1st Home Assignment – Requirement Analysis

Schedule Support for Transportation System

Customer Specification

Within the frames of the *Smart Hungarian Railways* project, we want to extend the existing *Intelligent Cargo Transportation Network* with support for railway service lines and a schedule planner. In this context, railway lines are routes that involve any number of stops and operate a service with a regular schedule, not to be confused with actual railway tracks. For the actual trains following a service line, the schedule of the line defines the timing of first departure, as well as arriving at and leaving from the stops of the line. At a station, a train (provided that it actually stops there according to its service line) can load/unload cargo and/or passengers can get on or off the train. The system needs to comply with all the laws and standards related to different types of cargo (especially deep-frozen goods, hazardous material) and passengers.

The purpose of this project is to extend the previous railway system with support for centralized and automatized scheduling. The system must be capable of scheduling trains dynamically, adapting to the actual number of passengers and type of cargo to be transported. Smart trains will be able to react to traffic changes and disruptions by recomputing their routes to finish their transportation faster.
A common user interface should be provided through which the operators can supervise the system. In addition, operators should be able to intervene in the scheduling process and edit the regular schedule of lines, or (in case of heavy demand) manually launch new off-schedule trains if necessary.

Main objectives of the project:

Scheduling:
readjust the frequency of trains on a line based on the number of passengers, to meet service guarantees and economic goals.

Smart trains:
recompute routes when obstacles (such as congestion) appear on a segment of the route.

User interface:
modify the regular schedules of lines, launch new off-schedule trains from a common interface.

Increase efficiency:
increase the amount of successful and timely passenger and cargo transport compared to the previous year.

Tasks

The supplied project file contains the models that were previously used to design the *Intelligent Cargo Transportation Network*. Extend these models by completing the following tasks:

a. Study the model of the old *Intelligent Cargo Transportation Network*. Assemble a list questions and issues that you would give to the previous developers, and also another one for the current clients. Next, *pretend that you are the client and answer the questions in a reasonable way, then proceed according to that (also log the answers).*
b. Extend the list of stakeholders.
c. Extend the system context.
d. Add new requirements based on the specification and add further detail to them.
e. Define new use cases based on the new requirements.