

Automatic Timetabling and Planning of Rolling Stocks in Microscopic Railway Network

Timetable generation and rolling stock planning are significant processes of railway operation. These processes define the efficiency and quality of operation. Recently automation of railway operation processes helped in saving time, resources and higher service quality to the passenger and freight transportation.



Foto: Ahmad Zaki Ghafari

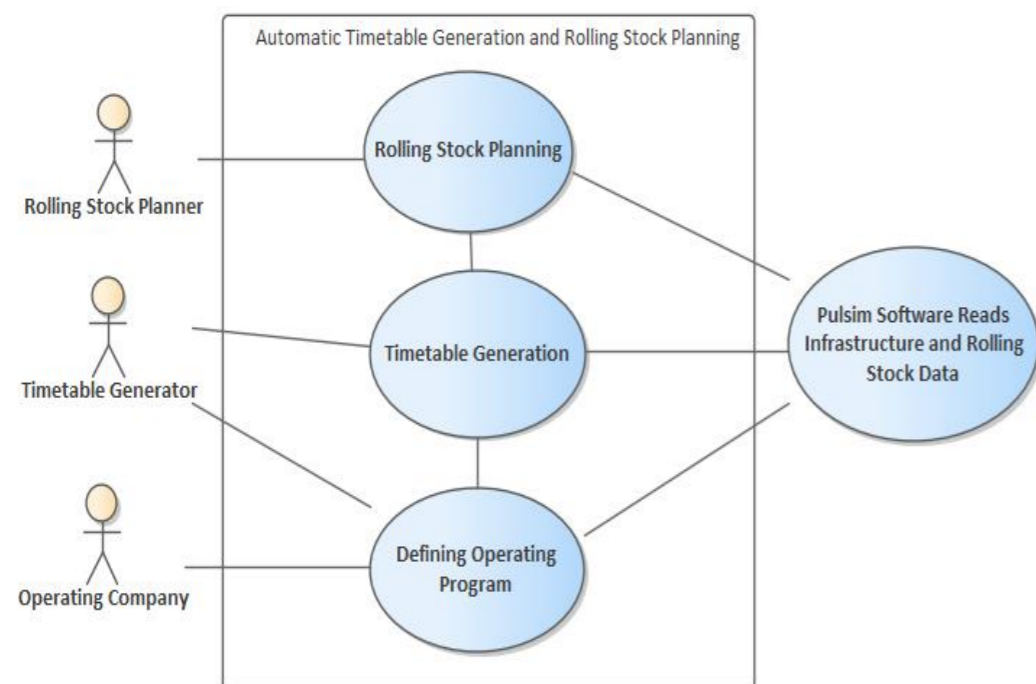


Figure: Use Case Model (Automatic Timetabling and Rolling Stock Planning)

This thesis is considering an integrated approach combining timetable generation and rolling stock planning together and to produce a comprehensive automatic solution method for effective operation of the railway system.

The process comprises the development of graphical user interface for creating operating program. Next, set of automatic timetable generation algorithms are developed to satisfy the railway operating program considering the infrastructure and rolling stock constraints. Further, the rolling stock planning algorithms are applied to define the number of rolling stocks required to operate the railway system effectively.

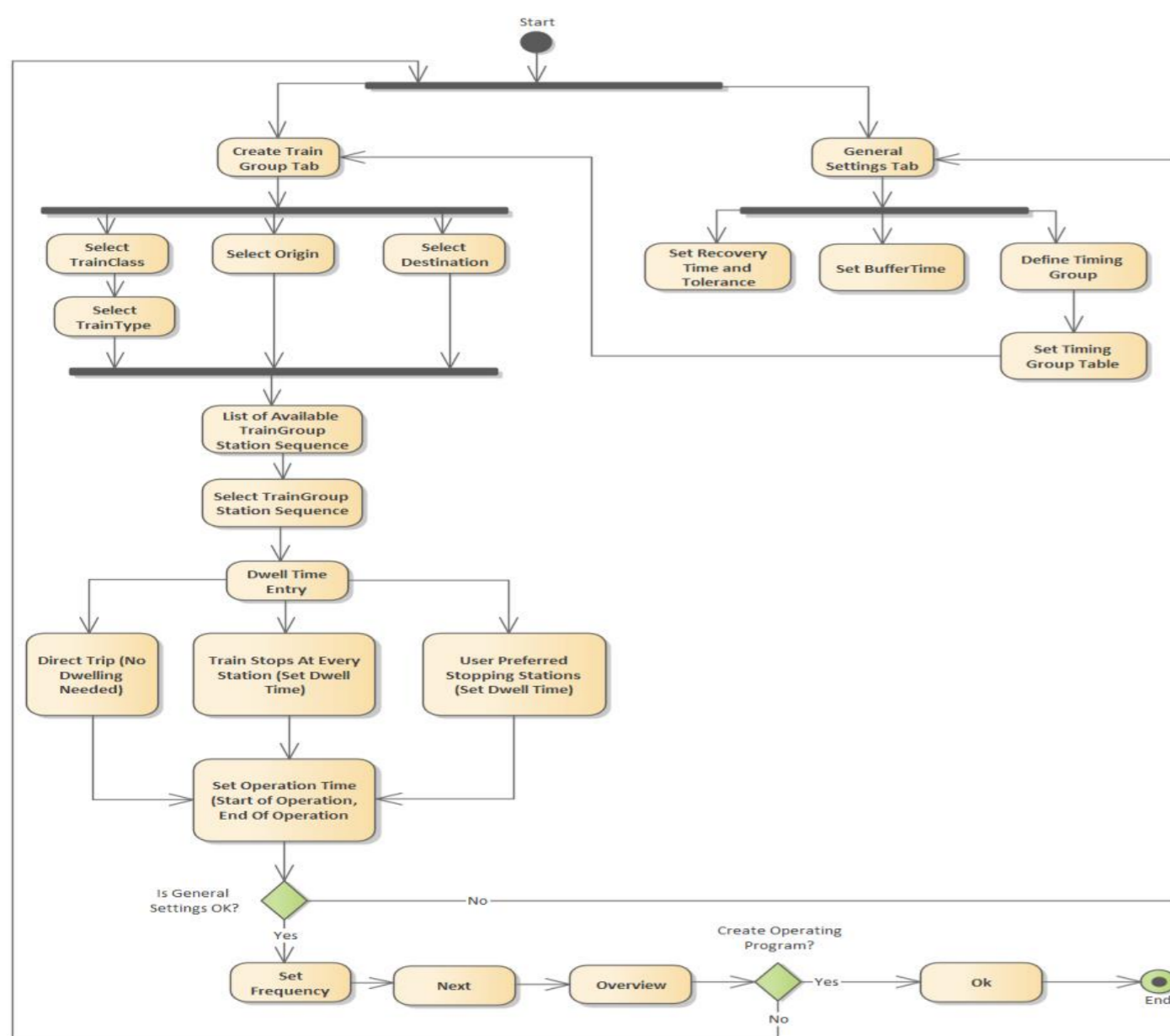


Figure: Creating Operating Program Activity Diagram

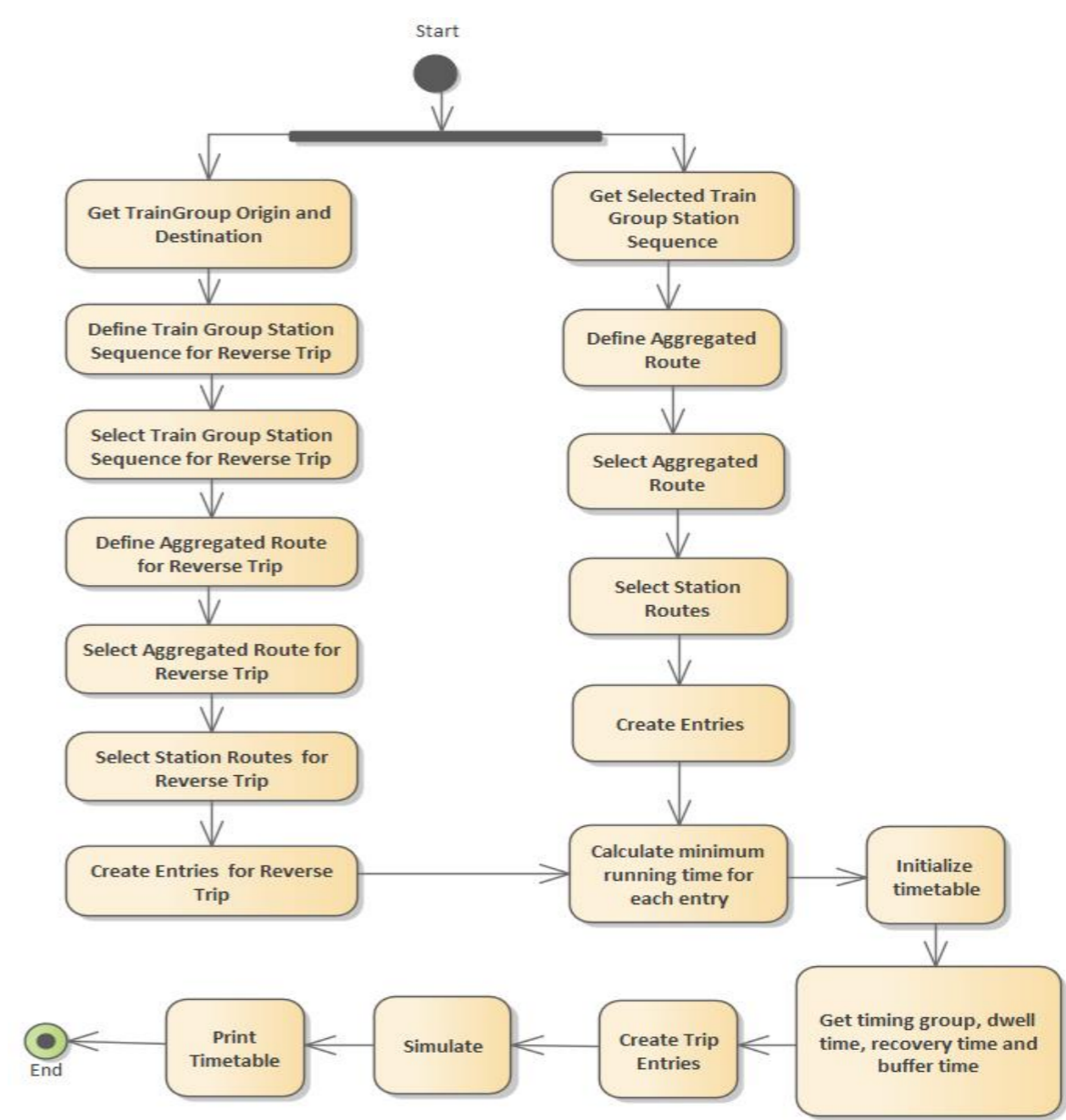


Figure: Timetable Generation Activity Diagram

To check the usefulness of the developed method a case study area in Germany is selected and four test cases are applied. The results confirm a feasible timetable with required rolling stock plan for effective operation of railway operating program.

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