Determining and Evaluating Alternative Line Plans in (Near) Out-of-Control Situations

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Introduction

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3. For the *average* disruption, disruption management models are available
4. On *average* solved within 2 hours

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⇒ Goal: find effective disruption management to prevent/reduce impact out-of-control situations

Proposed Strategy

Idea: prevent domino-effect by decoupling the disrupted region from the rest of the network

1. Identify and decouple the disrupted region
2. Adjust the timetable, rolling stock and crew for the non-disrupted region according to existing disruption management techniques.
3. Determine a simplified line plan to operate in the disrupted region.
4. Schedule rolling stock and crew within the disrupted region according to *self-organising, local* principles.
5. Manage the passenger flows.

This Presentation

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Method: simulation

Test instance
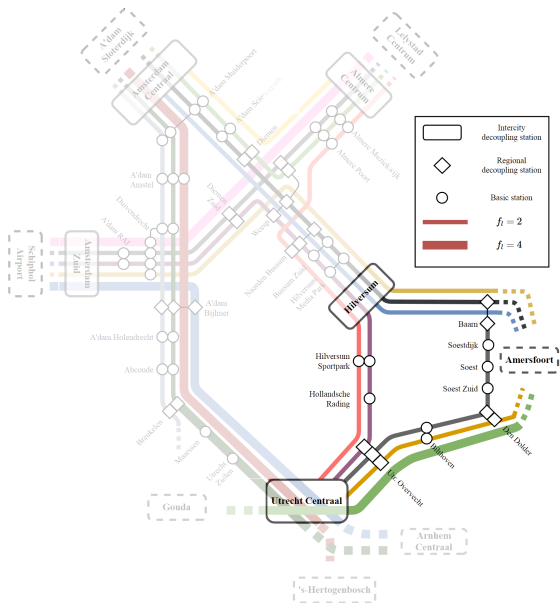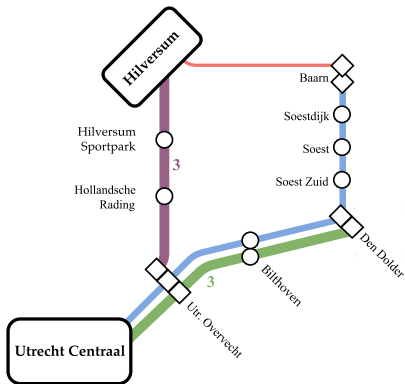
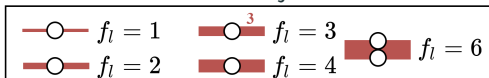# Line Planning Results
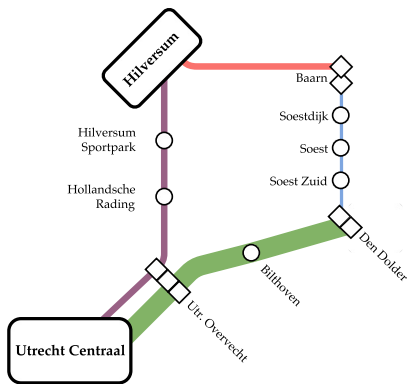

Different objectives

Figure 2: "Maintain network"

Figure 3: "Maintain travel options"

Dispatching Strategies

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When does a train depart?

- *ASAP*: as soon as possible
- *SYNC*: in a regular pattern
- *SYNC + COOR*: add coordination between intercity trains and sprinter trains

Where does a train go upon arriving at the terminal station

- *STAT*: back and forth, fixed to a line
- *DYN*: reassign trains to lines at the terminals

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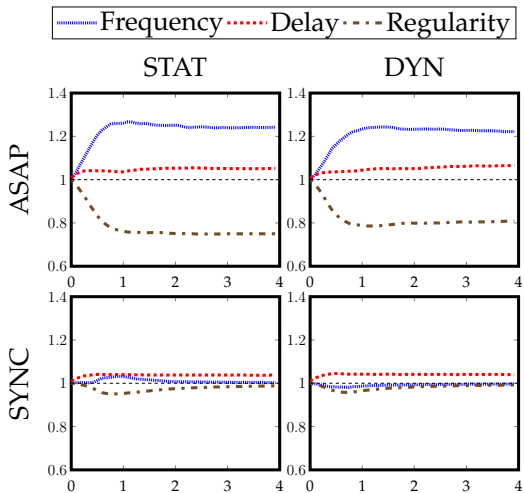- *DYN*: reassign trains to lines at the terminals

Evaluation

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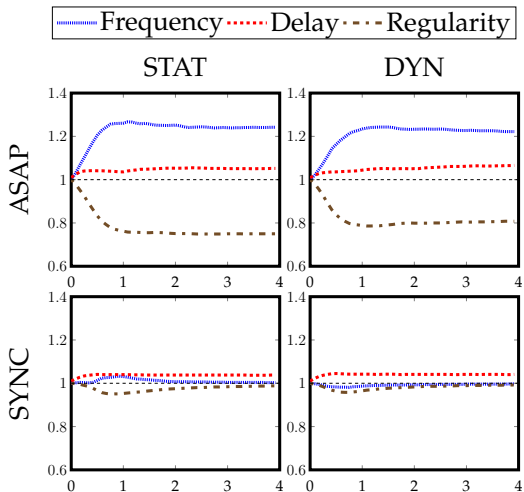The dispatching strategies are evaluated by means of simulation

Measures:

- Frequency
- Train Delay
- Regularity
- Travel Time

Simulation Results

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Conclusion

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- We can generate passenger-oriented and practicable line plans for disrupted regions in real-time
- It is possible to operate railway traffic in a disrupted region using self-organising, local principles
- Further research: also consider the train drivers and conductors