

# The advantages of multi-modal concessions,

*Two analyses in the Netherlands*

TU Delft

arriva  
a DB company

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“ Various forms of Public Transport should be better connected to each other,  
to better match the traveller's needs ”

## Organisational integration

Existence of one or more independent PTA(s)  
Arrangements between operators

## Operational integration

Network layout

Schedule

Information

Fares & tickets

Vehicle management

## Physical integration

Access to facilities

Location of facilities

Design of stations

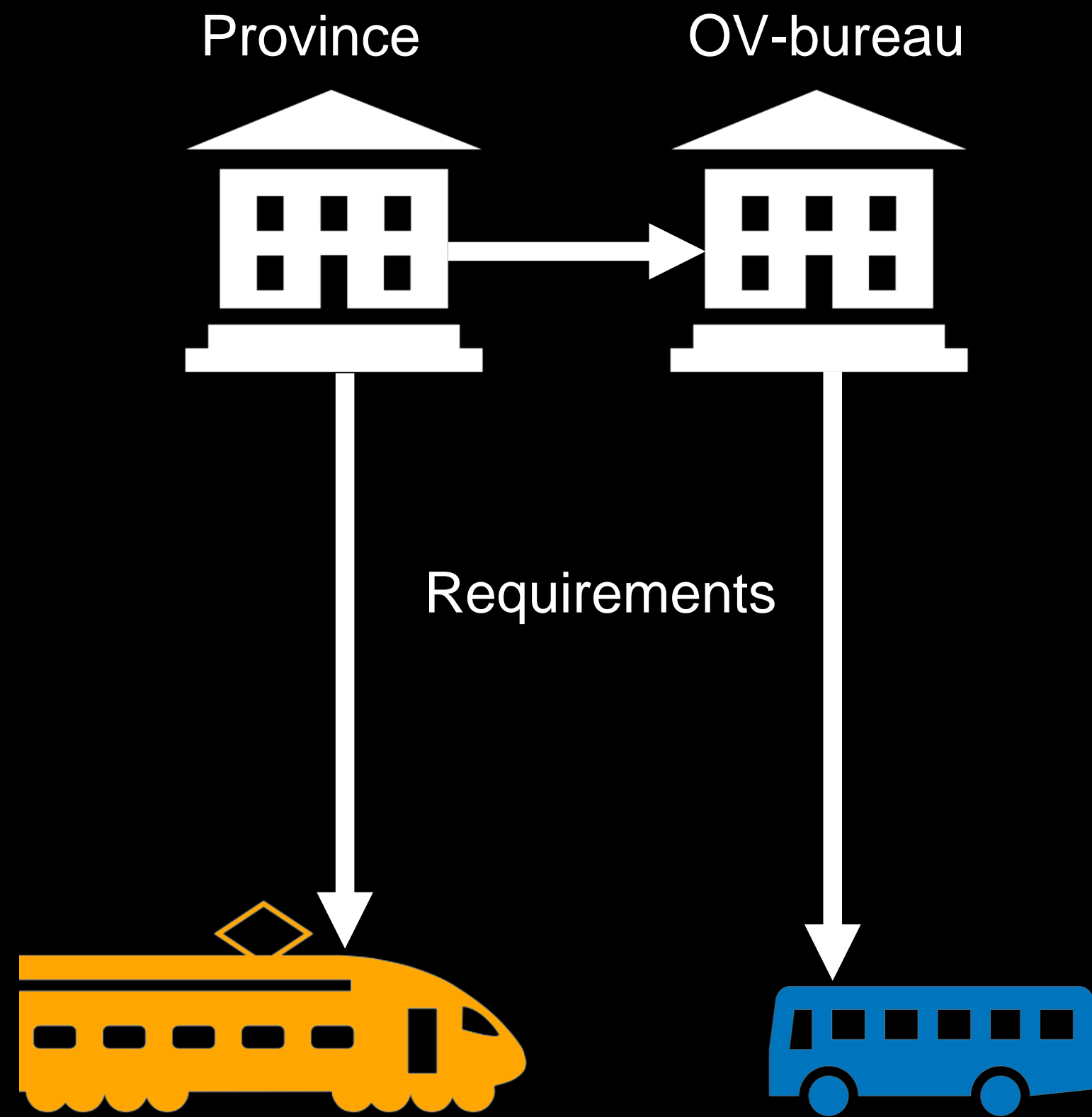
Control of vehicle movements

## Main question

What are the pros and cons of contracting out regional multimodal public transport concessions for travellers, public transport authorities, and operators instead of regional unimodal concessions?

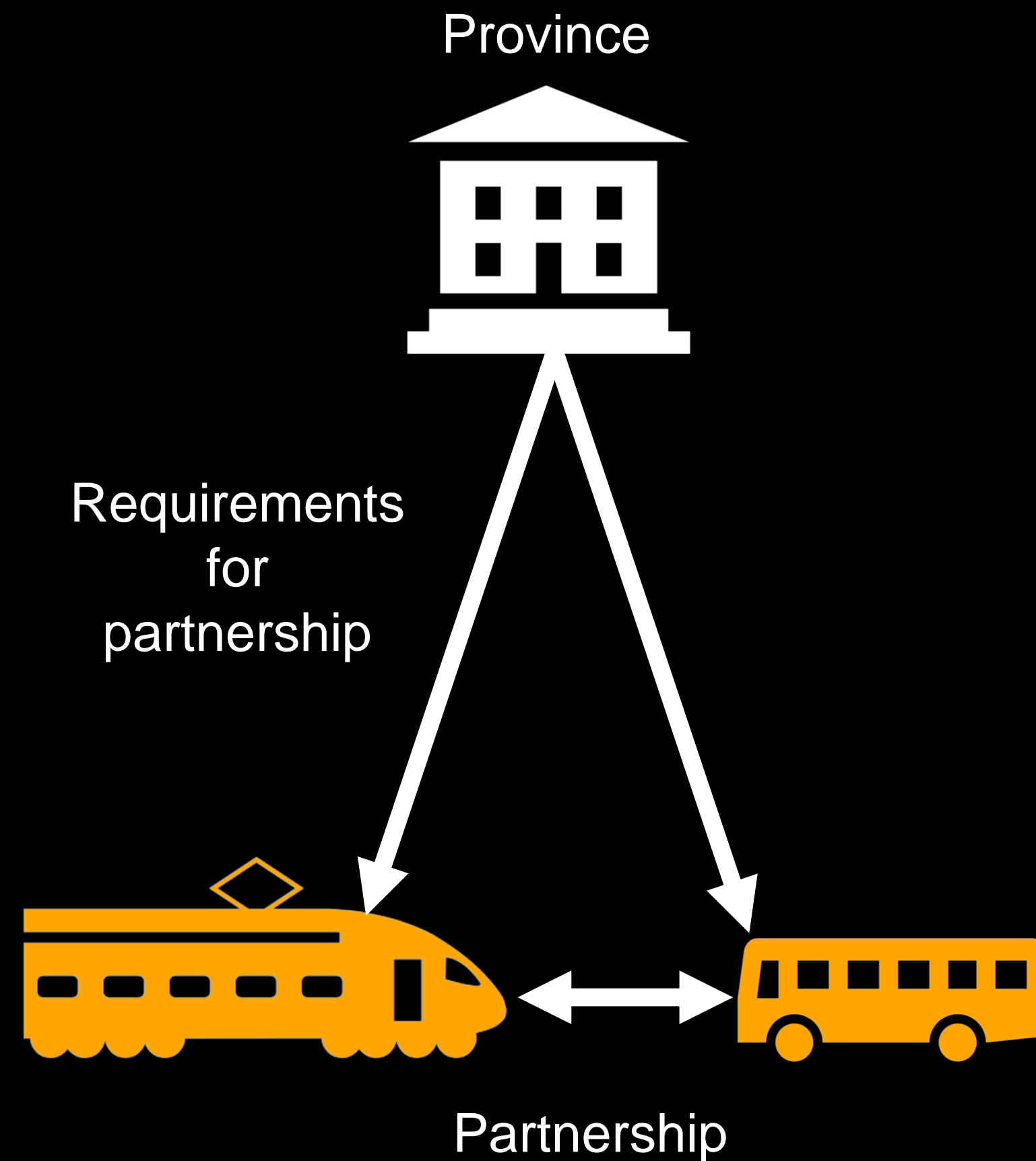
# Groningen

Contract



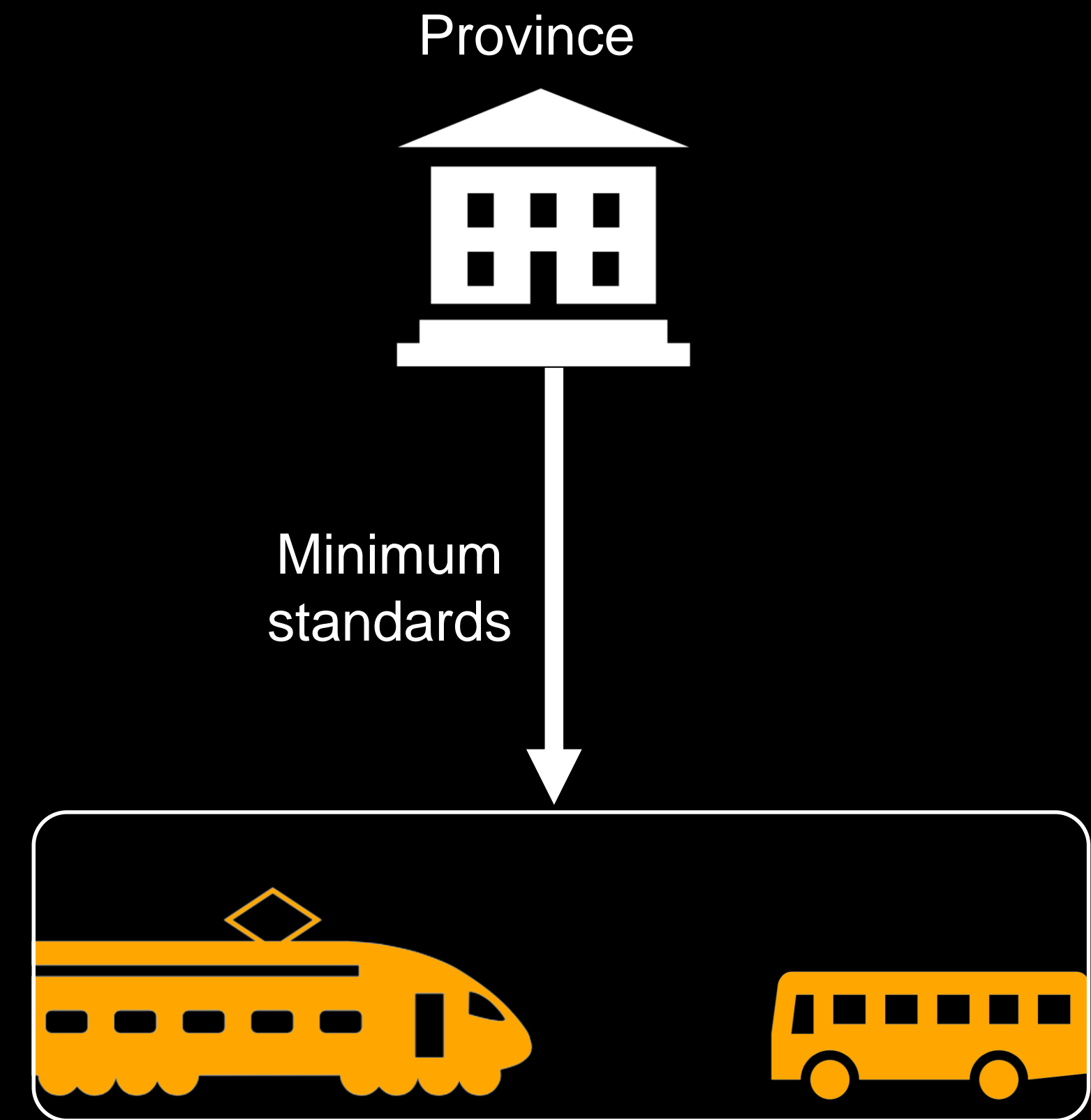
# Fryslân

Partnership



# Limburg

Internal



# Groningen

Contract

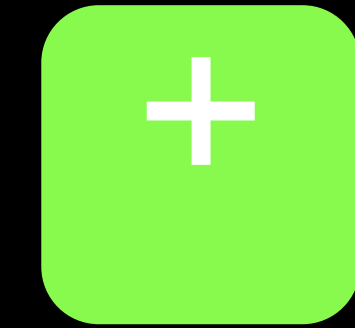
# Fryslân

Partnership

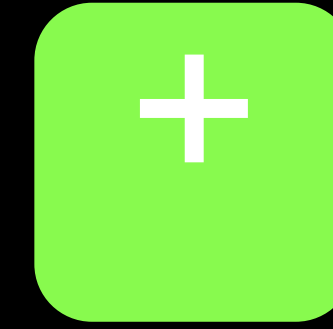
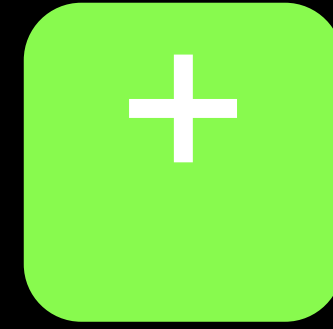
# Limburg

Internal

Network



Schedule



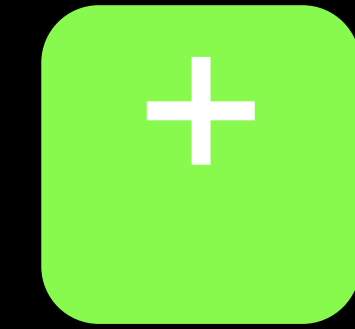
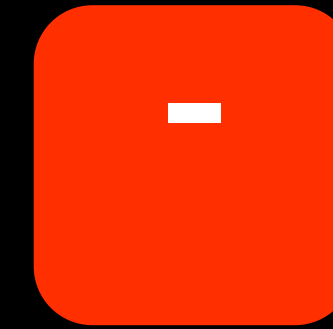
(Regional)

Information

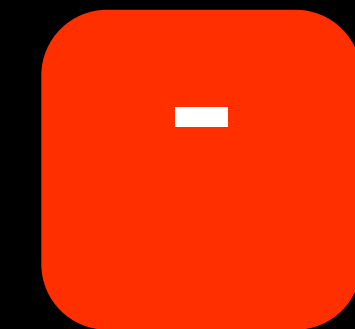
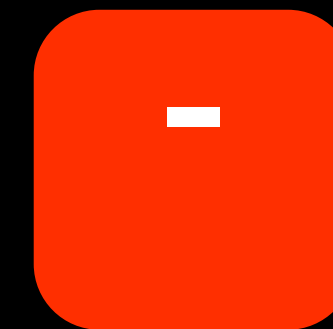


(Regional)

Fares & tickets



Vehicle management



## Lessons learned

- ✓ Fare integration and a feeder network are interdependent
- ✓ Internal coordination successful in Limburg
- ✓ (Financial) interests are important and inhibit contractual coordination

# Network assessment: passenger impacts

- ✓ Before and after network
- ✓ Smartcard + AVL data (Van Oort et al. 2015)
- ✓ Calculating travel times per OD



## Objective

## Perceived

Supply

Generalised Travel Time

Waiting time 2.18

In-vehicle time bus 1.28

In-vehicle time train 1.0

Transfer time 2.18

+ Actual Demand

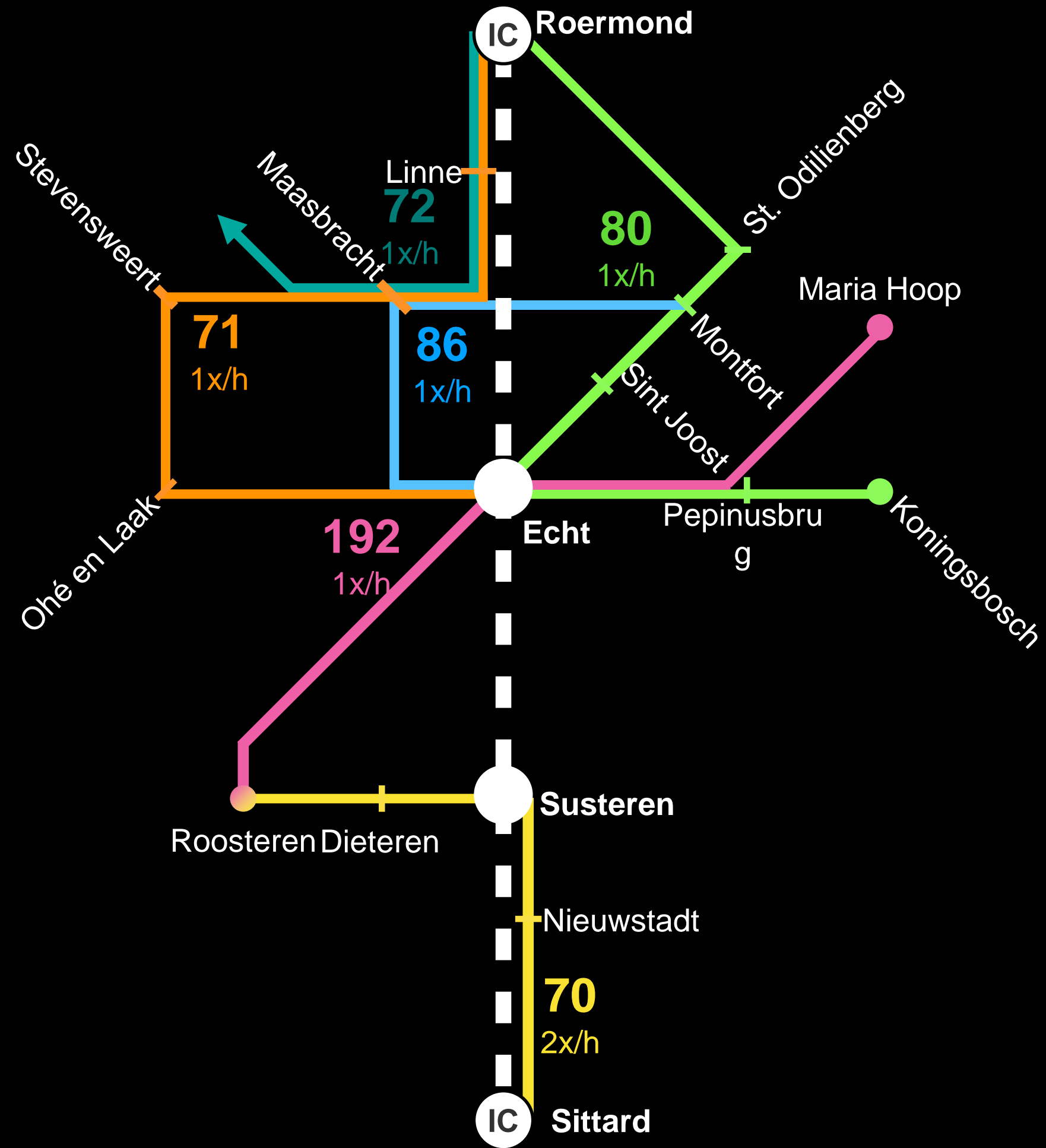
$v$

Transfer penalty 12.8

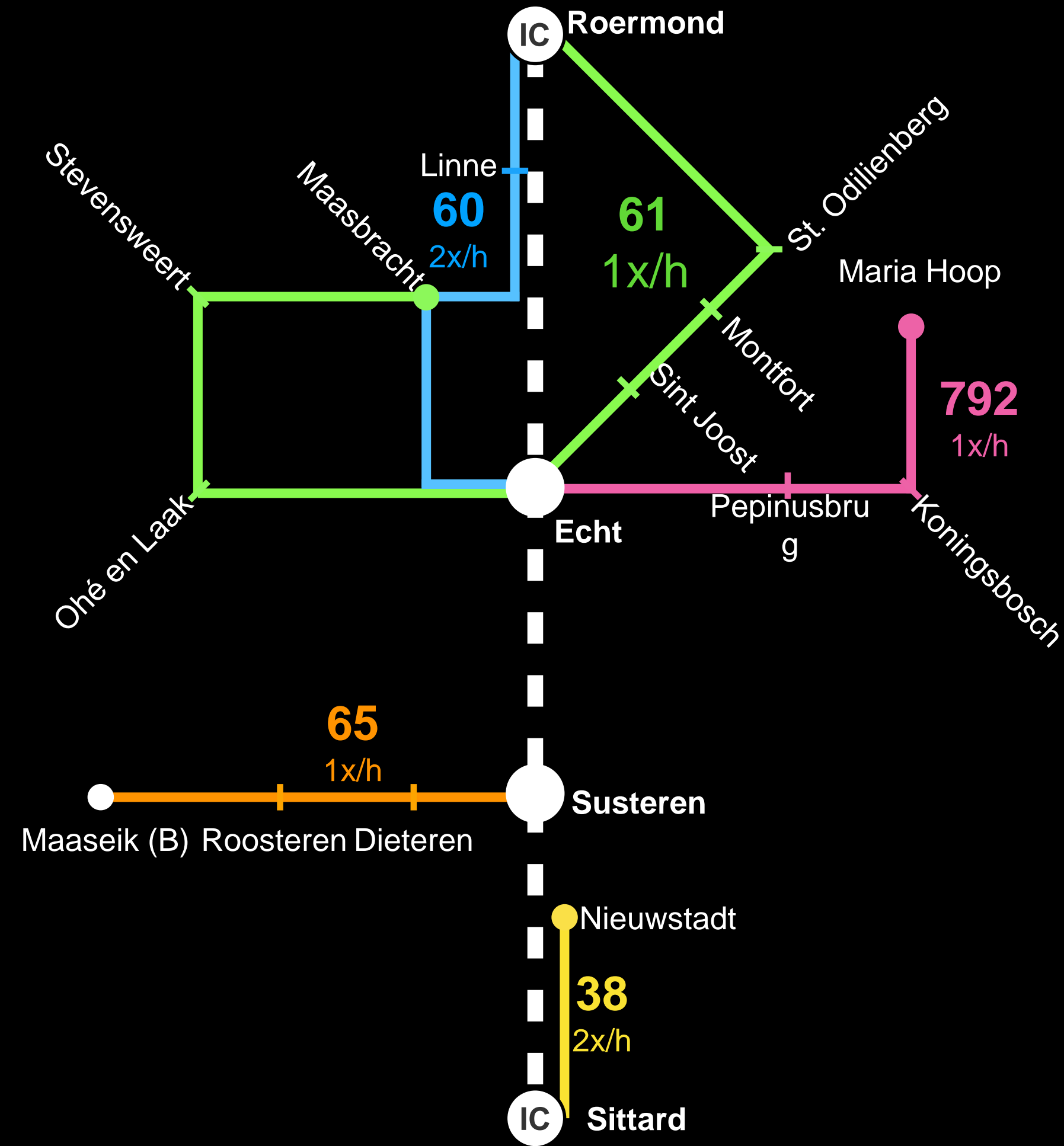
Generalised Travel Time

# Network Assessment

## Former network

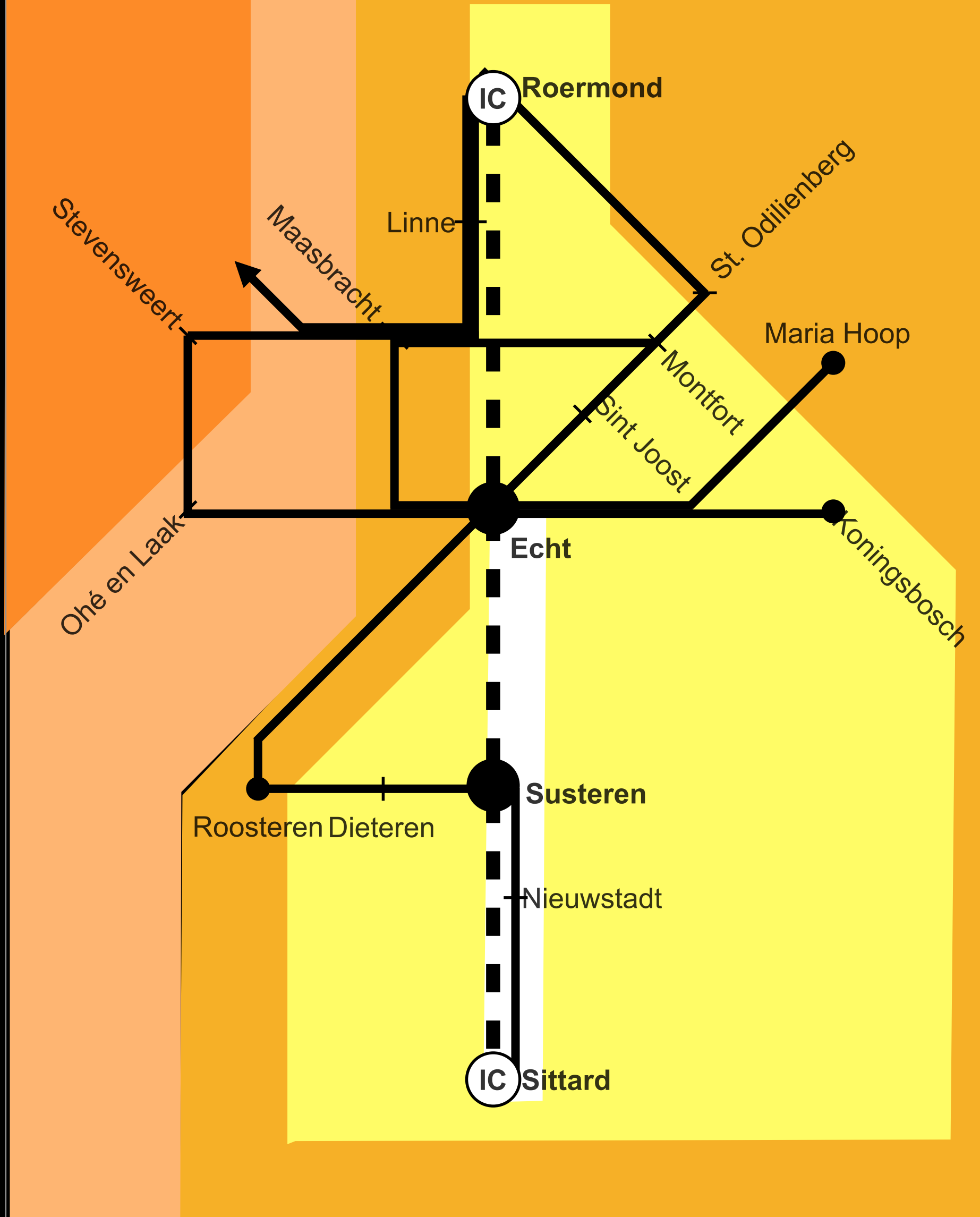


## Current network

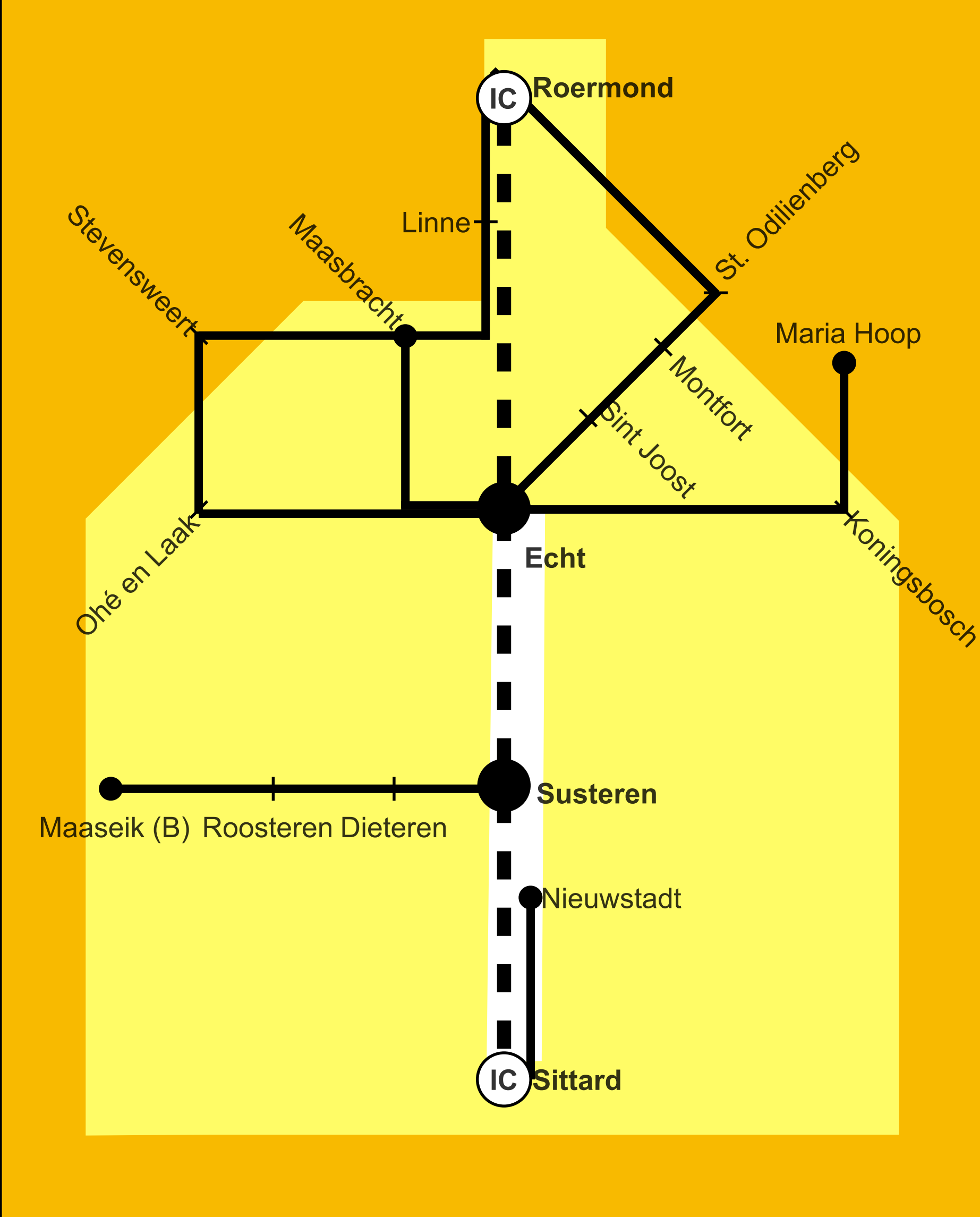


	Objective	Perceived
Supply	<p>Travel Time</p> <p><b>-7.3%</b></p> <p>36.8 to 34.1 min.</p>	<p>Generalised Travel Time</p> <p><b>-9.6%</b></p> <p>74.0 to 66.9 min.</p>
+ Actual Demand	<p>Weighted Travel Time</p> <p><b>-1.3%</b></p> <p>23.7 to 23.3 min.</p>	<p>Weighted Generalised Travel Time</p> <p><b>-2.6%</b></p> <p>39.2 to 38.2 min.</p>

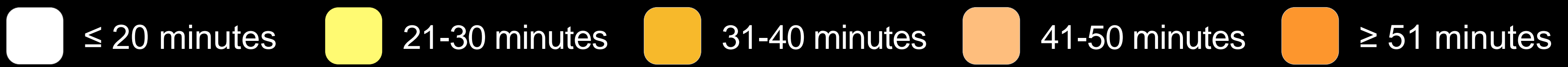
# Former network



# Current network



Travel Time



## Lessons learned

- ✓ On balance, travel time decrease
- ✓ Improved transfers main contributor
- ✓ Extra interchanges

	Positive	Negative
Internal	<p><b>Strengths</b></p> <ul style="list-style-type: none"> <li>• Feeder network</li> <li>• Integrated fares and tickets</li> </ul>	<p><b>Weaknesses</b></p> <ul style="list-style-type: none"> <li>• More interchanges</li> <li>• High investment risks</li> </ul>
External	<p><b>Opportunities</b></p> <ul style="list-style-type: none"> <li>• Pressurised PT budgets</li> <li>• Directly competing train and bus operators</li> </ul>	<p><b>Threats</b></p> <ul style="list-style-type: none"> <li>• Complex organisational structures</li> <li>• Duration on-going concessions</li> </ul>

# Questions / Contact?

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