



Toulouse Railway Station Simulation

Project

Pedestrian flows in a main railway station (August 2010)

Organisations

Egis Mobilité (France)
Egis Rail (France)

Sector

Public transport
Railway station
comfort

Goals

Analysis and visualisation of passengers in a main railway station

Topics

- Modelling of pedestrian flows (underground passageways, platforms, transfer between the platform and the train boardings / alightings).
- Potential bottlenecks

Contact

Egis Rail
Le Carat
168-170 avenue
Thiers
69455 Lyon Cedex 06
France

Ian Wilson
Transportation
Engineer

Contractor: Réseau
Ferré de France (RFF)

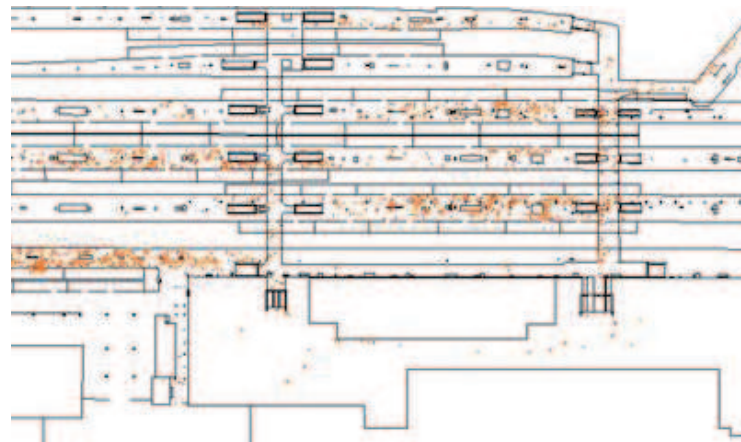
Egis Rail has simulated the pedestrian flows in the main railway station of Toulouse-Matabiau (France) with SimWalk. The station features 6 platforms, 13 tracks and 4 access points connected by underground passageways. Passenger use is expected to rise. The pertinence of the station layout, in its present form, needs to be checked against these future volumes.

The simulation was particularly challenging because pedestrians had to be modelled firstly by passenger group, namely 1) TGV (long distance services) 2) TER (local services); secondly by passenger type, namely 1) without baggage 2) with baggage 3) with reduced mobility 4)

some passengers had friends to accompany them. Each passenger group and type was given a range of speeds and widths, adapted to their physical and mobility characteristics.



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occupation graph): 1) Train compositions (cars, number and widths of doors) 2) Arrival time / departure time (dwell time) 3) Track allocation 4) Stopping position along the platform. Visual indicators were films (pedestrian dynamics and interactions), platform area space usage (graphic showing trajectories) and density plots according to the levels of service A-F of John Fruin. Statistical analysis included walking times and distances (total and averages) according to pedestrian group and type, origin / destination, passengers who missed their trains as well as counters to see if some routes were more heavily used than others.

The results identified some potential bottlenecks, both time and location based. Potential solutions and improvements have been proposed. These involve modifications to the train operations and to the station infrastructure. A second simulation is planned later this year, where the proposed modifications to the station will be tested. The new simulation will evaluate how the results indicators will have changed for the better.

A total of 11240 pedestrians were simulated within an 80 minute period. Their movements within the station (entering, leaving, boarding, alighting, transfer) were linked to the arrival / departure of the trains (as defined in the track