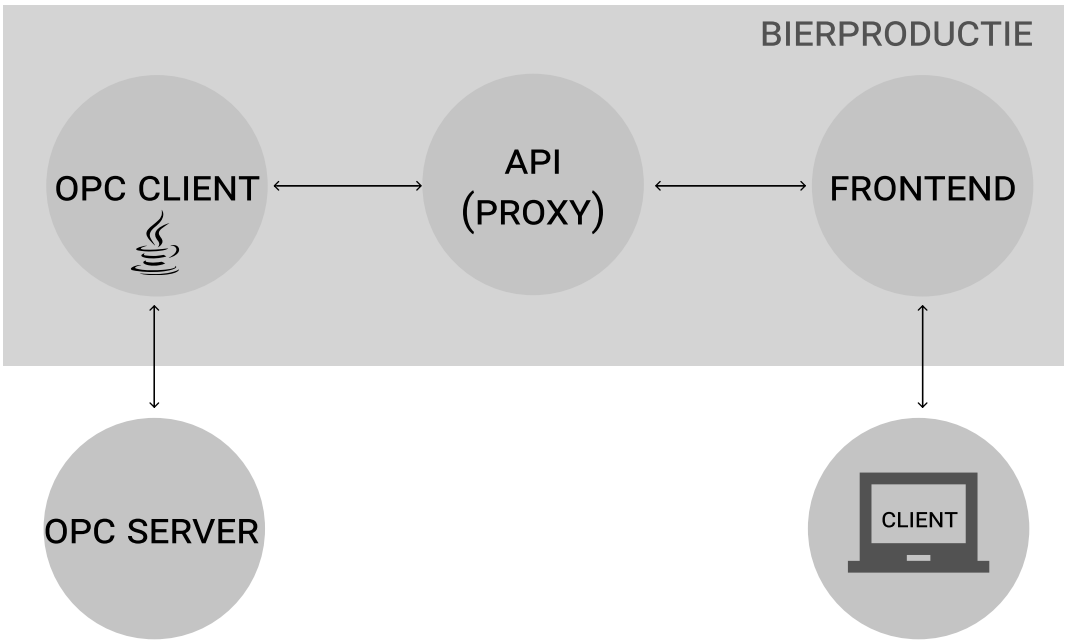
Bierproductie

A management system for brewing machines



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By signing this document, each group member confirms that everyone have participated equally to this project, and everyone is thus collectively responsible for the content of the report.

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6.2.1 Sequence Diagrams

A sequence diagram shows the system events for a given scenario of a use case, and how the actor interacts with the system to solve the use case. There are two kinds of sequence diagrams, system and operation. The system sequence diagram displays the system as a 'black box', where the internal system events are not shown, but only the external. This means that the diagram displays how actors generate system events and what the system output is. Furthermore, the diagram functions as a timeline for the system events.

maybe add a system sequence diagram and explain why we used it
The operation sequence diagram displays the system as a 'white box', where both the internal and external system events are described, as seen in figure 1.

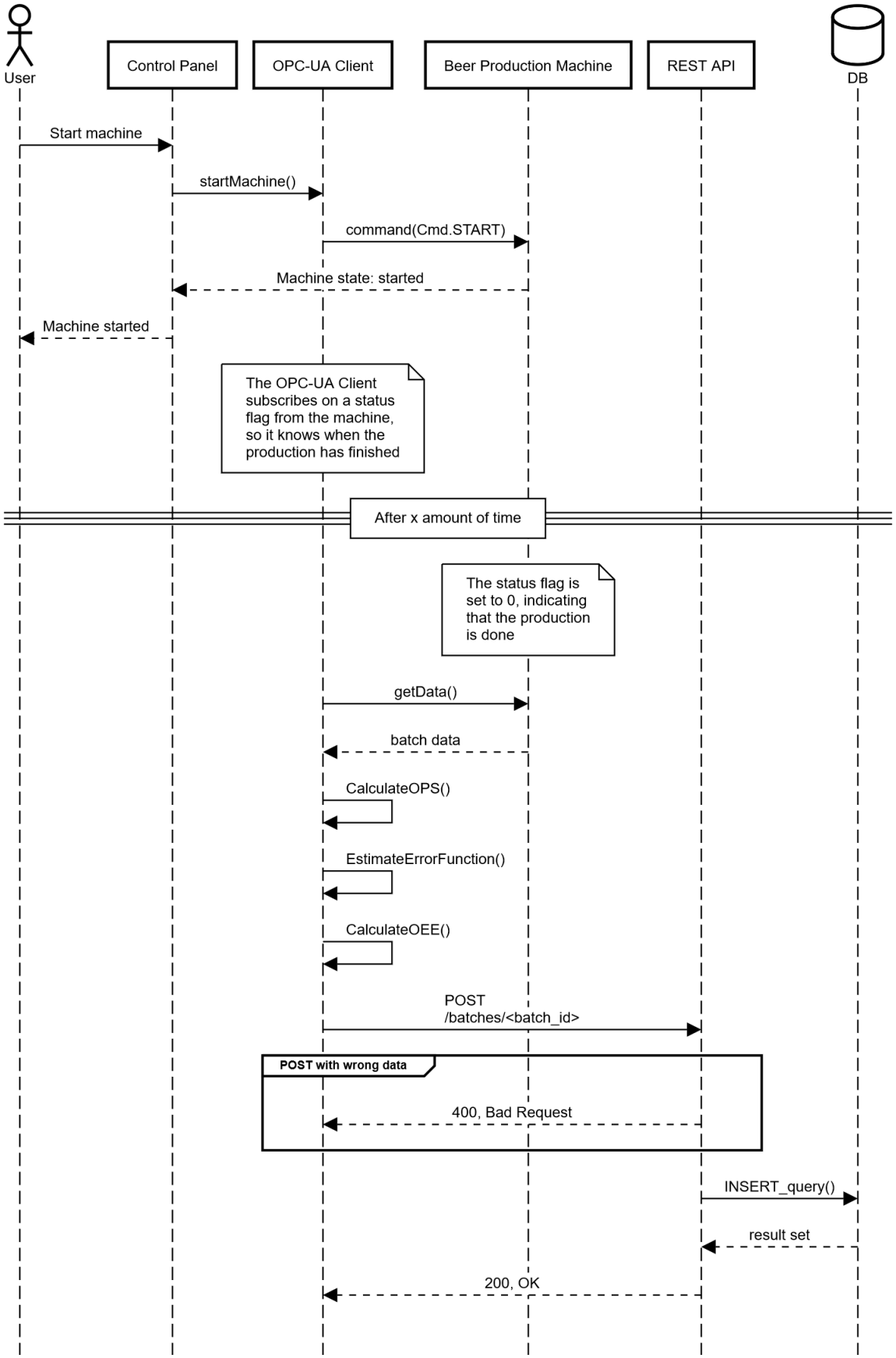

Figure 1: Sequence diagram: start

This sequence diagram is used to identify system functions, as the events shown in the diagram

are the functions needed to complete the use case. In this specific use case, the actor, the user, wants to start the beer production machine. The user interacts with the control panel by pressing the start button, which then sends a command to the OPC-UA client. The OPC-UA client interprets the command as a start machine command, which triggers an event in the OPC-UA client to send a command to the beer production machine. The beer production machine interprets the command as a start command, which then turns on the machine. As a response to the user, to beer production machine sets a flag which the control panel reacts to, and sends a message to the user.

When the beer production has finished, the OPC-UA client collects all relevant data from the beer production machine. This data is used to calculate the optimal production speed, estimate the error function, and calculate the OEE. These calculation are used to optimise the beer production. The calculated data and the data collected from the machine is then stored in a database. This happens through a REST API which acts as a translator between the different subsystems within the MES.

6.2.2 Operation Contracts

6.2.3 Updated UML Class Diagram

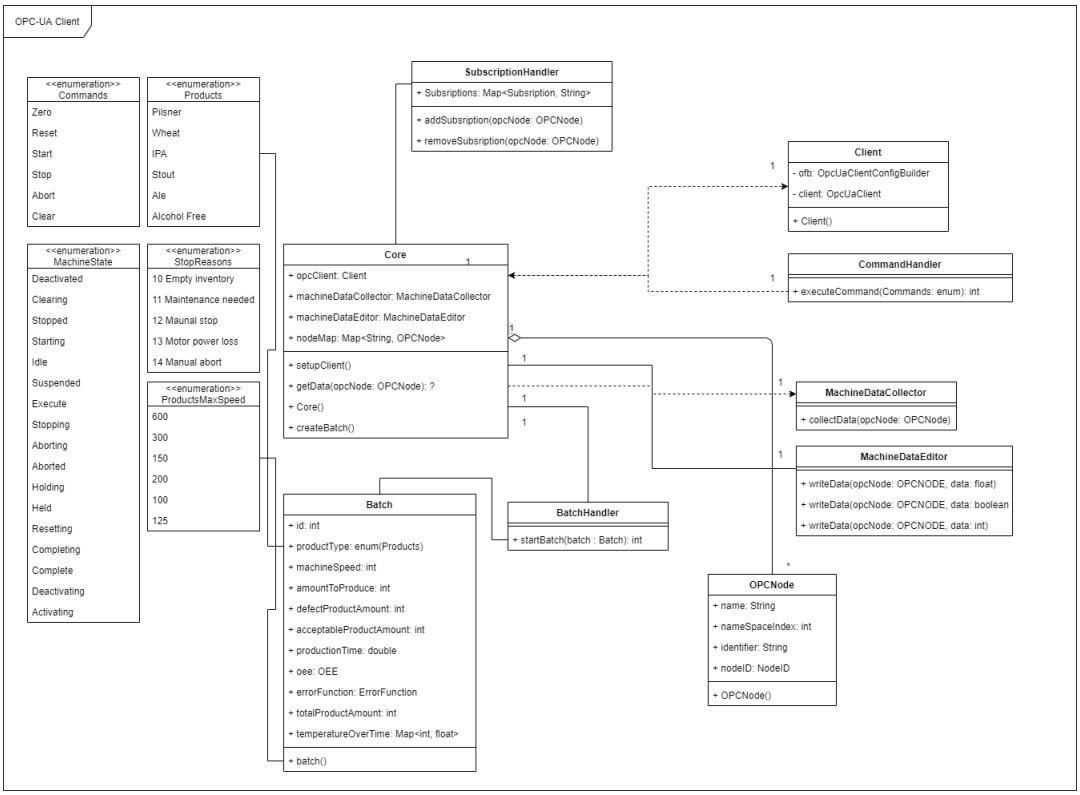

Figure 2: Updated UML Class Diagram

The updated UML class diagram illustrates the current system idea based on the analysis of the system. Although this diagram only shows the OPC-UA client, it still gives a good idea of how this part of the system is going to be, once implemented.

By using the diagram in the implementation phase, the group has a good starting point to expand on. The classes in the UML class diagram have a chance of not being implemented if

the group finds them unuseful or changed to adhere to the program.

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8 Design

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