

How to increase revenue in only 4 months with SAS Real Time Decision.

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Abstract

This paper describes an effective real-time contextual marketing system based on cases of use which was successfully implemented in a Chilean private communication company. Implementing real-time use cases for marketing purposes is becoming a major challenge within communication companies in Chile due to a stronger competition which generates an increase of churns, higher operational costs, among others. All of these may enormously affect revenue and profit. Just sending automated outbound campaigns periodically may be an inefficient task because it does not cover needs from customers in the right moment. Although, a set of predictive machine learning models may help to improve response rates of these outbound campaigns, it is not enough to be more proactive in this business. Our real-time system for contextual marketing uses the two pieces of SAS software called SAS Event Stream Processing (ESP) and SAS Real Time Decision Manager (RTDM) which are connected in cascade. In this configuration while SAS ESP can read massive amounts of data from CDR and antennas, SAS RTDM receives the golden resulting events which will trigger right responses. Time elapsed since a golden event is detected until a response is processed is around 5 seconds. Results of this real-time system in a first step after implementing 7 cases of use show an augmentation of revenue of 2 million dollars in a testing period of 4 months as an average, returning the investment in a short-term period. The implementation of this system for facing a real marketing problem has been changing the way in how Telefónica Chile generates value from Big Data. As part of the roadmap are considered to apply real-time machine learning algorithms to improve response rates through the generation of adaptive messages to customers and integrating natively SAS and Hadoop Hortonworks. Moreover, an outstanding conjoint long-term work between Telefónica Chile and SAS has been started with this application.

Introduction

Telefonica is a spanish multinational telecommunications company headquartered in Madrid, Spain, located as the largest telecommunications company in Europe and the fifth in the world

Telefonica Chile, called Movistar the offer fixed telephony, mobile and long distance ; Internet access and switched via broadband ADSL and VDSL ; DTH satellite television ; transport services satellite radio and TV . Fiber to the home and IPTV

Telefonica brands are Telefonica, Movistar, O₂ and Vivo.

The logo for Telefonica, featuring the word "Telefonica" in a blue, cursive script font, with a horizontal line underneath.The logo for Movistar, featuring a stylized blue "M" icon followed by the word "movistar" in a blue, lowercase sans-serif font.The logo for O2, featuring the letters "O" and "2" in a blue, bold, sans-serif font.The logo for Vivo, featuring the word "vivo" in a blue, lowercase, rounded sans-serif font.

With 125.000 professionals Telefonica has presence on 21 countries and has 349 million accesses worldwide.



Figure 1 – Telefónica Global Presence

Telefónica and digital transformation. We choose it all.

In November 2015 Telefónica outlined a five-year plan to become an 'Online Telco', under the new slogan 'We choose it all'.

Technology offers us a world of communication possibilities, to be more efficient, to enjoy, to entertain ourselves, to learn, etc. At Telefónica we want to give our clients the possibility of being connected with what they most want and love and not give anything up. Making the most of your life at all times.

Life is full of possibilities: CHOOSE IT ALL

The plan is based on six foundations. Three relate to Telefonica's value proposition – outstanding connectivity, integrated or multiplay offerings, and a differentiated user experience. The other three are 'facilitators' of new digital services and strategies and consist of big data and innovation, end-to-end digitalization, and capital allocation and simplification.

One of the foundations is big data which includes the ingestion and analysis of large amount of data inherent to a Telco. Most of data is generated in real time.

In this paper, we will describe the real-time decision project we implemented in Chile to take advantage of our data with SAS ESP and Real Time Decision products.

1.1. Business context... what about doing it in real time? Differences between relational and transactional businesses

Involution of prepaid incomes

In the telecommunication business from the year 2014, there is a fall trend in an Industry level, on the most valuable customers. This trend is due to several reasons such as government regulations and the entry of aggressive new competitors, who end up marking the margins.

This effect is being amplified especially in the prepaid segment, whose value has been declined by 4.4% year-over-year between 2014 and 2015 in an industry level. (Figure 2).

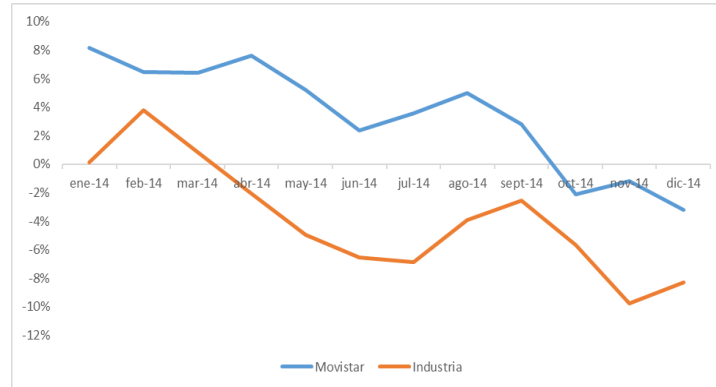


Figure 2 – -4,4% YOY prepaid industry income fall

This creates a gap at industry level that challenges Telco’s to generate new products and new consumption dynamics and stimulation that allows maintaining the income levels. But it’s in the prepaid market where the greatest challenges arise.

The prepaid business is characterized by being a transactional business, where customers prepay the consumption of the products and then consume through the usage of data or usage of minutes or through the acquisition of packs (data or minutes) (figure 3). In Chile, the prepaid market still represents close to 70% of the total mobile communications market.

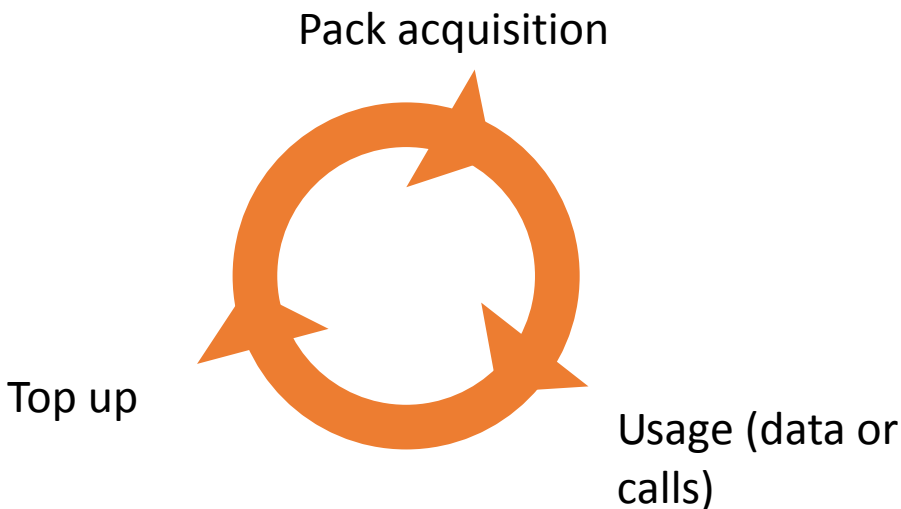


Figure 3 – Prepaid product lifecycle

The usage of mobile products is recorded in the operational systems; thus, it is possible to see in real time or near real time the consumption of minutes, data, use of bags (promotions), consumption of packs and top up. (Figure 4)

Since there is no contract with the customer, and the use of products, consumption and permanence basically depends on top up and using mobile products, we call it a transactional business. A transactional business generates millions of daily events that can be analyzed, stored and managed in real time. Some of the events that describes prepaid customer behavior (and are available in operational systems) are shown in figure 4.

| Event | Description |
|-------------------|--|
| Data cap | Customer has reached maximum amount of data available on his data pack |
| Traffic | Customer has made a call or navigated on his phone |
| Change of device | Customer has changed his device to a smartphone |
| Top up | Customer has loaded an amount of money on his account |
| Balance threshold | Customer is about to reach a minimum amount of balance in his account |

Figure 4 – sample of real time events

1.2. Differences a change of paradigm is necessary (1)
 Doing or not doing it in real time

The entire organization must understand what means working in real time.

Since we began to talk about real time, a lot of business areas began to ask in real time processes: customer experience, operations, marketing, sales were just some of them. But not everything should be migrated to real time. It all depends on whether the event is available in real time and the value of managing them.

Telefonica O2 Germany performed a detailed analysis of the micro effects of the real time. While the campaigns in near real time on average have a 30% more effectiveness compared to batch, it was also demonstrated that there is a difference in effectiveness of 2.6pp depending on whether it communicates 1 minute or 2 hours after the event (Figure 5).

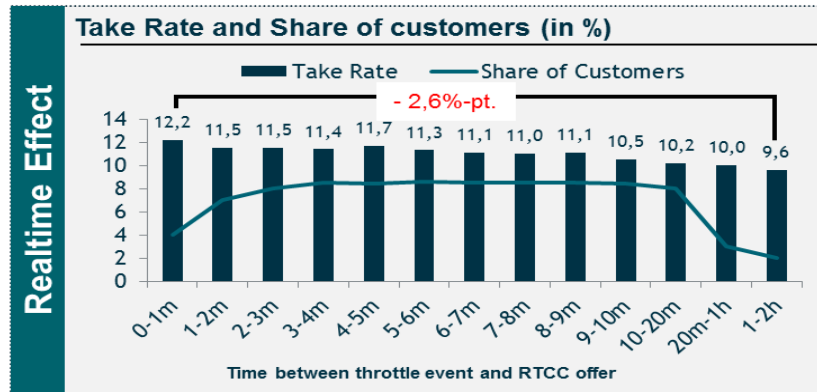


Figure 5 – effect of real time communications versus near real time

The truth is that managing in real time can make the difference between, for example, that the customer recharges or does not recharge, since it goes through a near recharge point. This amplified millions of times is a lot of money.

The main differences between traditional management and real time can be seen in figure 6

| Campaings | Traditionals | Real Time |
|--------------------------|------------------------|---|
| Comunication | Channel focus | Client focus |
| Contact type | outbound | Inbound/outbound |
| Contacts | Lots of interactions | Customer interaction triggered by event |
| segmentation | Historical | Real time |
| Assignment offers | By client segmentation | Contextual for individual client behavior |
| Incentive | Daily | In real time |

Figure 6 – Comparison between real time and batch use cases in Telefonica

We've got great results in a little time

Improvements in: contact rate, profit, top up rate and mount compared to control group

In our first months of experience in real-time campaigns we can see preliminary results that show significant improvements in effectiveness compared to our traditional campaigns.

- Contacts: we lowered the volume of contacts to 1/5 batch campaigns, ie. We communicate 20%.
- Contact thru SMS improves significantly reaching 90%, compared to a traditional contact rate of 50%. This is because we contact the customer when he is "doing something". Additionally, real-time contact

capabilities were improved, increasing the potential transactions to be performed, resulting in a monthly increase in real-time contacts, as shown in Figure 7.

- The effectiveness of communication increased by 37% compared to batch campaigns. Again, it has to do with the context of the message and with the offer, which is adapted to the customer behavior. If we open by type of campaigns, consumer spending increases by 150% and top up by 24%.
- ARPU (Average Revenue Per User) increases by 2% in managed groups
- Average ticket decreased by 15%. This may seem counterproductive since managed customers top up 15% less money on each recharge, but top up frequency increases by 22%. This ends up explaining the 2% increase in ARPU, generating value that did not exist before. (Figure 8)

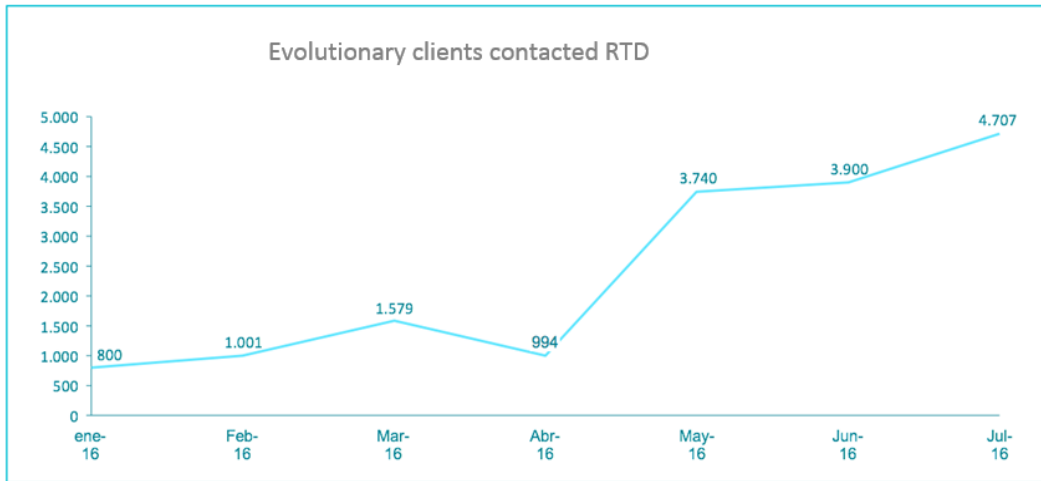


Figure 7 – Evolution of contact volume en 2016

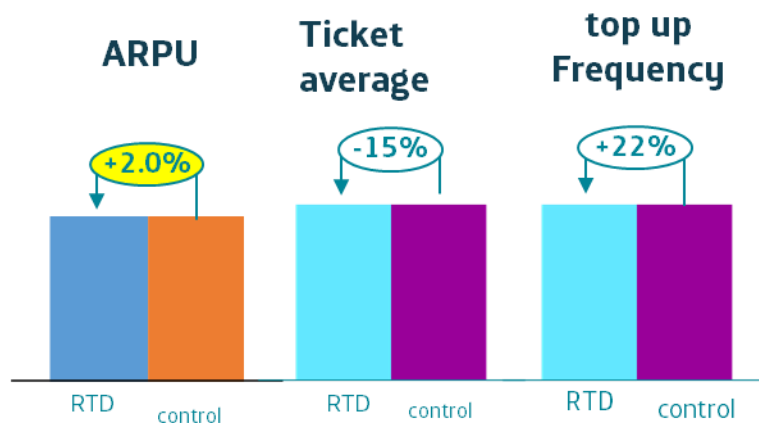


Figure 8 – General business results

A new dimension of customer insight. How does the customer behave being stimulated in real time?

Campaigns in real time have forced us to generate new analytical dimensions that help us to know our customers. We periodically update new insights that help us make decisions and prioritize our contacts. Some of these new kpi's are preferences of contacts, schedules, communication channels, products, frequency, periodicity, etc.

Figure 9 shows that the peak of conversion rate occurs before 2 hours after the communication. Nevertheless, in the 5 next days, customers still convert. This data allows us to choose a personalized customer journey. Some of the customer will receive one message after the event, the others a few reminders the next days.

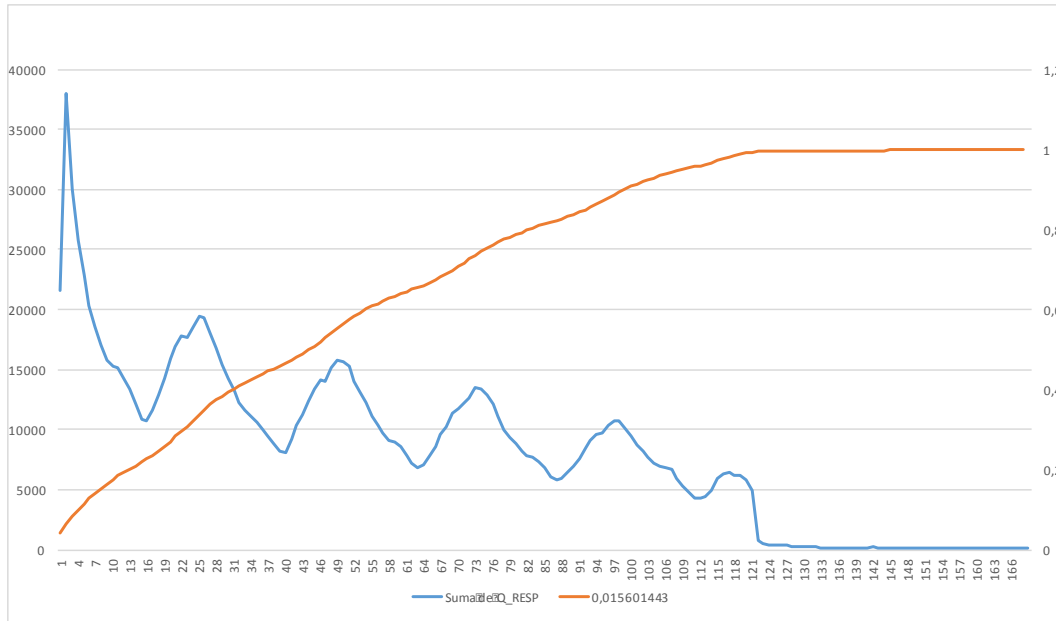


Figure 9 – conversion time

Figure 10 shows how customer conversion rate concentrate. Most of customers that had accepted an offer after a communication do that 2 of 10 times. This allow us to balance communication agresivity. Some customers won't buy so we stop sending messages automaticaly.

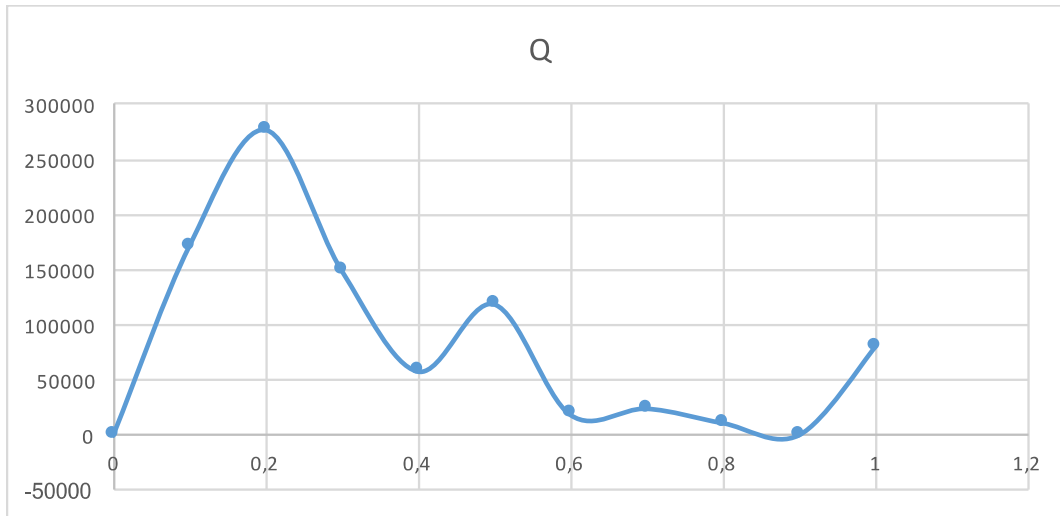


Figure 10 – conversion rate

2.1. The project we designed had two main components

SAS Real Time Decision and Big Data: Architecture

General schema of architecture

SAS architecture allows us to interact with multiple capacities through the integration of an OSB service bus. This service bus has allowed us to integrate APIGee queues, NRT sources, communication channels and web service that are orchestrated between ESP and RTDM. This integration architecture allows you to quickly connect or modify any of these capabilities. (Figure 11)

How SAS Real Time Decision is integrated in the organization: sources, channels, analytics, provisioning, etc.

To manage in real time, it is necessary the complete chain operates in real time, from the generation of the event to the contact with the client. Something that seems simple requires ensuring processes in the entire value chain. A failure in any component kicks the entire chain.

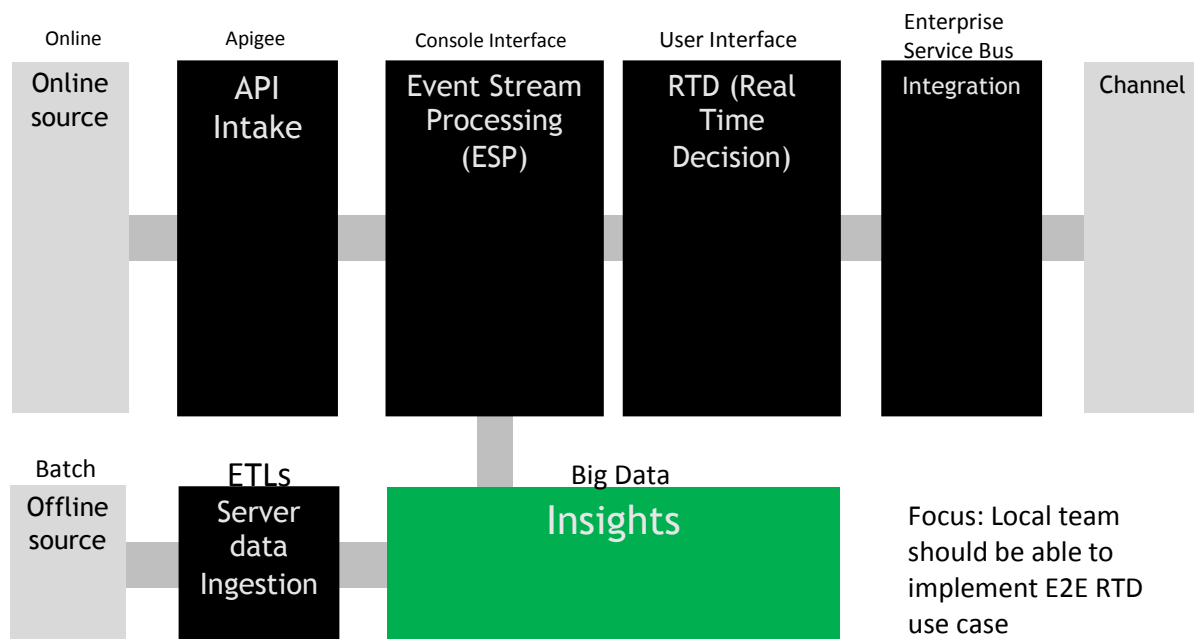


Figure 11– Architecture of SAS Real Time Decision in Telefonica

Some important points we gave focus:

- Emphasis on technical and functional aspects to strengthen the technical and functional process and give improvements to ensure E2E process.
- Migrate to a **productive hardware** that allows the configuration of the solution, assure 100% of the operation.
- **Technical monitoring alerts**, give us alerts related to integration sources problems, queues, web service, events, communications, communication channels and provisioning.
- Deliver control of **operations technical solutions** to receive a formal response SLA.
- Online operational and business reporting (Figure 12 and 13)

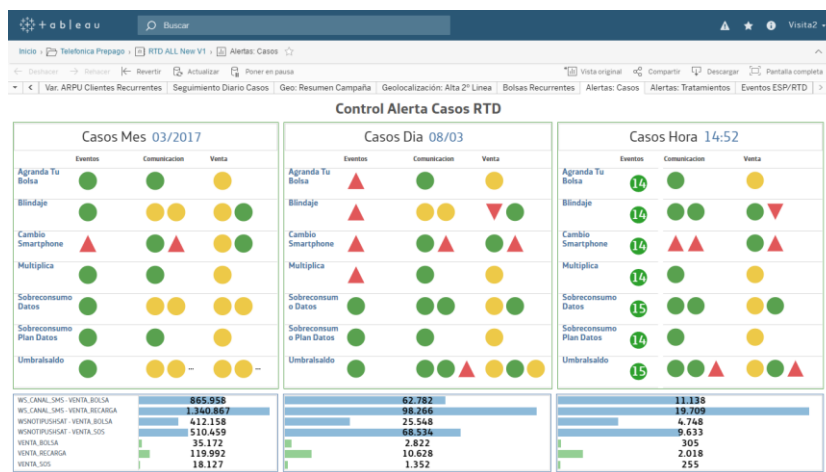


Figure 12 – Operational report in real time

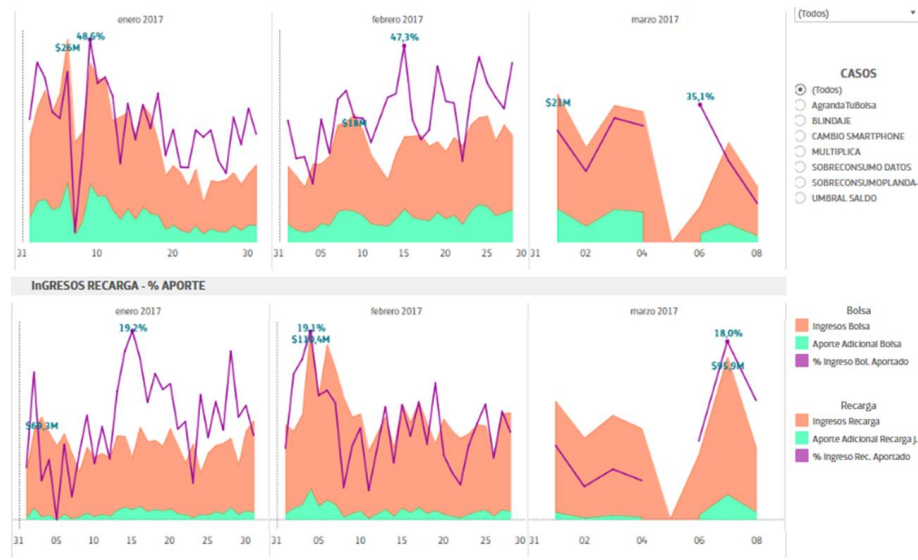


Figure 13 – Business report in real time

2.2. We chose top down strategy to design use cases
 Pretty fast but had scalability issues

Using top down strategy means that we started building end-to-end use cases. Building cases end to end means making an ad-hoc design for each use case, ensuring the entire value chain. This results in the development of use cases, fast, quickly go alive on production and with a full face-to-face experience, but with a higher cost of scaling.

On the contrary, develop uses cases with bottom up strategy allows to mount a repository of events, attributes and processes in a structured way, allowing greater, ease and more efficient development of future use cases. In figure 14 we can see a brief comparison of both methods.

| | Top Down | Bottom Up |
|--------------------------------|------------|-----------|
| Use case Scalability | Restricted | high |
| use case go alive average time | low | High |

Figure 14 – brief comparison of top down versus bottom up strategy

Additionally, it is necessary to prioritize each use case according to a potential business impact. Since we want to get results quickly we opted to do a small impact simulation, as shown in figure 15.

| Caso | Eventos | Potencial Eventos | Exclusiones Política Contactos + Contactabilidad Canal | %Efectividad Proyectada | Ingreso Diario | Ingreso Mensual |
|--|------------------------|-------------------|---|----------------------------|-------------------|--------------------|
| Agranda tu Bolsa (500MB Rsoc x \$1.000 x 3 días) | Compra bolsa | 60K | 12K | 52K * 10% = 5.2K | | |
| Upselling MegaPlan (Turbo) | Termino Megas Plan | 21K | 4.2K | 16.8K * 10% = 1.6K | | |
| Caso Perdidos | Encendido en la Red | 5K | 4K | 4K*30%=1.2K | | |

Figure 15 – Business impact simulation

Today we have 16 uses cases working together. Not only prepaid but postpaid too.

In 2015 and 2016 we have developed 16 use cases with focus to enhance the business both prepaid and postpaid. Some examples:

| ID | Use | Event |
|--|--|-----------------------------------|
| Recurrent Bag | Recurring “bag” or stock product allows customers to sign up, down and activate their prepaid plan bag. Also generates a reminder of the product according to cycle. | SMS 9103 |
| Geolocation | Identify clients near a geographic location, identifying offers and inviting a branch visit | CDR Traffic |
| Upselling Turbo | Upselling early mobile data by early threshold boundary range (network signaling). Deliver turbo bag offer | Threshold consumption bag |
| SOS incentive to purchase intentions without balance | SOS incentive to purchase intentions without balance | SOS is not successful |
| Roaming Aeroport | Identify clients entering airports in Chile | CDR Traffic |
| Balance Threshold | Customers who carry out traffic and reach a balance threshold | CDR Traffic and Balance Threshold |

2.4. Organizational challenges

We have leveraged 3 key areas in the operation model for the real-time campaigns for evaluating, defining, developing and managing campaigns:

Marketing

- Define lines of business performance and customer development
- Define the value proposition to be exploited in real-time campaigns.
- Define and prioritize use cases to be implemented.

Business Intelligence

- Ensure the implementation of defined use cases and the operational continuity of the solution.
- Provide analytical intelligence and feedback.
- Define campaign (business and technical) requirements.

IT

- Ensure availability of information.
- Integrate new channels and capabilities
- Guarantee the construction and production of the design
- Manage incidents on platforms.

2.5. The “improve your data pack in prepaid” use case (1)

Use case drill down

A detailed use case will be presented

Conclusion

Main learned lessons (Resume)

Real time has relevance in businesses where there is a real-time transaction log.

Not all real-time transactions provide value on their own. They must be managed in a chain which includes the collection of insights from the analytical systems to the communication and provision of the services in real time.

Real-time management generates new data that must be analyzed in order to get the most out of the business, for that, new real time insights are generated.

Developing use cases E2E allows to accelerate the construction of use cases but can make difficult the future scaling, it is necessary to orchestrate from the beginning the construction of a repository of standard events and processes that may be applicable to a large number of use cases.

Operational IT support with high priority monitoring is essential to keep operating processes in real time, any failure will result in a complete drop in the process in real time.

As much as possible avoid putting up operational processes on the platform in Real time, for that are the operational systems.

*Next steps: better integration to digital
SAS Real Time Decision as a 360 orchester*

Explains what's next on RTD: integration with digital channels (app) and other digital marketing solutions

Contact Information

Your comments and questions are valued and encouraged. Contact the author at:

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