AMS Workshop on Active Modes

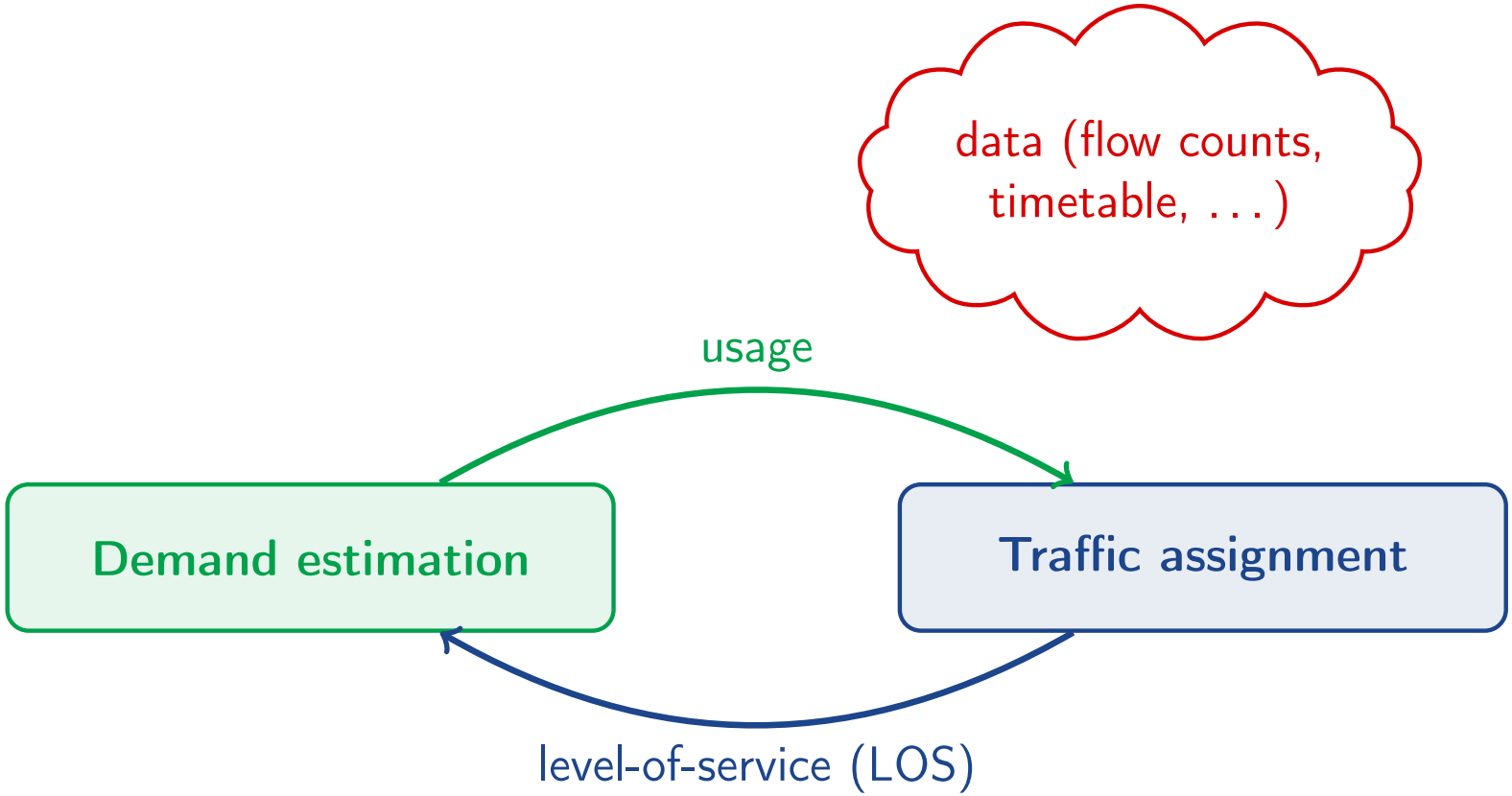
Towards an 'integrated' urban transit network model

Flurin S. Hänseler

(includes previous work with Michel Bierlaire, EPFL)

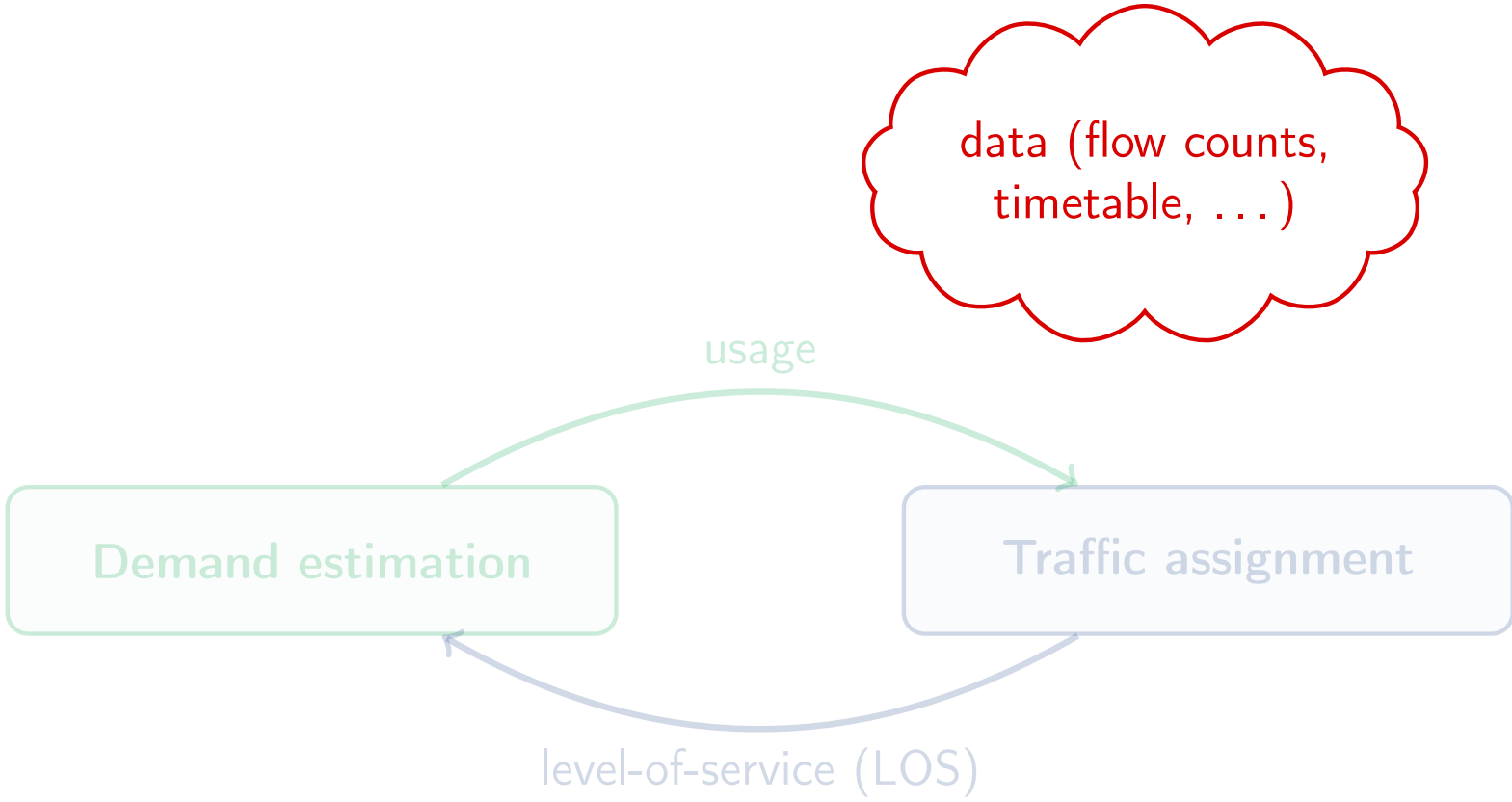
Amsterdam, September 7, 2016

Modeling pedestrian flows in train stations

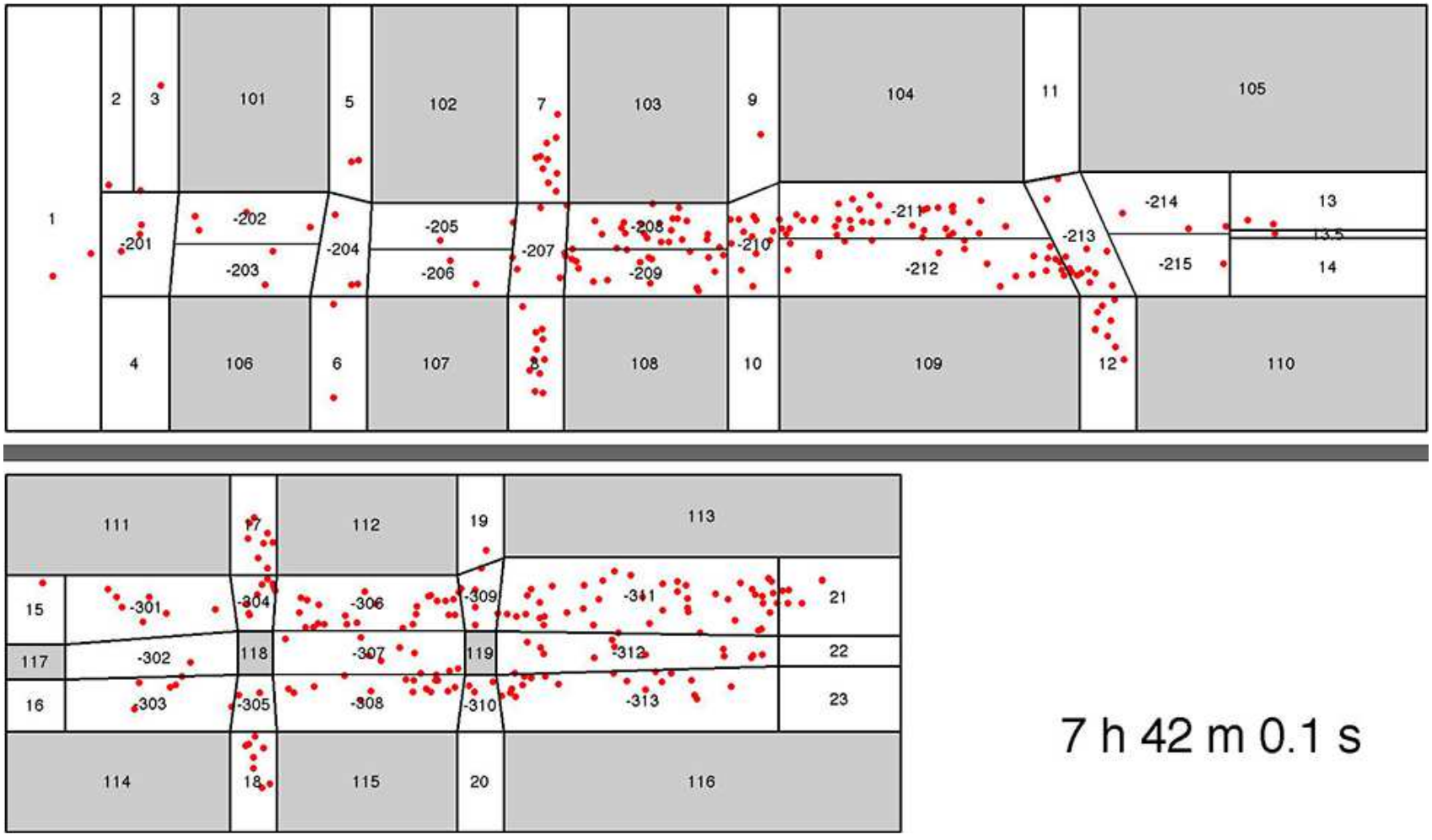


Lausanne railway station

Modeling pedestrian flows in train stations



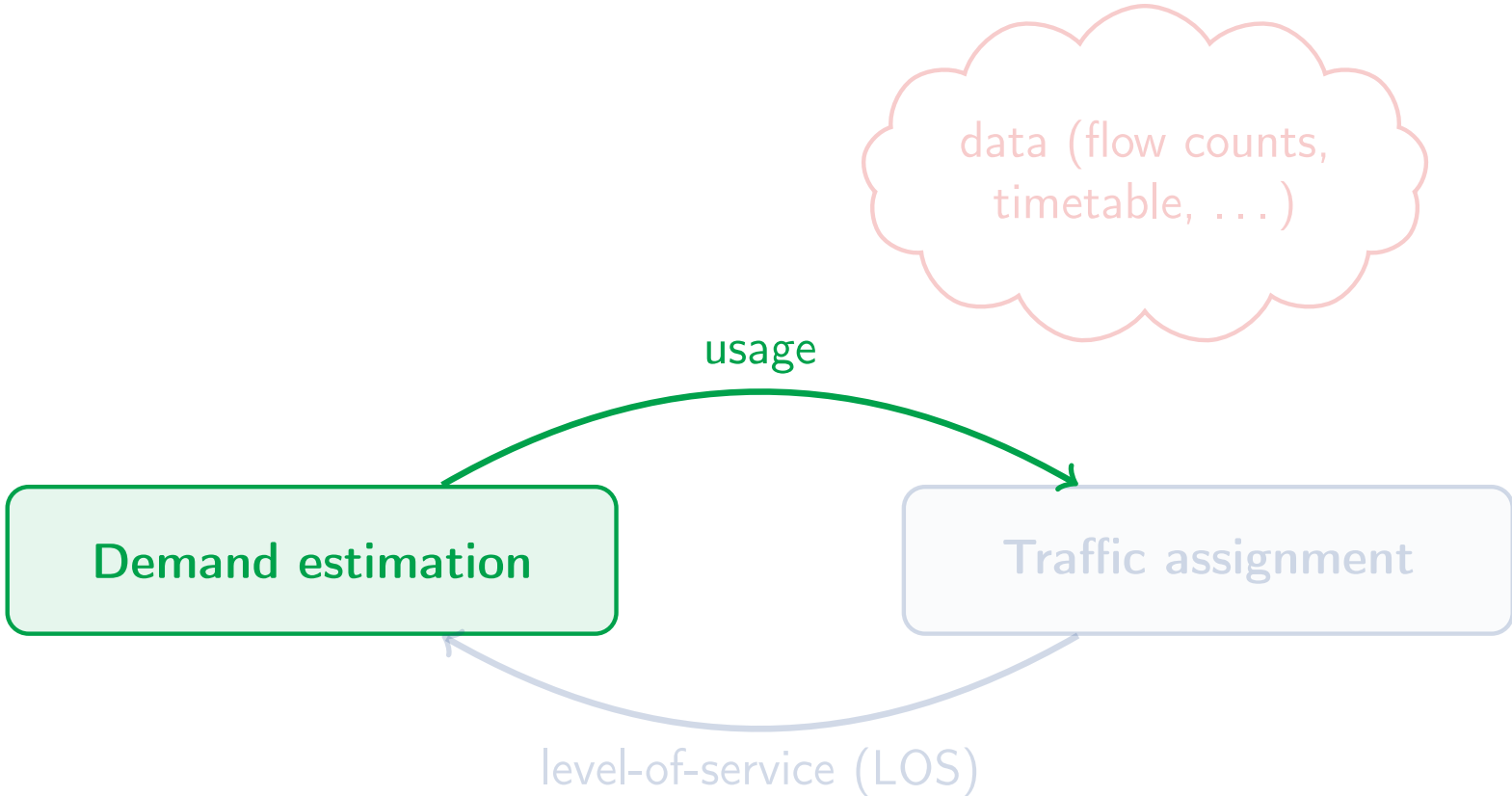
Pedestrian movements on January 16, 2013



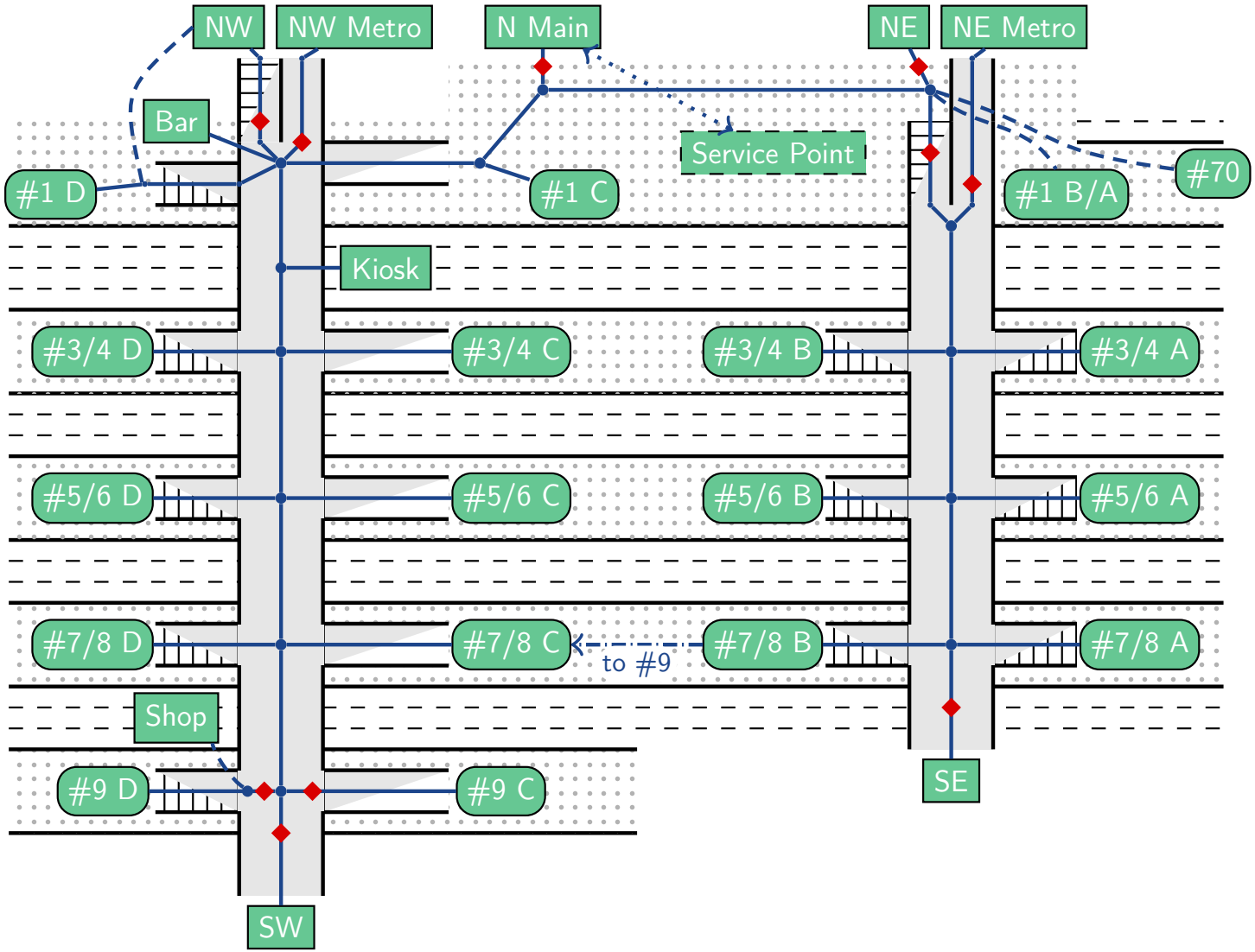
7 h 42 m 0.1 s

Animation: https://youtu.be/HHMXTJlQlkY

Modeling pedestrian flows in train stations



Lausanne railway station: Pedestrian network



Flow map of Lausanne railway station (2013)

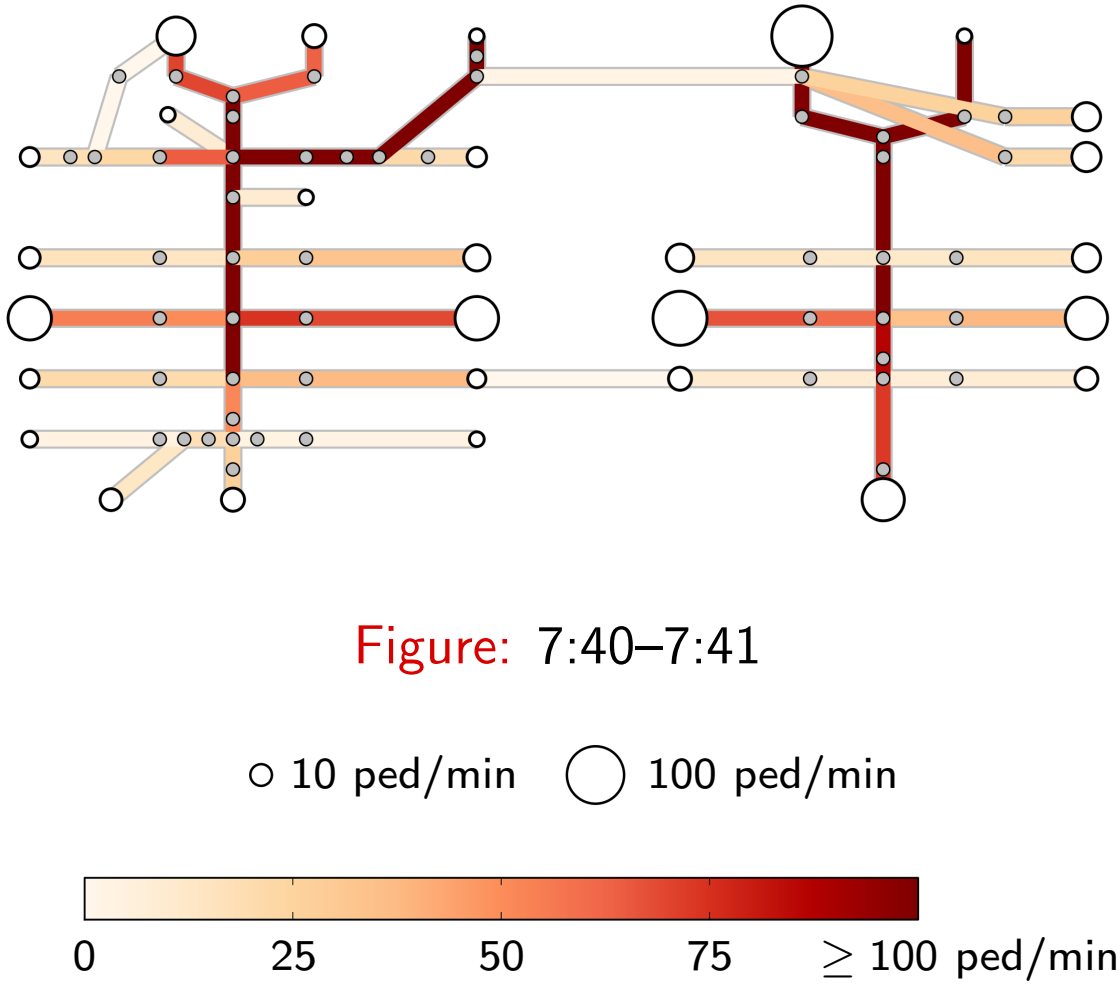


Figure: 7:40–7:41

Flow map of Lausanne railway station (2013)

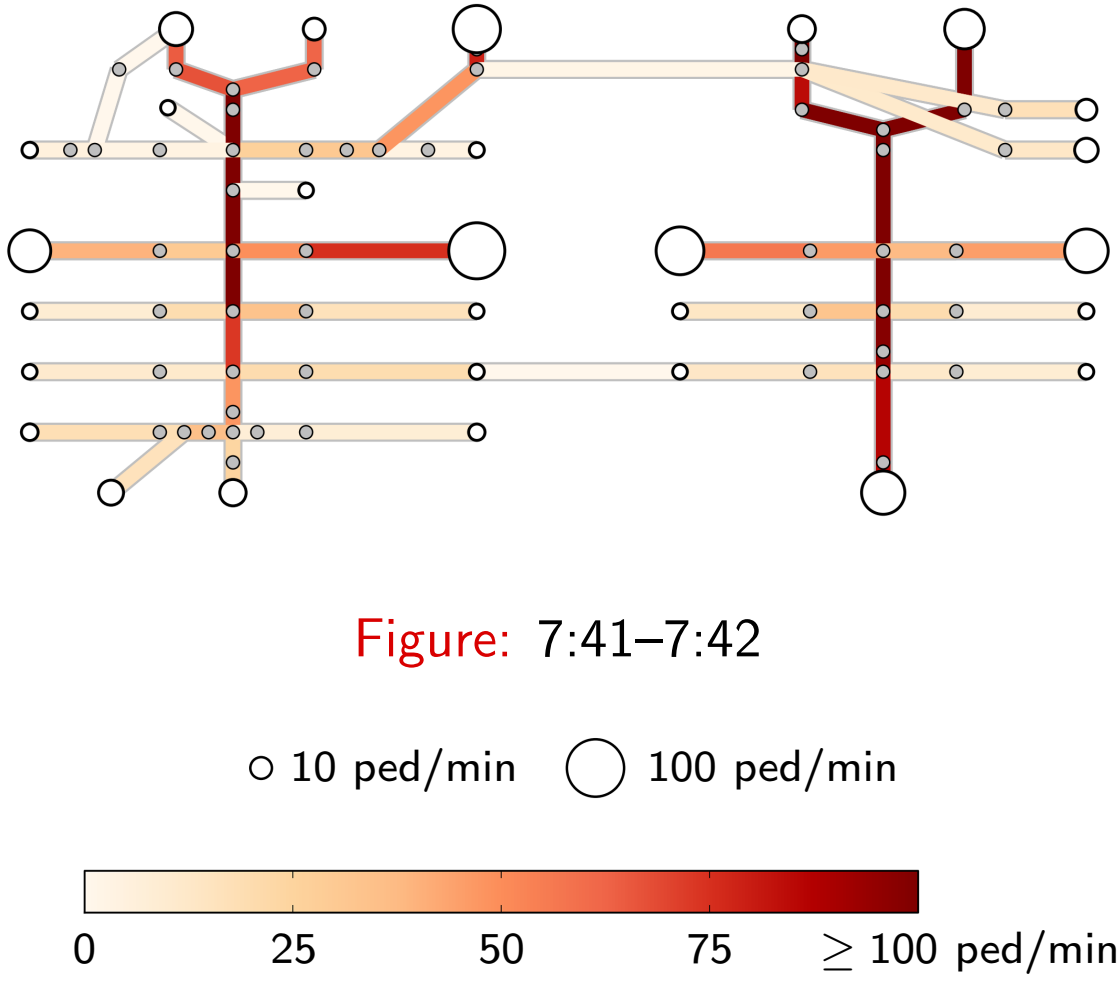


Figure: 7:41–7:42

Flow map of Lausanne railway station (2013)

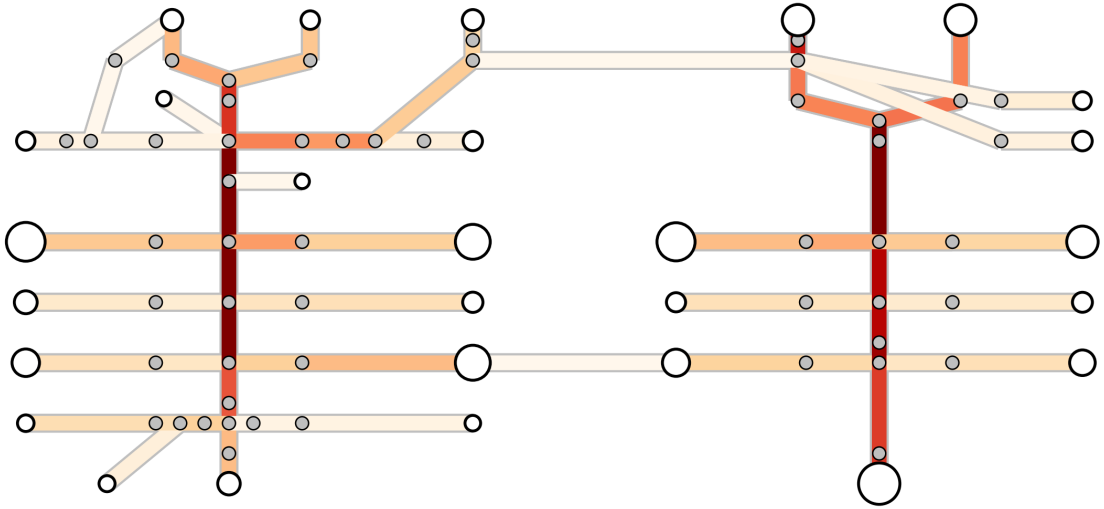
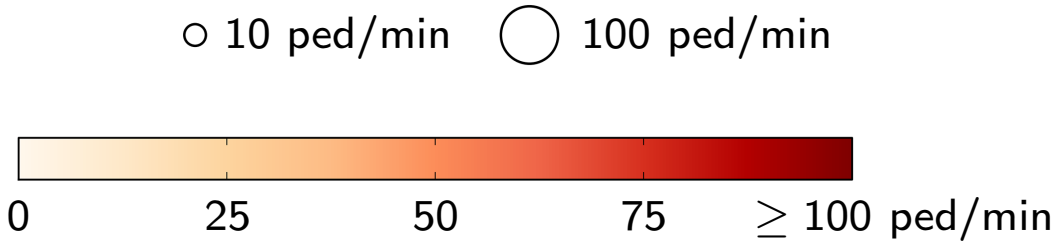


Figure: 7:42–7:43



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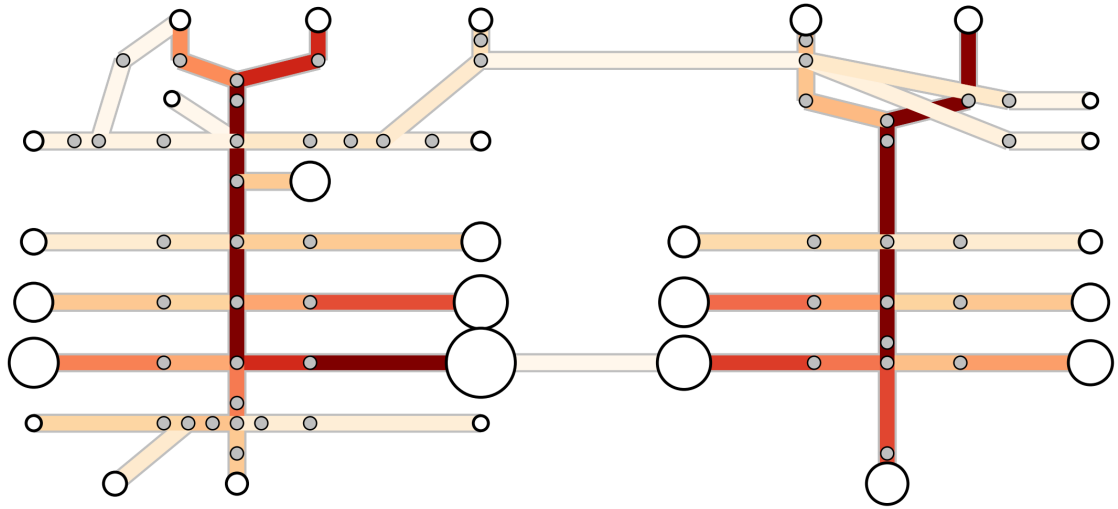
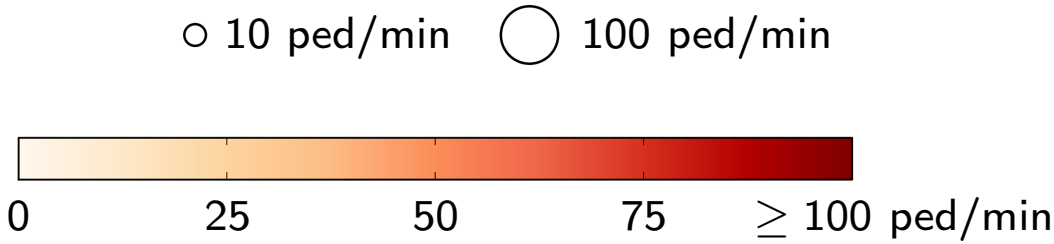


Figure: 7:43–7:44



Flow map of Lausanne railway station (2013)

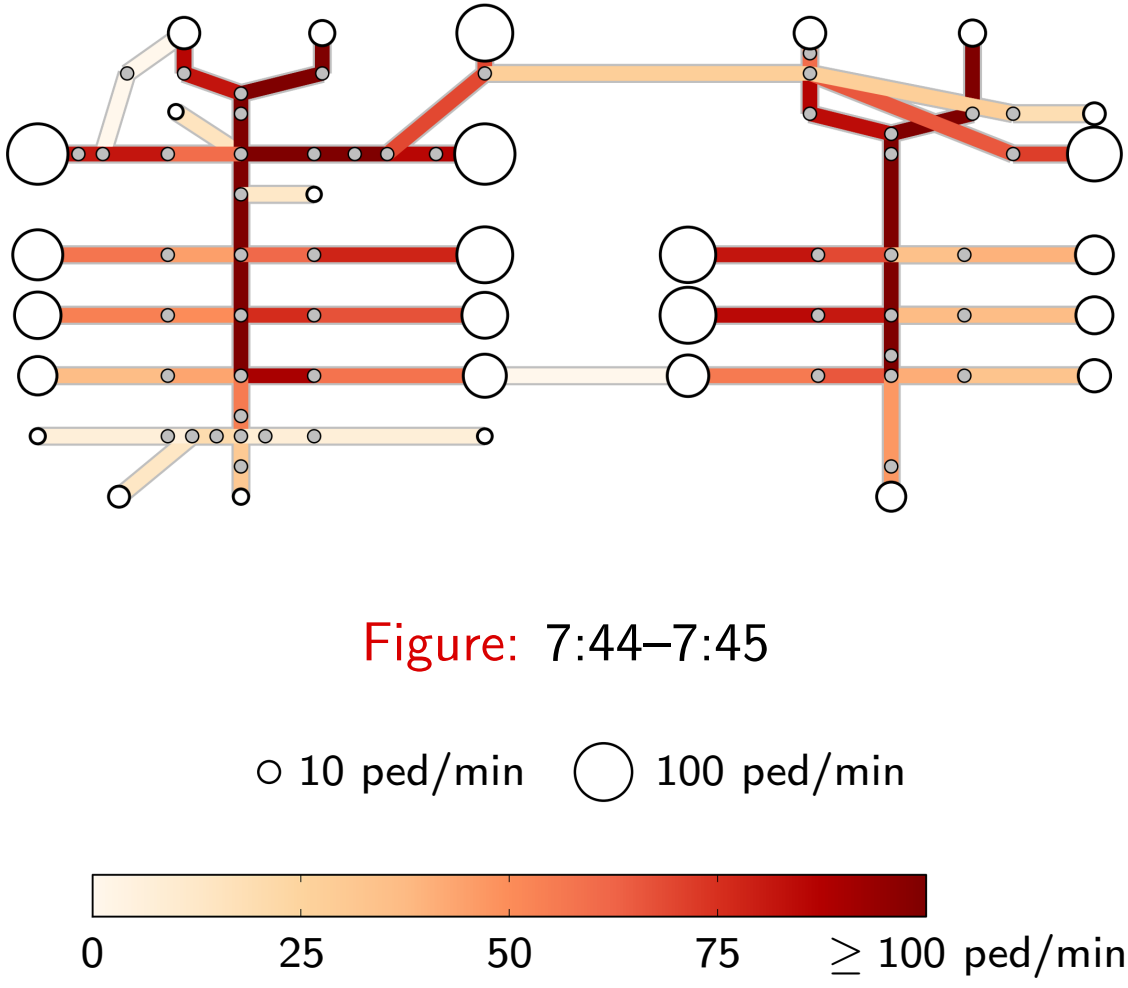


Figure: 7:44–7:45

Flow map of Lausanne railway station (2013)

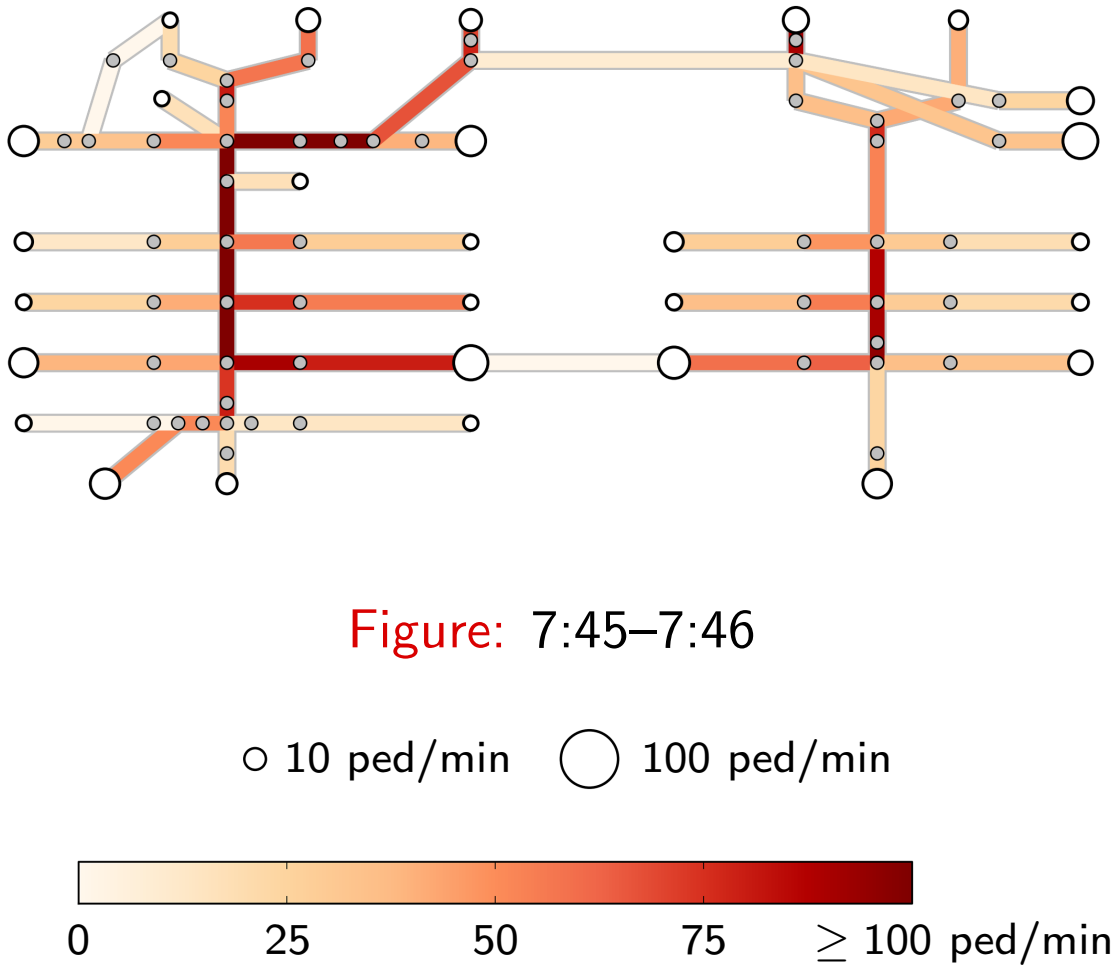


Figure: 7:45–7:46

Flow map of Lausanne railway station (2013)

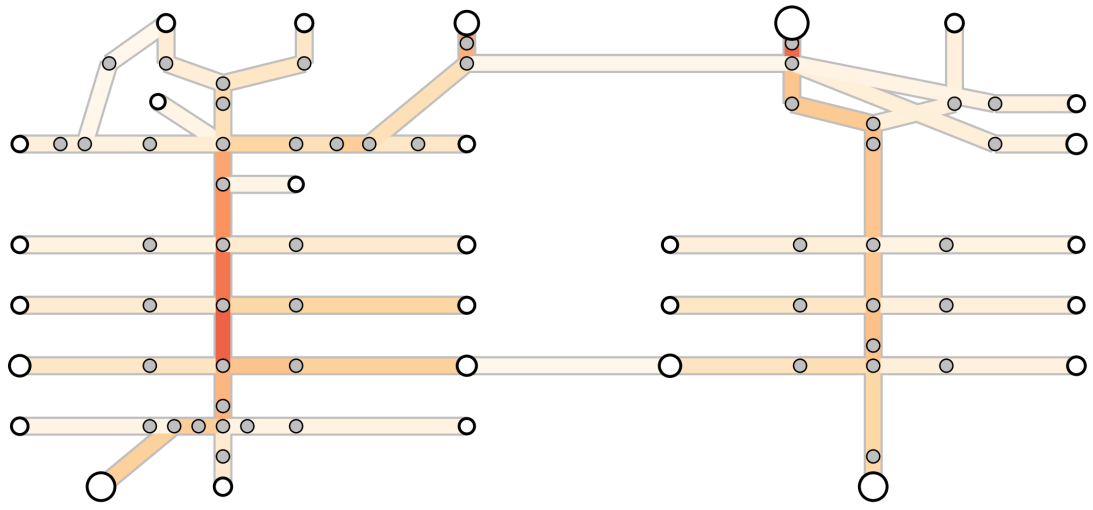
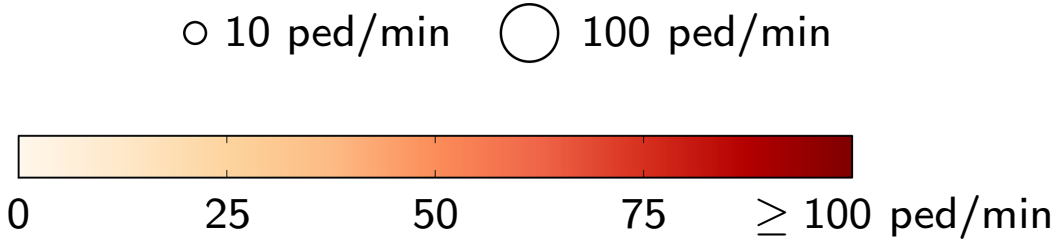


Figure: 7:46–7:47



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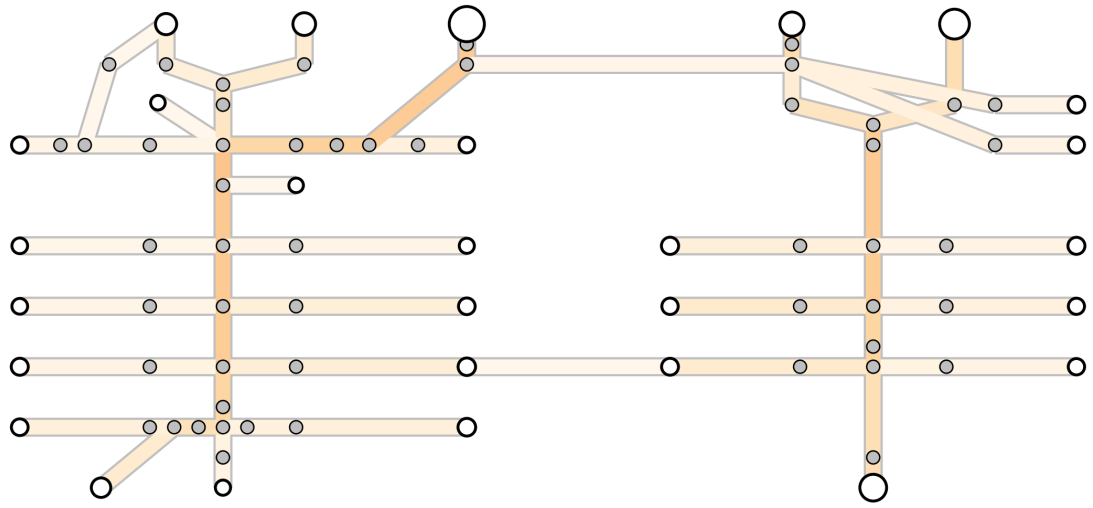
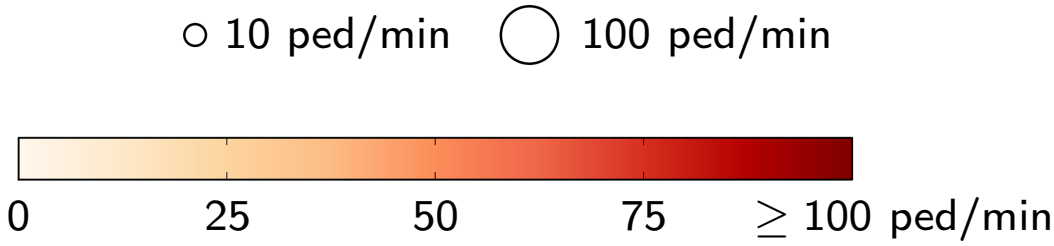
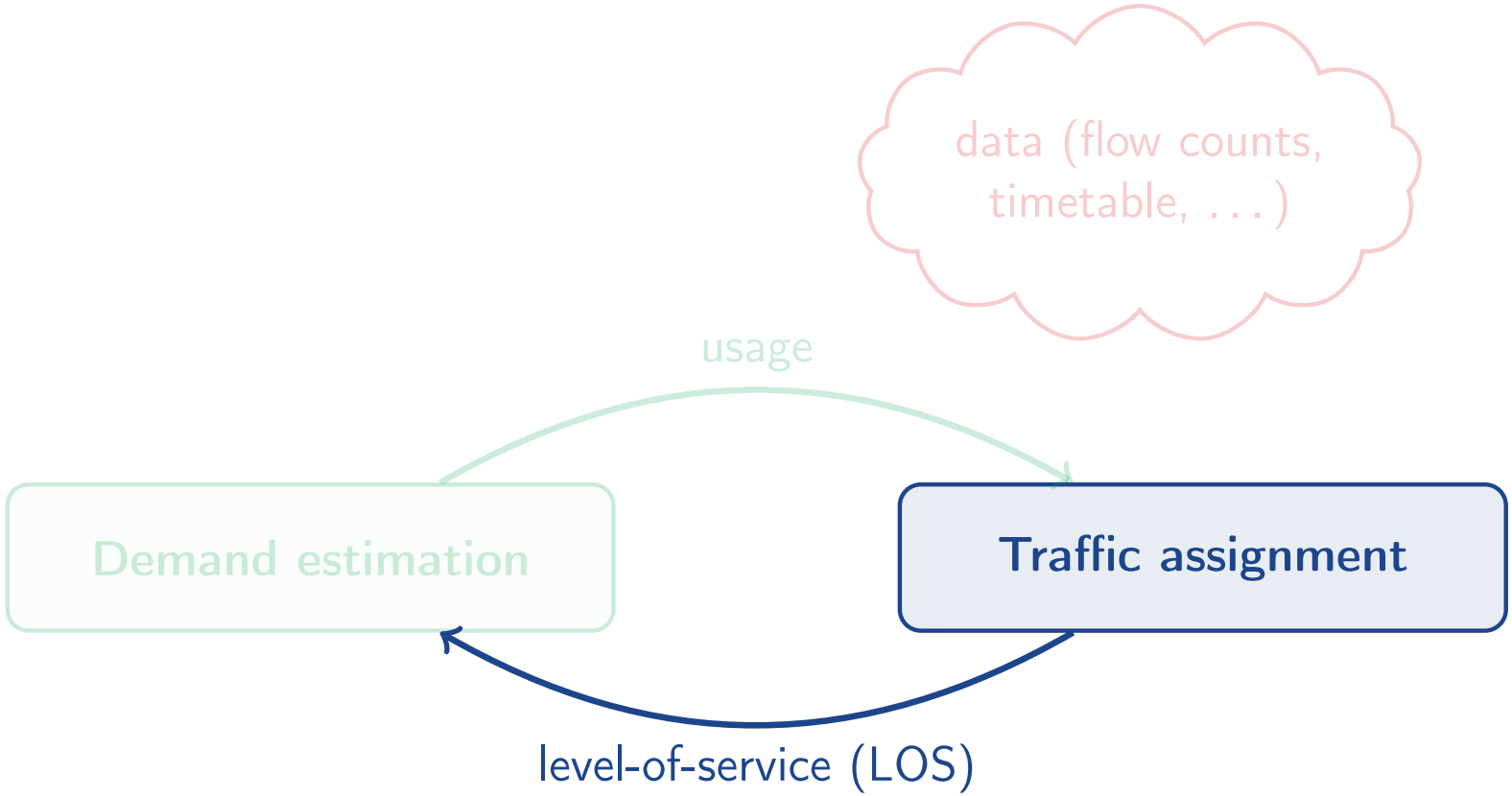


Figure: 7:47–7:48



Modeling pedestrian flows in train stations



Level-of-service

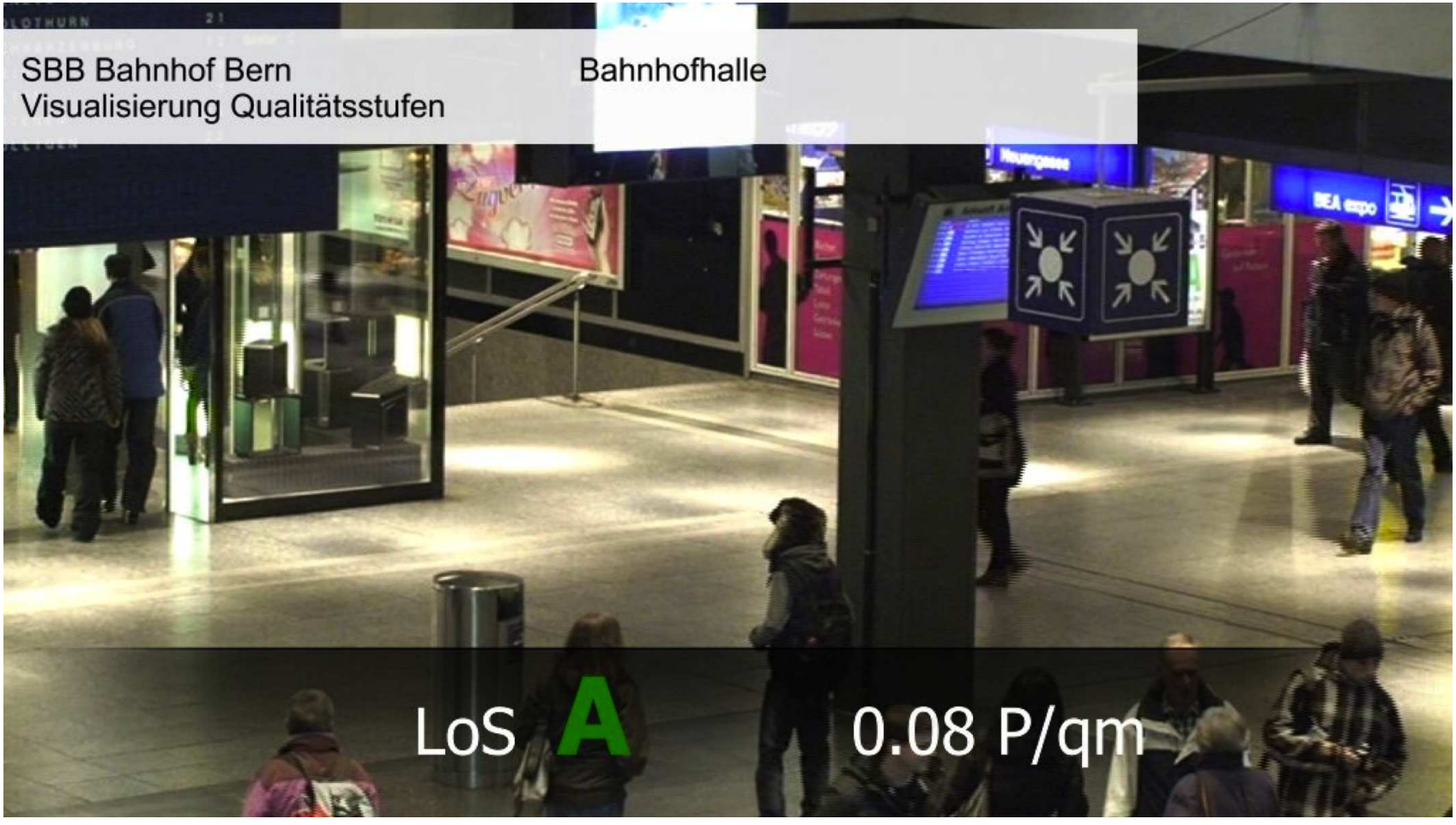
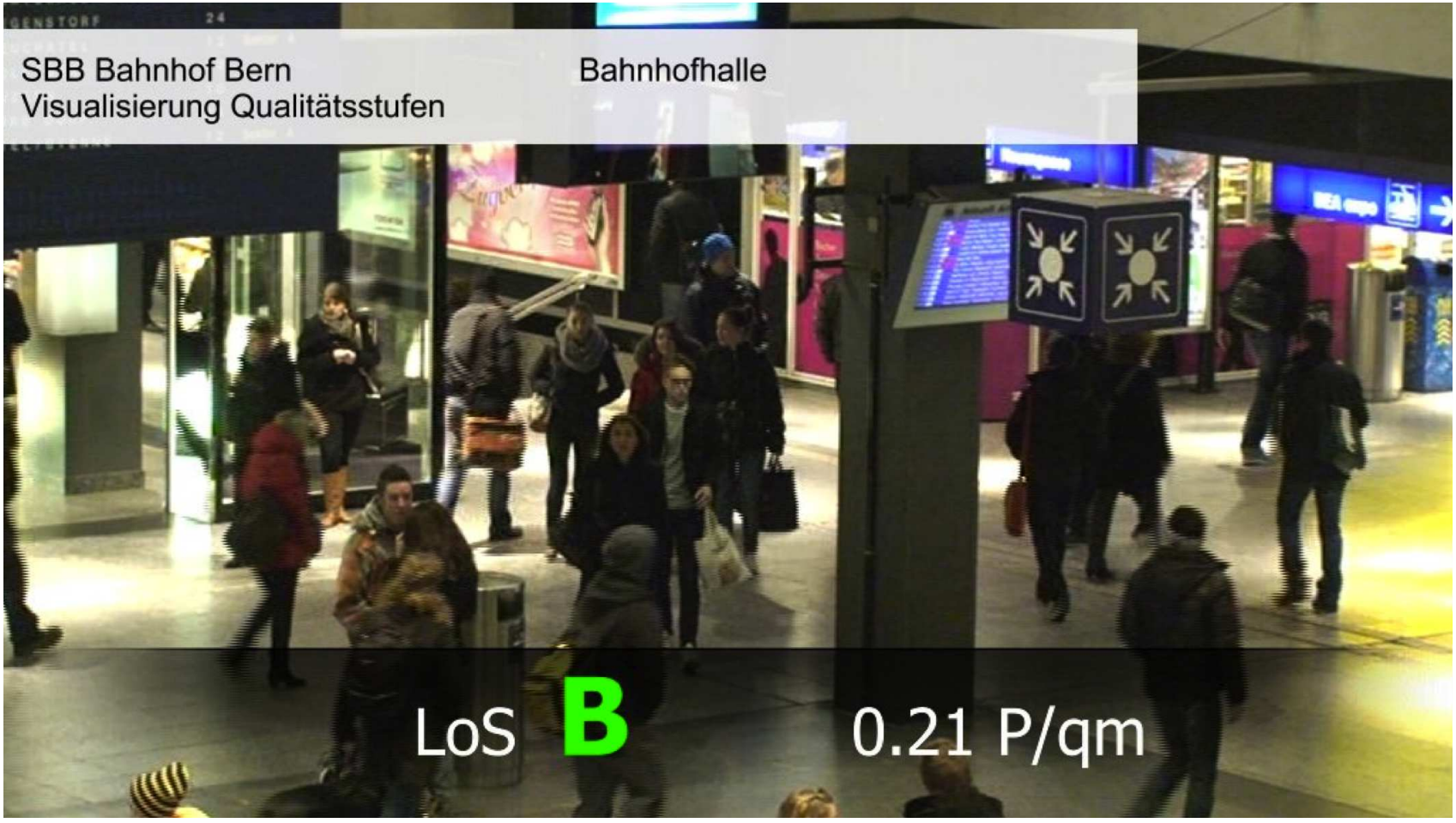


Figure: SBB-I-AT-BZU-PFL

Level-of-service



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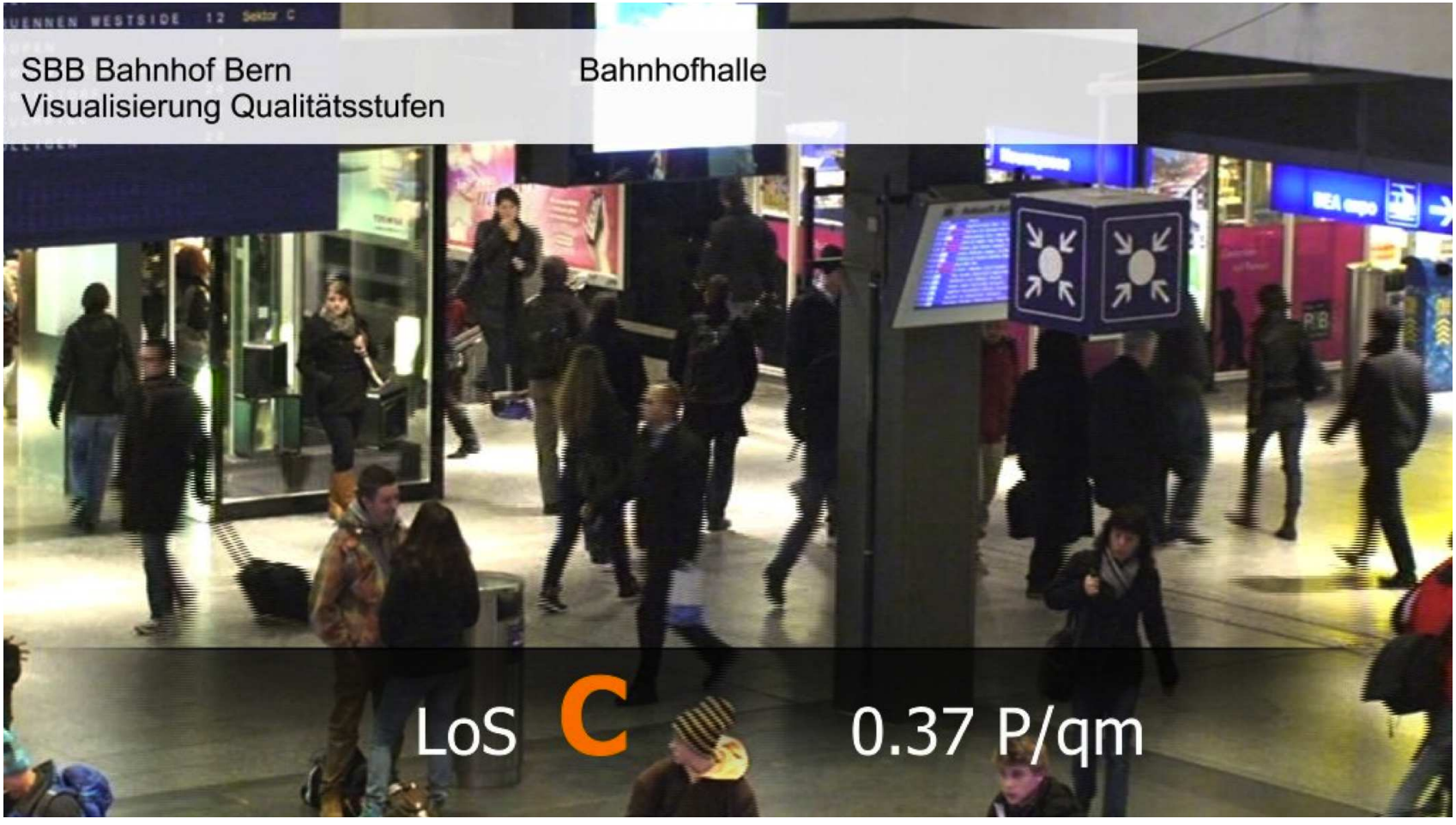

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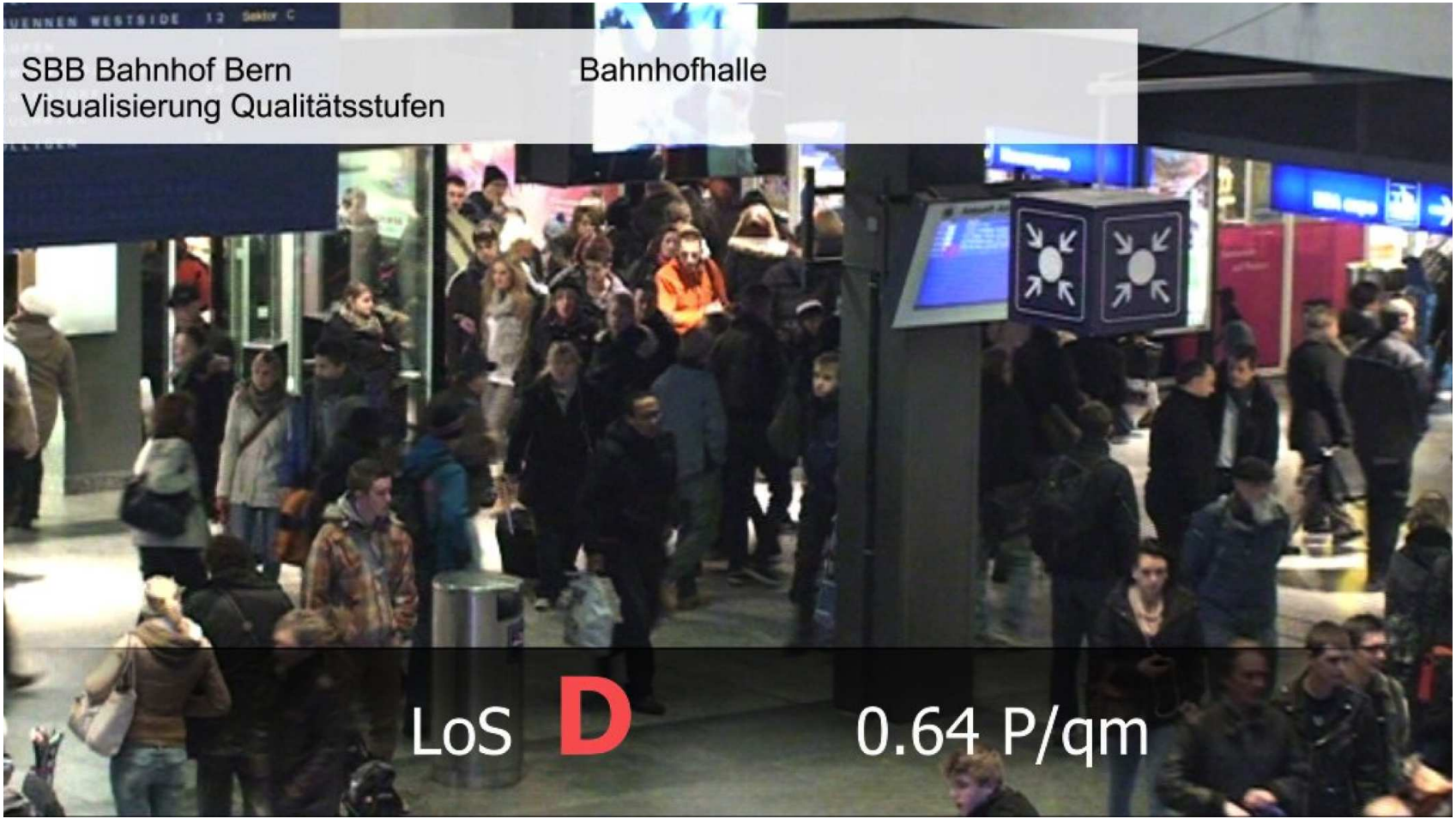


Figure: SBB-I-AT-BZU-PFL

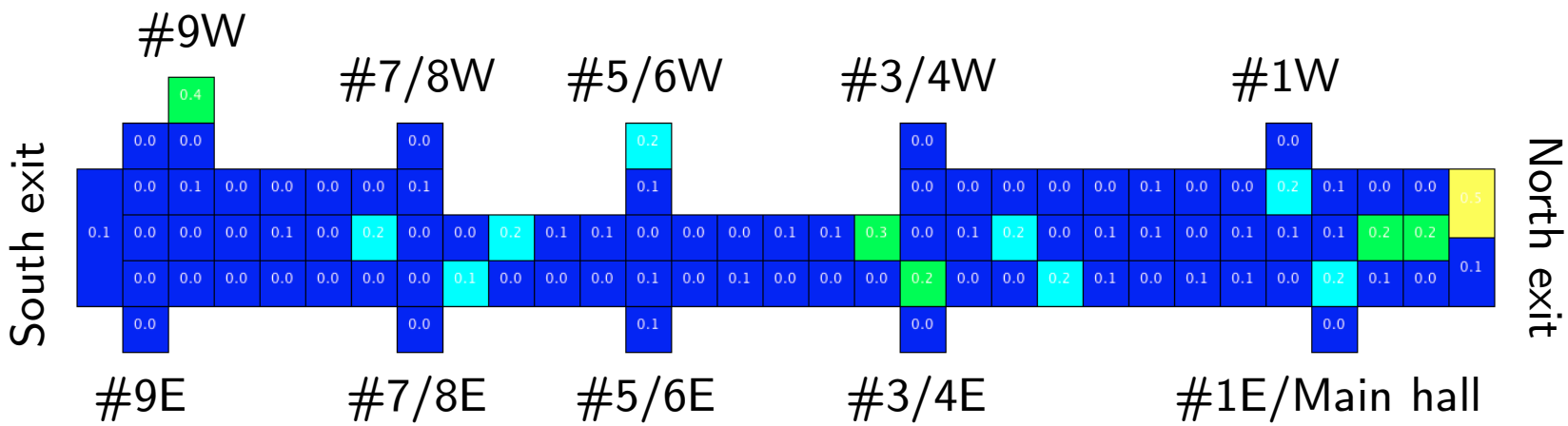
Level-of-service

Figure: SBB-I-AT-BZU-PFL

Level-of-service assessment: Example

- PU West, Lausanne
- January 22, 2013, 07:40 – 07:46

	LOS	[#/m^2]
	A	< 0.179
	B	< 0.270
	C	< 0.455
	D	< 0.714
	E	< 1.333
	F	≥ 1.333



Animation: http://youtu.be/16_MkoF70Hc

Possible extensions

1. Passive Crowd Management
   - real-time prediction of OD demand
   - real-time prediction of level-of-service
2. Active Crowd Management
   - real-time control of pedestrian movements

Outlook: TRANS-FORM (with Oded Cats)

- management of traveler movements in urban transit systems
  - real-time, demand-based, network-wide
- research goal: urban transit network model
  - pedestrian movements within transfer stations
  - passenger movements within transit network
- case study: The Hague Metropolitan Area
  - coordination of travel services in case of disturbance/disruption

Thank you

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