System optimisation of the projected high-speed line „High Speed 2“ in Great Britain

Data sheet – Master thesis FS 2011, Olivier Schorer

Background

In Great Britain (GB), some lines are covered by trains running up to 200 km/h. The line linking London with the European high-speed network by the Chunnel, the only one to run trains faster than 250 km/h, is a high-speed one, according to the international union of railways. Since 2009, « High Speed 2 Limited », a company established by the government, has been developing a high-speed railway line, HS2, between London, the Midlands and the north of England, relieving the current West Coast Main Line of some of its traffic. In the official HS2 project, the stations are not well connected to the current network.

Aim

The main aim of this thesis is to study different integrations of the new projected High Speed 2 Line into the current rail network. The information about the planned service and the infrastructure requirements for each variant have to be given. The variants have to be evaluated in order to find the best one.

The following secondary aims help to achieve the main aim:

- Analysis of the long-distance passengers traffic in GB
- Estimation of the potential demand on the HS2 line
- Analysis of the High-Speed lines projects in GB
- Elaboration of a balanced weighting (SWOT) about the construction of a new High Speed line in GB

Approach

This study is composed of five main parts. The first one analyses the current situation in GB (demography, railway network, long-distance services, HS2 project of HS2 Limited and different high-speed rail systems in the world). The second part forecasts the demand on the HS2 line and works out the SWOT. The third one designs the variants that are evaluated in the fourth part. Finally the best variant is improved.

Method

The main element of this study is the elaboration of four variants for the high speed line between Birmingham and London (study area) with stations that are well connected with the current network. For each variant, an integral regular timetable for the HS2 line and also for the line into the study area is developed with good connections in the whole area. Then the variants are evaluated according to economic, social and environmental criteria in order to find out the best variant.