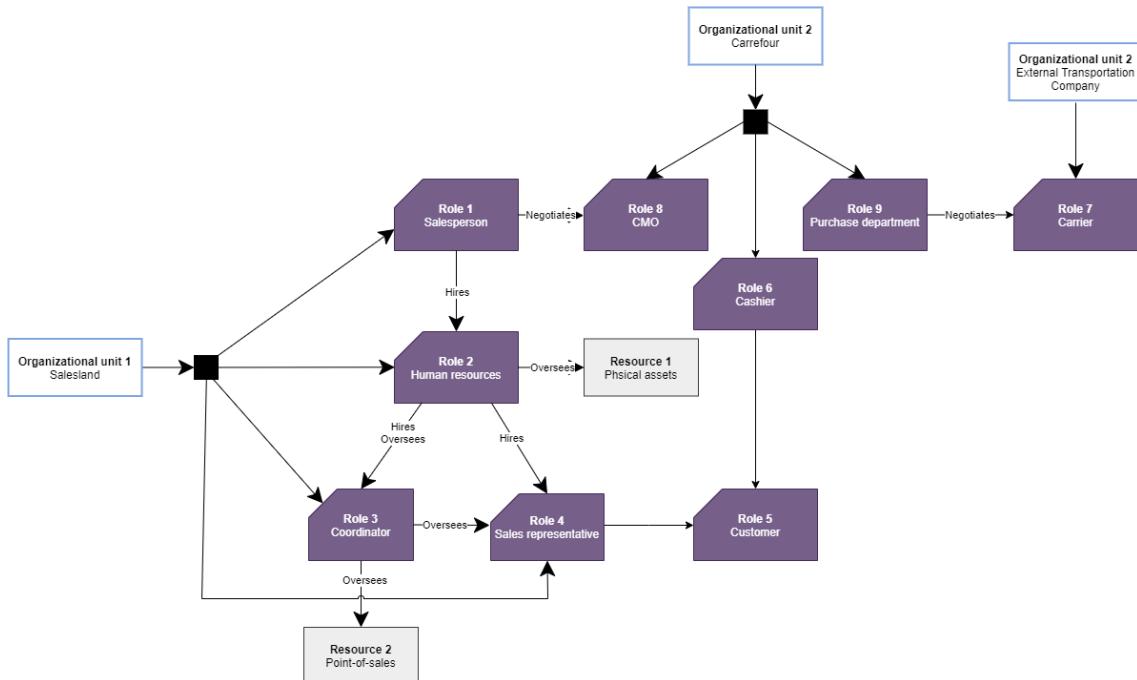


Figure 1: 4EM - Actors and resources

• Goal Model

This model shows that the main goal of the company is to increase the profits by 20% in 5 years. Salesland is going to achieve this goal through various sub-goals. The one we are focusing on, in this model is the Goal #2 *Be hired by other enterprises*, which, in turn, has Goal #4 *Improve point-of-sales*.

This is the goal we are going to be focusing on, as we are in a new campaign with Carrefour, so this is one of the fastest ways. We have different processes of achieving this goal, shown in Figure 3.

For achieving Goal #9, *Register as many members as they can* (7 people registered as new members per hour), we have encountered two news opportunities that will make the registration of a member faster and more appealing.

We can see that there are 2 opportunities:

- *Working with tablets*: Instead of having forms that have to be completed by hand and to be registered in the database at the end of the day; have a device directly connected to the database and fill the form there.

- *Develop an application*: An application where users can have their tickets, so the cashier does not use paper. Also, a tab where the users can see the catalog of the offers. The members would have more functionalities such as special offers.

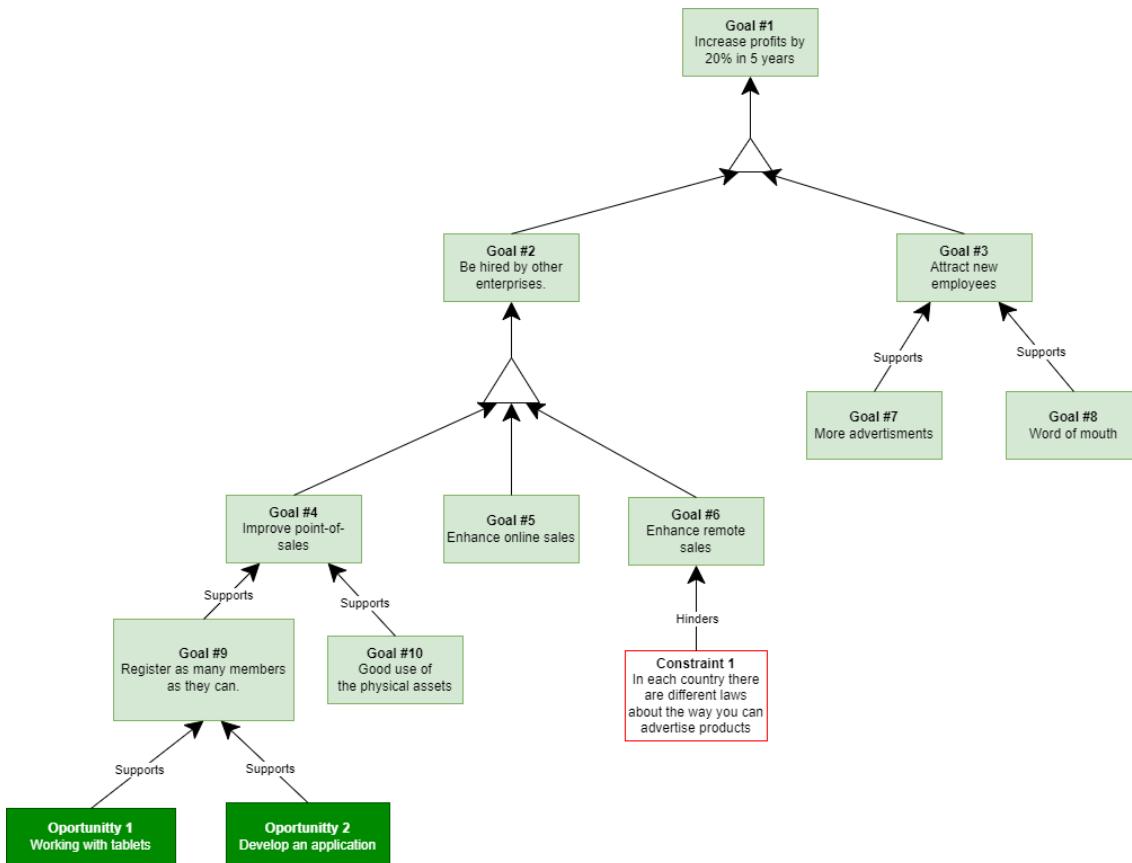


Figure 2: 4EM - Goal Model

In the next model, we can see the process we will need to carry out to achieve goal #9. We will expand process 1 and 3 in the figures 4 and 5. It exists the basic membership card but there are also special cards for special collectives. If you are minor above 30, you get special discounts apart from the ones you also get on the normal membership card. The same happens if you are greater than 65 years or if you have more than 3 children. This is due in Spain if you are part of a large family (+3 children) you get government aids, and in Salesland and Carrefour we want to contribute with that.

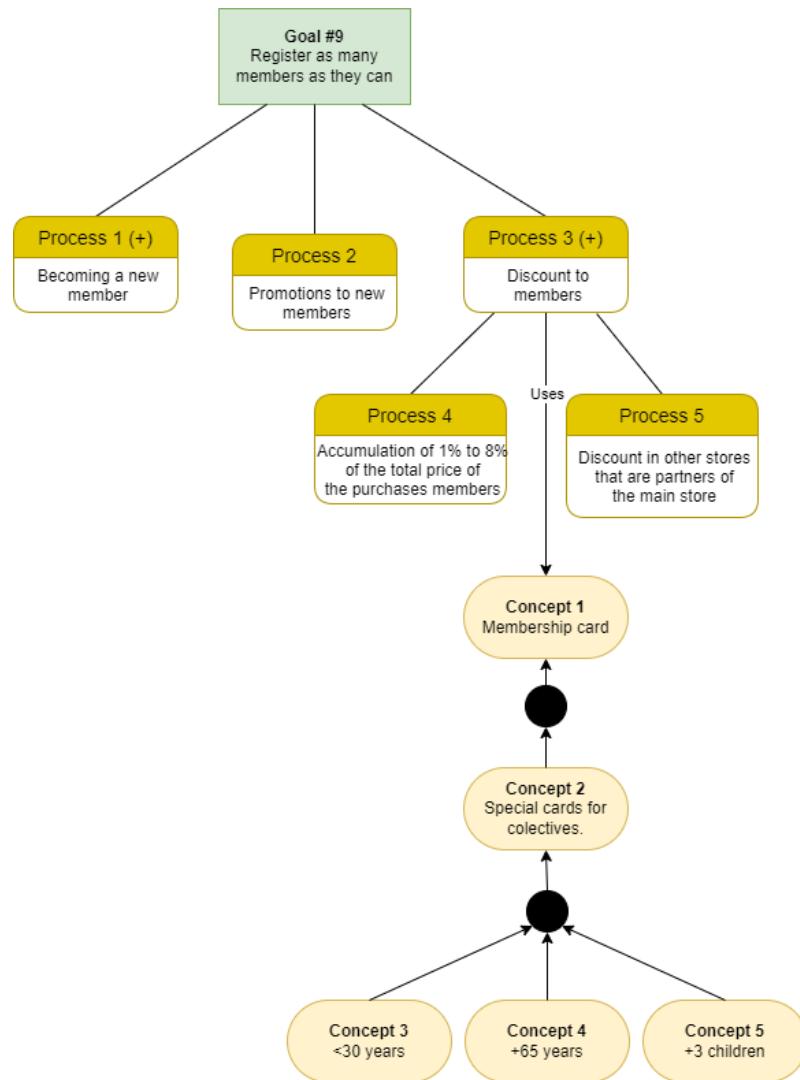


Figure 3: 4EM - Goal Model with process

• Process Model: Becoming a member

Here we can see process 1, becoming a member. It is composed of 3 processes more, the first one is the one where the sales representative asks for the information to the client to fill the form. The second one is the one where the carrier is involved, they will have to take the filled forms to the Carrefour office. The last one is the one where a machine registers the new members into the database.

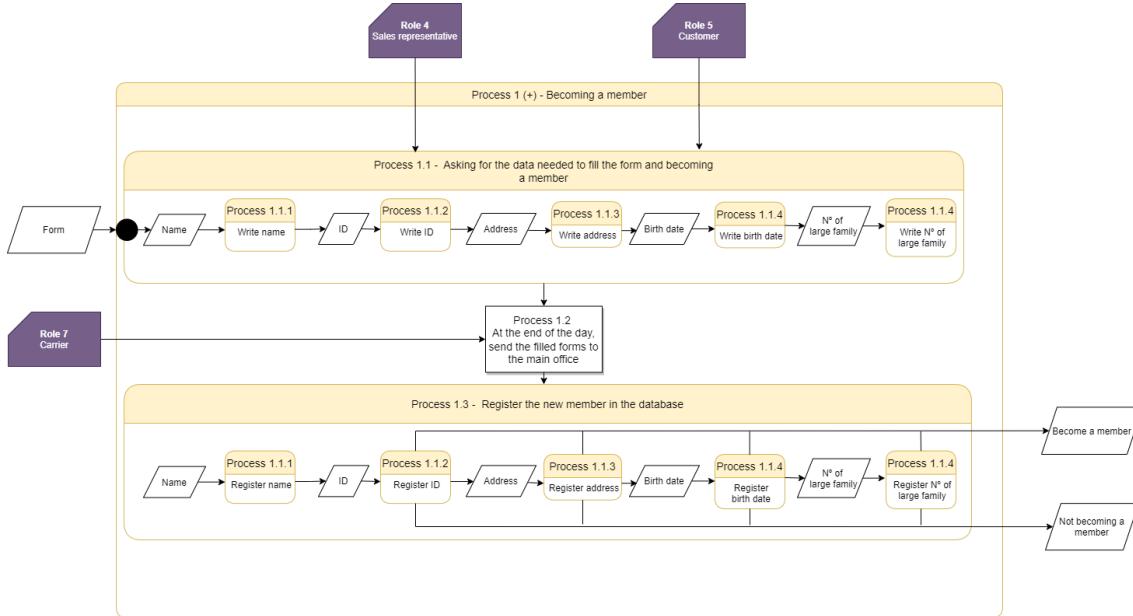


Figure 4: 4EM - Process Becoming a member

• Process Model: Apply discount to members

The next model is a process of how it applied the discount to members of "Club Carrefour". As said before, there are 4 different types of cards, the standard membership one and the ones that are special for some collectives. The standard ones can be used by all the members of the family but the special ones can only be used for that specific person as they need to fill special requirements.

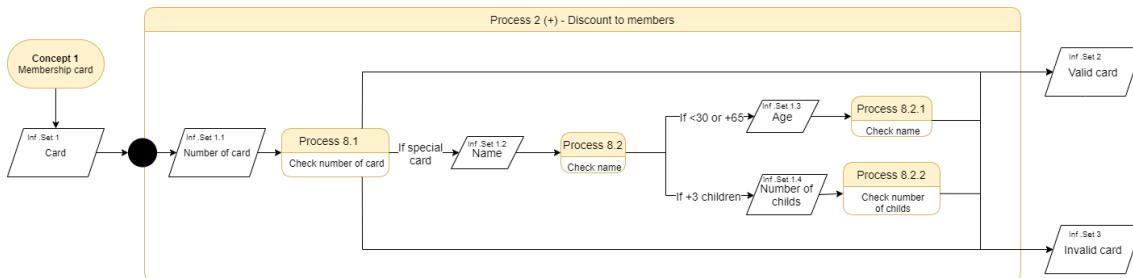


Figure 5: 4EM - Process Apply discount to members

• Global view of 4EM Model

In the next picture the 4EM model is represented entirely.

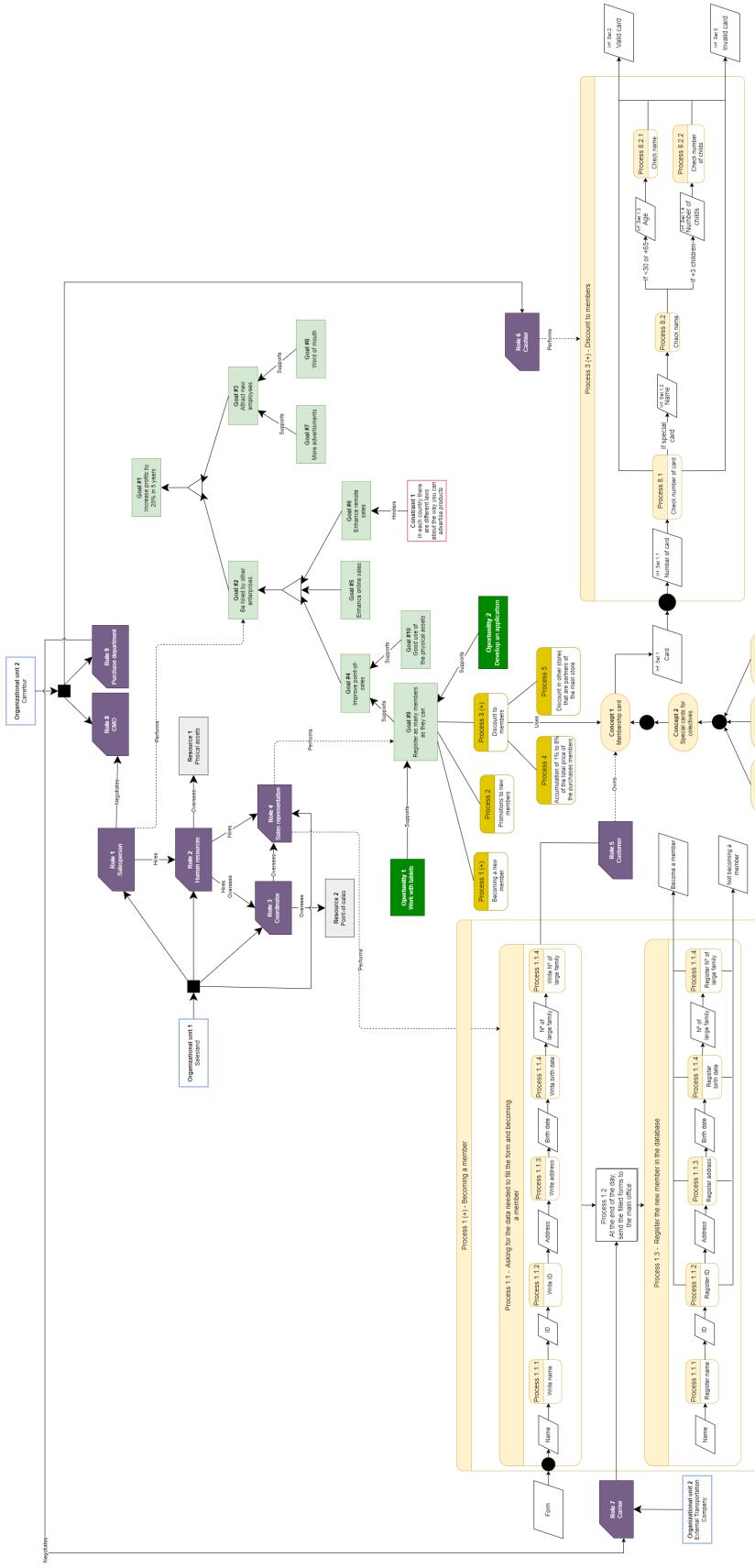


Figure 6: 4EM

2.2.2 Model in Archimate

- **Organizational Model**

In the following model we can see the organizational model modeled in Archi. There are more actors than in the Archimate model because here we have also represented the other departments that Salesland works in.

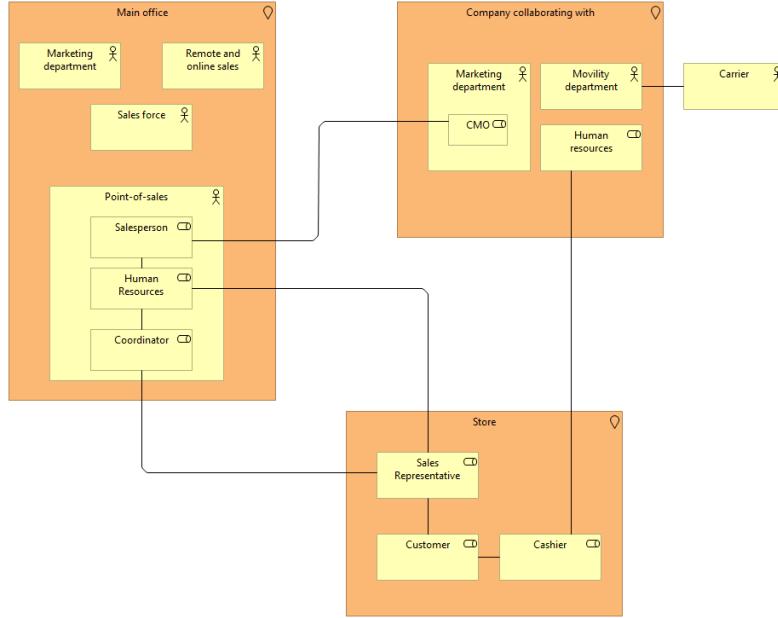


Figure 7: Archimate - Organizational Model

- **Goal Model**

In this goal model, we can see the same goals as in the 4EM model. The only difference is that in this model we have not represented the processes as it comes implicit in the global view of the Archimate model.

As for the member cards, the representation in Archimate is more abstract than in the 4EM model.

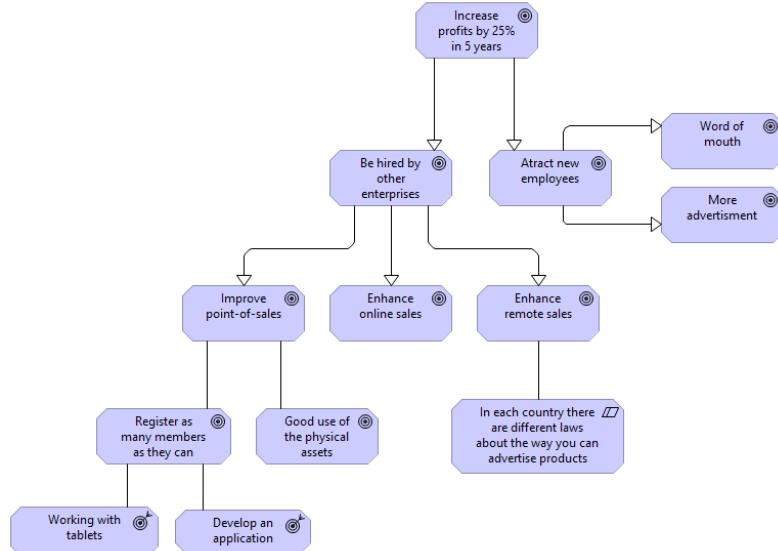


Figure 8: Archimate - Goal Model

• Process Model: Becoming a member

The process of becoming a member is represented in the next figure. It also has an application and a technology model part as it is represented how the forms are scanned and stored in the Carrefour database.

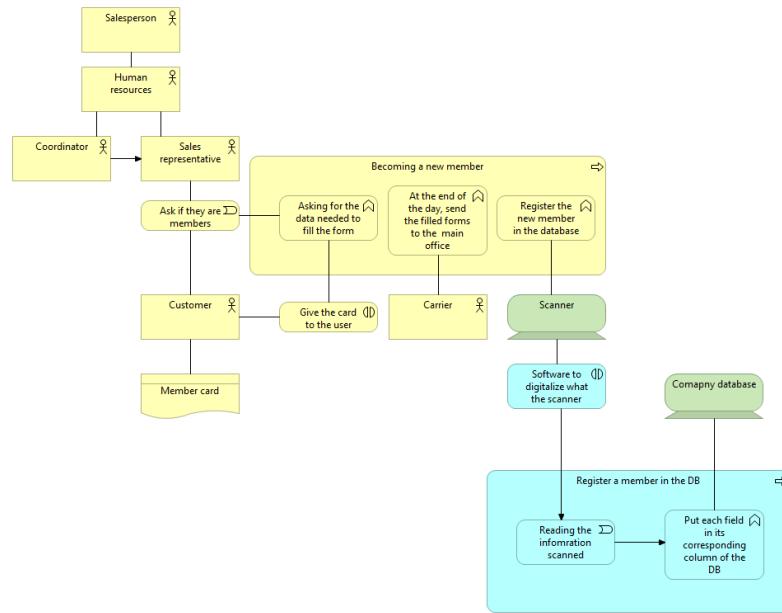


Figure 9: Archimate - Process Becoming A Member

• Process Model: Paying a shopping bag being a member

For this process model we have also represented some application and technology Archimate model as the discount is applied only if the member card is valid.

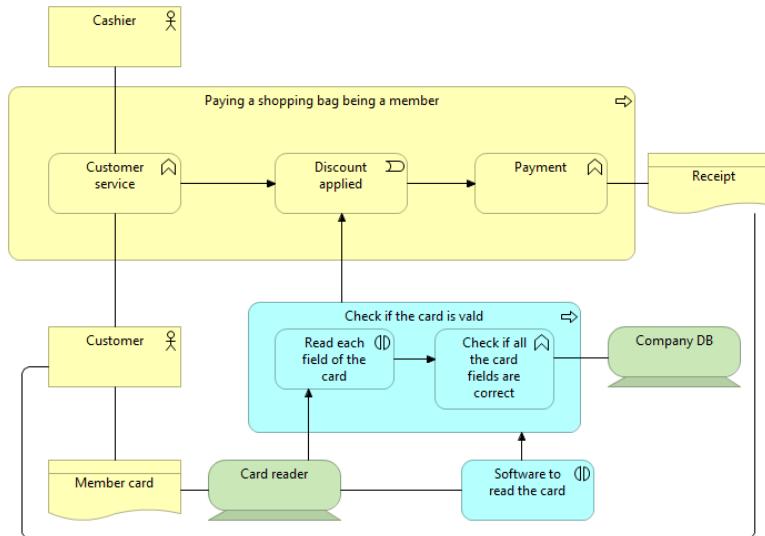


Figure 10: Archimate - Process Paying A Shopping bag

• Global view of Archimate Model

In the next image we can see the global view of the Archimate model where there is represented how the process of becoming a member and paying a shopping bag are related.

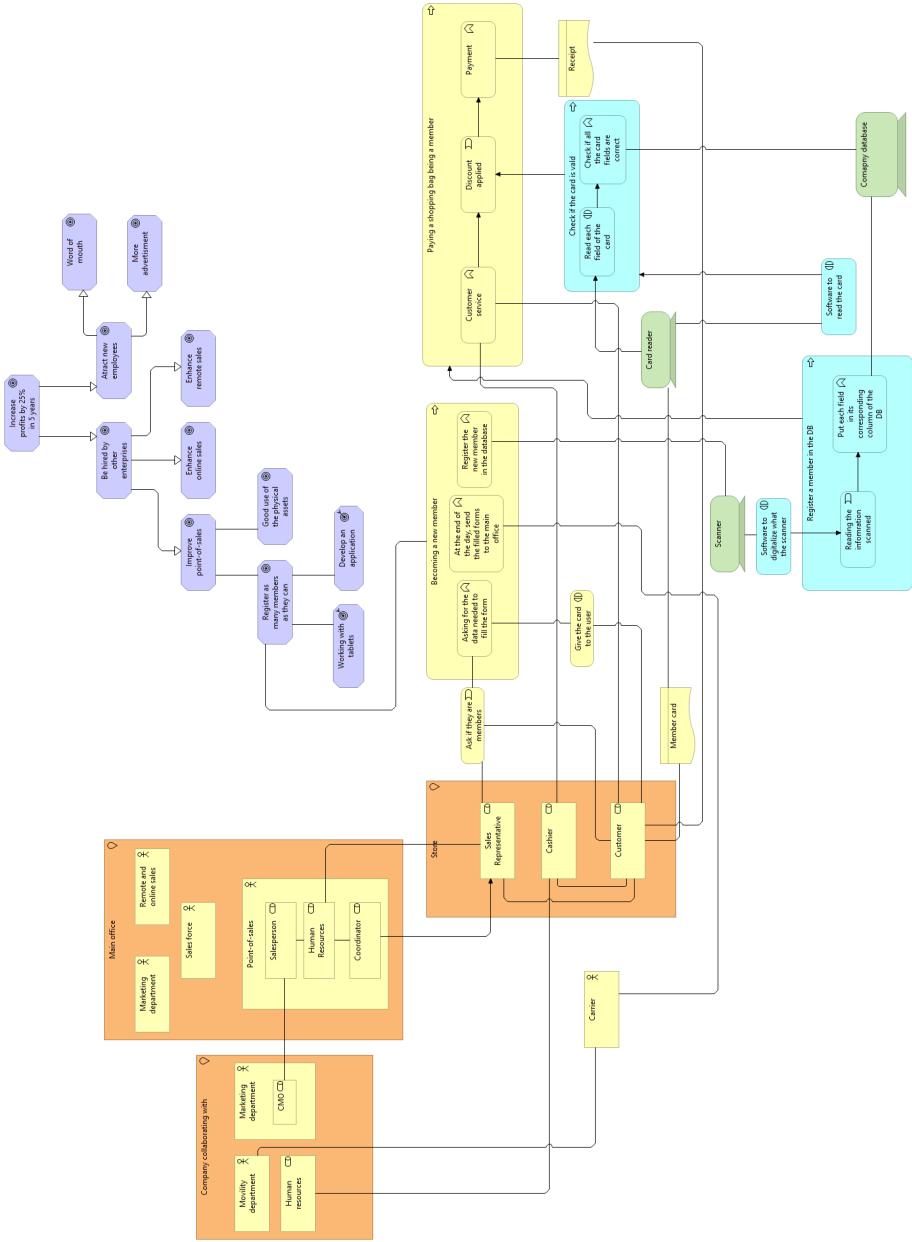


Figure 11: Archi

2.3 Using the model

As described in Section 1.2, the model will be used especially to see new challenges to face and to create new plants to innovate in the company. It shows a general display of the company and it will be used by the management for the latter. But also it is used to redesign the business processes (how the processes can be innovated with new tools and methods) or to give a global view to new employees.

For help with this purpose, we have come with the following stakeholders:

2.3.1 Stakeholders

Business stakeholders are those that can impact the business model, as well as be impacted by it in either a positive or a negative manner. For achieving the target of the project "Register as many members as they can" we have the following business stakeholders.

- **Customers:** The customers are important as they are the ones we are focusing our campaign on them joining the "Club Carrefour".
- **Departments:** The departments in our company will also be affected in different ways.
 - **Marketing department:** The marketing department will have to work to make announcements of the new membership card we have.
 - **Research department:** Will have to make a market study and see the different competitors we have to highlight our differences.
- **Suppliers:** We need someone to carry the new cards and empty forms to the store and the filled forms to the main office.
- **Competitors:** Carrefour and Salesland will have to be prospect the competitors that are currently in the market.

2.4 Choice of modelling language/tool

I have chosen the Archimate language as I think is easier to comprehend. At first, it was a bit confusing for me and the models in Archimate were the ones that took me more time to create.

After some struggles, I started to model without having much idea but it came easier when I started doing more things.

I chose Archi as I think it fits better to my case and the innovations I want to make. The innovation the company did, was to fill the forms online, for the clients to have a better experience when receiving their membership card. They could use it at the moment.

Another innovation is to create an application for not having to have a physical card. It will also save paper from the receipts. The innovations are better explained in point 3

3 Open service innovation and service design

3.1 Method

To perform the service innovation we have used the double diamond method. It consists of 4 stages: Discover, Define, Develop, and Delivery. These steps help to organize and improve the process of innovation. We are going to talk about the first three steps in this report, as the fourth one is not covered here as is the phase where the product is launched.

The double diamond method is not a linear method, as we have seen when doing this step. First, we came out with the first problem and definition and after that, we came with the second one.

3.1.1 Discover

First of all, we have to learn about the problem we have intending to find all possible solutions. As seen before, in the Figure 2.2.1 and Figure 2.2.2, we can spot the problem. Those two main problems are described in the next paragraphs:

1. We have had some problems with how we fill the forms. As they are filled by hand, there have been cases in which a single number was mistaken for another one. There are also cases where a letter of a name or an address is not clear.
2. We also want to find some complaints because we print a lot of tickets when the clients pay. The reason is that along with the receipt, we also give tickets with small discounts.

3.1.2 Define

With the problems that come across the discovery phase, we came with two solutions:

1. Instead of having forms that must be completed by hand and to be registered in the database at the end of the day; have a device (like a tablet or an iPad) directly connected to the database and fill it in from there.

This will improve the way the customer buys and joins the "Club Carrefour". It will save time and the customers will also be able to use their new discounts at the moment they affiliate with the club.

2. There are also developing the idea of using an application where the users can have their tickets there, so the cashier does not use paper or a tab where the users can see the catalog of offers. The members would have more functionalities such as special offers. In this way, customers do not waste time on the store seeing our offers, they can do it in their own houses. We also save paper as we do not make so many offer catalogs.

With these innovations, Carrefour will have loyal customers as they will be giving them saving time and a way to be greener.

3.1.3 Develop

For this phase, the development phase, actual solutions are created. It involves a lot of multi-work, like putting together the designers, developers, engineers, etc. Costa 2018

For helping them, we have developed a blueprint, inserted as Figure 16.

3.2 Customer journey

The next section shows the customer journey for the two innovations: Working with tablets and Implementing the Carrefour application. The customer journey shows us what is happening over time, from the point of view of the customers, when they are using the service. It is focused on the interactions with the services and employees Salesland and Carrefour have.

This will help us to identify the key elements of the service and use them in the business canvas model, represented in Figure 17.

3.2.1 Working with tablets

The Figure 12 shows what the customers would do if they become members without the implementation of the tablets. They would have to wait until the next working day to use the new membership card because, at the end of the working day of the sales representative, a carrier will take the filled forms to the main office of Carrefour, and there, the forms will be scanned and the information will be stored in the database.

The next figure, Figure 13, shows the process of becoming a member when the tablet innovation has been implemented. They would enter the store, talk to the sales representative and get a new card. As the sales representative will fill the form in the tablet, containing software directly connected to the database, the customers will be able to use the membership card at the moment.

From the point of view of the sales representative, Figure 12 exposes how he or she will go to ask the customer and start asking if the customer wants to join the "Club Carrefour" and, if the customer says yes, the sales representative starts to fill the form. Finally, they give the card to the customer, save the filled form and in the end, give them to the coordinator for them to give it to the carrier and send it to the central main office.

With the innovation, the last part of the latter does not happen. The sales representative just fill the form on the tablet.

- Before working with tablets

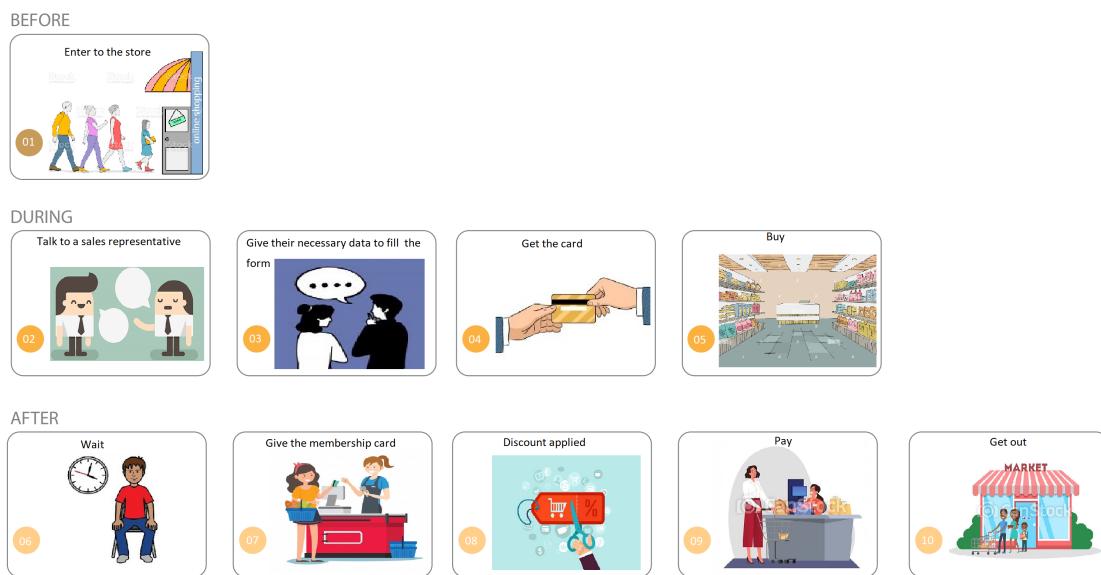


Figure 12: Customer Journey - Before starting to work with tablets

- After working with tablets

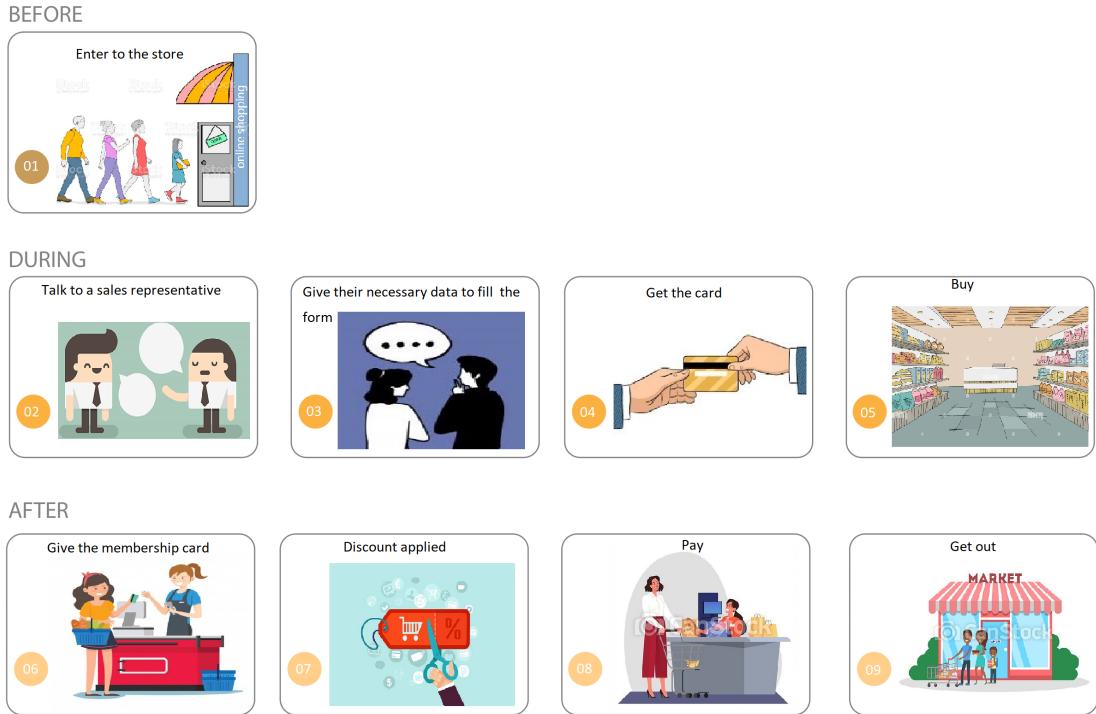


Figure 13: After starting to work with tablets

3.2.2 Implementing the application Carrefour

The picture of Figure 14 represents what a normal customer will do if they do not have the Carrefour application. Catalogs with weekly offers are available in each store, so the clients can take a look at them before coming to do the shopping. As there are some special offers each day (ie. food that is going to expire), they will also have to look at those offers in the store. These customers will also pay and get the receipt on a piece of paper.

The difference between the last listed figure and Figure 15, is that the customer will not use paper. It will be saved because the customer will be able to check the catalog in the application instead of having to take it from the store. It will also let them get their tickets in their application.

The app will save time for the customers as they will not spend time checking the daily offers. The customers will also be able to use the membership card in the app and not have a physical one made of plastic.

From the point of view of Carrefour, they will save money on paper and also, the cashiers will be safer as they will not need to touch the membership card, ticket, etc from the customer, and they will be less exposed to COVID-19.

- Before implementing the application



Figure 14: Customer Journey - Before implementing the application

- After implementing the application

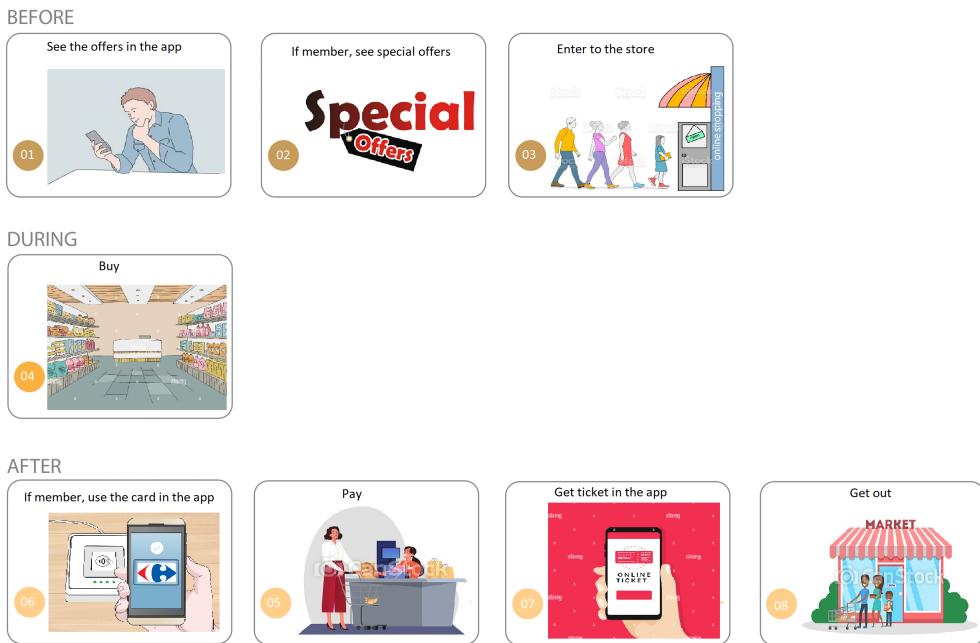


Figure 15: Customer Journey - After implementing the application

3.3 Service Blueprint

The service blueprint has been developed as it details the customer journey and all the touchpoints they have.

The main change the customers will notice is that they will gain time. Now, they can use the membership card at the moment they stop telling the sales representative the needed information to fill the form, as the data will be stored in the Carrefour database at the moment.

The second main change the customers will notice is that, when going shopping, they do not have to waste paper looking at a paper catalogue, they can take a look at it in the application. The same happens with the shipping receipt and the fact that you can have the membership card on the phone.

This new ICT will need to be connected directly to the database. All this, developed by the app developers, in charge of developing the application for the customers and the sales representatives.

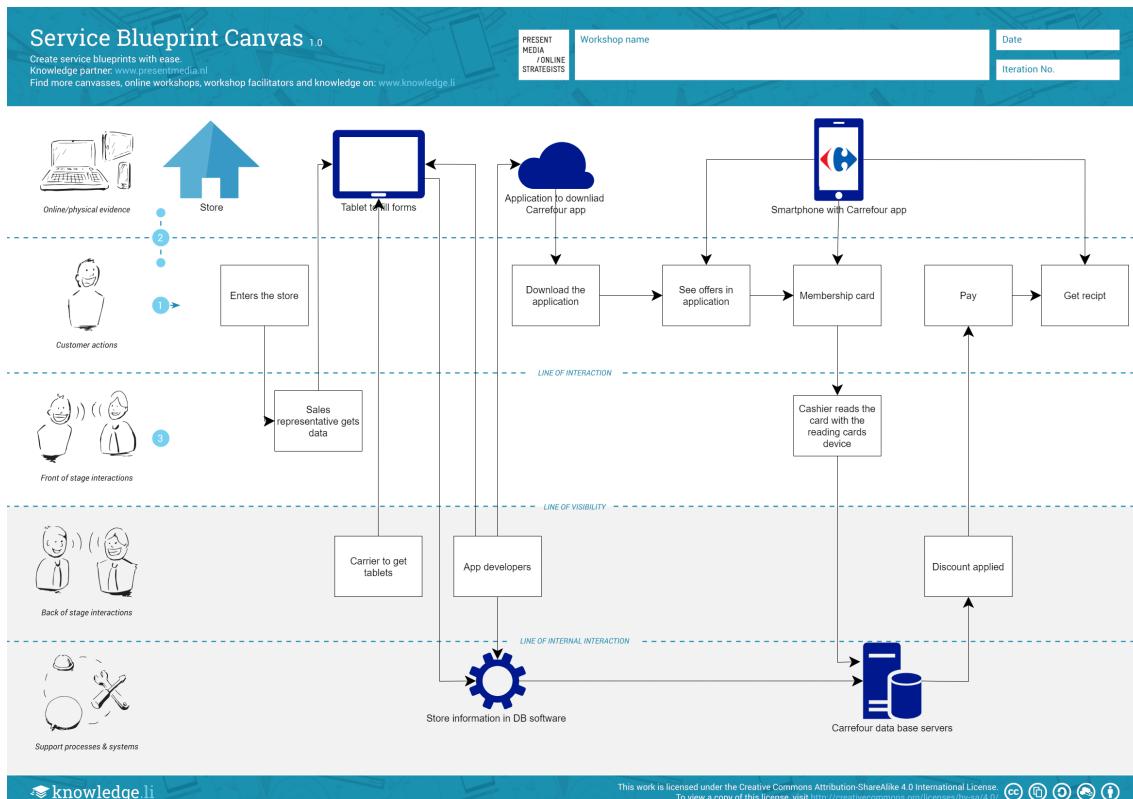


Figure 16: Blueprint

3.4 Reflections

The innovations made in the company will let the customers save time. This is one of the most important thing as we want the customer feel the better they can. The innovation also gives the company a new technological and younger face, as we have implemented the tablets and the application, thing that for the majority of the people is related with modernization. We have been able to create a greener company, not using paper and giving the brand a new status.

The customers journeys will help the management to implement better the two innovations, as they give a better view of the total process and the point of view of the customer. This with the next models in Section 5, will make their work easier. We have also see a good relation between the service design and the enterprise modelling, explained in Section 5.2.

4 Business modelling

We have chosen the business model canvas to represent the business modelling as, from our point of view, it was the one that created a better value for the business and described better how Salesland and Carrefour created, delivered and captured the value.

4.1 Business Model Canvas

The business model canvas is used for developing a new model for the collaboration between Salesland and Carrefour. It is a visual template of how the elements of the company are related to each other.

The customers' segments are satisfied by the value propositions, in turn, are delivered through channels. The company maintains customer relationships and receives revenue streams through successful value propositions.

The key resources are assets needed to deliver value through key activities, collaborating with key partners. All these business elements result in a cost structure. Cowan 2015

The next image is the business model canvas of the enterprise:

Key partners	Key activities	Value propositions	Customer relationships	Customer Segments
Suppliers Device manufacturers Technologies alliances	Sales Service design and development	Saving customer time Innovation Convenience Brand and status High performance Newness Cost reduction	Personal assistance Automated services Professional services	General customers Business Government
	Key resources		Channels	
	Customer services staff Brand Human Resources Sales/Marketing employees		Direct sales Social media Web site	
Cost structure		Revenue streams		
Salary Suppliers Sales and marketing		Products sales Services List price		

Figure 17: Business Model Canvas

4.2 Description of the Business Model

4.2.1 Delivery

- Key partners

Intending to optimize the operations and reduce the risks, Salesland and Carrefour have made supplier partners focus on developing the innovation.

These partners are:

- Suppliers: We will need to get suppliers that give us the membership cards because there will be still some clients that will not use the app for various reasons for example they are seniors or do not have a smartphone.
- Device manufacturers: There will be the need of having some company that let us the tablets our sales representatives use for filling the forms at a good price.

-
- Technologies alliances: For the development of the application we will need to have technological partners.

- **Key activities**

The most important tasks Salesland have to do are to approach the value proposition and make their business model work. We have focused our key activities in production and platform, even you can include problem-solving.

- Sales: Weekly sales to the clients to create a relationship between client and Carrefour.
- Service design and development: Production of new software for the clients to feel closer to the store.

- **Key resources**

Most important tasks to do for making the business model work and achieve the goal. There are different categories. Physical, intellectual, human, and financial.

- Customer services staff: Human. For achieving the goal, the customer service staff has to be involved in all the processes when releasing the new app or when the new membership cards will be in use, in the case of someone having a problem.
- Brand: Intellectual. The brand will have to start announcing itself and the innovation it has.
- underlines Human Resources: Human. The human resources will have to increase.
- Sales/Marketing employees: Human. As we are going to start a new campaign, the sales and marketing employees will have to create an advertising plan.

4.2.2 Value

- **Value propositions**

Products and services that the collaboration between the two companies offers to satisfy the customers needs.

- Saving customer time: With the use of the new application.
- Environmentally friendly: With the proposition of save paper.
- Innovation: As we are going to introduce a new application to the customers.
- Convenience.
- Brand and status.
- High performance.
- Newness.
- Cost reduction.

4.2.3 Customer

- **Customer relationships**

Kind of relationship the company wants to create with its' customer. This relationship is created via:

- Personal assistance.
- Automated services.
- Professional services.

- **Customer segments**

For building an efficient business model, the type of customers we want, have to be described. They are defined by their needs, the relationship between the customer and the enterprise, the reach we want to achieve, among others.

Exists different types of customer segments but Salesland and Carrefour use the mass market as it is a shop chain. We want to make a change and focus our campaign on a more diversified segment as we serve customers with different needs and characteristics, like the special cards we have described in point 2.2.1.

The different groups and people the company aims to reach are:

- General customers: Aim for them to have Carrefour as their reliable supermarket.
- Business: The general business market.
- Government: Making them aware of the changes we are making for making a greener company and having them create some law for helping the environment.

- **Channels**

The company reaches and communicates with their customer through the following channels. These channels have to distribute the value proposition fast, efficiently, and cost-effectively.

- Direct sales: With help of the sales representatives.
- Social media: Making advertisements in social media as in popular applications as Facebook, Instagram, or Twitter.
- Web site: Making the website a place where the new products and sales are visible.

4.2.4 Financial

- **Cost structure**

Most important monetary consequences while operating.

- Salary: A fixed cost that the company will have to assume, as they will have to hire sales representatives.
- Suppliers: A fixed cost that will be taken for granted as the company will need someone to carry the new devices.
- Sales and marketing: Some variable costs that Carrefour will need to make on the way to achieving their goal.

- **Revenue streams**

The income a company generates from each customer segment.

- Products sales: The company will gain money if the product sales are well-made in price/quantity.
- Services: Generated from providing a service to the customer.
- List price: The company will also have to take into account the list price given by the government.

5 Redesigned enterprise models

5.1 Describing the changes model

The changes made in the enterprise are the addition of tablets and the development of an application. The changes are represented in the Archimate model, as said before.

First of all, the organizational model is changes as the carrier role is different in this new model. Their work was to carry the filled forms to the main office and to bring to the store new membership cards. Now their work is just to bring the tablets, in addition to the membership cards.

A new role is implemented, the developer of the application. They will need to maintain the database as well as the application for the customers and the sales representatives,

A detailed explanation will be given in the next section.

5.1.1 The Organizational Model Re-designed

The next figure shows how the organizational model has changed. The work of the carrier has decreased and there is a new role, the app developer.

This person is in charge of developing the app, but not only that but also to maintain it and be in charge (having their own team or just them alone), to attend to the problems the users¹ of the app find.

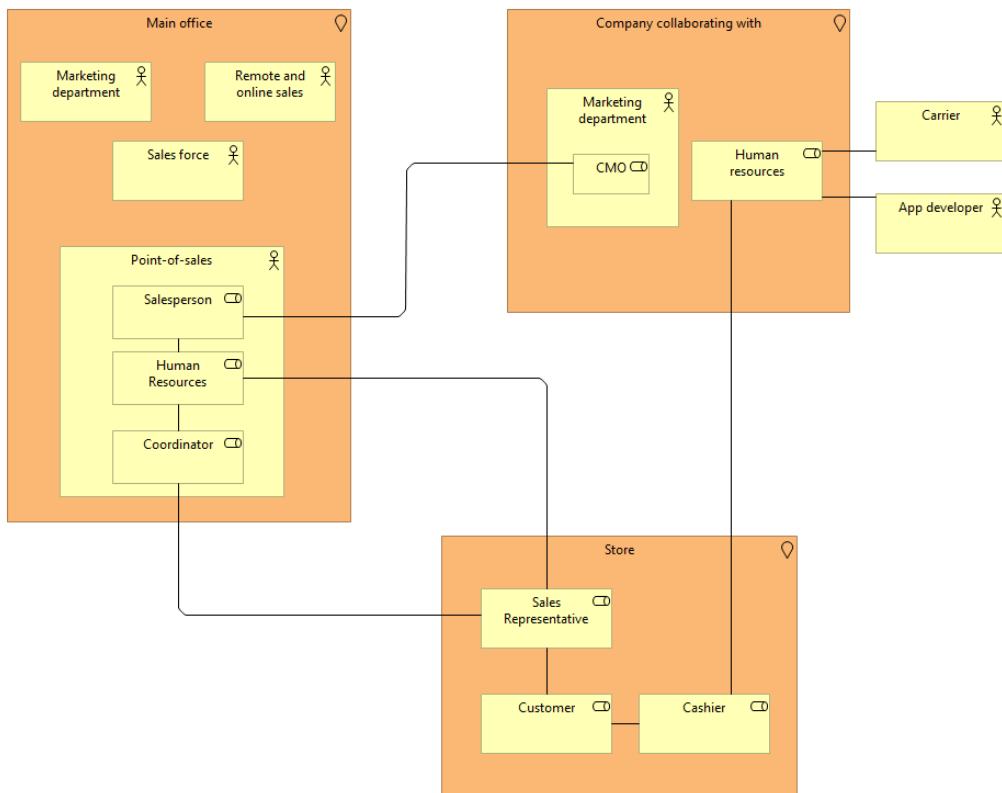


Figure 18: Organizational Archimate Model Redesign

¹Customers and sales representatives

5.1.2 The Goal Model Re-designed

In the next model, we have solved several opportunities we had. The innovations we made. Now we have the tablets that are given to the sales representative and the application that is used by the users.

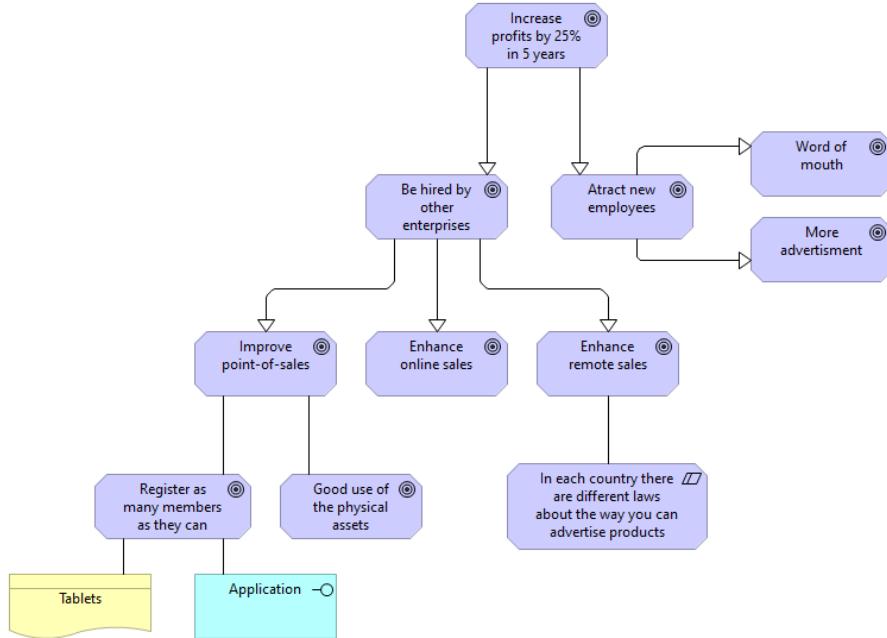


Figure 19: Goal Archimate Model Redesign

5.1.3 The Processes Models Model Re-designed

The processes have been sped up. As the Section 3 explained, we have removed the part where the customer has to wait a working day to be able to use their membership card. We can see it reflected on Figure 13.

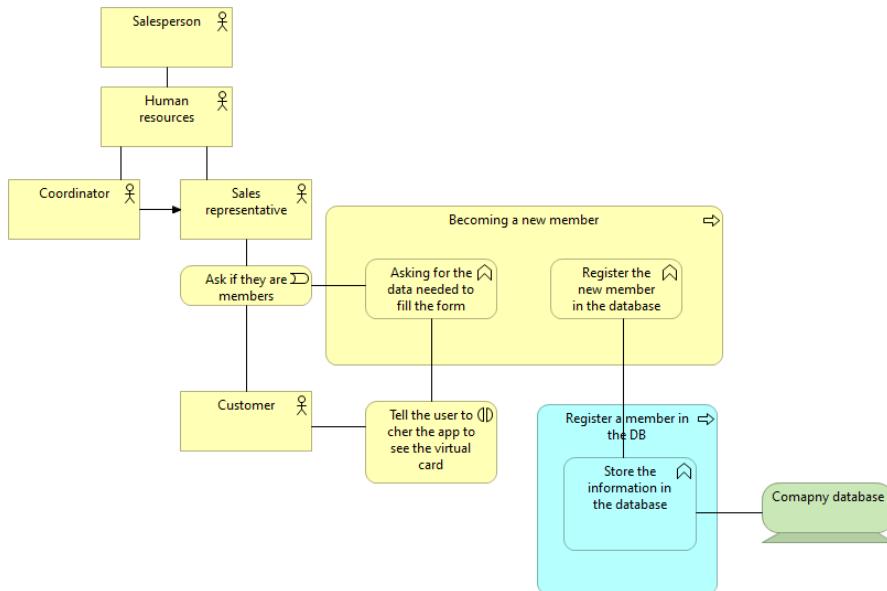


Figure 20: Process Archimate Model: Becoming a new member Redesign

The process of paying for a shopping bag is also improved. As we could see represented in the Figure 13.

Now the customer has all that they need in their phone.

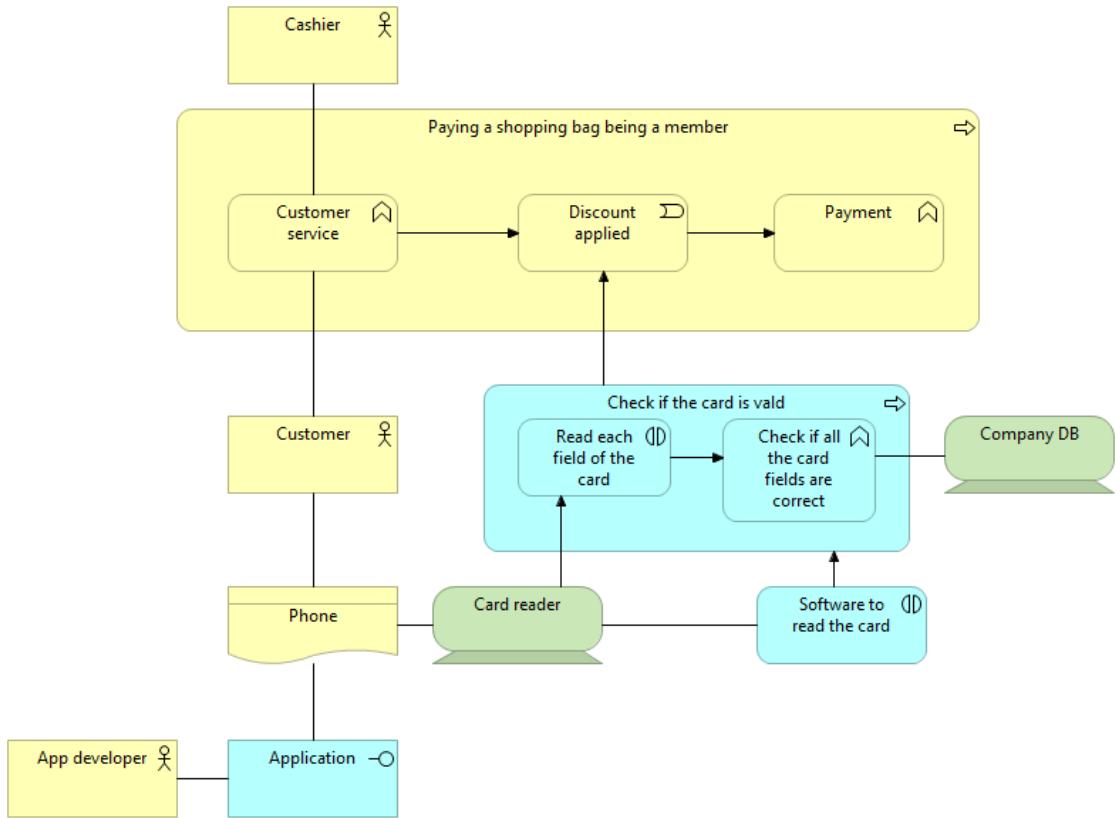


Figure 21: Process Archimate Model: Paying A Shopping bag Redesign

5.1.4 The 4EM Model Re-designed

In this global view of the model, we can see better the relationship between the app developer and the things they are in charge of.

They are hired by the Carrefour team and they supervise the proper function of the application.

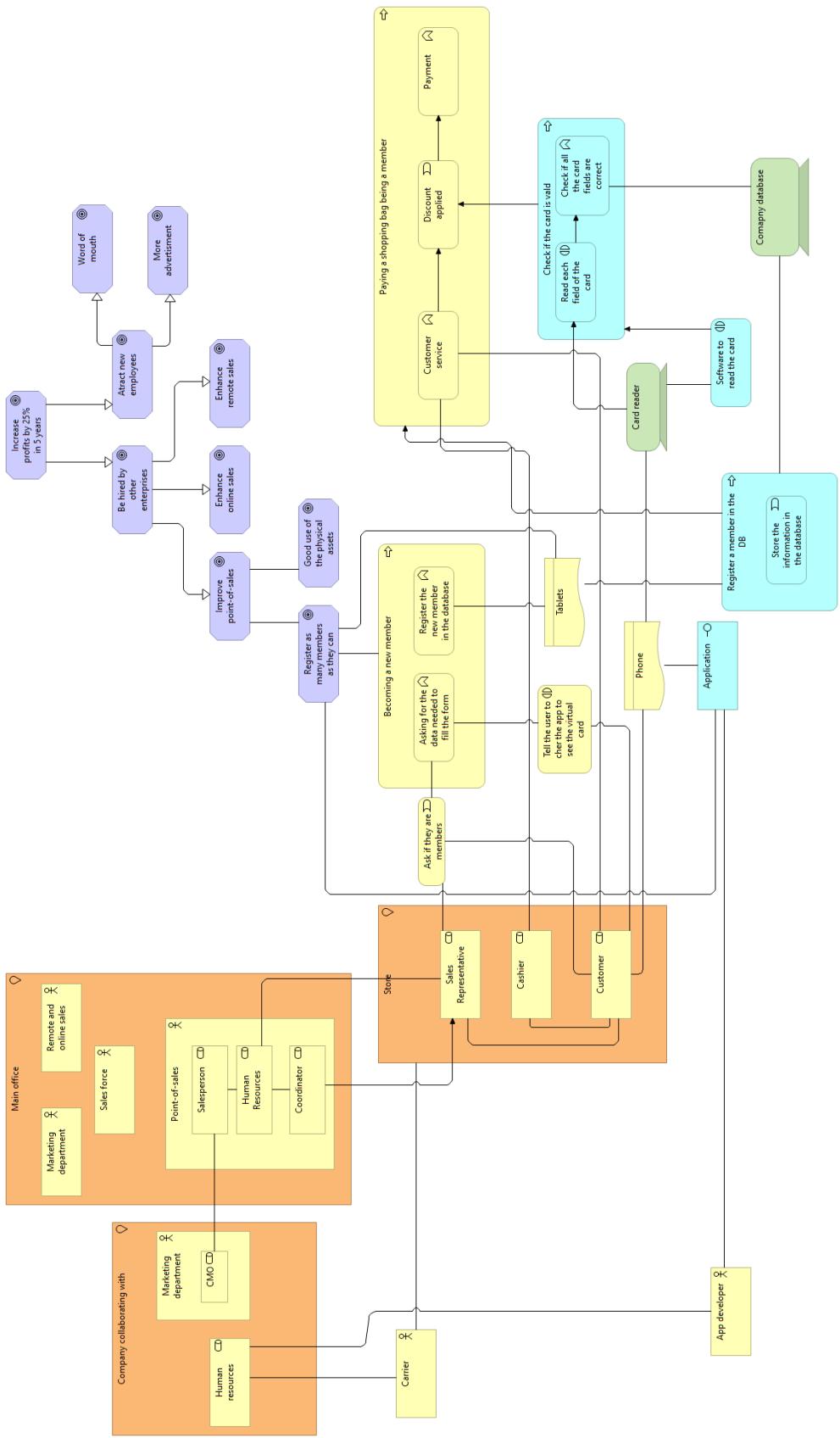


Figure 22: Archimate Model Redesign

5.2 Relation between the Enterprise Model and Enterprise Architecture

The enterprise architecture is the understanding of all the inter-related components that go to make up the company. It has to be a formal description of the enterprise, showing its structure and inter-relationships.

5.2.1 Model structure according to TOGAF.

The Open Group Architectural Framework consists of creating architecture using the following steps:

- An Architectural Development Method (ADM).
- Foundation Architecture.

We are going to focus on the Architectural development method (ADM), the most important part because meets the business needs of an organization and describes the process of moving from the TOGAF Foundation Architecture to an organization-specific architecture.

To approach the architecture development we have different phases. Represented in the next figure.

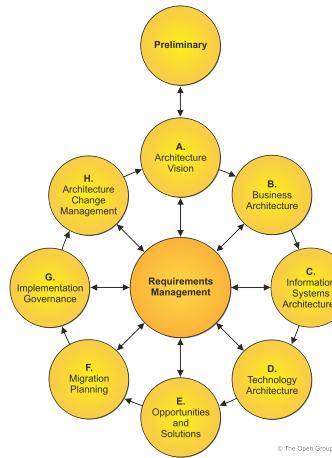


Figure 23: TOGAF - ADM

Architecture Vision is part form the strategy and motivation, next to the preliminary and Requirements management. This is explained in Section 1 and Section 2.

The **Business Architecture** belongs to the business layer of the Archimate model, the **Information System Architecture** to the application layer of the Archimate model and the **Technology Architecture** phase to the technology layer of the Archimate model.

All there three phases are represented in Section 2.2.2.

The next three phases are implementation and migrations. **Opportunities and Solutions**, **Migration Planning** and **Implementation Governance**. These phases are parallel to Section 3 and Section 4.

Finally, the **Architecture Change Management** phase is between the implementation and migration and the strategy and motivation, parallelism not represented in this report.

6 Evaluation of models

As we have to assess the model by examining that it meets its purpose, we have chosen to proceed with the SEQUAL-framework.

SEQUAL is a framework that is not only focused on quality aspects of the enterprise. It is also focused on social impact or subjective quality, a semiotic language where the core of the framework is parallel to the use of the discussion on syntax, semantics and pragmatics. We have talked about making a social impact by trying to reduce the use of paper in Carrefour and helping certain collectives. This framework distinguishes between the quality characteristics and how you achieve these. It is based on a "constrictive world-view", which means knowing the modelling domain can change as the modelling takes place. Krogstic 2019

The quality is defined referring to the following sets:

- **G:** Goals of the modelling.
- **L:** That can be expressed in Archimate.
- **D:** What can be expressed about the domain.
- **M:** What it is expressed.
- **A:** Actors (persons or tools).
- **K:** The knowledge of the participating persons.
- **I:** The social actor interpretation. What persons interpret the model.
- **T:** What relevant tools interpret the model to say.

The development of the framework is assessed by the next ones:

- **Physical Quality:** Is it externalized by what is expressed in the model is available, persistent and relevant to the actors.

It is possible to externalize knowledge by using the model language and it is also able to express the model domain. It is also available to everyone as it is in digital format and persistent, as we have made copies in each local storage and the Cloud. The model would pass the test.

- **Empirical Quality:** What is expressed in the model is comprehensible, to every actor.

It is ergonomic, has readability and has enough information theory. The models presented in this report are as clear as they can be, with the best layout we have achieved and with enough size to read them (in the photos attached). It has different colours and the graphs are not too big or small. Also, the number of crossing lines have been minimized as much as possible. The model would pass the test.

- **Syntactic Quality:** How the model and Archimate are correspondence. How Archimate defines the scope and how well the model adheres to syntactic and relational rules. The Archimate models were developed in Archi4.8.1, a specified program to that modelling language. We have checked that all the models are correct by using the Tool Validate Model. The model would pass the test.

- **Semantic Quality:** What is expressed on the model. Check if the model is valid and complete. This has been achieved as the goals and requirements are satisfied, it represents the department of the sales representatives. All the processes, goals and actors were represented in a global view. The model would pass the test.

- **Pragmatic Quality:** The correspondence between the model and the user's interpretation of it. It is explained in Section 2.2, even if the Archimate language is more difficult to understand, reading this part will help so the model would pass the test.

-
- **Social Quality:** Whether the actors agree with the model. This can not be proved in this report as it involves coordinators, managements people, developers, etc.
 - **Deontic Quality:** Goal defined by the social actor's interpretations, how well the model fits their purpose. As it is said at Section 1.2, we are going to use this model to visualize a global model of the enterprise and to find innovations to make.

After the evaluation of the models using the SEQUAL-framework, we have passed the tests so they are good.

7 Reflections

The first lecture of this course reminded me of a course I had at my home university, in there we talked about models and business processes, but we did not explore those matters in-depth. I thought this course would be a course of more memorizing things, but in the end, it was a lot of practice stuff, a thing that I liked a lot more.

The start of this course was a bit hard as in the first practical classes I did not know how to start my models and I was a bit lost. After some practice classes, where we started working in teams and creating the bakery 4EM models, I started to understand how those models were supposed to be. I thought of a case to work in and I thought about making the report about the last enterprise I worked on, a thing that I have accomplished. When I started working is the Archimate models, I found it quite hard, but by asking the teacher assistants, I finally understood what we had to do and how it worked.

When thinking about the innovations, it was not a problem as they came to my mind out of the blue. The thing I had problems with, was with the business model canvas. These doubts were solved in checkpoint 2, a thing that I liked, as in that way, I could see different points of view about my model and see new ways of facing the problems I had while I listened to my teammates explain their models.

What would have done different is to start the report earlier and keep it update, as sometimes I had questions that were from past classes.

Bibliography

- Costa, Rebeka (2018). *The Double Diamond model: what is it and should you use it?* URL: <https://www.justinmind.com/blog/double-diamond-model-what-is-should-you-use/> (visited on 23rd Nov. 2021).
- Cowan, Alex (2015). *THE 20 MINUTE BUSINESS PLAN: BUSINESS MODEL CANVAS MADE EASY.* URL: https://www.alexandercowan.com/business-model-canvas-templates/#Step_1_of_10_Customer_Segments (visited on 11th Nov. 2021).
- Krogstic, John (2019). *Understanding and Assessing Quality of Models and Modeling Languages.* IGI Global.
- Lankhorst Marc, et al. (2017). *Enterprise Architecture at Work, 4th edition.* Springer.
- Sandkuhl Stirna, Persson and Wißotzki (2014). *Enterprise Modelling.* Springer.