ROBIN PIERRE FRANÇOIS LÉON COSTÉ

STUDY AND CREATION OF AN OFFER OF MARKETING DASHBOARD AND CUSTOMER DATA PLATFORM TO ASSESS QUALITY OF MARKETING CAMPAIGNS AND E-COMMERCE OPERATIONS

Graduation work presented at Escola Politècnica da Universidade de São Paulo for the accomplishment of the “Diploma de Engenheiro de Produçao”

Orientador: Prof. Dr. Mauro de Mesquita Spinola

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To my family for the exemplarity, for believing in me and for trusting me during my moving to Brazil at this moment of my live. To my godfather for the guidance through engineering studies.

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RESUMO

Hoje em dia, com um preço de cálculo computacional diminuindo, o marketing e mais especialmente o marketing digital está explodindo e se tornando cada vez mais personalizado (e-mail personalizado, smart TV, ...). Se torna mais fácil de analisar e adaptar em tempo real as estratégias de marketing. Essa adaptação deve ser automática e algumas ferramentas permitem de fazer isso facilmente. De repente, essa automação precisa de parâmetros (como gênero, tempo, ... que podem influenciar a compra). Aqui é o challenge de verdade: construir uma estratégia adaptada a cada business e segmento de consumidores. Normalmente, os marketers usa dashboard pre-configurados e genéricos que vem com um set de alguns Key Performance Indicators (KPIs). Esse trabalho tem como objetivo, primeiro avaliar o que já existe falando de dashboard de marketing e sets de KPIs e também plataforma de dados para marketing. Depois, o objetivo principal é de desenvolver uma plataforma nova e inovadora que vai juntar ambos management de dados e reportagem. Uma metodologia de desenvolvimento de oferta vai ser seguida a partir de pesquisa de mercado até a revisão. Ao fim, vamos ter sets de KPIs que fazem sentidos para os businesses e e-commerce e também uma integração entre a Customer Data Platform (CDP) e um dashboard de marketing. Essa oferta é agora usada como produto numa empresa de consultoria para grandes clientes dela.

Keywords: marketing, dashboard, key performances indicators, customer data platform

ABSTRACT

Nowadays, with the decreasing price of computation, marketing and more specifically digital marketing are booming and getting each time more personalized (personalized email, smart TV, …). It becomes easy to analyze and adapt in real time the marketing strategies. This adaptation is to be automatic and some tools allow to do it easily however, this automation requires parameters (such as gender, weather, … that can influence the purchase). Here comes the real challenge which is building a strategy adapted to each business and customers segments. Usually, marketers use generic preset dashboards which comes with a set of few Key Performance Indicators (KPIs). The present study aims first to study what exists in terms of marketing dashboards and sets of KPIs as well as data platform for marketing and then, the main objective is to develop a new and innovative platform that would gather both data management and reporting. A offer development' methodology will be followed from the market study to the review of the developed platform to have, at the end, sets of KPIs that make sense to businesses and e-commerce and an integration between a Customer Data Platform (CDP) and a marketing dashboard. This offer is now used as a product in a consultancy company for its main customers.

Keywords: marketing, dashboard, key performances indicators, customer data platform

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1 INTRODUCTION

To have a study which is accurate and up-to-date with the market, it seems important to have a better understanding of what is a dashboard of marketing and what are the ins and outs of it. In this purpose, we will, after explaining the context of this study and the objectives of it, see the history of dashboards especially in the marketing area and how they are used in the enterprise world.

1.1 OBJECTIVES OF THE WORK

Nowadays, marketing is changing to go in a more personalized way. Companies are abandoning the conventional TV ads and physical banners to turn to personalized advertising such as on social media or even with the conventional e-mail. The key for that is to use segmented audience: it is not the same to target young male of 15-20 years old from São Paulo and elder women of 70+ years old in Paris. For that reason, start-ups such as Smartly.io (https://www.smartly.io/, s.d.) or Kenshoo.com (https://kenshoo.com/, s.d.) allow marketer to personalize their paid ads on the internet. Someone from São Paulo will then see a different ad than someone from Rio de Janeiro. You can also enrich the content knowing the weather of the location where the customer is for instance. All this aims to target better and engage in a easier way all the actual and potential customers.

Having this need in minds, there is a real obsession to know what our audiences are and what the characteristics of them are. Indeed, when having these characteristics, we will know better our customers and be able to target them with more adapted advertising thanks to marketing tools such as SAP Hybris Marketing or Salesforce Marketing Cloud. The aim is to contact people at the right time when they are the most opened to receive ads, with the right message, by the right channel (email, Facebook, …), advertising the right product.

To be able to have all these insights, better known as: best time to send, propensity to buy, best channel to send, … we need to gather information about our customers, this means: history of campaigns, details of commerce – purchases, items of

interests, … – (e-commerce as well as offline commerce), unaggregated results from social media which is usually hard to get. This can also be enriched with free text analysis (ie: Natural Language Processing) from texts gathered on all kind of site depending of our business (TripAdvisor, Imdb, …). Once the information is gathered there is a need to analyze it at an aggregated level to focus our means on the right parameters to optimize. This is the moment where a marketing dashboard comes in. Indeed, one needs to have good insights on the performance of each part of the marketing funnels, of each marketing campaigns, … on everything that is related to the final customer or consumer. These insights will be first used to determine on which parameter to focus, for example optimizing the interest of people for our emails thanks to the segmentation of email campaigns. These parameters optimized we will be able to measure the impact it has on our business thanks again to the marketing dashboard, keeping the same example, we will measure it thanks to the KPI: Click-Through Rate (CTR).

We have seen the importance of dashboards to precise the strategy of the marketing as well as to measure the results of the later. Then, this marketing dashboard can also be used to determine the need or not of heavy tools such as SAP Hybris Marketing which will be able to optimize many parameters at the same time but will require a huge investment of resources (mainly money and time). As an IT Consulting company, the use of the dashboard be a fast forward deployed tool to access the quality of the marketing and here again the need of more powerful tools depending of the results. Too often marketing is made on the good-sense of the CMO and not based on data itself even if the data is fully available in the company.

In this context, our objective is to develop a SaaS (Software as a Service) offer, a marketing dashboard, for a consulting company to be viable for its clients and then sold. One sub-objectives of this work is to study the state-of-the-art of digital monitoring dashboards in general and marketing dashboards. One will also focus on Customer Data Platforms (CDP) which are trendy and useful data lakes adapted for marketing. This will enable us to make a relevant market study to place our offer on the right market and having the right features. Once done, one will build the offer by focusing on evaluating the requirements from customers, evaluating the cost of the development as well as the pricing offer for the built product. All this keeping in mind the system the customers have and that needs to be linked and adaptable to our

product. Going further than just a marketing dashboard, we aim to develop sets of KPI that could be available out of the box (OOTB) to quickly evaluate the situation and needs of the company in terms of marketing.

1.2 DEFINITION OF A MARKETING DASHBOARD

A marketing dashboard which is the core of this work seems to be an easy to understand and well-known notion. However, there are some nuances that need to be studied. The definition of marketing has changed over year, in 2004 the notion of *exchange* as the main principle of marketing has been mostly replaced by the idea of *creating and delivering value through customer relationships* this has been validated by the American Marketing Association (Uslay, 2007).

If we go deeper in the research, we enrich this first definition by characterizing the marketing as the *activity, set of institutions, and processes for creating, communicating, delivering, and exchanging offerings that have value for customers, clients, partners, and society at large*. This definition has been approved on July 2013 by the board of Directors of the American Marketing Association (AMA, 2013). The AMA, created in 1953 by Neil Borden, was founded by a group of marketers who were not satisfied by the current best practices of the area and wanted to gather a community to think about the concepts and way of doing in marketing.

One can go further and refer to the Chartered Institute of Marketing (CIM), which is the marketing professional body in the United-Kingdom and which defines marketing as *the management process responsible for identifying, anticipating and satisfying customer requirements profitably* (Marketing library resources - content, 2016). In this definition there is a real emphasis on the requirements of the customers, this is to be achieve by knowing what they are. To know the requirements, there are mainly two ways: either asking directly to the customers or trying features and strategies of marketing and measuring the results of it. This is in this aim that one will place its product and offer.

Once the definition of a marketing is clearer, it is easier to understand what a marketing dashboard is in facts. Indeed, the dashboard will be the place where one

would be able to see indicators or KPIs (Key performance Indicators) that will allow to measure how the marketing is done (LaPointe, 2005). Having better knowledge on what is the marketing dashboard, it is also necessary for the study and the offer to have a platform, names Customer Data Platform (CDP) which will help to gather the data all in the same place to use any kinds of data for the marketing dashboard. The aim is to unsilo the data from the company's areas.

1.3 DEFINITION OF A CUSTOMER DATA PLATFORM

The Customer Data Platform (CDP) is a platform, usually a Software as a Service (SaaS) where marketers can store their data from all kinds and sources. The idea is to un-siloed all the data that are cluster and siloed in most of the big companies. The *Customer Data Platform Institute* is considered the reference in this new kind of solution, their definition is: *A Customer Data Platform is packaged software that creates a persistent, unified customer database that is accessible to other systems* (CDP-Institute, s.d.) . For our purpose the most important parts are the *persistent, unified customer database* and the *accessible to other systems*. The former is a requirement – must have – as we need to gather and identify all the sources of data of our customer – the company which wants a dashboard – to use it at its best and then export all the data to another system, here being a marketing dashboard.

Defined by *Raab Associates* in 2013 as a category (CDP-Institute, s.d.) this concept is quite new. The CDP institute is agnostic to the solutions it deals with and aims to educate the marketers about the best practices in terms of CDP.

According to different articles, it also allows to go further than just gathering information for different sources it can also retain information from the past which some sources erase so that one could have a deeper analysis of the data it has (Earley, 2018). The idea is at the end to work on the data with some statistical or even machine learning analysis to increase sales. Some features such as best-time-to-send (what is the best time of the day to send an ad to someone base on his propensity to open, read or click on the ad) or propensity-to-buy (what is the chance one is will to buy one product in particular or a product from a category in particular) are really common in the area.

We will use this type of solution to have the most up-to-date solutions, maintenance and to provide better analysis to our customers. See Figure 1: CDP Overview for a better overview

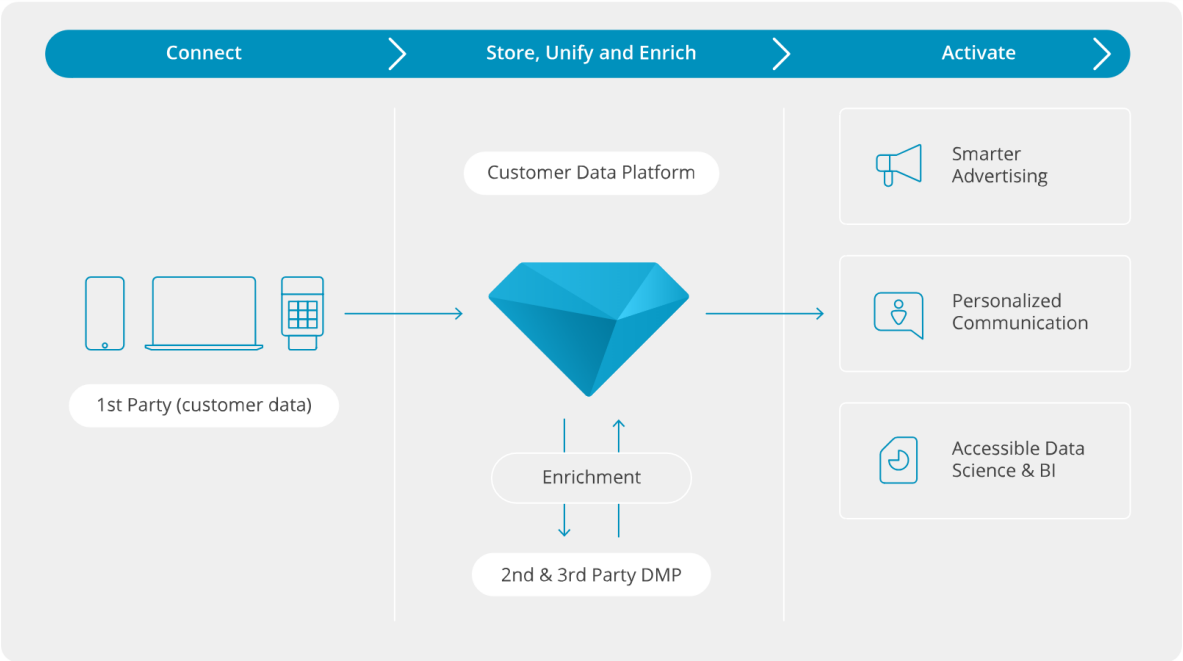

Figure 1: CDP Overview

1.4 THE NEED OF DASHBOARDS FOR MARKETERS

Marketing internally and externally is a strategic area. The marketing resources have been proven to impact financial performances by increasing customer satisfaction, creating loyalty, … (Hooley, 2003). Depending on the country, marketing measures will be more or less oriented toward a certain sector, for instance Spanish companies will be more oriented towards marketing metrics (understand non-financial such as brand awareness for instance) whereas UK are more financial metrics centered (offline advertising expense for instance). Both companies from Spain and UK see room for improvement in the measurement of marketing metrics, broadly speaking (Llonch, 2002).

Recently, there have been an introduction of the term “marketing dashboard” which aims to gather marketing metrics on one single display (LaPointe, 2005). This terminology comes from a vehicle dashboard where the driver can see a report of main metrics he needs to know (Pauwels, 2009).

According to (LaPointe 2005), dashboards are needed for mainly 5 reasons:

1. poor organization of the many pieces of potentially decision-relevant data,
2. managerial biases in information processing and decision-making,
3. the increasing demands for marketing accountability,
4. the dual objective of companies to grow the top-line while keeping down costs for a healthy bottom-line,
5. the need for cross-departmental integration in performance reporting practices and for resource allocation.

The main issue that arises is to determine and set the most relevant metrics considering the business. That is, what we aim to develop. Knowing better what the lacks and flaws of marketing in the studied businesses are, it will be a lot easier to have a good start with potential future solution implementation. When you know what is wrongly done and what is correctly done you can prioritize the actions to undertake. Another important step before starting is to know what is the state-of-the-art in the domain.

1.5 HOW IT IS TODAY

There are only few studies that assess the quality of sets of KPIs compared to the number of articles dealing with marketing strategies themselves. However, some are really adapted to start our research. In 2013, Fröshén studied 1.157 Finish companies to assess the use and development of dashboards and metrics. This study demonstrates that one can cluster companies according to their degree of metrics’ measurement and can also classify the metrics into categories. These categories are important to managers to take the right decisions and further, to understand the impact of their decisions on the market and the company (Frösén, 2013).

The factors – understood category of metrics – that were relevant during the study are:

F1 - Brand equity
F2 - Market position
F3 - Financial position
F4 - Long-term firm value
F5 - Innovation
F6 - Customer feedback
F7 - Customer equity
F8 - Channel activity
F9 - Sales process

These dimensions allow researchers (Frösén, 2013) to group companies into 5 clusters:

C1 - Parsimony seekers: they use the information that are easily obtainable and will not seek for more (e.g. construction industry, …)

C2 - Casual marketers: they have few or no marketing data and do not focus on any dimensions (e.g. non-profit org., small company, …)

C3 - Data collectors: they track many or all the metrics used in the study (e.g. large companies, banks, …)

C4 - Future builders: they concentrate on dimensions that evaluate the future such as *innovation*, *brand equity*, … but do not look at the present value, for instance *market position* or *channel activity* (e.g. new companies, followers, …)

C5 - Conventional marketers: they use classic measures: *market position, brand equity, financial position* and do not look at broader idea of marketing such as *innovation* (e.g. customer services, hotels, …)

Building a model this way allows the marketers to have a full understanding of the underlying market and customers' segments. This allows managers to investigate the right box when they are thinking about their strategy. Without this, one cannot understand and more importantly measure the market activity and then cannot understand the real impact of decisions that are taken. The aim of this study will be to determine in which group(s) our clients may belong to assess which are the most

important dimensions for them. Then a set of KPI will be built for each dimension to fulfil the needs of the marketers and operators.

Even going further, the aim is to have a tool easy to deploy in all known and future environments of e-commerce such as Magento or SAP Hybris Commerce and even off-line commerce that will be able to assess the state of the marketing of the company depending on the business and the characteristics of the company. Having these categories and factors in mind will help us to have a basis for the work and always remember to adapt the KPIs to the company itself.

1.6 HOW TO BUILD A DASHBOARD

1.6.1 MARKETING DASHBOARD

To deliver a product that remains in the continuation of the operations and marketing strategy, we need to prove the benefit of it in different contexts.

Integration is the first step towards building a dashboard. There are 3 main ways of integration: integration of data, integration of process, integration of viewpoints (Pauwels, 2009). This is to ensure 4 purposes that a dashboard aims to have: consistency in measures, monitoring of performances, planning, communication to important stakeholders (Pauwels, 2009).

The aim is to be effective and generate profits. This can engender real competitive advantages considering:

- Sharing values and what is important in the company, this is considered as being a key part of firms' culture (Deshpande, 1993)
- Diagnosing good and bad performances, understanding where actions must be taken (Reibstein, 2005)
- Improving organizational learning (Clark, 2006)
- Increasing profitability (Eckerson, 2005)
- Helping for decision making (Reibstein, 2005)

To fulfil these objectives, we will follow a predefined methodology to accelerate the process of decision relatively to all features of the product as well as the process development technically speaking.

1.6.2 PROJECT METHODOLOGY ENHANCEMENT

For this work, the methodology of the project is crucial. Part of it is based on good practices the consultancy company has built with the experience. This methodology will be adapted according to the *Stage-Gate* Methodology of Cooper (Cooper R. G., 2005). This is a reference in terms of product innovation and improvement. The core idea of this method is to go step-by-step but each stage of development or research – Stage – must be followed by a phase of review – Gate –. This allows to stop at several times during the research and cut the founding and costs if the project turns out to be a dead-end or not to be lucrative.

The reason why choosing this method in particular is first because it is famous for its success but also because of the background of the operators (the author and the developer). Being an engineer brings a lot a technical and analytical background, but this usually brings to perfectionism. It leads to the wish to end all started projects instead of aborting them when we realize it is not worth it. This issue has been proven part of the engineer profile (Nagarjuna, 2008) and should therefore be prevented.

The *Stage-Gate* methodology is here for that. It is usually used to generate innovation and manage it at it’s best. See Figure 2: Stage-Gate methodology for more details on the phases. It can also be represented as a funnel as the number of ideas/projects is to decrease with the process.

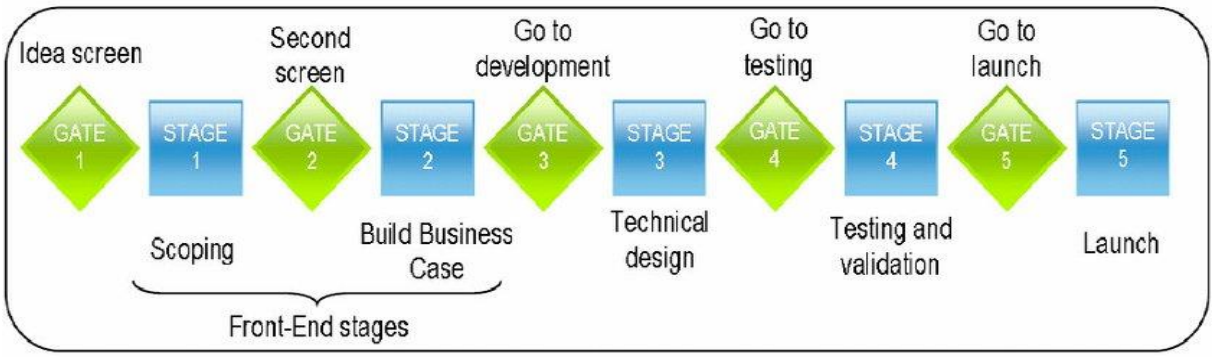

Figure 2: Stage-Gate methodology

Source: https://www.researchgate.net/figure/The-stage-gate-system-model-source-Cooper-2006_fig1_47782397

One adapted this methodology to the methodology in place in the company which will be displayed more in details in the following *timeline* part. This allows to check on the project at each phase. Indeed, the source of this project is an idea for the direction, but it can turn out not to be relevant to the market of the customers.

1.7 THE ECOMMERCE PAYSAGE

E-commerce tools are flourishing nowadays, and a lot of companies always try to make it easier to setup and customize whatever the size of the client is. The Gartner Quadrant (Magic Quadrant for Digital Commerce, 2018) displayed on **Erreur ! Source du renvoi introuvable.** is considered by the community as a good state-of-the-art when talking about digital commerce.

Figure 3: Gartner Magic Quadrant for Digital Commerce

Of course, the main leaders are the most well-known: SalesForce and SAP. These 2 major competitors, for instance, offer tools of marketing respectively SalesForce Marketing Cloud (SFMC) and SAP Hybris Marketing Cloud (the later changed of name during the realization of this work to SAP Customer Experience (CX) Marketing Cloud). Even if these tools as well as all the tools mentioned on the quadrant comes with an integrated reporting tool (which sometimes is not included in the initial price or out-of-the-box), there is no offer of pre-set KPIs that you can select based on your business. Indeed, there is always the famous marketing funnel, eventually we have the Click-Through Rate (CTR) or the opening rate which are the common KPIs and whcih do not bring a lot of differential out of these tools.

2 METHODOLOGY

The aim of this project is to build a SaaS offer. In a digital context, one will conduct a market study to see which are the existing and possibly competing offers. With a better knowledge of the market one can then turn to some interested customers. The aim is to request what are their needs to better understand where our solution can fit in. Once the characteristics of the offer are defined, the time is right to start evaluating the cost of the solution and study the possible tools that can be used to fit the customers' requirements and the price constraints. Having defined the tool to be used, one will start thinking about what the details of the architecture of the solution are (integrated sources, main KPIs, display options, …) and the details of the implementation (cost structures, time-to-market, …).

2.1 PROJECT TIMELINE

The project aims to be organized not to lose any step and to estimate at its best the potential Profit & Loss (P&L) in the future. This allows us to be able to cut the founding and abort the project in case it turns to be not profitable at some point. See Figure 4: Timeline of the Project to have the details on the steps followed.

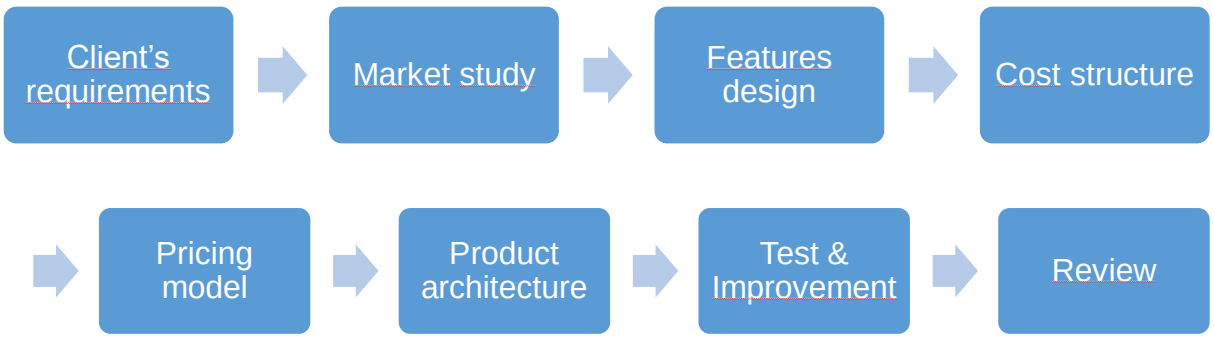

Figure 4: Timeline of the Project

2.2 CLIENTS' REQUIREMENTS

Knowing more about the state-of-the-art literature, contact is made with some clients as well as people from the company who have worked with marketing dashboards or made studies about it. Transcript of the interview is made (with previous agreement) to get better insights. The interview will also be anonymized for confidentiality purpose.

The choice of the clients is based on the history with the consulting company, i.e. clients who have expressed the need in the past during the implementation of SAP Hybris tools for instance. As well as new potential clients who would be interested in the project. Clients are chosen private on purpose and the size can be variable but considering the price of such a tool, the market is restricted to quite big compagnies.

2.3 MARKET STUDY

The author will perform a market study to know what the use, the main features, pricing models, support, etc. of the current market are to place its product correctly. The methodology for this phase will be to look for the main companies in the country as well as internationally and see the different kinds of offer. Contact has been made with these companies and a demo has been requested.

Before the demo, a set of questions have been prepared based on the current literature and the references found on the internet as well as the features requirements we built previously. The main categories of the questions will be: the features, the implementation (method, time, data management, security, pricing model, general comments).

During this demo:

- Screenshots have been taken of the design of each tool,
- Questions previously prepared have been asked

All these results have been gathered in a table to further compare them in an easier way and prepare a scorecard.

2.4 FEATURES DESIGN

To place our offer correctly on the market, one needs to define cautiously the features and what would differentiate the product from all the already existent ones. Based on the market study and the clients' inquiries, one defines what are the main questions the tool needs to tackle, what are the KPIs which are relevant for the current market as well as the integrations required.

As part as the features design, one also needs to consider which platform will be used to develop the offer (Tableau, R app, Datastudio…) considering the possibilities of the products as well as the prices. A scorecard is built to compare and to weight what are the advantages of each ones considering: feature, time to market, investment (resources: man.hour).

2.5 COST STRUCTURE

Knowing better what the solution will be and will look like, the author studies what are the expenditure items from the design and creation (fixed costs) to the implementation and support (variable costs). This estimation is based on past projects and experiences gathered from co-workers. As no data will be stored in the marketing dashboard to be compliant with all restriction laws in the world (GDPR - Europe, Cloud Act - USA, Bei 'an license law – China, …), we don't have to deal with extra cost of hosting, we just have cost for the transformation of data, more detail will be given bellow. The CDP part will engender costs dependent on the number of customers stored but the variations are negligible as we will see.

2.6 PRICING MODEL

Having the costs of the product as well as the market study we can design the pricing model, considering that the product is mostly designed to be part of pre-sales

actions. In other words, this product can be used in a way that it is not sold but only is part of pre-sales that aims to highlight a need and give the opportunity of making a bigger sale. This part is voluntarily shortened as this is not a focus for us considering this purpose of pre-sales.

2.7 PRODUCT ARCHITECTURE

At this point, all the design part is done. The implementation of the platform itself is not part of this TF (also because it will not be done by the author himself). The main study we will talk about here is the architecture that the data takes and follows from the source of the client to our dashboard. This implies the design of a real data integration and management. This is to link with the offer of a CDP. Indeed, the CDP will give us a lot more flexibility on the data we can ingest and on how we can have pre-sets of KPIs to adapt to each kind of businesses. Another part will be done on the potential of sharing the costs between projects at several clients. This is, how to take advantage of being a consultancy company, the management model has been designed during this work.

2.8 TEST & IMPROVEMENTS

To evaluate and validate the solution, tests are run first by the author and the developer themselves. The circle is then enlarged progressively with former marketers that are from the consulting company and then to some relevant volunteers from partners or clients. Along with this process, improvements and further developments will be made on the solution. The process is the same for each new person involved:

- First a discover of the platform on its own to test the understandability of the solution,
- Further explanations are given by the author on the tool so that the tester can get easily familiarized,

- Test of consistency of data are done by people more experienced in the business
- More advanced tests of understandability
- Feedback on the sets on the dashboards displayed

Theses feedbacks are analyzed and when relevant they will be implemented in the platform.

2.9 REVIEW & DISCUSSION

At the end of all this process, the solution is to be releasable. Feedbacks are made on the whole process, expressing the successes and failures, the lessons learnt and the further work to be made.

2.10 PROJECT MANAGEMENT

2.10.1 DECISION MANAGEMENT ADAPTED FOR INNOVATION

The project one aims to lead is basically a project of incremental innovation. Indeed, a lot of marketing dashboard are available on the market but there is no offer of KPI sets and of dashboards based on SAP Hybris products (Commerce and Marketing). Hybris is newly named CX (Customer Experience)

One wants to go as fast as possible in the design and on the decision of the features/advancement of the project. To cover all the aspect of the product, on will based the study on the stage-gate methodology of Cooper (Cooper R. G., 1986), we will define the deliverable and the gates to pass. This theory is based on the concept of using a branch of stage-gate blocks. The stage will be the process in which the main development and research will be made, and the gate is originally the moment when the decisions are made about continuation or not of the project, the funding and the deliverables. The gate will be to check the deliverable, check if we are on track with the direction and the client requirements. This methodology will be

interlinked with the following one, which is the development methodology to develop the fastest possible and be able to deliver efficiently.

2.10.2 MANAGEMENT OF THE DEVELOPMENT

As the development of the platform itself will not be done within the scope of this TF and will be outsourced, we need to define how the management of the outsourcing will be done. The methodology which is used in the company and which is recognized as one of the most efficient at the state-of-the-art of software development is the methodology *agile* (Agile methodology, s.d.) (Beck, 2001). This method has been proven efficient in the context of innovation (Conforto, 2010). The main idea of this methodology is to improve the product and make it deliverable during the development of it. Instead of using a standard *waterfall* methodology, which will be mainly 3 phases: Design of the product, development of the product, delivery. This implies a long time of development and that any feedback or change of request from the client side will have to be considered as a new product and can mean a lot of useless work and redo.

On the contrary, the agile methodology allows the prioritization of the features. These features are called *user stories* because of the way they are written, the pattern is:

*"**As a** <type of user>, **I want** <a goal> **so that** <a reason>."*

For instance, in our case, we could have:

*"**As a** COO (Chief Operation Officer), **I want** to have real-time or near-real-time KPIs **so that** I can monitor the operations of the system"*

This user stories will be associated to the effort of it (in cost/man.hour/man.day) depending on the granularity of the project. Then the stories are prioritized in a list which is called the backlog. The priority is set based on the effort and the impact of it on the project. See Figure 5: Matrix Impact Effort for the representation. We will focus on the quick wins and major stories first and leave the thankless for the last time if we have.

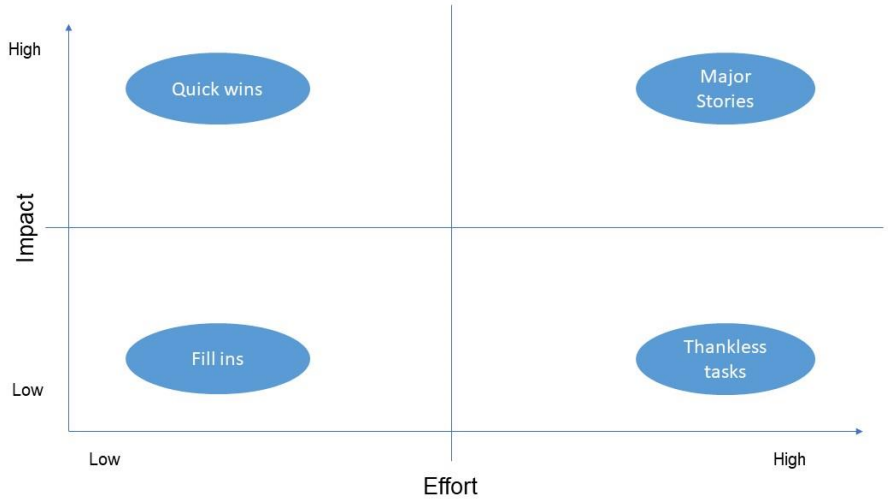

Figure 5: Matrix Impact Effort

Tools exist to help managing the whole process, especially following the progress on the stories. The one chosen by the company is Jira from Confluence, see Figure 6: Jira Screenshot Source: http://confluence.equestind.com/display/AGILE/Using+the+Backlog for an example.

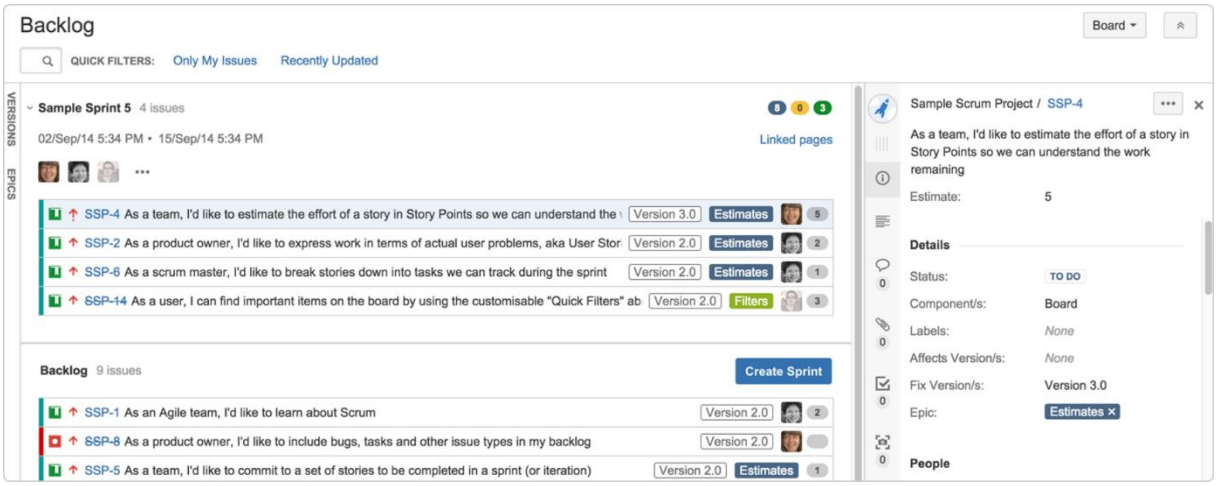

Figure 6: Jira Screenshot
Source: http://confluence.equestind.com/display/AGILE/Using+the+Backlog

Once the backlog is done, the next steps are the sprints. The sprints are a phase of the project which is typically 1 to 3 weeks depending on the project. Some stories are allocated to this special sprint according to the priority of them.

One sprint is run by the following pattern: initial meeting to state what are the stories in the sprint backlog *(the sum of all the sprint backlog is the project backlog),* which person will work on which story, what are the tests to do for Quality Assurance (QA). Then the sprint is run so that the development itself is done. At the end of each sprint, the final user/client will test all the story to approve them. (Beck, 2001)

3 RESULTS OF THE RESEARCH

One will present here the results of the project, divided by phase as described before in Figure 4: Timeline of the Project. The results are aggregated and most of it anonymized or randomized to ensure the property of the company over this project. (a star - * - will be put next to anonymized or randomized values)

3.1 CLIENTS' REQUIREMENTS

First, we aim to distinguish 2 types of clients that we summarize as being client 1 who focuses more on the e-commerce/operation part and client 2 who focuses more on the marketing itself.

3.1.1 CLIENT 1

Profile: *former head of Systems and e-Commerce processes for an ecommerce website*

Main relation to marketing dashboard: *use of operational dashboards to monitor the activity of the back-end*.

The client explained the main KPIs at stake, including the common journey on e-commerce displayed on Figure 7: Main E-shopping Journey.

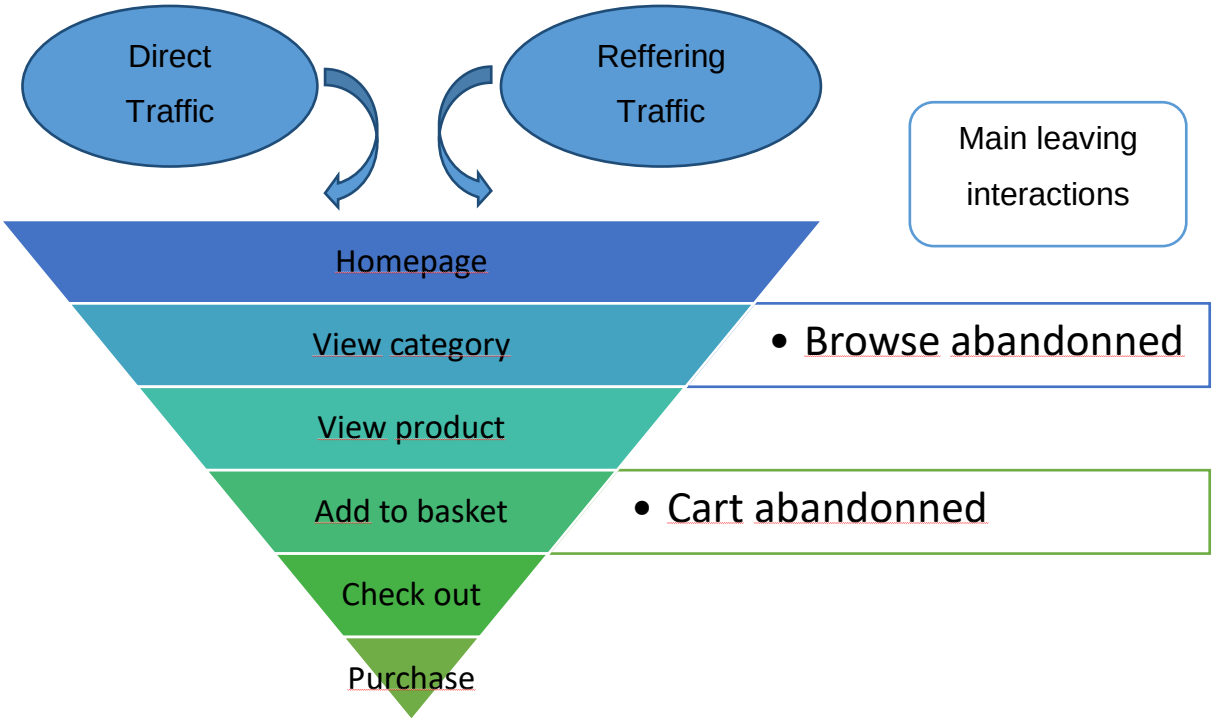

Figure 7: Main E-shopping Journey

The KPIs and actions on the figure are quite explicit. The difference between *direct traffic* and *referred traffic* is: the former means the number of person entering the site without considering the previous page, typically they enter the host on the Uniform Resource Locator (url) input of their browser or they saved the page in their favorite, the later is people coming from another page: search engine, ads, …

The KPIs of this journey are used for mainly 2 actions. The first one is to measure the marketing actions. Indeed, playing on the brand awareness you can increase the direct traffic for instance. On the other side, a marketer can buy more adds (or programmatic adds) to increase the referring traffic. The main leaving interactions are the actions a marketer can monitor and can take measures to thwart and increase the number of purchases. The other way of using this KPIs is to check on the operations and the backend. Let's say we have 5% of purchase on the input traffic, during 24h we have only 1%, it is relevant to check on the operations because one page or system can be broken. This example was related by the interviewed.

The main KPIs in all these steps are the number/percentage of people going to the next phase as well as the amount of money involved starting from the “add to basket” stage. As an example, a marketer can monitor how much money is put in the abandoned carts and then consider the lost opportunities.

In addition to the e-commerce funnel, what a marketer wants to monitor is the marketing funnel displayed on Figure 8: Marketing Funnel.

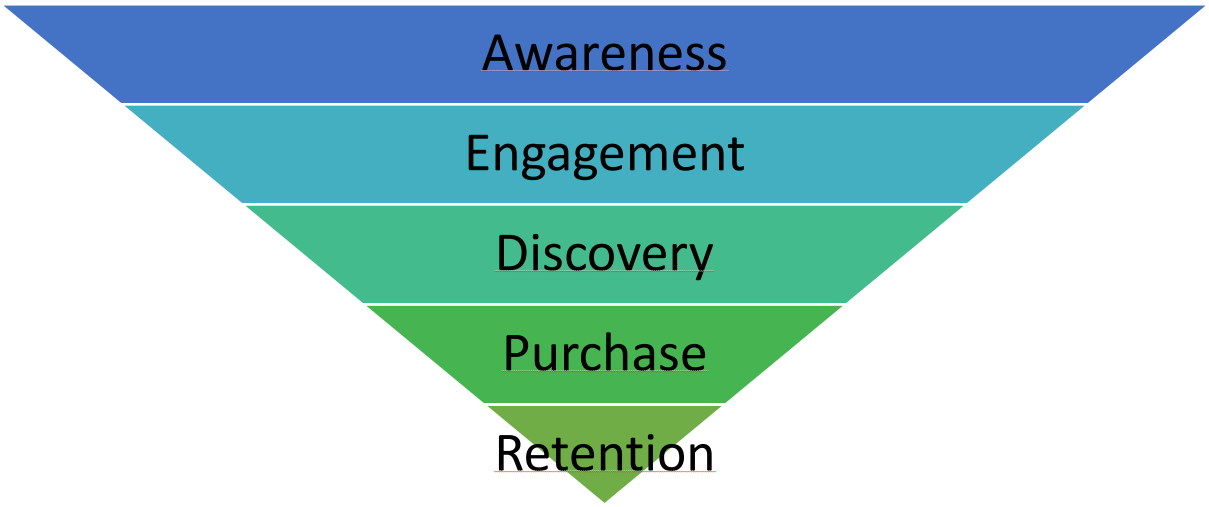

Figure 8: Marketing Funnel

Awareness: is the knowing of the brand by customers. Let us think about a customer who would like to buy shoes online, he will think about some websites first, this consumer is considered as *aware* of these brands. This is can be measured by the number of *direct traffic*, *social media fans/followers, E-mail subscribers, …*

Engagement: refers to how the “not-yet” customer is involved with your activity. This can be measured through KPIs as *time spent on the website, repeat visits, number of pages viewed, number of e-mail opens & clicks, …*

Discovery: refers to the knowing of the “not-yet” customer of your brand and products, it is the last phase before purchasing. This can be measured with: *Cart initiated, product views, …*

Purchase: refers to the act of purchasing one or more products. This is measurable by: *number of purchases, median value of carts, …*

Retention: refers to the fact that the customer will come back to your brand in the future, measurable by: *number of second purchases, …*

Based on the interview a first idea can be depicted for the design of a funnel which aims measure the marketing strategies, see Figure 9: Shopping Funnel enriched with KPIs and Figure 10: First overview of a panel - the Marketing Funnel.

NB: the timeframe for this board is to consider. Indeed, this can serve as an evaluation tool as well as a monitoring tool. Indeed, if during a certain period, the rate of visitors going from one step to another is decreasing a lot, then there may be an issue with the operations. To counter this, we require to create another board monitoring the evolution over time.

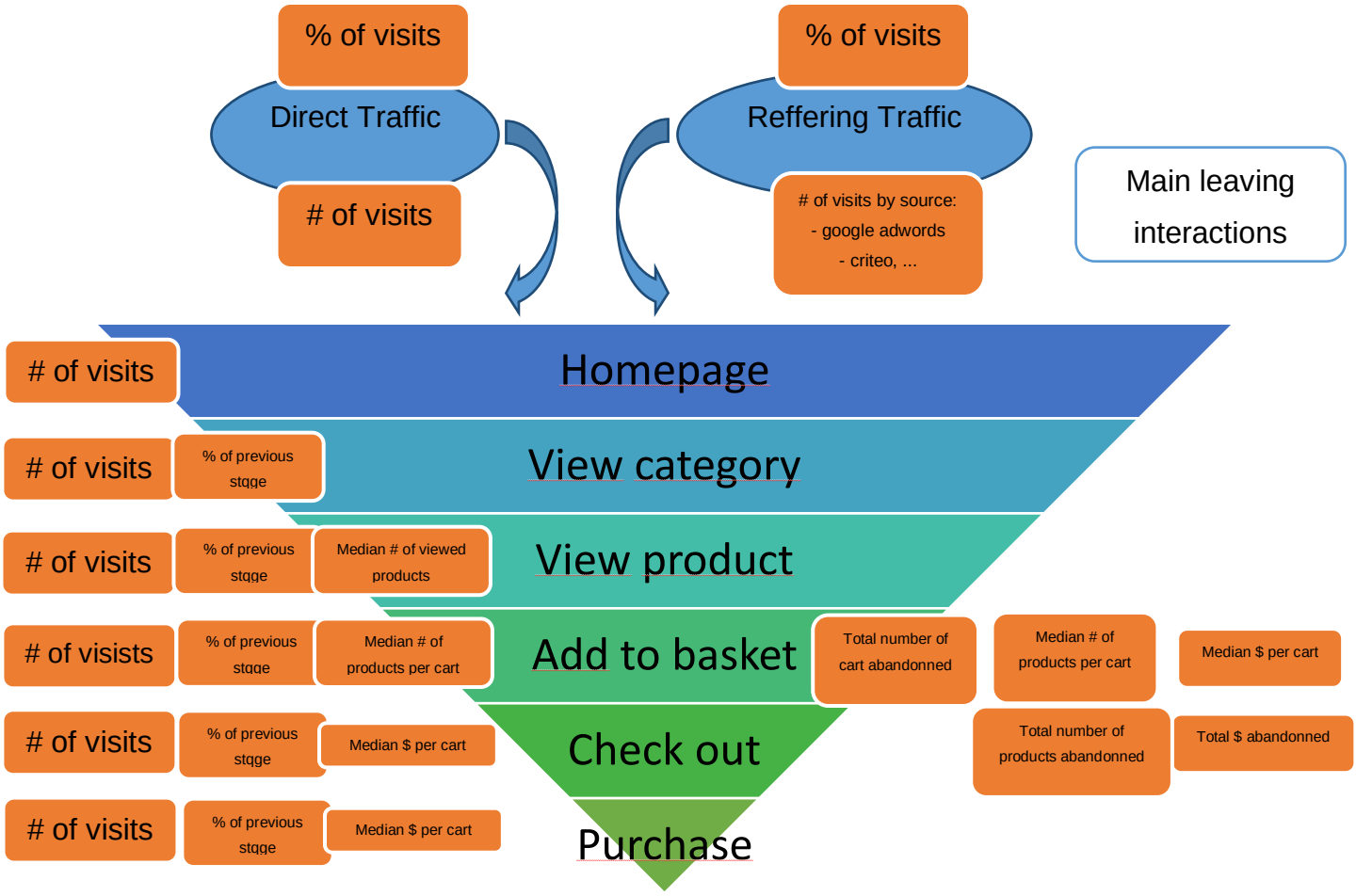

Figure 9: Shopping Funnel enriched with KPIs

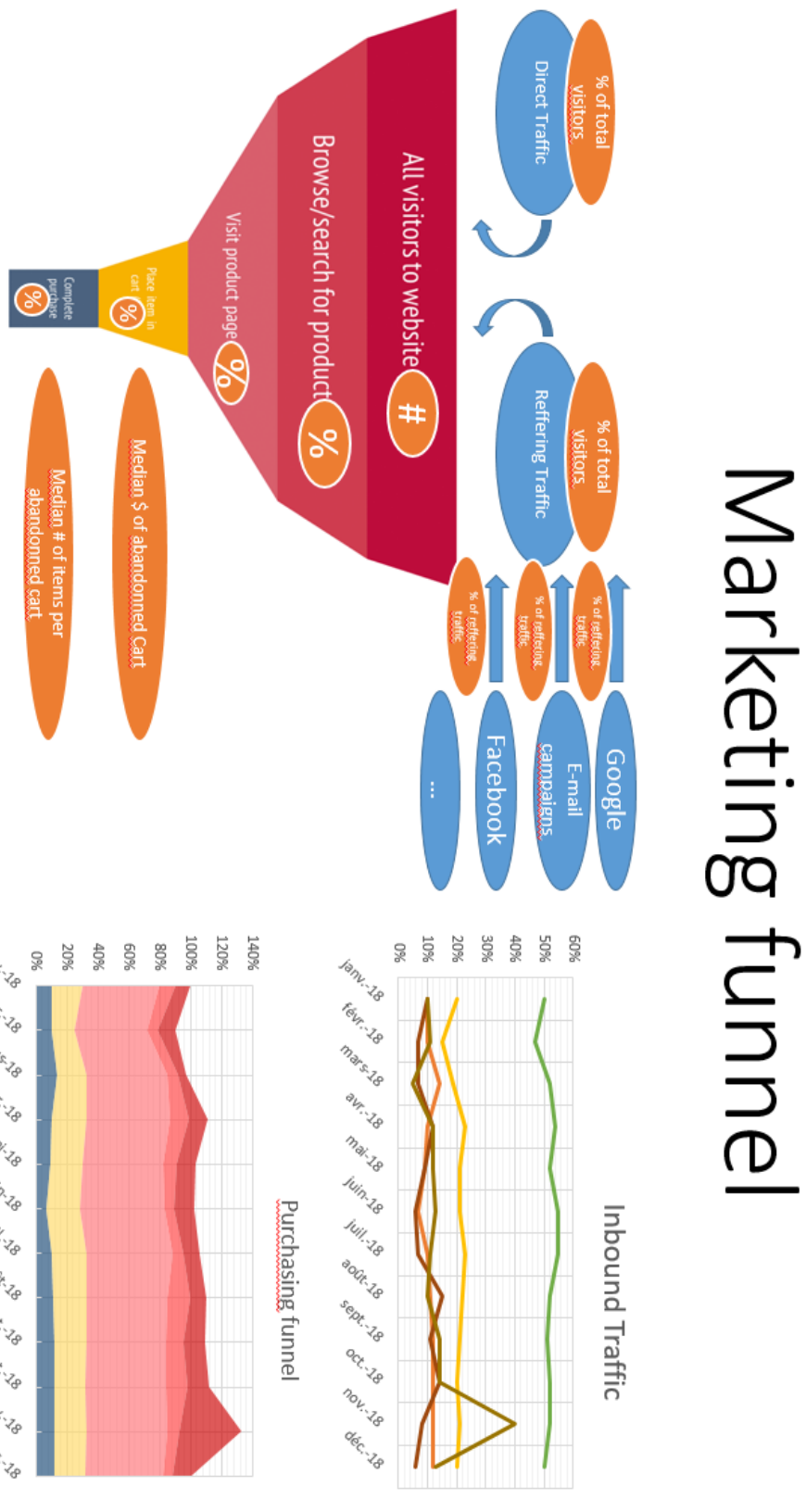

Figure 10: First overview of a panel - the Marketing Funnel

3.1.2 CLIENT 2

Profile: *Responsible for an e-commerce website in Colombia*. *Using marketing dashboard to follow the sales and pilot the marketing strategy.*

The dashboards used are made on *datastudio* (a Google's tool recently launched).

His company on the day-to-day work broadly uses the board previously showed. Some more scenarios are studied:

- Working on the **UX** by comparing device uses,
- Analyze best and **worst** sellers: product categories, products and link this with the channel of use to check on customer affinities,
- Survey results study: integration directly in the dashboard → email results, product qualities, extreme comments, extreme ratings
- Shipping information: main cities, costs structure
- Payment methods study and conversion: card, equivalent of *boleto*.

Main pain-points order by importance:

1. Just one segment is studied
    - Build cluster based on segments predefined or automatically found
    - Understand the clusters: best/worst buyers, payment methods, living areas, …
2. Comparison are made by day of the month: comparing Tuesday 15/05 to Sunday 15/04, obviously the day of the week is a main component of the analysis
    - Comparison based on a 7, 28 and 364 days timeframe, customizable
3. Outliers make the KPIs hard to trust (bank holidays, black Fridays …)
    - Possibility to include/exclude some date/people in the data
4. Not identifying/knowing the products when reviewing it
    - Solution proposed: add a picture next to the label

Some examples of KPIs that are relevant to him but do not appear in the dashboards he uses:

- Cancelled orders: It can either be people that didn’t go to pay the Boleto or rejected credit card payments, in any case there is a significant difference between received orders and paid orders.
- Revenue by payment method
- Cancellations by payment method
- Cancellations by city
- B2B vs B2C orders
- CPA (cost per action) and ROAS (return on advertising spend) per channel
- Funnels easy to understand
- Load time per page (top and bottom speed load pages)

This list of KPIs and remarks is not exhaustive but is a way to show how much the details matters. Of course, there are KPIs that are obvious and one could wonder why their representation is not implemented, the main inputs this kind of customers bring to the study is to demonstrate the importance of little details that we should focus on.

3.2 ANALYSIS

Thanks to these 2 personas one can see what the main two ways of using and therefore designing marketing dashboard in the e-commerce world are. With these insights summarized, we can assess the solution on the market and conduct a market study based on what we aim to design. These requirements can seem intuitive but what matters for us are the details inside it and even more important, how the KPIs are grouped. Indeed, we aim to design a solution who is delivered with a set of KPIs adapted to the business needs.

More than that, it appears that there is a real need of gathering the data, may it be from advertising (online – email, programmatic, social – or offline – loyalty program, offline purchases, …). Therefore, we increase the scope of the project and consider also a tool that would be able to unify the data from several sources which means having connectors for that sources and manage this amount of data considering the quantity but also the diversity of structure. For a client of the company which is one of

the main players in consumer goods products worldwide, we estimate the data available in Brazil at about few billon records. However, the product we aim to deliver would be able to gather a lot more – would work for the 50 countries our customer is implanted in – using real-time connector and real time data importation.

To be able to manage that much data and to make the dashboard interactive enough to filter and manage the data in real-time or almost real time (few seconds of delay). One solution is to study as well the Customer Data Platforms (CDP) available on the market.

A CDP is a Software as a Service (SaaS) which has a goal to gather all kind of data and unify them. That means knowing that John who went online and bought on an e-commerce site is the same John as the one who bought in this one supermarket. CDP is also designed to allow to have better insights, usually thanks to a marketing dashboard and finally it may allow to make segmentation and export it for activation (sending email/SMS, social advertising, …)

Having a CDP integrated in the offer would be a great plus as it would allow us to implement the solution being agnostic to the data source we have and would require relatively low setup and customization.

In the next steps, we will consider the option of having a CDP beforehand of the marketing and study also what is the impact of it on the dashboard and the offer.

3.3 MARKET STUDY

A first set of features has been set talking with people that expressed interested in the product. This list has been enriched as the interviews went. Finally, the main features assessed during the market study are displayed on Table 1: List of features accessed during the market study. Some more features have been studied but on the request of the direction they won’t be displayed here – they are mainly about the data management

Table 1: List of features accessed during the market study

Company
# of Employees
Country
Year of creation
Specialized in marketing dashboard
Partners
Demo available
Dashboard type
Ecommerce
Digital marketing
E-mail analysis
Marketing performance dashboard
Data Sources
Quantitative data
Facebook
Google analytics
Magento
Bronto
Salesforce
Hybris (commerce & marketing)
Qualitative data
Social network listening
Other analysis
Designed Use
Consistency of data check
Performances monitoring
Strategy Plan
Communication
Customization of font/images/colors, …
Public
CEO
CMO
Marketing expert

Use
Mobile
Cloud (computer)
On premise
TV mode
Shareable

Actualization
Live
Daily

Reporting
Automatic
Exportation
Online live visualization

Implementation
Implementation done by the partner
Time to market
Self-service? Widget/support
Support?

Costs
Initial
Mensal
Per user
At the client - In case someone must be trained/dedicated to the maintenance

Security
Azure VS AWS

Machine Learning features (ML)
Recommendation
Other type

Differentials
Main -
Main +
Support and Sales feelings

Conclusion

The result table of the market study can be found in appendix A. This study demonstrates that there are various kind of vendors' focuses each company is adapted for a certain segment of the market and then offering a certain list of features. This list of features we want has been enriched talking to some vendors which offers them.

Now that we have the results of the market study, we can conclude that there really is a need to set and sale a set of KPIs that are adapted to some businesses. Indeed, lots of features are available here and most of the dashboards are customizable. However, there is no company that offers (without expensive consulting work) to deliver the dashboard with a set of KPI that fits your business and therefore is ready out-of-the-box. It is in this niche of the market that our solution can enter and encounter a market.

Here again we can analyze the market seeing the solution with a CDP together with the dashboard (some of the offers studied included CDP solutions). We conclude that even more than not having offers gathering data and dashboard, there is no usable set of the whole package: *data collection* + *(data storing – optional)* + *dashboard*. This is where our offer can enter the market with a reasonable price. Before looking more into the financial aspect, we will see what the details of the features we are expecting are.

3.4 FEATURES DESIGN

Thanks to the talk with the clients as well as the market study, we have a better understanding of what exists and what is wished by the clients. As expected, there is no offer of business KPIs set that are ready out-of-the-box (OOTB) except inside the marketing platform themselves such as salesforce marketing cloud or SAP hybris marketing. These KPIs are good for a first understanding of the marketing but are too basic to be used to establish a real marketing strategy. Moreover, often the customization of the dashboards available in SAP or Salesforce requires a lot of understanding of the data structures inside the solutions, custom insights would even require a specialist in a programming language created by companies (such as

ABAP by SAP used to customize at the data level Hybris marketing and other products of their own).

To counterbalance it, the CDP is a great alternative, it allows to connect (with a minimal effort) to all the sources we want and ingest all this data. Therefore, there is a great opportunity here to join both CDP.

To have more details about that, after having done the market study and a first test of features with the client: i.e. presenting the feature to some clients to have their feedbacks, we are able to create a score card and coming back to the compagnies we studied in the market study, we can assess which one is the most adequate, c.f. Table 2: CDP Score Card. NB: one added Company 5 which is a company which claims itself being a CDP only (even if a dashboard tool is available it is not part of the main marketing of the company) so we aim to assess the relevance of this solution too.

	Scored Company Response					Weighting	Weighted Score				
	Company 1	Company 2	Company 3	Company 4	Company 5	0 = Not important 1 = Nice to Have 2 = Important to Have 3 = Need to Have	Company 1	Company 2	Company 3	Company 4	Company 5
UX/UI											
UX : Marketer-controlled system with minimal assistance from IT	5	3	5	1	5	3	15	9	15	3	15
UI : Easy to use, comprehensible front-end	5	2	4	2	5	2	10	4	8	4	10
Data Ingestion (in)											
	5	5	5	1	5	3	15	15	15	3	15
Data types	5	5	5	5	5	2	10	10	10	10	10
Connection methods	5	5	5	1	5	1	5	5	5	1	5
Speed and scale	5	5	5	3	5	2	10	10	10	6	10
Data Analytics Management											
Data cleaning	5	5	5	4	5	3	15	15	15	12	15
Standardization	5	5	5	5	5	2	10	10	10	10	10
Linking of data : unified customer profile	5	5	5	1	5	3	15	15	15	3	15
Data outputs											
SFMC	5	5	5	5	5	3	15	15	15	15	15
SFDMP	4	4	4	2	4	3	12	12	12	6	12
Connection with other external tools	5	5	5	5	5	2	10	10	10	10	10
Segmentation and Data Enrichment											
Create user segments without writing code	5	5	5	0	5	3	15	15	15	0	15
Share segments with analytics and engagement partners in near real time	5	5	5	0	5	2	10	10	10	0	10
Predictive Insights Using Data Science/Machine Learning, AI	5	1	5	0	5	1	5	1	5	0	5
User-Specific Content Affinity Using Machine Learning, AI	5	1	5	0	5	1	5	1	5	0	5
Security											
GDPR	5	5	4	5	5	3	15	15	12	15	15
Country cloud host	3	5	5	2	5	1	3	5	5	2	5
Consumer data tracking	3	5	5	4	5	2	6	10	10	8	10
Full consumer data delete	5	5	5	4	5	3	15	15	15	12	15
PII encrypted & anonymized	5	5	5	1	5	3	15	15	15	3	15
SSO integration	5	5	5	2	4	3	15	15	15	6	12
Service & Support											
Technical Documentation & Support	5	5	5	5	5	2	10	10	10	10	10
End User Training & Support	3	4	5	3	5	1	3	4	5	3	5
Dedicated Account Management	1	3	5	1	5	3	3	9	15	3	15
Multi-zones											
Multilingual	1	1	1	1	1	1	1	1	1	1	1
China compatibility	5	5	5	5	5	3	15	15	15	15	15
TOTAL							**278**	**271**	**293**	**161**	**295**

Table 2: CDP Score Card

What we can see here is that one of the companies clearly is out of the choice (company 3) and then we should consider also the other features we analyzed during the initial market study.

Thanks to this study, this project is facing a change of orientation. Indeed, instead of focusing just on the dashboard itself, we discover that the offer, to be efficient, needs to integrate a big part of data management. Further in this study we will consider both part of it.

3.5 COST STRUCTURE

The goal of this part is to show how the costs will be split. A first global overview is done. Then, one considers the benefits of being a consultancy company and adapt an existing project structure so that everyone could use the resources at its best. This means that one does not require a data scientist to make basic tasks that an intern of computation can do, for instance inputting data inside the CDP which is basically a drag and drop. Therefore, the costs of the data scientist, obviously higher than the one of the intern, will be split according to the needs of the customers.

3.5.1 TOTAL

In the costs structure, we will consider both implementation costs and running costs. The choices of some of the solutions are imposed by the company due to agreements (for instance *Amazon* vs *Azure* for cloud hosting and computing). Some of these choices will be voluntary hidden in the mentions (*Cloud computing* instead of the real *Amazon* or *Azure*).

In the Table 3: Comparison of costs, we do not show the price. Only the final pricing is displayed for anonymization reasons. The final prices are displayed with the rule: the reference is the lowest price which is Company 4 after 1 year standardized as 1 and for all the other prices we display the factor it has with the reference. That means if the product of the Company 4 has a total price of $ 5k then the one of the company

1 after 3 years will have a price of $ 15,6k (= 3,12 * 5). There is no actualization of the price because the aim is not to compare “after 1 year” and “after 3 years”, it is to compare companies between themselves.

Table 3: Comparison of costs

	Company 1	Company 2	Company 3	Company 4	Company 5
CDP Platform					
Setup price	x	x	x	x	x
Running price	x	x	x	x	x
Marketing dashboard					
Setup price	x	x	x	x	x
Running price	x	x	x	x	x
Consultancy					
Consulting first implemantion	x	x	x	x	x
Consulting Hypercare	x	x	x	x	x
Consulting support	x	x	x	x	x
Total over 1 year	1,54	1,03	1,14	1	1,43
Total over 3 years	*3,12*	2,67	3,03	2,56	2,98

Here again we see that depending on the focus of the company as well as the main clients the pricing is different, and the options are large.

3.5.2 CONSULTANCY DETAILS

The way it will be organized for this project is a bit new to the consultancy company which is more used to big centralized projects working with an adapted agile method. See Figure 11: Adapted Agile Management to have more details (QA – Quality Assurance)

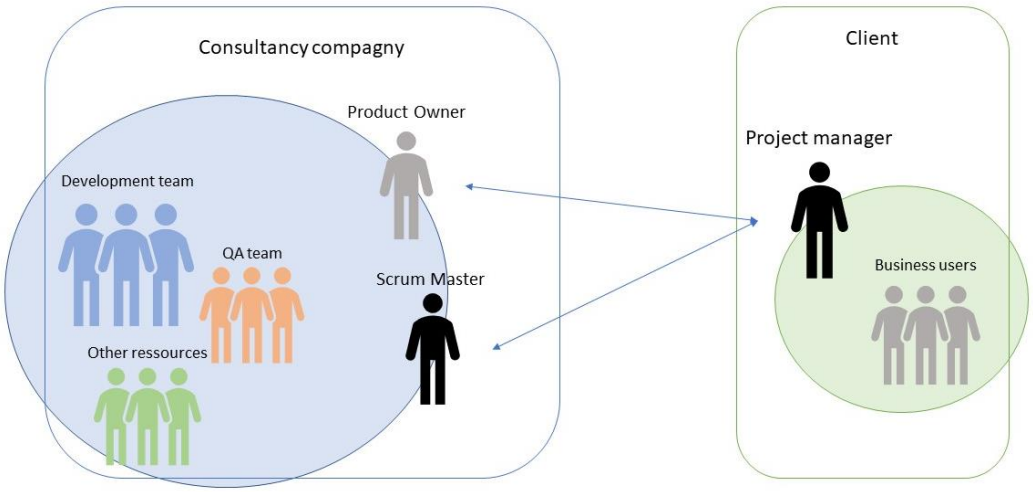

Figure 11: Adapted Agile Management

The aim of this organization is to develop faster than the traditional waterfall method. We then organize the development in sprints, usually lasting for 2 weeks. After this duration a release is done so that the client can test and start using it before the complete development. This enhances quick feedback, bug fixation and better focusing in the project features.

We propose to adapt once again this method to have more flexibility and to use each one as its best. Some jobs such as ingesting data require only little technical competences so that interns would be able to do it whereas some more advanced ones, for instance developing machine learning models or automations, would require some more competences and so will be centralized so that many clients can benefits from it.

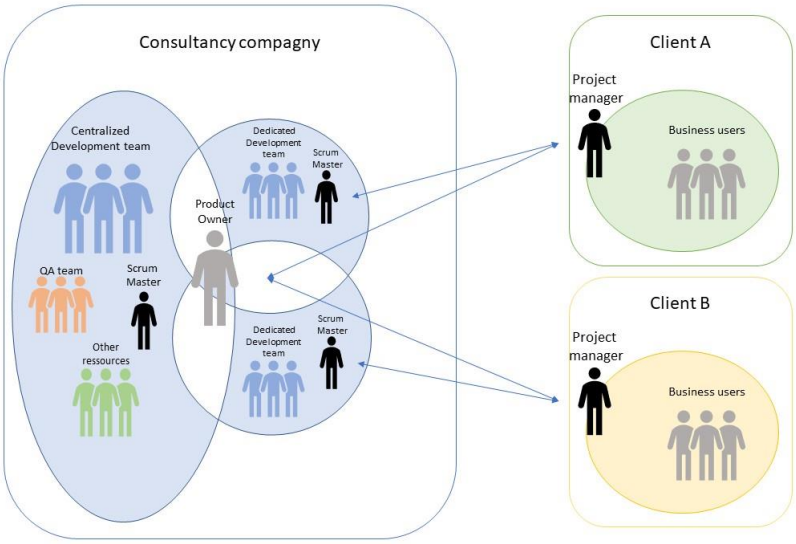

Figure 12: Adapted Dispatched Agile management

This way, the main features of the CDP and marketing dashboard will be developed by a centralized team. These features are for instance: unification, KPI sets, … and the dedicated teams will work on more specific and client-oriented tasks such as: data ingestion & standardization, KPI adaptation.

This way of organizing the team allows every part to cut costs. Indeed, the main costs of development are diluted thanks to the multiplicity of clients. Studying each player:

- *SaaS partner company – the platform provider –:* do not have to take care of the implementation, can have a strong partnership to use the experiences and competences of the consulting company,
- *Consultancy company*: can reuse the competences and divide better the work based on the specialty of each one. Earn more by selling better experts to several companies and having the same margin.
- *The final customer*: will divide the costs of the experts and reduce the size (and then price) of the dedicated team.

However, the Table 3: Comparison of costs previously seen does not consider this repartition because for now we have no expectation on the number of clients we may have neither on how large the overlapping parts between clients will be.

3.6 PRICING MODEL

The pricing model is based on several parameters (intrinsic and extrinsic) and there is no fix price.

First, the product can be used as a pre-sale so that the cost will be absorbed by the consultancy company to demonstrate the importance of having this kind of tools. This can be considered as a prove of concept to assess the quality of the customers' data and the marketing processes that there are in the whole company (can be a group gathering many brands for instance). This is to consider the lead it gives to the consultancy company. Indeed, if the cost of this dashboard is X and lead to the sale of a larger platform implementation which will bring 4*X of benefits, considering that the company close 1 big deal every 2 dashboards sold, it is worth it to offer the dashboard as a POC. The final benefits being X in this simple case it is relevant to go after it. NB: it is important to consider the customer awareness to the consultancy company, sometime the simple dashboard sold can bring as much profits as the big project offering the dashboard, but it will bring a reference on big projects to the consultancy company which is not negligible.

Then, the product can also be used on itself and be a bigger offer that will require a lot of customization and then will also require the dedication of a team (depending on the size and the timeframe of the project we estimate between 1 and 10 people). Considering the repartition of the team one explained earlier on Figure 12: Adapted Dispatched Agile management the price could be a lot lower if several clients are found at the same time or at least on an overlapping schedule.

The work will display neither the margin nor any details of the decision about the prices for concurrency protection.

3.7 PRODUCT ARCHITECTURE

As we discovered interviewing professional, there is a real need to gather all the data before reporting and creating a dashboard. Therefore, the architecture of the final product will be composed of two main parts which are: a CDP & a marketing dashboard platform.

The CDP will be an external partner due to the complexity of the product and the pricing offered, it is not valuable to rebuild a CDP internally. However, we will prefer a solution which is customizable in terms of the structure of the data ingested as well as the output data structure so that we can standardize it and pre-process it for the dashboard.

The marketing dashboard will be able to use the data of the CDP's output in an efficient way to have it ingested and processed to make clear and understandable reports for a non-technical person. See Figure 13: Data flow structure for the overview.

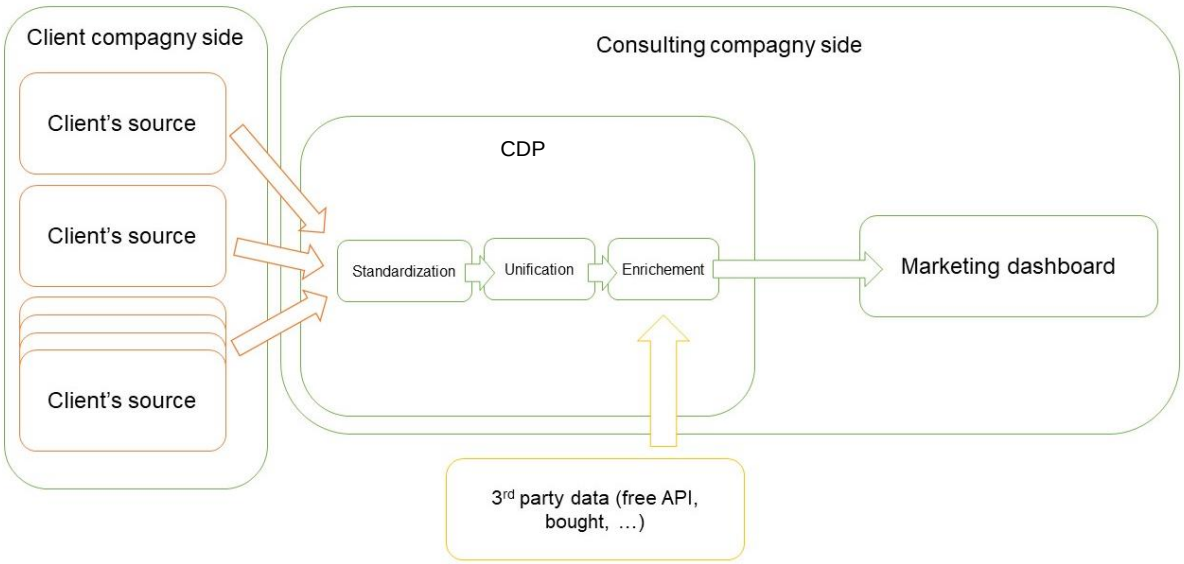

Figure 13: Data flow structure

The details of how the standardization, unification and which kind of data we use for enrichment are left at the discretion of the client. For instance, a main global player in consumer goods and using the B2C data, who wants to know better their final consumer will use:

- *Standardization*: standardization of names (especially fuzzy matches for latin names) standardization of addresses, of personal identifier – *Cadastro de Pessoas Fisicas (*CPF: *registry of physical person*) in Brazil or Cedula in Colombia –
- *Unification*: the unification needed was basically making hard matches (exact matches on strings or numbers) on several parameters. For instance, in the Table 4: Example of unification of hard matches we have an example of anonymized real dataset that we encountered. The colors are displayed only for a better understanding of the issue. With attention, we discover that all these records belong to the same physical person. Indeed, the email, id_1, id_2, id_3 are personal identifiers, it means that if we have two lines with the same email or the same id_x we can conclude that these two lines belong to the same person. There is no literature on this kind of algorithm, this is a specific issue that arises when considering high volume of data (~ 1 billion records). It exists a trivial solution which is using graph database, however this is out of the scope as the solutions of the partner chosen do not offer this kind of features (mainly due to the higher cost of graph distributed databases involved compared to relational distributed database). There is no competitor which offers graph database on the same market segment. It exists private solutions offering this feature, but the pricing is about 10 times higher. Therefore, we develop a unification algorithm, the details won't be displayed here for competitive reason. The main idea is to use basic theorem on integer series.

Table 4: Example of unification of hard matches

identifier	email	id1	id2	id3
1	email1@hotmail.com	4413888197	56133500	1532137861
2	email1@hotmail.com	4413888197	56133500	1532137861
3	email2@hotmail.com	510509592		
4	email3@xx.com.br	3404507495		
5	email4@gmail.com	3404507495		1532137878
6	email2@xx.com.br	4413888197		1532137878
7	email5@xxx.com.br	4413888197		
8	email5@xxx.com.br	3404507495	1660324	1532137861
9	email5@xxx.com.br	510509592		1532137878
10	email5@xxx.com.br	3404507495	1660324	1532137861

- *Enrichment*: the enrichment, depending on the business of the client, may be a key part of the product. It allows to gain a lot of information and have better knowledge about the consumers/customers and their general landscape. For instance, some APIs allow to get Personally Identifiable Information (PII), let's say we have the email address, we are then able to get the name, social networks identifiers, mail address(es), incomes, …

Having this data standardized in a way that we can use it and enriched so that the marketing will be enhanced, we are able to output the data to the dashboard side where the analysis can be done by experts. We will first focus on delivering sets of KPIs relevant to the business of the client. These sets have been developed and during this phase and the development but are not display here as it is the core of the product.

3.8 TEST & IMPROVEMENT

The first tests of integration are undergone, as mentioned above, by the developer and the author on a new platform. The idea is to have a new data structure and to see in how much time we can connect to this data source, ingest the data, work on it and then output it as a dashboard with a set of KPIs that would be adapted to the test business we would have. This is the time-to-market that we want to evaluate as a pilot so that we have a notion for further clients.

As was mentioned in the introduction, this phase will be developed in many steps. The steps are divided between two types of person: the data scientists and the marketers. Indeed, there cannot be one without the other one when it comes to the so-called notion of MarTech (Marketing-Tech). Therefore, there will be each time 2 series of testing:

For data scientist:

- Encounter a new source (can be API, database, ...) SAP Hybris or not, understand the source format with little hint of its provenance – in order to go

faster without the help of the client (this is out of the scope of our offer but is a requirement for hiring the data scientist),
- Integrate the data from the source into the CDP,
- Setup the CDP to run the steps showed above (standardization, unification, enrichment, …),
- Output the cleaned and enriched data to the marketing dashboard.

For the marketing consultant:

- Understand the business that goes with the company,
- Understand the data we have available and the format of it,
- Pick up a set of KPIs already developed and enrich it even more according to the business of the company,
- Check the easiness of integration of new KPIs in the dashboard,
- Present the results.

For each step we ask how the tester assesses the easiness of the solution we developed and what can be improved, what the benefits and the flaws of our solution based on their experience and knowledge of other tools.

3.9 REVIEW & DISCUSSION

Now that the offer is entirely ready to be released, we may make a review of the entire work done to save time for the next works and for others to go faster and pay attention to some details learning from our experience. We follow the structure of *post-mortem* in game design to focus on the relevant points. This means, one emphasizes *what went well* and *what went wrong* and for each point distinguishing the sources and the effects and the eventual improvements done.

3.9.1 WHAT WENT WRONG

Even with the amount of preparation there was, there are still some points to improve:

- **Security of the system & access' management:** during the development, there was a focus on the features and the business needs. This focus blinded us on the security side which should always be present in cloud computing environment. The issue was on the access' management, indeed, the platforms (CDP and marketing dashboard) allow different type of users, for instance managers may have access to everything whereas some data engineers may just have access to certain parts of the system (data ingestion or data management and not some financial reports for example). However, on the marketing dashboard, the solution developed allowed anyone to add a new graph or table on the dashboards he has access to, during the creation of the representation, there is a possibility of creating his own SQL view to enhance the possibility of the platform. If one knew the names of the tables, you did not have access to, he would be able to select it anyway. The basic SQL query *select * from database.table* was not restricted by users; the restriction was at the dashboard level. Fortunately, this major issue was discovered during the first tests and was easy to solve by making the available restrictions at the table level and not down to the dashboard level. Refer to Figure 14: Access & Restrictions Management for more details on the changes made.

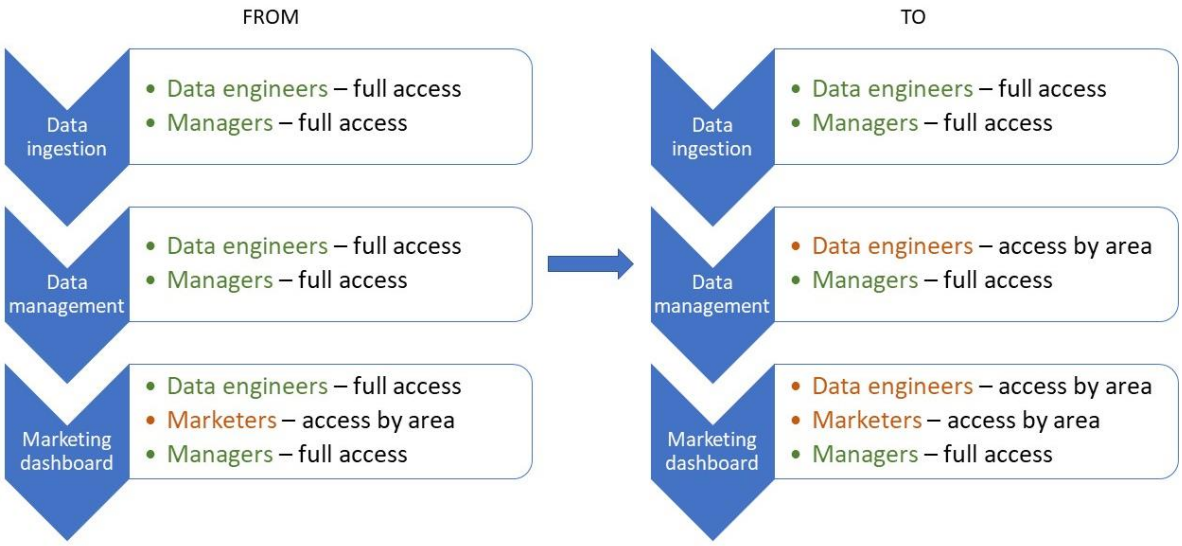

Figure 14: Access & Restrictions Management

- **Cost structure & pricing:** first, the cost structure and pricing was estimated considering all resources: materials (cloud computing, licenses, …) and man (time of implementation, of support, …). The estimation was made in United-States Dollars (USD) however the costs was based on the Brazilian market – for cloud computing there is no change as the pricing is international but for the price of man resources the pricing is often different. Indeed, the consultancy company has two types of pricing: one is international, for big international clients, the deals are negotiated in the client's head office country as far as possible, the other ones are local deals. For the former the pricing is then international and for the later the pricing is local. Both are dealt in USD and this was the origin of the misunderstanding. Indeed, the cost structure and pricing were estimated on the Brazilian rates whereas the good practice is to have it international and the conversion rate is part of the negotiation of the deal. This was not a major mistake for the project but delayed the project for about week. The lesson to learn is that the pricing is not just about the price itself but also about the global company strategy and so, more details should have been looked for about the global good practices before undergoing the assessment locally.

3.9.2 WHAT WENT WELL

Most of the study and development went well thanks to a good planning:

- **The market study**: thanks to good preparation and the methodology chosen, it was easy to go straight to the relevant points during the interviews and even beyond. According to colleagues who had already undergone this kind of study, this is not always the case and several approaches are possible. Indeed, the choice we made to study the clients' requirements before making the market study can seem not obvious or even may seem wrong. This is because it obliges you to go in front of the client without any knowledge of the state-of-the-art or any guidance about where the discussion could go. These risks were measured because we went first to colleagues who had previous

experience in the marketing area and then migrated to potentially interested clients. The first people understood the exercise and knew it was more of a brainstorming than a real scoping. This allowed to free both the interviewed and the author from the state-of-the-art so that it was possible to analyze better the needs and wishes of the interviewed without considering the feasibility of the features talked about. Then, based on the first interviews, it was easier to go a bit further with the companies and go deeper into their wishes. This is still without knowing what was feasible or not. This was the key to real radical innovation and brought the study from only marketing dashboard to an offer which would gather CDP and marketing dashboard into one single place as it does not exist on the market right now.

- **Global management and timeline:** developing an offer from scratch is not the easiest and requires a good planning and management to have something feasible for the development and viable for the offer to be sold. At the beginning a lot of time had been dedicated to the planning and the features design, this was first perceived by us as a loss of time but then it allowed to go faster in all the other steps and even work in parallel for instance on the development and the pricing model as it was done by two distinct persons. There is no best method to develop an offer. The literature about it is divergent. The choice was to use as a basis the experience of others as it exists a deviation very high from a company or an area to another one. Time was taken to exchange with people who had undergone such a study before in this field and/or in the company. Thinking about it and looking for more references such as the stage-gate method (Cooper R. G., 2005), it allowed the author to distinguish all these phases and to order it this way. Reviewing what has been done the author considers this was a good way of doing it. On the other side, the development management was not something the author had a lot of experience with, therefore discussion with more experienced scrum master and project owner was the key to succeed during this phase of the project.

- **Development:** the development and pilot of the product could have been the most complicated part of this work as it involves project management and

costs of resources – materials and men (other than just the author of the study) – for the consultancy company. This was the opportunity to develop a detailed planning and to apply the agile theory. The planning was developed by the author and then reviewed by his management before being checked by both a scrum master and a senior developer. This chain of reviews allows to minimize the risks of failing and potential delays. Of course, some changes had been done between the first version and the next ones. The final document was precise in tasks and times enough to have the developer work efficiently without having the author taking too much time taking care of the development (except the daily meetings and other ones included in the agile methodology). The choice of the agile methodology was also a good idea as it allowed to have partial version of the product for the author to often test the implementation and, less often, colleagues' or even clients' testing.

4 CONCLUSIONS

This study was supposed to relate the implementation of a CDP and marketing dashboard and build the connection between both, based on the requirements of customers and the market potential. This has led to the finalization of the complete offer. Some steps on the way could have been done more efficiently or could have been covered more extensively.

Thanks to this study, the offer is saleable, and the first customer has been found. The implementation has started with one of the partners identified during this study. The pilot phase ended just before the end of this work, it has led to the first results and a successful business case. The results for the company are basically a new offer added to its panel with a first prove of concept and business case for a major customer.

What remains available for further work in the company is mainly the method used with the feedbacks on each point in order to develop an offer faster. Moreover, part of the study can be used as an offer or part of an offer itself; for instance, the CDP implementation and the platform studied can be reused with another use in mind, such as using it as a more evolved data lake. The algorithms developed, such as unification (hard match on several columns) or standardization, has been put disponible on an internal Git so that it is easy to reuse.

In a broader context, this study can be an example of a full develop of a business offer with models and the features and method to assess.

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GLOSSARY

AMA	American Marketing Association
B2B	Business to Business
B2C	Business to Customer
CDP	Customer Data Platform
COO	Chief Operation Officer
CMO	Chief Marketing Officer
CPA	Cost per Action
CPF	*Cadastro de Pessoas Fisicas (*registry of physical person)
CTR	Click-Through Rate
CX	*Customer Experience* (product of *SAP*)
GDPR	General Data Protection Regulation
IT	Information Technology
KPI	Key Performance Indicator
NLP	Natural Language Processing
OOTB	Out-of-the-Box
P&L	Profit and Loss
PII	Personally Identifiable Information
QA	Quality Assurance
ROAS	Return on Advertising Spent
SAP	*Systeme, Anwendungen und Produkte in der Datenverarbeitung* ("Systems, Applications & Products in Data Processing" in German) – Company name
SaaS	Software as a Service
TF	Trabalho de Formatura (*Graduation work* in Portuguese)

TV	Television
URL	Uniform Resource Locator
USD	United States Dollar(s)

APPENDIXES

Appendix A – Market study results – 1

Appendix A – Market study results - 2

Appendix A – Market study results - 1

Company	Company 1	Company 2
	ScreenShot	ScreenShot
Employees	Anonymised	Anonymised
Country	Anonymised	Anonymised
Year of creation	Anonymised	Anonymised
Specialized in marketing dashboard	Y	BI in general
Partners	Anonymised	Anonymised
DEMO	Y	Y
TYPE		
Ecommerce	Y	Y
Digital marketing	Y	Y
E-mail analysis	Y	N
Marketing perfermance dashboard	N	Y
DATA SOURCES		
Quantitative data		
Facebook	Y	Y
Google analytics	Y	Y
Magento	Y	Y
Bronto	N	Y
Salesforce	Y	N
Hybris (commerce & marketing)	N	N
Qualitative data		
Social network listening	N	Y
analysis	N	Y
Designed Use		
Consistency of data	Y	N
Monitor perfermance	Y	Y
Plan	N	N
Communicate	N	Y
Customization of font/images/colors,...	Y	Y
Public		
CEO	N	Y
CMO	N	Y
Marketing expert	Y	Y
Use		
Mobile	Y	Y
Cloud (computer)	Y	Y
On premise	N	N
TV mode	N	Y
Shareable	N	Y
Actualization		
Live	N	Y
Daily	Y	Y

Company	Company 3	Company 4
	ScreenShot	ScreenShot
Employees	Anonymised	Anonymised
Country	Anonymised	Anonymised
Year of creation	Anonymised	Anonymised
Specialized in marketing dashboard	embed intelligence	
Partners	Anonymised	Anonymised
DEMO	Y	Y
TYPE		
Ecommerce	N	Y
Digital marketing	Y	Y
E-mail analysis	N	N
Marketing perfermance dashboard	Y	Y
DATA SOURCES		
Quantitative data		
Facebook	Y	Y
Google analytics	Y	Y
Magento	Y	Y
Bronto	Y	Y
Salesforce	Y	N
Hybris (commerce & marketing)	Y	N
Qualitative data		
Social network listening	N	N
analysis	N	N
Designed Use		
Consistency of data	N	N
Monitor perfermance	N	Y
Plan	N	N
Communicate	N	Y
Customization of font/images/colors,...	**Y**	**N**
Public		
CEO	N	N
CMO	Y	Y
Marketing expert	Y	Y
Use		
Mobile	Y	N
Cloud (computer)	Y	Y
On premise	N	N
TV mode	N	N
Shareable	Y	N
Actualization		
Live	Y	N
Daily	Y	Y

Appendix A – Market study results - 2

Company	Company 1	Company 2
Reporting		
Automatic	N	Y
Export	Y	Y
Online live vizualization	N	Y
Implementation		
Implemantation done by the partner	Y	N
Tiime to market	5/7h OOTB + 3h by custom integration	0
Self service? Widget/support	N	Y
Support ?	Google sheet filling then they upload it ito the platform	N
Costs		
Initial	Custom	Pricing will flex up and down based on the number of client accounts you need. Payment is done by credit card and done monthly. Monthly works to your advantage because if you remove clients, your next month payment goes down.
Mensual	X R$	
Per user	0	- White Label begins at $X/client/month x N client minimum (even if fewer than N clients). Thus, a $X/month minimum.
At the client - In case someone has to be trained/dedicated to the maintenance	Required to fill googlesheets every months	
SECURITY		
Azure VS AWS	AWS but migrating to Azure	AWS
ML		
Recommandation	N	N
Other type	multiplication to make prevision of sells/revenues	N
DIFFERENTIAL		
-	The solution is very complex, the display is hard to understand, lots of numbers No self service customization All customization and numbers (objectives, ...) are given to enext by google sheet every month Preivsions are done by multiplications by the number of days until the data -> really bad predictions	
+	Really cheap	Cheap and really easy to use
Support and Sales impressions	Really cold support	Really warm and helpful/available
Conclusão	**A basic solution, I do not recommend at all considering the price.**	**White label is really interesting. Afordable and customizable**

Company	Company 3	Company 4
Reporting		
Automatic	N	N
Export	Y	Y
Online live vizualization	N	N
Implementation		
Implemantation done by the partner	**N**	**N**
Tiime to market	10 weeks	0
Self service? Widget/support	Y	Y
Support ?	N	N
Costs		
Initial	0	X$
Mensual	X$	X$
Per user	X$	X$
At the client - In case someone has to be trained/dedicated to the maintenance	Not Applicable	X$ standard optionnal training for 1h
SECURITY		
Azure VS AWS	AWS	AWS
ML		
Recommandation	N	N
Other type	N	N
DIFFERENTIAL		
-	Really hard to play with, no training available/Out of the box. Not that cheap	Not intuitive, too many features to be able to use them at their best
+	Lot of options and features	Really customizable and data oriented
Support and Sales impressions	Good	Good
Conclusão	**Good solution, maybe hard to use for marketers, setup has to be made by third party**	***Too customizable,* hard to use and customize, but possibility to ingest any type of data closer to BI solution than to marketing dashboards**