

Scientific Contributions to Railway Timetabling: 1/2

First time:

- automatically generated a complete timetable for BE and DK
- for complete search space (all train orders are allowed and without artificial upper bounds on supplements)
- for complete objective function covering all ride and dwell supplements as well as all potential transfer supplements
- proved that $s < T$ upper bounds do not generate infeasibilities
- setup strategy (probably) avoiding start of resolution of infeasible model
- objective function covers all expected passenger time (except for inter-departure waiting time)
- reduction of expected passenger time in practice was shown with automated method (BE: -3.8%, DK: -2.9%)

Scientific Contributions to Railway Timetabling: 2/2

First time:

- two national timetables were (automatically) compared in terms of expected passenger time
- minimisation of expected passenger time was shown to be beneficial for:
 - train robustness and train punctuality (via a.o. OnTime Macro & LUKS micro bottleneck simulations for BE)
- setup of constraints & objective function terms associated with expected inter-departure waiting time which are addable to a MILP model

Scientific Contributions to Railway Platforming: 1/1

First time in Belgium:

- automatic platforming of all stations in Belgium, maximising trains platformed
- method for platforming without conflicts (no double use of same platform or dependent routes)
- tool for 'in stations feasibility'-check of a (new) timetable

Publications as First Author

3 Journal papers:

- Transportation Research Part B: Platforming Model (published 12/2015)
- Transportation Research Part B: Timetabling Model (published 02/2016)
- Expert Systems with Applications: Platforming All Stations in Belgium (11/2015 submitted, 02/2016 adapting after first review)

Published 10 Conference papers and held presentations