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Development of a C++ Code Generator for Traffic Flow Model Visualization.

ABSTRACT - Masterthesis

To optimize traffic flow at an airport, Process Flow Model (PFM) system can be used. The input parameters of PFM system are varied for different simulation runs. Then there will be a result of an evaluation on the basis of characteristic values. The Air Traffic Management Model Vision tool (ATM-MV tool) is developed for above optimizations. The PFM system consists of several instances of connected blocks, which covers certain features in a simulation model (example: Delay blocks, Multiplier blocks, Splitter blocks). These blocks are already implemented in C++. The blocks are connected to each other with data inputs and data outputs. Then these blocks will be used to take the connections with each other and also to set the parameters. To create a simulation model, these blocks has to be concatenated in a defined order. The outputs of a block are connected to the inputs of other blocks or with external data sources (database). Furthermore, all data of the outputs can also be stored.

The establishment of such a simulation model was previously done manually and directly on the source code. For a better overview and maintainability a Graphical User Interface (GUI) for modeling was developed in previous work. As the last step C++ source code has to be generated from a GUI. Then use this generated source code in the simulation engine, but still need additional information that is not available through the GUI. To overcome the above problem a dialogue box has to be implemented to assist the model developer. Therefore, the finished source code of PFM system should be finally completed for running simulator.