

easyMoney - Business Case

End-to-End Machine Learning

Pedro Costa del Amo
Felipe Calderero Patino

Welcome to the real-world practical use case of the Master in Data Science: easyMoney!

For 4 months we will get into Bob's skin to work as a Data Scientist in a company that sells financial products. The goal of this project is to complement programming practices with a scenario close to the reality of the DS profession, in which the requirements are poorly (or not at all) defined, and we will have to be creative to provide data science solutions in an area of analytical marketing and business development.

This case will also be an opportunity for you to work as a team, and thereby to learn another important part of the profession: working with other people's code. In the next slide you have a bit of context about the company, and in the following ones you will find a series of emails that will provide you with more context. We hope you enjoy it!



Context

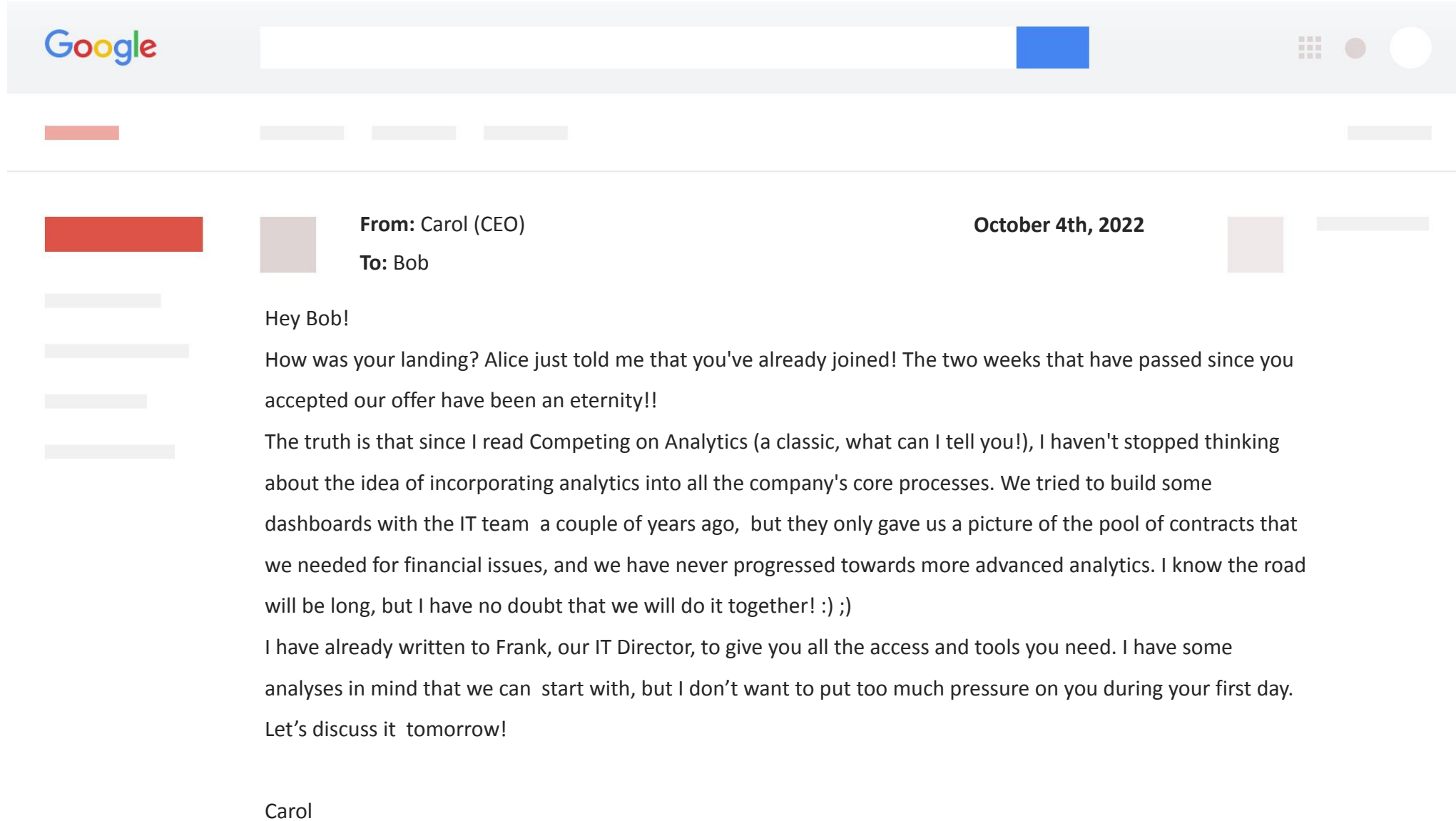


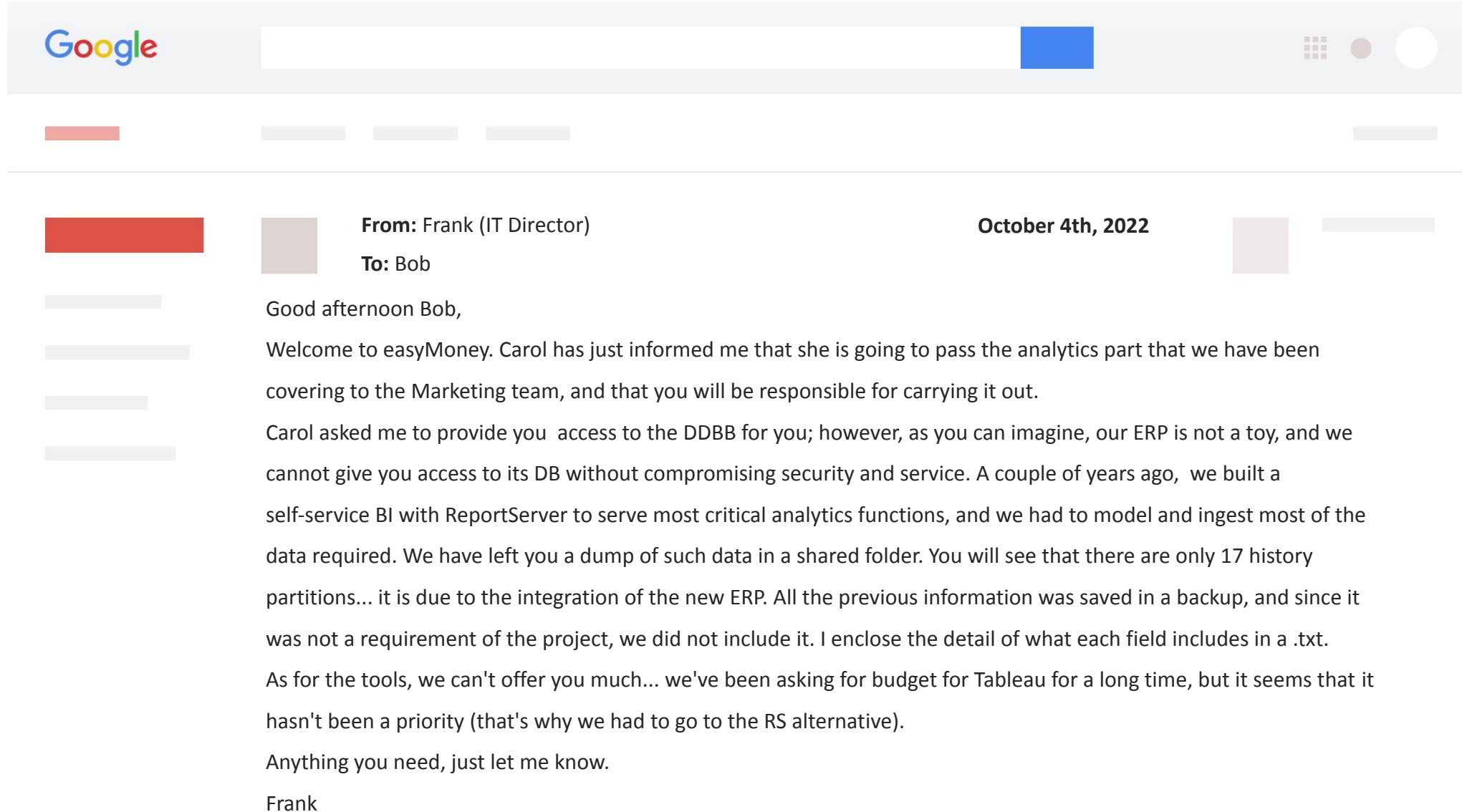
easyMoney was born almost 4 years ago from the imagination of Carol Denver, an investment banking professional, who after more than 10 years working for large firms, decided to launch her own business project: a multi-channel platform for marketing financial products (savings, investment, financing) with a friendly interface. It would allow customers to find solutions to their financial needs and to acquire them in a simple way. Their first product, the **easyMoney piggy bank account** (accumulate money in your piggy bank effortlessly and automatically by rounding up your purchases) was a great success, after which they have been expanding the product offering with investment solutions, cards, etc.

As it did not have a bank behind, easyMoney allied itself with easyBanking S.A. in its launch, an entity supervised by the Bank of Spain that acts as a product factory. However, as its only supplier, it exercises great power in easyMoney's commercial strategy, and that is generating tension in the relationship between the companies. On the other hand, thanks to Carol's contacts and tireless spirit, easyMoney undertook up to 2 rounds of financing that allowed investing in customer acquisition during the first year. The results was exceeding the target business figures of the launch plan and reaching a staff of almost 100 people and a revenue of several million euros.

After 4 years of activity, easyMoney is facing some challenges that put its continuity at risk: the addition of products to its catalogue due to pressure from its easyBanking partners has changed the initial vision of offering simple products to just respond to customer needs. Furthermore, the funding obtained in the rounds has almost run out, without yet obtaining the expected positive EBITDA that allows them to start walking alone. The main investor, Lion Global Management, is asking for obtaining profitability from the current client base before further investment. On the other hand, the high turnover in the IT team and the lack of investment in technology is beginning to generate problems in all areas of the company, which complain of not having adequate means of work. Last but not least, internal tensions in the company are holding back the agile spirit that characterized the first developments. In this context, and after the departure of one of the members of the Marketing team assigned to fundraising, easyMoney's management has decided to fill this vacancy with the incorporation of a Data Scientist, who will help in this new stage to increase the profitability of the current client portfolio.

Alice



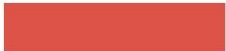
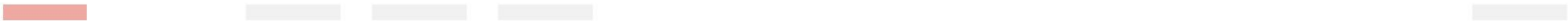


Data dictionary

Name	Table	Description
active_customer	commercial_activity	Client activity indicator in our application
age	sociodemographic	Customer age
country_id	sociodemographic	Country of residence of the client
credit_card	products	Credit cards
debit_card	products	Debit card
deceased	sociodemographic	Deceased index. N/S
em_account_p	products	easyMoney+ account
em_account_pp	products	easyMoney++ acount
em_acount	products	easyMoney account
emc_account	products	easyMoney Crypto account
entry_channel	commercial_activity	Customer acquisition channel
entry_date	commercial_activity	Date on which first easyMoney contract was signed
funds	products	Investment funds
gender	sociodemographic	Gender
loans	products	Loans
long_term_deposit	products	Long term deposits
mortgage	products	Mortgage
payroll	products	payroll
payroll_account	products	Account awarded with a bonus due to payroll
pension_plan	products	Pension plan
pk_cid	pk	Customer identifier
pk_partition	pk	Data ingestion date
region_code	sociodemographic	Customer's province of residence (for ES)
salary	sociodemographic	Household gross income
securities	products	Securities
segment	commercial_activity	Customer business segment
short_term_deposit	products	Short-term deposits

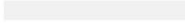
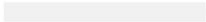
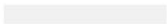
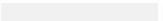
Task 1 - Analysis





From: Carol (CEO)
To: Bob
CC: Dan (Marketing Director)

October 5th, 2022



Hello Bob! I hope everything went well yesterday! Frank has already confirmed to me that everything you need to start working is ready.

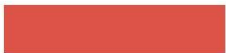
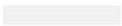
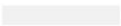
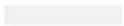
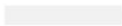
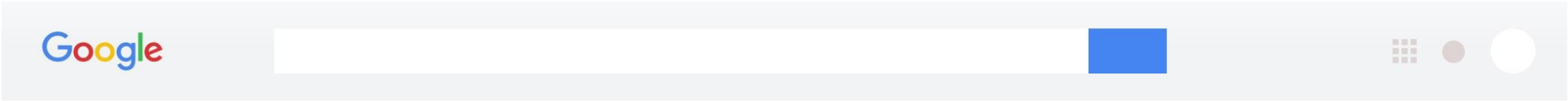
Ready to start! A bit of context: as Dan knows, we have decided to reorient our commercial strategy towards increasing the penetration of the current product portfolio in our market, with the objective of increasing profitability from our current customer base. We will reduce the intensive client acquisition activity that we have been carrying out since we started.

In this sense, and to finalize the definition of our strategy, it would be great to have a thorough analysis to help us make decisions. Currently we have a BI self-service, but this simple picture doesn't help us much. I don't even know how many products we've sold this month or if most sales are made by new customers or by the ones we already had! :S. You will have to work on a new BI self-service for the whole team as well. It would be great if you could prepare a presentation and you guys could present it to the Steering Committee meeting!! Please, let me know if this is feasible and an approximate date for it to be ready ;)

Carol

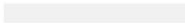
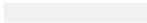
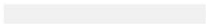
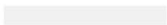
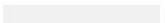
Task 2 - Segmentation





From: Carol (CEO)
To:: Bob
CC: Dan (Marketing Director)

October 5th, 2022



By the way, I forgot the most important thing!!!

It would be great to get to know better our customer base to guide our business goals. I have always had the idea that we should be able to segment the customer base into 7 or 8 groups of similar customers... it would be great to identify them, and to be able to know how the customers belonging to each groups look like... it would help us a lot when defining our future marketing plan!

Looking forward to it,

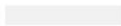
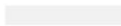
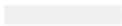
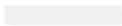
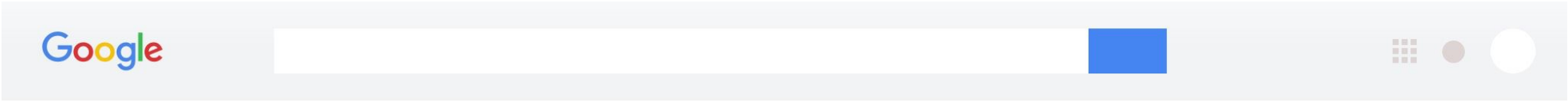
Carol

Task 3 - Recommendation



easyMoney

Make your dreams come true

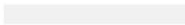
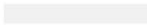
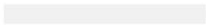
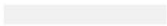


From: Erin (Direct Marketing Manager)

October 5th, 2022



To: Bob



Hello Bob!

Breakfast was great! I've really enjoyed all those things you've told us about Data Science! I think you will be of great help around here.

As I was telling you, we have budget for an additional campaign to be launched at the end of the month. The idea is to be able to send our customers the product that interests them the most (and also the one that helps us earn more, of course!). Keep in mind that our revenue is approximately of €10 for each account sold, €40 for savings and investment products (plans, funds, etc.) and €60 for financing products (loans and cards).

In terms of budget, we are going to send about 10,000 emails. It would be great to be able to know with your "ball of the future" what the response rate is going to be before sending it! (expected ROIs are of interest).

Maybe I'm already asking too much... hehe

We'll prepare a cool presentation of everything to show it to Carol!!

I've sent an email to Dan telling him that I have asked you for help, and to Frank to start setting everything up!

Erin

Task 4 - Monitoring



easyMoney

Make your dreams come true

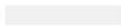
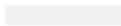
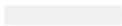
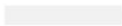
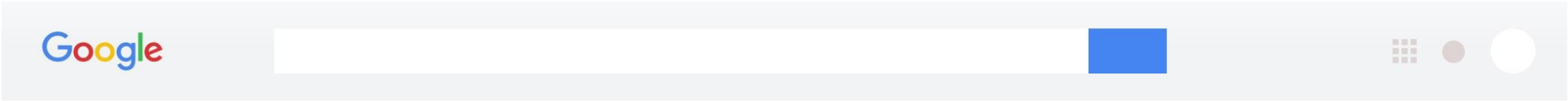


Task 5 - Coordination



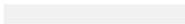
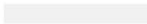
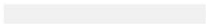
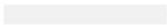
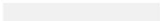
easyMoney

Make your dreams come true



From: Dan (Marketing Director)
To: Bob

October 7th, 2022



Hi Bob, Welcome!

Sorry it's taken me so long to write., I've been away visiting some very important clients.

Carol and Erin have already told me that they have given you some things to do... it seems that you have become very popular! Well, after all, it was Erin who decided to fill the open position with you.

A couple of things from my side. First, make sure that you please validate all reports and results with me. I am your supervisor and I am responsible for your work (and even more so if you are going to present to the steering committee). Second, I'd like you to please prepare a project plan with tasks and planned duration for these couple of months. I need to be able to see the complete picture and to follow it up. Whatever format suits you best.

All the best,

Dan

Some rules:

- The project will be carried out in groups of 3-4 people
- Each team will be guided by a tutor, but the team's autonomy will be another key aspect of the evaluation
- Communication channel between team members and tutor will be Slack
- It will be valued not only the technical level of the different tasks, but also the creativity, business orientation and the ability to communicate the results
- The ability to produce well-structured results and to follow clean coding principles will also be evaluated

Expected deliverables:

- **Technical document** with methodology and results (academic report)
- **Deliverables** requested **for each task** (dashboard, requirements for MLOPs and project plan)
- **Presentation** for the Steering Committee

Grading:

- Analysis 30%
- Dashboard 10%
- Segmentation 20%
- Recommendation 30%
- Project plan 10%



Important dates:

- Academic report + deliverables deadline: **06/04/2024**
- Steering Committee presentation: **12/04/2023**

Tutors:

- Sean Ariel
- Pedro Costa
- Miquel Larsson