

Q: Did you participate in discussions about the model's objectives?

A: No, the project's scope and our team's objectives were already pre-defined when I joined. However, they changed during the project.

Q: How did you come into contact with these objectives?

A: Initially, the objectives were abstract. We did not have all the project requirements elicited. We had several meetings to define what the product would look like, using tools like Lean Inception. Other team members, like the software engineers, also participated in these meetings. On the other hand, client representatives did not participate in these meetings, and it would have been interesting to have them together with us at that moment to make the companies feel comfortable with the product.

Q: After that, did the ML-enabled system objectives become clear?

A: From the model's point of view, what we would do could have been more specific. There was a misalignment between what was desired and what was possible, which led to many meetings. No one came to us with a model requirement. In fact, we were the ones proposing ideas. Initially, we did not anticipate the model being a key system part.

Each model definition was documented through presentations we did in meetings to showcase what our team was proposing. The architecture of the model was also described in a formal document.

Q: You mentioned the absence of client representatives in meetings. Did they prioritize any features for the model?

A: The requirements were abstract, like "the model needs to be fast" or "the system needs to be easy to use". We had difficulties because we did not include more client representatives when we defined the product's concepts. They could have helped us by making decisions. Instead, we made these decisions internally. We had to revisit some of these decisions later, while we were lucky not to in others.

Q: How were the data used to train the model obtained?

A: The data access method was not defined from the beginning, and no database was provided for the model. Instead, data provided by the client was downloaded. The retraining of the model is done manually.

Q: Were there any difficulties during data analysis?

A: Pre-processing the data was complex. We received raw data, so cleaning procedures were necessary, and we also put a lot of effort into annotating the data. This situation affected what algorithms we could use for the model. It took a lot of effort to analyze and process the data received so that we could work on the model.

We also had problems with data availability. It took us some months to get all the valid data needed for testing. Therefore, we had to initially use mocked data, which later became different from the real data, leading to rework.

Q: Did any other actors participate in data activities besides data scientists?

A: The software engineers made it possible to download the data, but our team did all the analysis. They were also present in the definition of the model consumption API and the format of each data. We presented our model studies to the project's stakeholders for them to evaluate if the results were adequate or not.

Q: Has an effort been made to document the data?

A: We have some documentation, but the data could be better explained.

Q: What difficulties appeared during the construction of the model?

A: The time taken to obtain valid data hindered the time to create a better performance evaluation framework. In addition, the client did not define any model metrics, like a minimum accuracy, as they probably could not determine such value. We also struggled with new requirements that emerged throughout the project, and also with model requirements related to legislation and transparency. These requirements generated doubts and impacted the model construction. For example, the model was supposed to be "auditable", and we did not know what that implied.

Q: How was the consumption mode of the model defined?

A: An API was created to be consumed by the rest of the system. There was a discussion with the whole technical team to define where the model would be hosted, in which the software engineers also participated.

Q: Was there any discussion about model updates and implementing incremental learning?

A: The model update is currently done manually, as incremental learning was not prioritized.

Q: How was the relationship with the software engineers during the integration of the model with the rest of the system?

A: In the beginning, it was difficult. We were a research team, not a development team. Still, we needed to develop versions and generate specifications for the model. Our team was responsible for understanding the entire business flow and legal procedures so that we could build the model. Someone else could have done this survey and delivered the requirements to us.

Our team was responsible for developing and maintaining the model consumption API. This responsibility could have been given to the software engineering team. Problems with the

model's input data format should not have been our responsibility either, as this data had to be in the expected form before the integration step with the model. However, we had to build workarounds to correct some input data formats, which made the system's integration with the model take time and generate rework.

Each unanticipated requirement that arose implied an adaptation in the system, which undermined the project's planning. There was also a misalignment in planning regarding each team's dependencies. For example, software engineers sometimes depended on a change in the model that was not in our backlog. The roles of each team ended up not being clear, which led to problems in the API. We lacked comprehensive planning that involved both teams more.