SIMWALK

Testing Future Capacities.
Toulouse Railway Station, France.

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 modeled 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.

A total of 11'240 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 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 movies (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.

Summary

Egis Rail France conducted a station layout evaluation of the main railway station Toulouse-Matabiau. A total of 11'200 passengers were modeled, and the results showed potential bottlenecks with increasing demand. Modifications to the train operations and to the station infrastructure were proposed to improve the situation.

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 the station infrastructure. A second simulation is planned for later, where the proposed modifications to the station will be tested. The new simulation then will evaluate how the results indicators will have changed for the better.

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