**Case description for Centrale-ESSEC DSBA Master - Corporate Research Project -2023/2024**

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We are looking for cases of strategic importance that are highly valued by you and the master students. To achieve actionable solutions, it has been proven over previous years that internal and granular data sources are required. The students get better knowledge of your company and understand in more detail what is at stake when using this type of data. A clear description of the data sets and an easy to use format (.csv; .txt; .xlsx) is necessary for our students which by the time they start working on their cases have typically only experience in the software language Python and R. To comply with regulation, anonymized/synthetic data is compulsory. When defining your case, make sure all data is available, shareable for the students, and prepare a data dictionary clearly describing all variables. Your case can be enriched by using in addition external data, or let students scrap data from the web. Streaming or live data, sensors, Images and text data can be handled by our students.

Apart from acquiring excellent coding skills, the students follow some fundamental statistics and machine learning courses between September and December, and should be equipped to handle technical data science problems. However, the aim is first and foremost to help you solving an issue that generates business value and that is in line with your company’s strategy. The students work from January to June on the case. It is recommended to plan, towards the end of the project, a real test of the proposed solution in order to provide a proof of value. The students are on the job market and being able to explain how they were able to transform data in actionable insights and decisions makes a huge difference during interviews.

The case and the data are considered as confidential. Therefore, our master students sign a non-disclosure agreement (NDA) provided by the data partner. The students either get cloud access to the relevant data, or students work on data stored on their laptop. The students are available in their group of five on average one day per week. In particular, Wednesdays are devoted to CRP work. To make sure the case solutions yield relevant insights for the company, short weekly meetings or calls are recommended. If required, the students can be asked to delete all the received data from the company when the projects is finished in June.

Please fill in all cases of this document. Note that given the international character of the Master program, all communication is done in English, also during the company meetings. Switching to French is uncomfortable for some students that don’t master French.

**IMPORTANT:** Students will vote for their preferred cases. Make sure your case description is attractive, challenging and complete.

**What to expect from the company:** A strategically important case that creates value for the company. The students have to understand in detail the “Why” of the problem, not only the “How”. The kick off meeting is an important event to understand fully the stakes of the case, to create trust and to foster a good working atmosphere. This meeting is ideally held offline at the company premises, and should introduce the students to the various stakeholders and the company project leader. The students should get a clear view on the business model during this meeting, and understand where the case fits. The analytics is carried out thanks to data (in arbitrary format) that is relevant and up to date. A data update might be required during the project to fine tune the analysis or to test a newly developed algorithm. A contact person (or team) is available regularly to give feedback or collaborate on the project. In the beginning of the project, meetings can be more frequent to launch the project. However, keep in mind that students follows academic several courses during January and June. A joint communication of the partnership and the case results at the end of the project is recommended, if possible. The company can contact Jeroen Rombouts anytime in case of questions, feedback, or solve some issues.

**What to expect from the students:** a professional and rigorous team of 5 students (the Team). The Team reports regularly to the company to keep their work focused, and they come up with a final deliverable or solution documented by a detailed report that allows direct implementation at the company. A spokesperson in the team is assigned to enhance the fluidity of communication. The purpose is to create value out of data, not just crunch data and apply advanced statistical and machine learning techniques. The students case work is graded and is integral part of their academic master program.

**IMPORTANT DATES:**

1. **November 27**: Send back this sheet with details on the case, to [rombouts@essec.edu](mailto:rombouts@essec.edu)
2. **December 15**: Datasets are ready, NDA is ready, to be send to [rombouts@essec.edu](mailto:rombouts@essec.edu)
3. **Early January**: kick off meetings with the students working on your case.
4. **End of April**: Intermediary deliverable, TBA
5. **Mid-June**: Final Presentations at the company and at ESSEC (all groups together), the students hand over a detailed written report of their findings, summary, code, and ensure a smooth handover of the solution.
6. Title of the case

Analysis and optimization of the pricing of electric charging networks

1. Short description of the case (you can put extensive details in the appendix below). What are the challenges?

* [MANDATORY] Quarter 1 2024 : Descriptive analysis of the pricing practices of the different European Charge Point Operators networks
  + Weight analysis of the different CPO price factors in the invoices : duration, energy quantity, power, locations… A special focus on market segment labelling is in progress : students could help on this topic to re-use this parameter in their analysis.
  + Consumer average cart :
    - Stats based on past transactions
    - Add Be:Mo valuation to compare with CPO price. Batch computation with HTTP Be:Mo pricer based on major CPO pricing formula and average consuming trends.
  + Conclusion in terms of general overview, details per CPO and way of handling prices for v arious departments which work on it. Python code to analyze stats on transactions.
* This following section is considered as optional and will be done as soon as first section is completed.
* [OPTIONAL] Quarter 2 2024 : Study of the application of yield management practices for optimization purposes
  + Find the best price by default for a given CPO with the conclusion of the first section

1. Contact of the people in charge of the case (name, email and phone)
2. Contact of the people in charge of the data (name, email and phone)

[Pierre.Chavanne@totalenergies.com](mailto:Pierre.Chavanne@totalenergies.com) & [estelle.halbout@totalenergies.com](mailto:estelle.halbout@totalenergies.com)

1. Name and contact details for sending the Non-Disclosure Agreement after signature by students.

[Estelle.halbout@totalenergies.com](mailto:Estelle.halbout@totalenergies.com)

1. Dataset description: list of variables and their definition, total volume of the dataset (e.g. 1.2 Gb)

Transactions dataset (~2Go for 2023) : user id, access mode (Rfid card, Remote app), location, CPO, customer, CPO price, Be:Mo valuation (as if at the moment, not as accurate as now), session duration, start/end time, energy quantity... The past transactions done by a given customer should be interesting to study.

Points of charge dataset (~500Mo at end 2023) : id, power, location, CPO, access mode…

Market segmentation : work-in-progress. Any contribution will be discussed furthermore.

1. Which data science techniques will be used? Other software than Python or R?

Python

1. Other useful information (How frequent can you meet the group of students?
2. Can the group work on site? Etc.)

Available every two weeks to discuss on current work and potential issues.

1. Date, time and place of the Kick-off meeting (give a phone number just in case)

Cœur Défense, Wojo 3rd floor, Be:Mo 110 esplanade Général de Gaulle 92400 Courbevoie

1. How will you measure the success of the case solution?

Accuracy of general overview, details of explored parameters.

Quality of delivered Python code.

**APPENDIX (You can add more details on the case, contextual articles to read, examples or extracts of data)**