

# Control logic for easing simulation projects

Graduate



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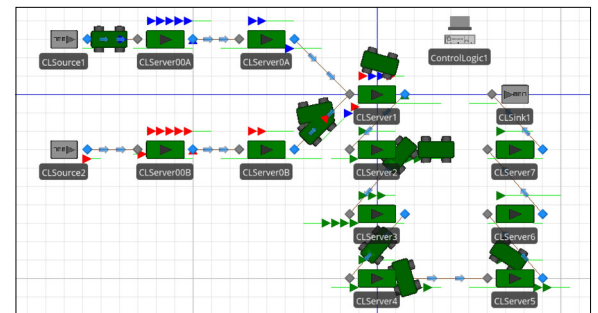
**Definition of Task:** The task of this bachelor thesis is to create a control logic with which production and logistics models can be easily configured and checked for their capacity and stability in the push, make-to-order, and Kanban settings within the simulation software Simio. To achieve this, model building blocks for basic and important structures in production and logistics shall be constructed and combined to form said control logic. It will be used to ease the implementation of simulation projects at the department of business engineering at the “OST - Eastern Switzerland University of Applied Sciences”.

**Approach:** When creating the control logic, the options provided by Simio were used. The most important components of the control logic are the processes. With them, the existing objects in Simio were adapted in such a way that they show the desired behavior. Several additional processes have been integrated into the control logic, which trigger each other or are triggered by add-on process triggers. Several add-on process triggers have also been added to allow greater complexity of the processes. The access point for the information about the user model is the data table, which is filled out by the respective users. From it, the processes of the control logic receive the information about the sequence of the objects in the model and their required input entities, as well as the output entities emitted.

**Result:** The result of the bachelor thesis is a control logic with which it is easy to switch between push, make-to-order, and assemble-to-order respectively Kanban. This project proves that it is possible to create an adaptable control logic for Simio. However, the control logic still needs work before it can be

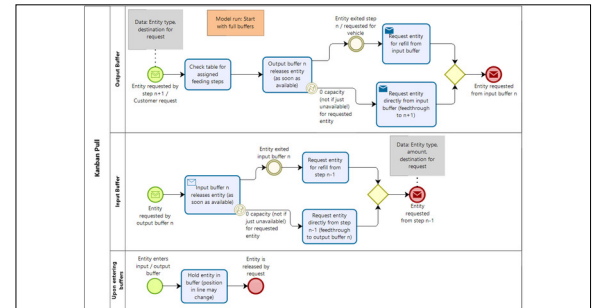
used. In the last version of the control logic there is the problem that too many tokens are generated in the processes and can bring the model to a standstill. In addition, 145 of 150 available steps were used in the processes. As soon as these problems have been resolved, the control logic is fully operational.

**Use of the control logic in the Kanban setting with vehicle movement**  
Own presentation

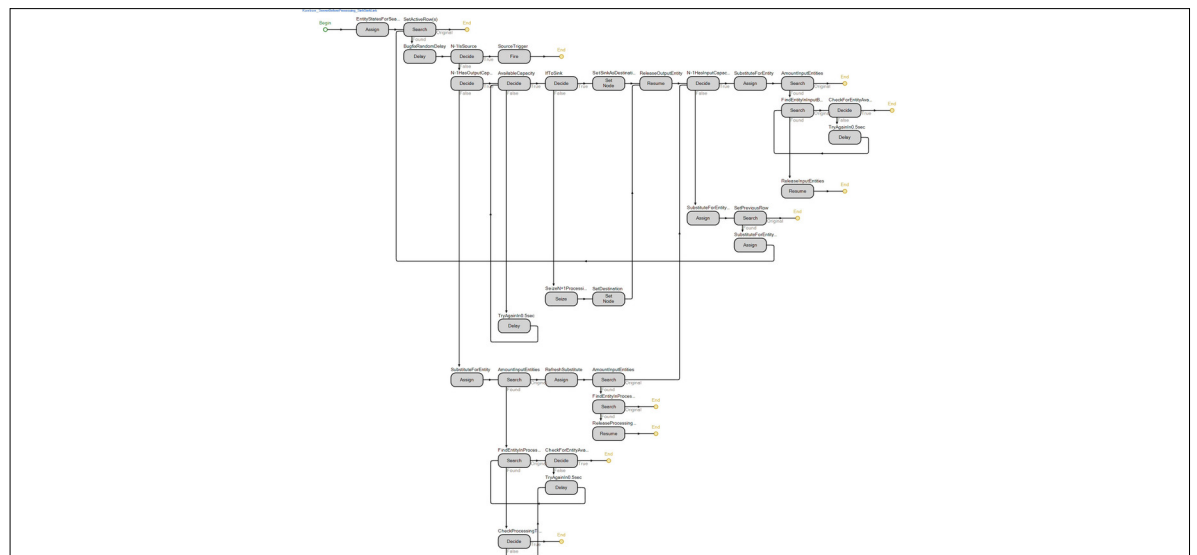


**BPMN concept of the Kanban process for forwarding Kanban requests**

Own presentation



**Kanban process that forwards the requests of an object to the upstream object after its capacity has been checked**  
Own presentation



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