

SAFE-10-T Final Conference

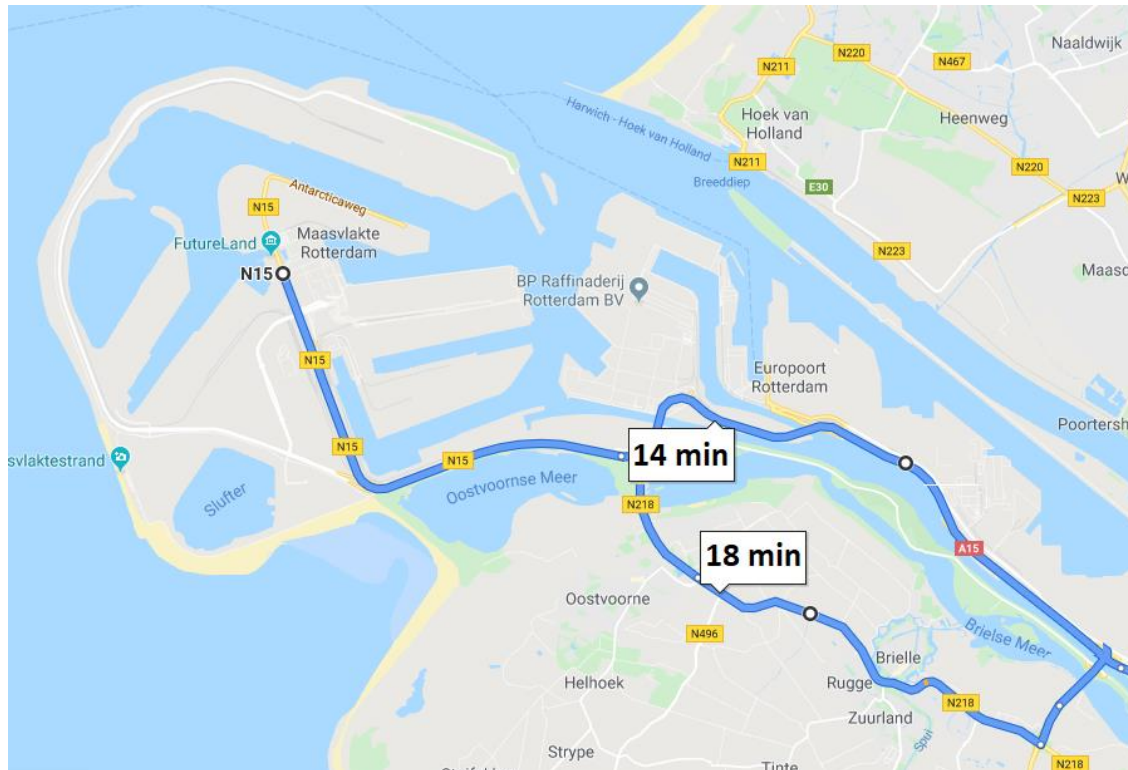
17th April 2020

Multi-Modal Traffic Modelling

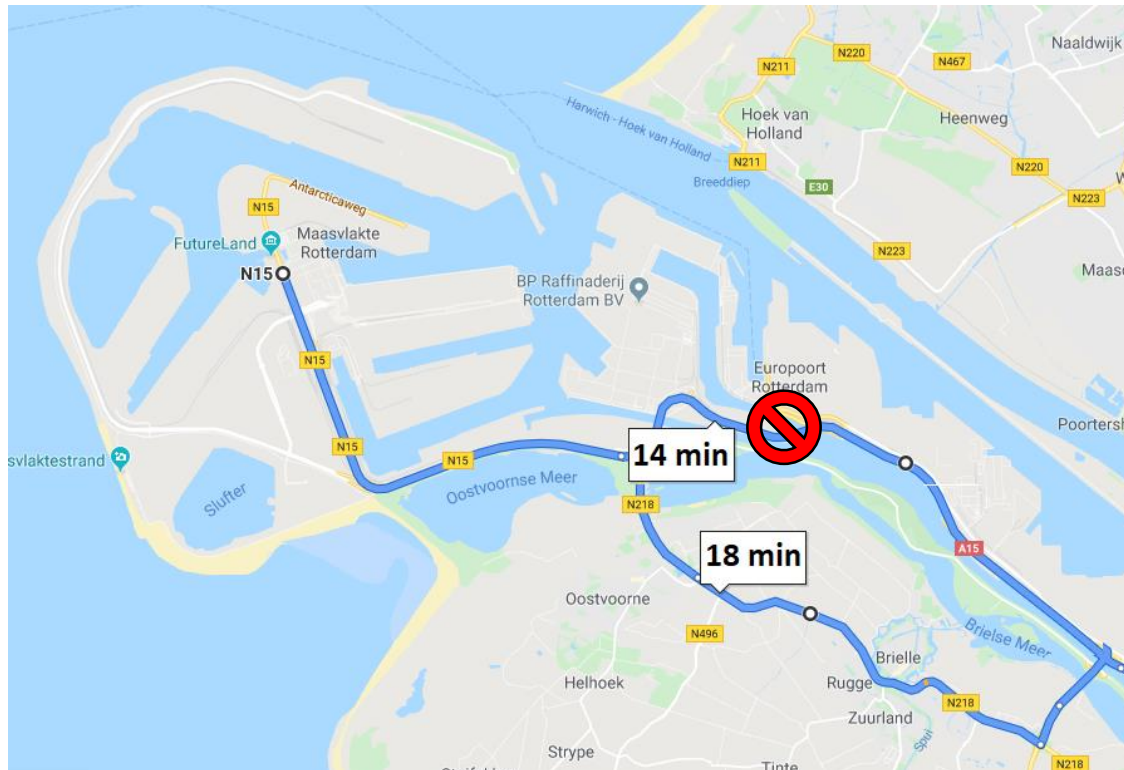
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What is the resulting delay of a closure?



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+ 4 minutes
additional travel time

38.800 vehicles
passing the section
each day

$38800 * 4 / 60 =$
2587 hours delay

What is the resulting delay of a closure?

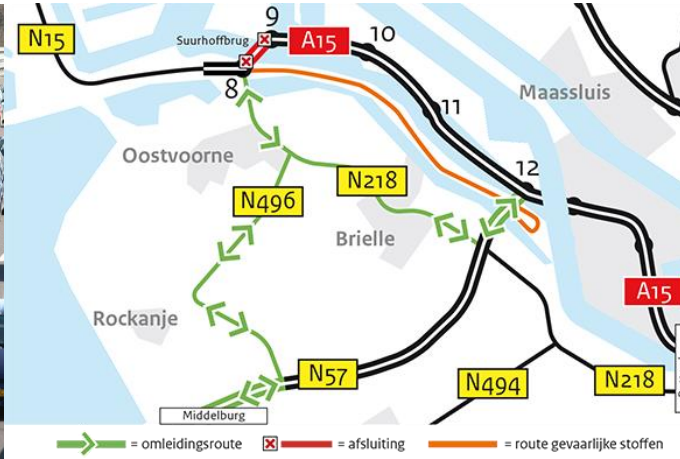


Traffic jams due to additional traffic

Additional traffic jams due to increased traffic further on

Delay according to transport model: 3570 hours per day (+983 hours, +38%!)

What happens during a closure?



Route choice



Mode choice



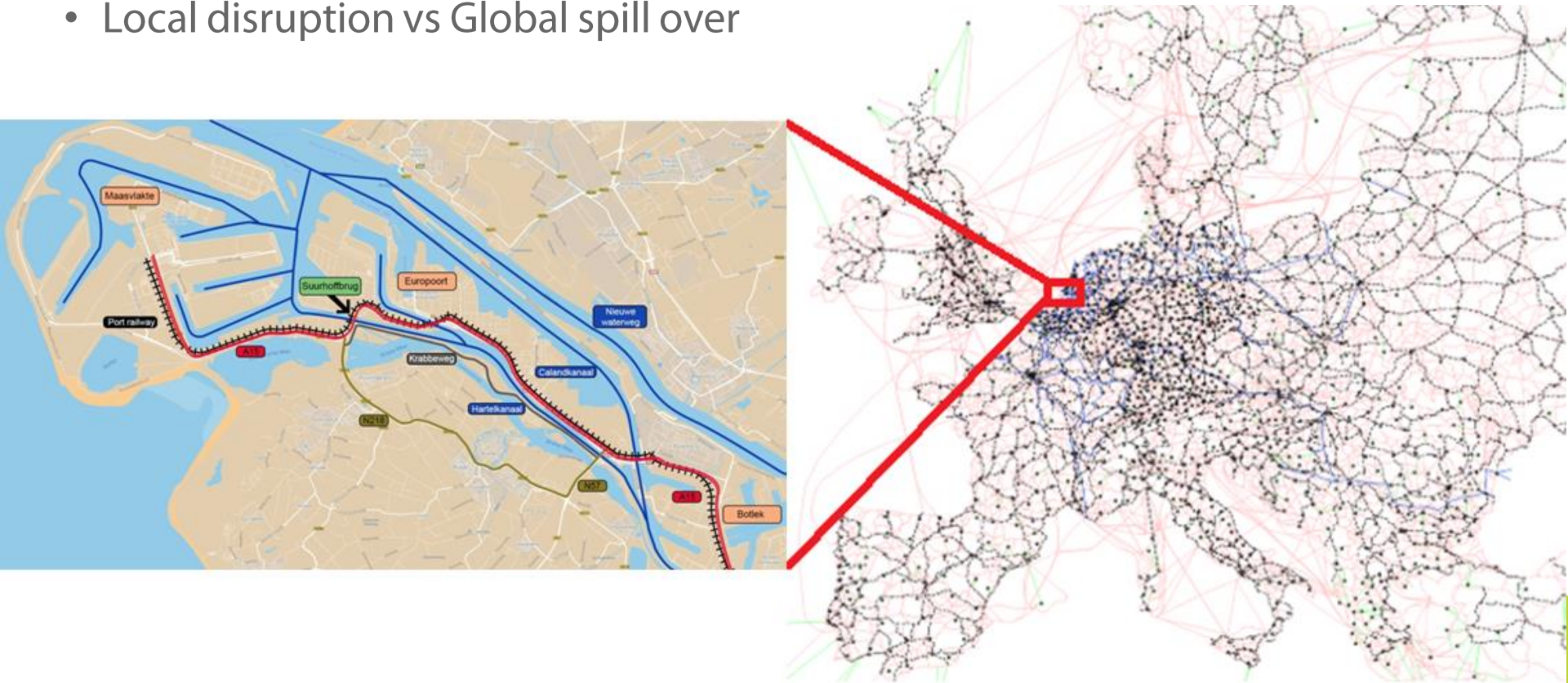
Departure time choice



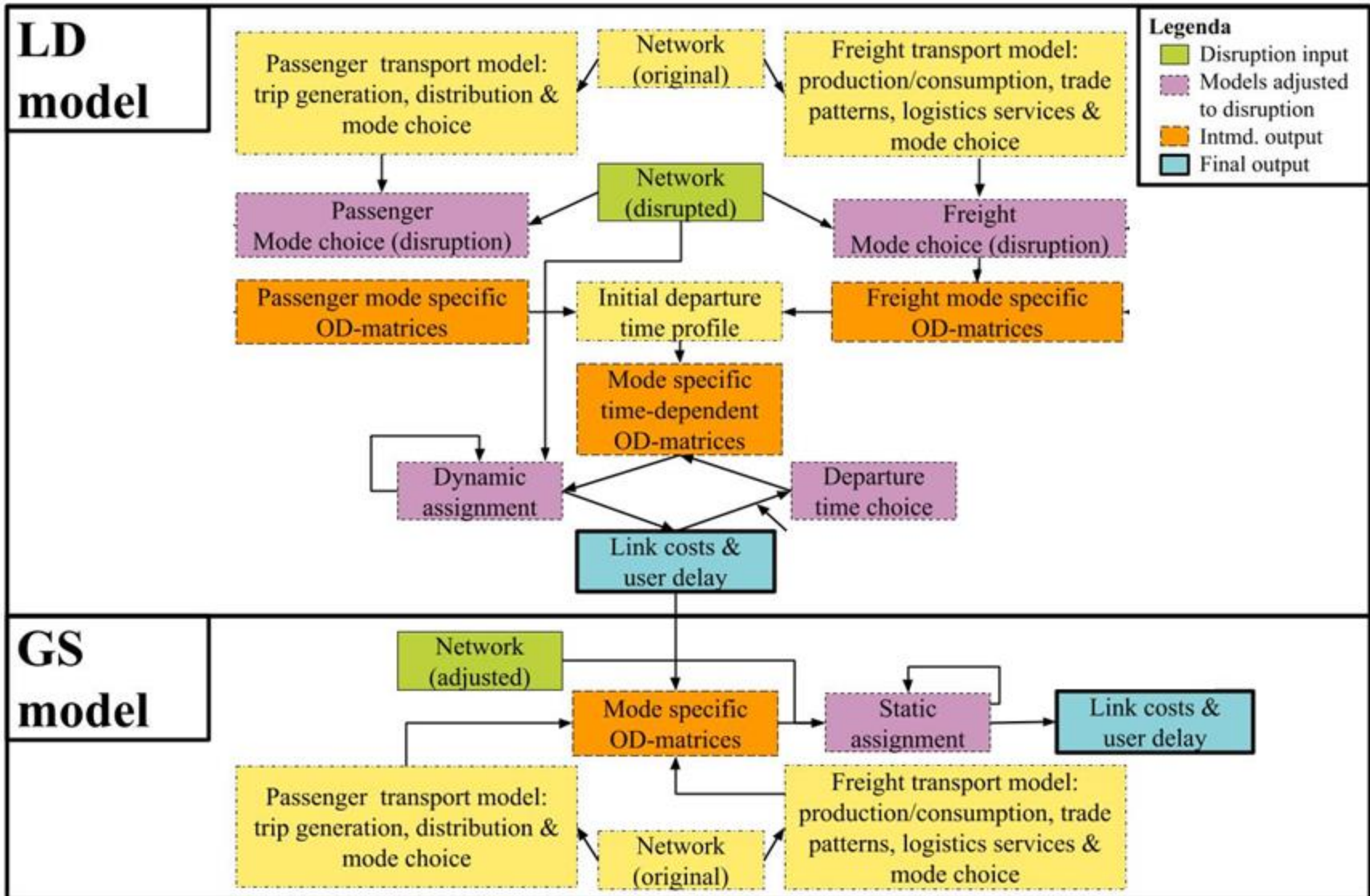
Trip cancel

Simulating traffic during closures

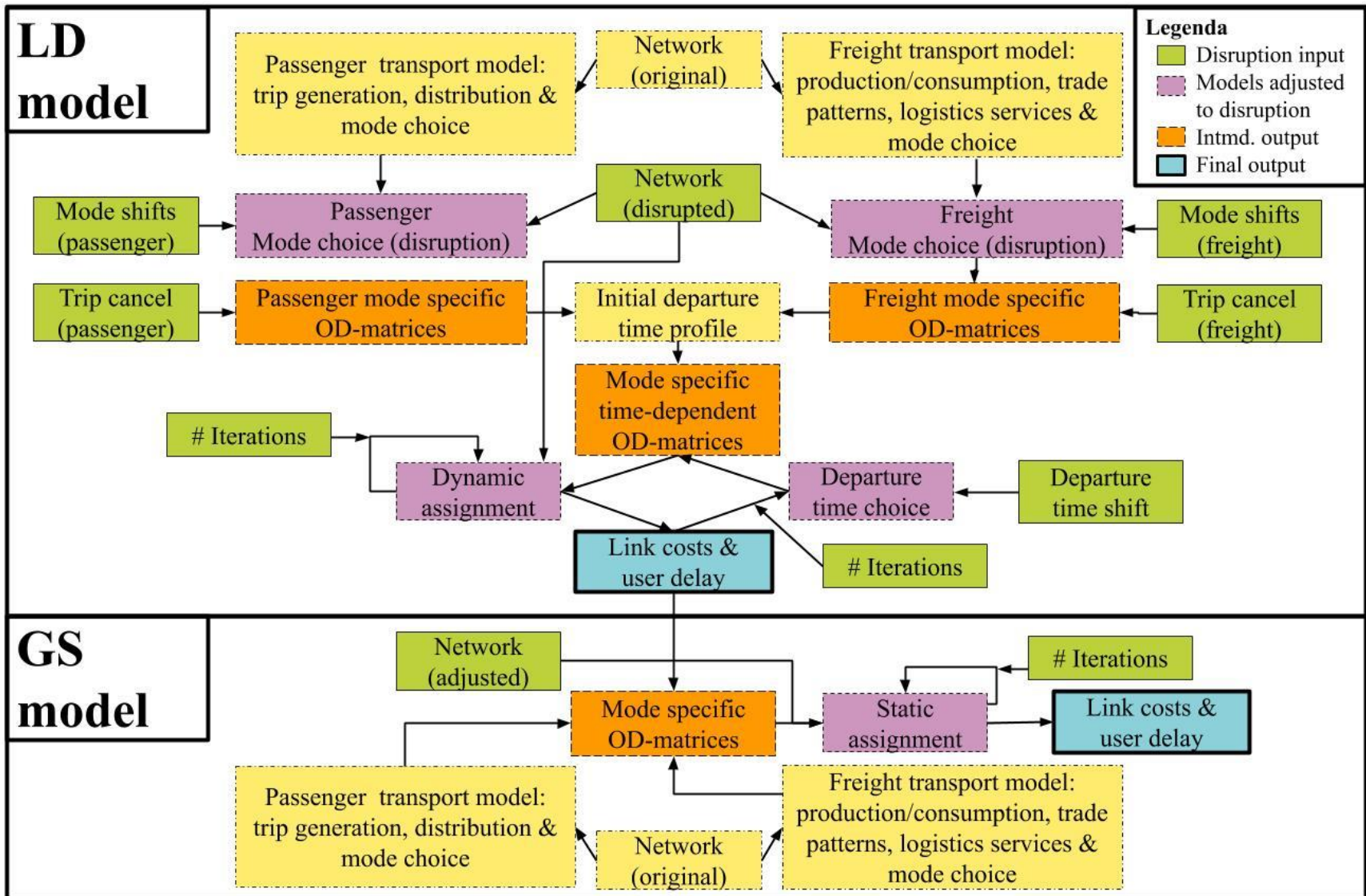
- Dynamic modelling of traffic (time-dependent)
- Time until an equilibrium has been reached
- Local disruption vs Global spill over



Traffic model

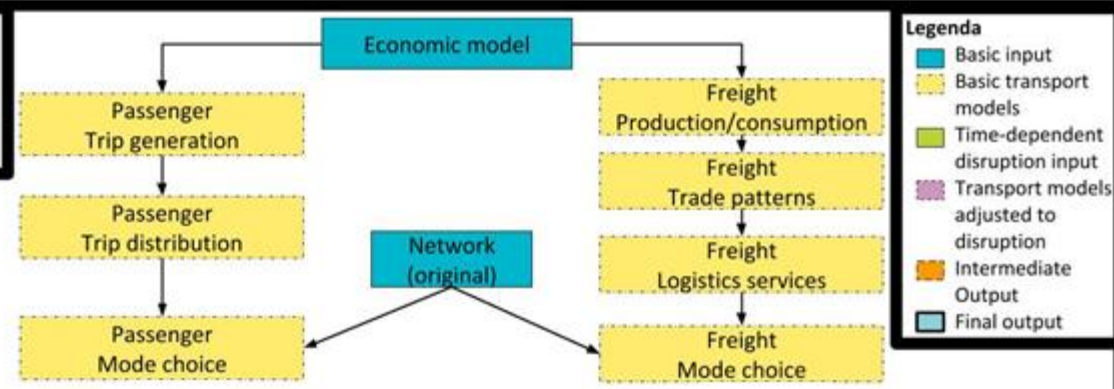


Traffic model



- Basic 4-step passenger & 5-step freight transport models

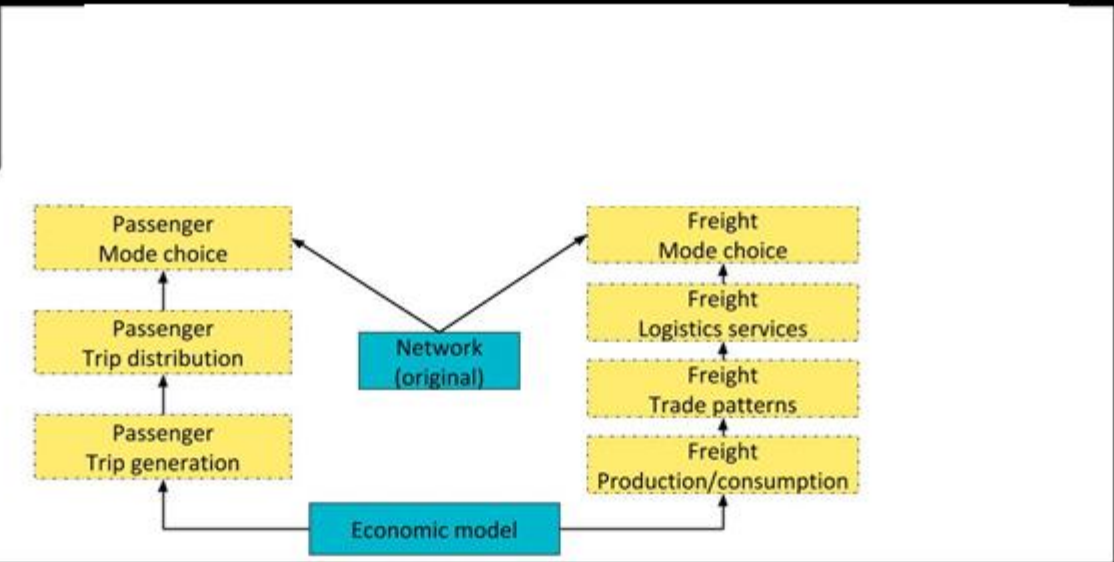
Local Disruption model



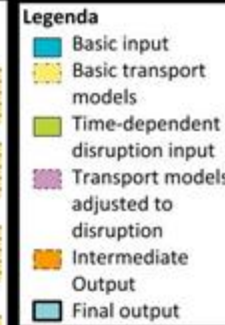
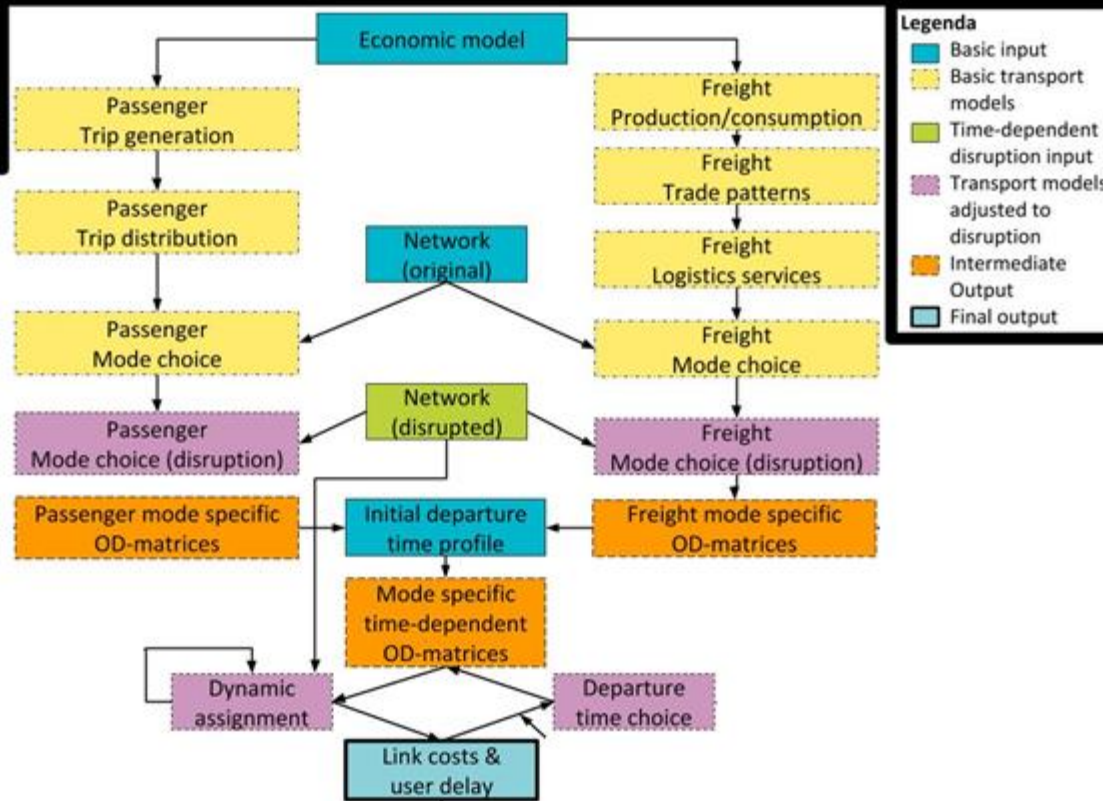
Legenda

- Basic input
- Basic transport models
- Time-dependent disruption input
- Transport models adjusted to disruption
- Intermediate Output
- Final output

Global Spill-over model

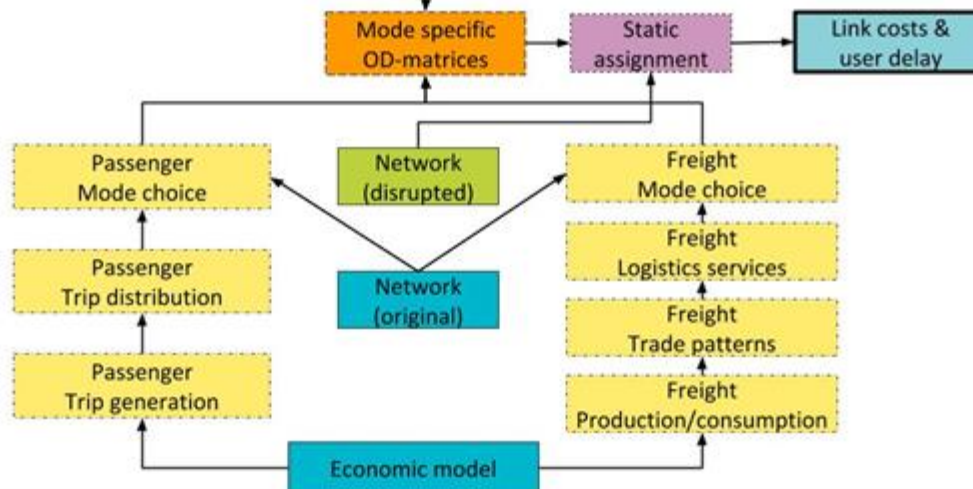


Local Disruption model

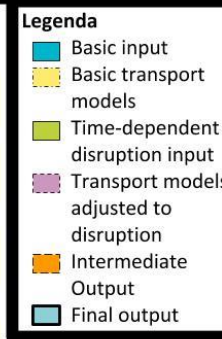
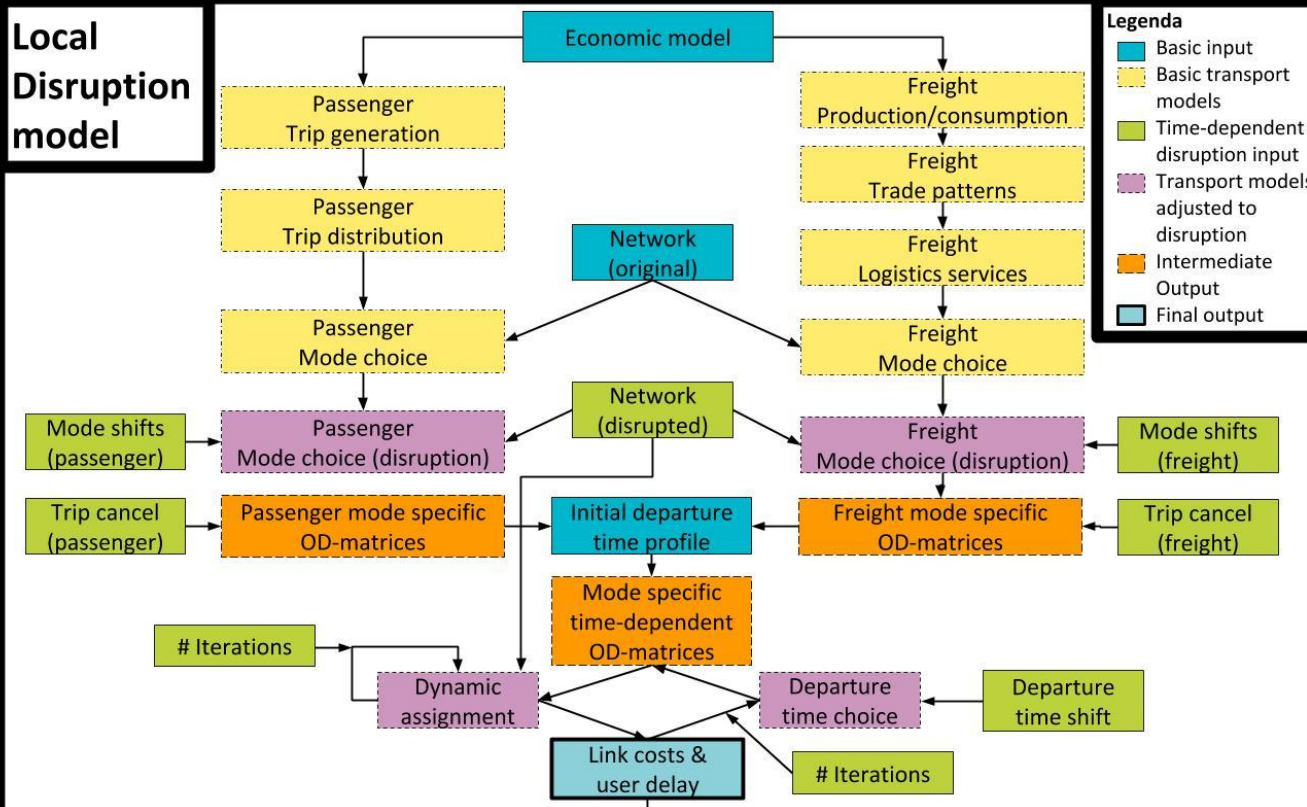


- Basic 4-step passenger & 5-step freight transport models
- Mode choice & assignment affected by disruption

Global Spill-over model

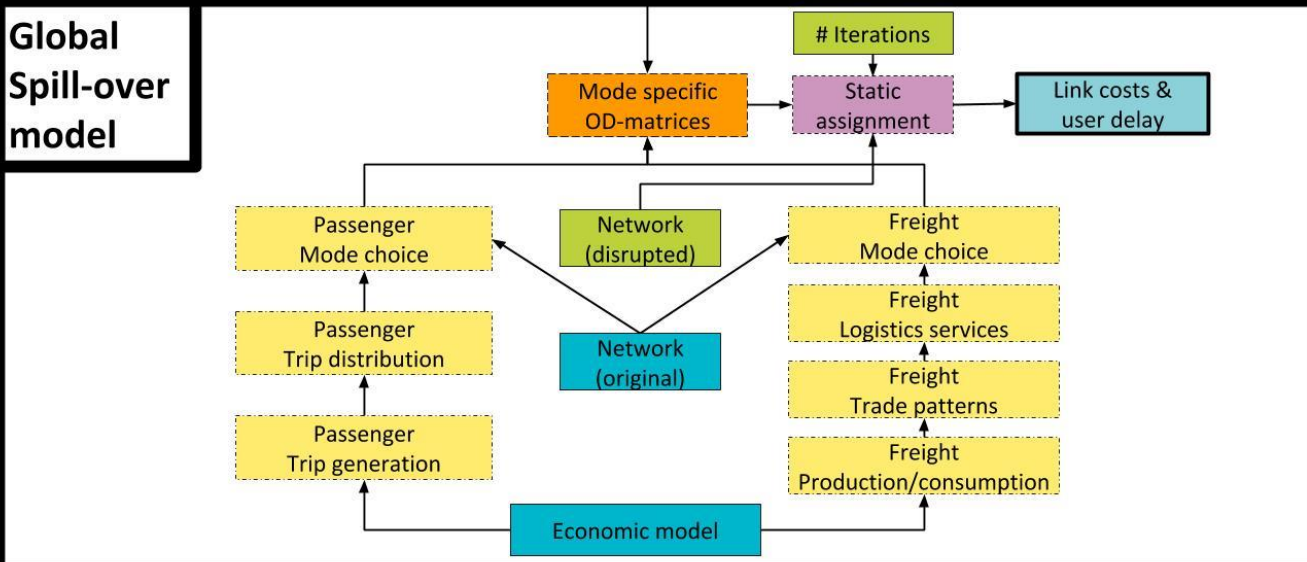


Local Disruption model



- Basic 4-step passenger & 5-step freight transport models
- Mode choice & assignment affected by disruption
- Parameters on mode shifts, trip cancellation and departure time shift, different per situation

Global Spill-over model



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Thank you!

van der Tuin, M.S., Pel, A.J. The disruption transport model: computing user delays resulting from infrastructure failures for multi-modal passenger & freight traffic. Eur. Transp. Res. Rev. 12, 8 (2020).
<https://doi.org/10.1186/s12544-020-0398-9>



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