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Socio-economic impact assessment Spatial and Transport Impacts of Automated Driving (PPT)

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CONFERENCE

Connected and Automated Driving

TOGETHER, SHAPING THE FUTURE



April 4th 2017

Socio-economic impact assessment

Spatial and Transport Impacts of Automated Driving



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03-04

April 2017

Brussels



Spatial and Transport Impacts of Automated Driving



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Spatial and Transport Impacts of Automated Driving





Dutch society and economy depend on transport



Dense road network



Port of Rotterdam



High traffic volumes



Schiphol airport

03-04

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Brussels





Strong governmental support



Automated vehicles can improve traffic efficiency and safety

Netherlands to facilitate large scale testing of automated vehicles



Driver assistance/ Partial automation



**Driver needs to be able to
intervene at all times**

Automated parking, autocruise

Conditional/ High automation



**Vehicle in control in special
conditions**

**Taxibots, platooning,
automated highways**

Comfort, efficiency, safety,
costs



Mode choice, location
choice, urban and
transport planning

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Spatial and Transport Impacts of Automated Driving

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Car driving more attractive!

Partial automation



Better comfort,
Less accidents
Less congestion

High automation



Travel time can partially be
used for other purpose

Full automation



Travel time can fully be
used for other purposes



Spatial implications

Functional



Geometric redesign of roads and junctions

Increasing sprawl residential and employment locations

Concentration activities by better accessibility

Spatial



Redesign of urban, commercial, touristic areas

No on street parking

Combinations with car sharing, electric driving

03-04

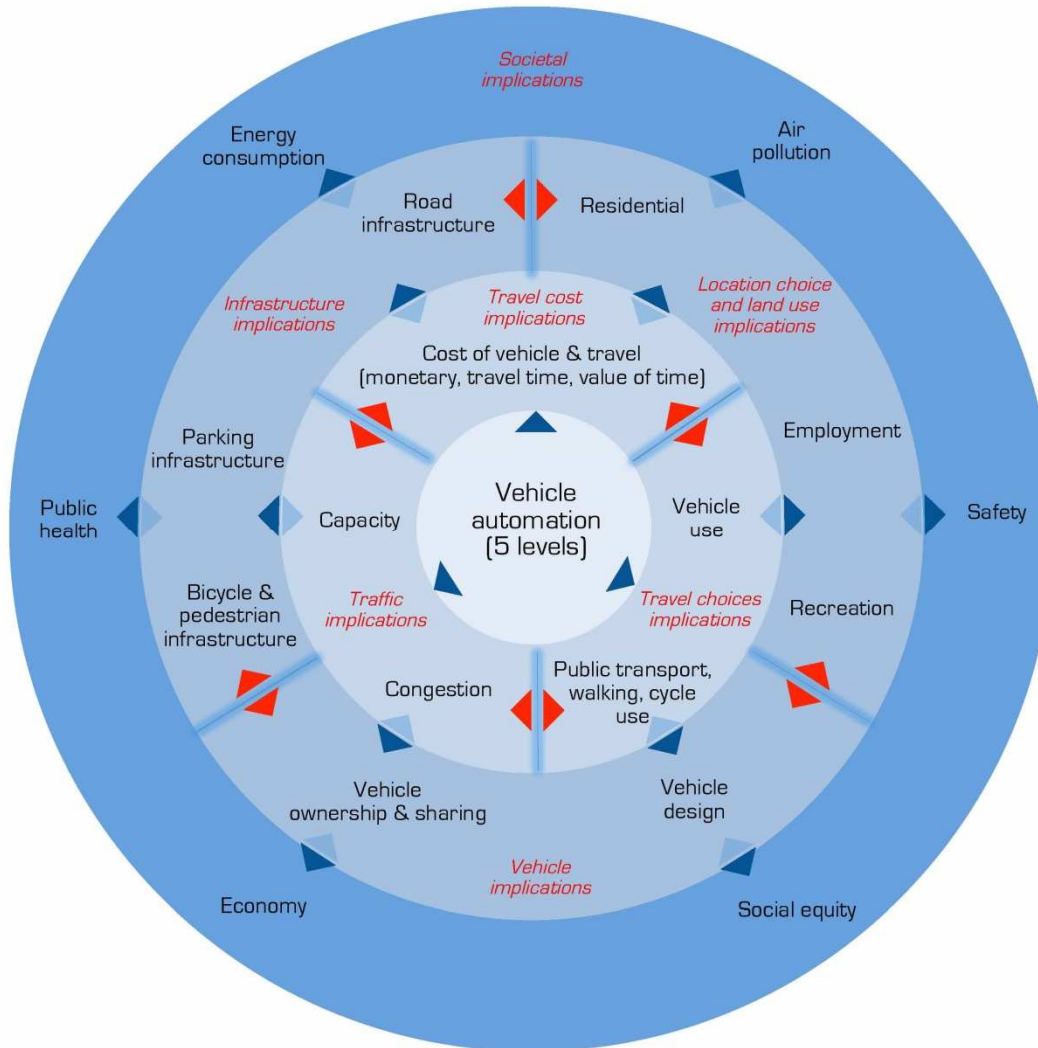
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Spatial and Transport Impacts of Automated Driving





Much progress short term and small scale impacts on driver behaviour and traffic flow.

Research on longer term, indirect, wider scale impacts on mobility, logistics, residential patterns and spatial-economic structure in its infancy.

Milakis, van Wee & van Arem (2017), Policy and society related implications of automated driving: A review of literature and directions for future research, Journal of Intelligent Transportation Systems, DOI: 10.1080/15472450.2017.1291351



Policy relevance

- Congestion and accessibility
- Safety
- Travel patterns
- Freight transport
- Public transport
- Socio-economic development
- Urban design
- Spatial structure
- Investment policies

National, regional, city authorities,
public transport operators, **Multimodal
hubs** (ports, airports)





Exploration using LMS

Automated Autonomous

5% capacity decrease on primary road network

	Index km travelled
Train	100.3
Car driver	99.8
Car passenger	99.7
Bus, tram, metro	100.2
Cycling	100.1
Walking	100.1
Total	99.98

Index congestion 115.7

Automated Cooperative

15% capacity increase primary road network
 10% capacity increase secondary road network
 10% decrease value of time commuting and business car trips

	Index km travelled
Train	98.8
Car driver	100.8
Car passenger	101.4
Bus, tram, metro	99.2
Cycling	99.3
Walking	99.4
Total	100.10

Index congestion 69.1

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Connected and Automated Driving

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Scientific challenges: understanding the spatial and transport changes?

Automated Driving



**Accessibility
Economy
Traffic Safety
Urban quality**

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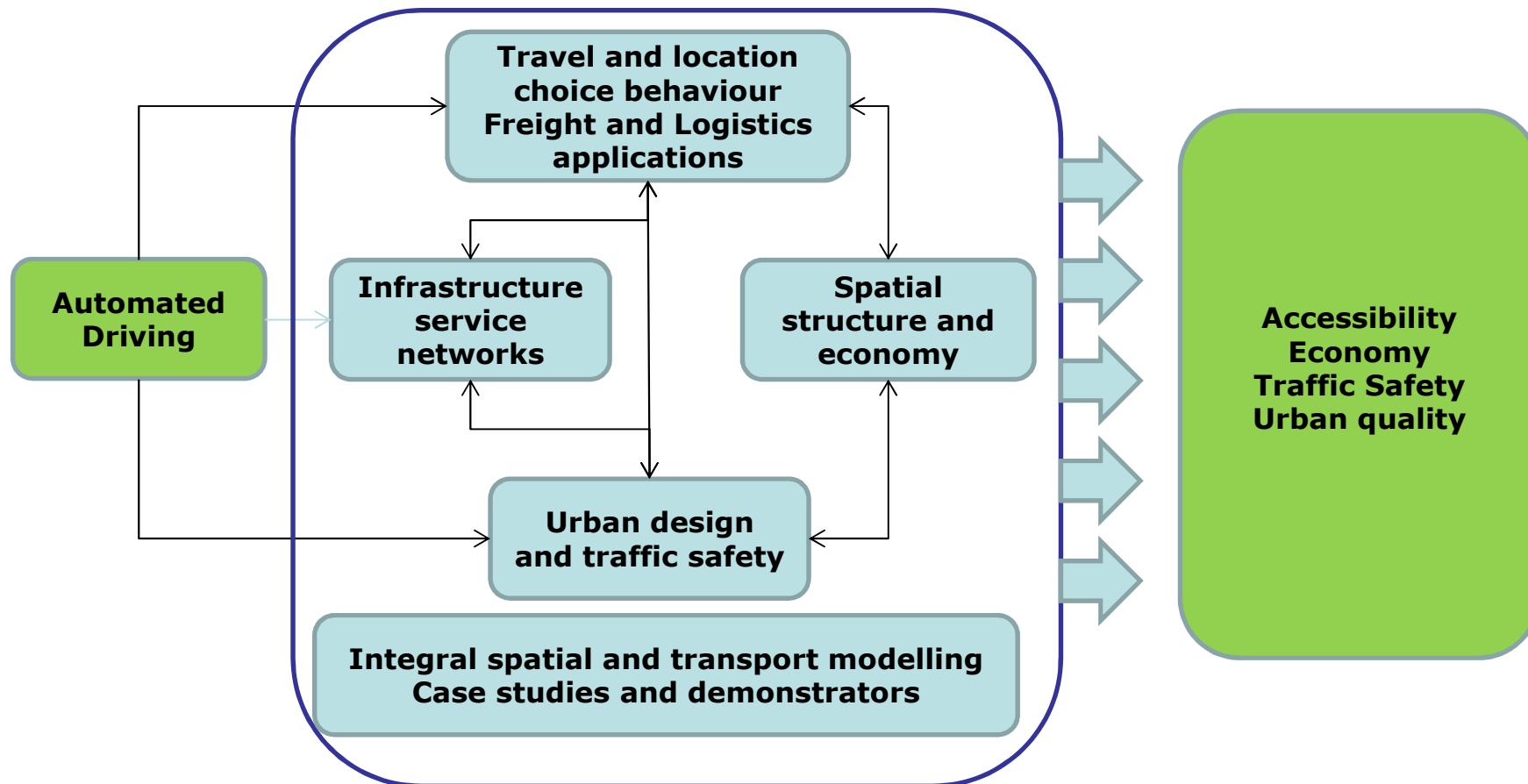
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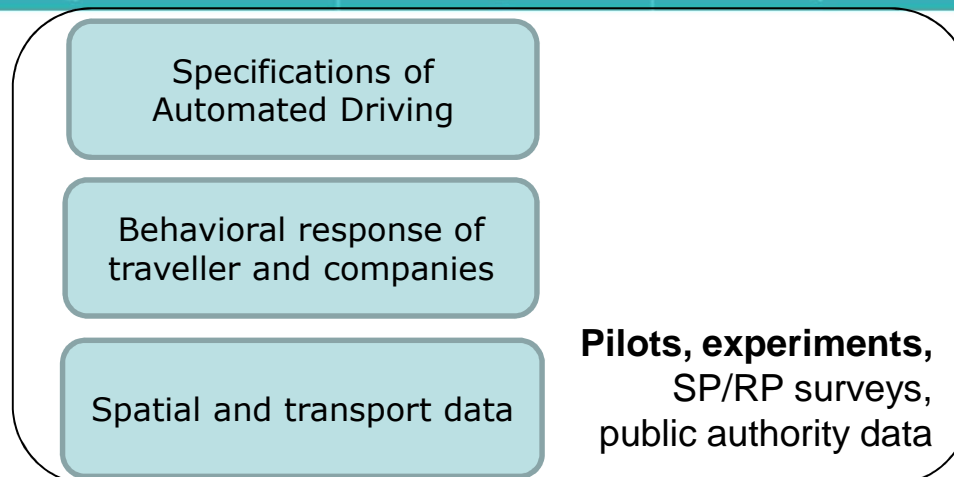


Scientific challenges: understanding the spatial and transport changes

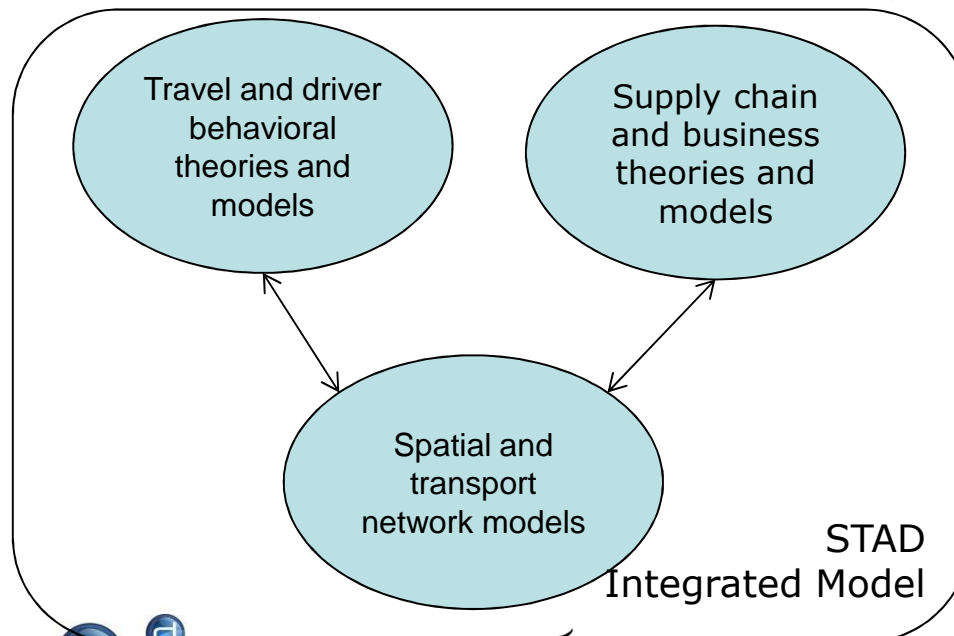




Data, theories and models



.. and others



Scientific partners,
Consultancy firms
Public authorities



Applications

Regional case studies: passenger cars, freight, public transport, parking

Spatial impacts, urban design, agglomeration

Business cases

Modelling tools, impacts, risks, benefits

Metropoolregio Rotterdam-The Hague
Province Zuid-Holland
Province North-Holland
Municipality of Amsterdam
Rotterdam The Hague Airport
Municipality of The Hague
Municipality of Rotterdam
AMS Advanced Metropolitan Solutions
SmartPort
SWOV Institute for Road Safety Research
RET NV
Mobycon
Province Gelderland
DTV Consultants
Connekt ITS Netherlands
Municipality of Delft
Rijkswaterstaat
KiM
CROW
Transdev-Connexion
RDW
TNO
Goudappel Coffeng

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STAD

2016-2020
2,3M€
27 person year

National Science
Foundation NWO
Sustainable Urban
Regions of the Future
SURF Programme



Agglomeration
Accessibility
Liveability

Parking
Public transport
Freight transport
Smart roads
Spatial planning
Urban design

Safe,
convenient,
efficient,
cheaper
mobility

Challenges

Instruments

Automated
driving



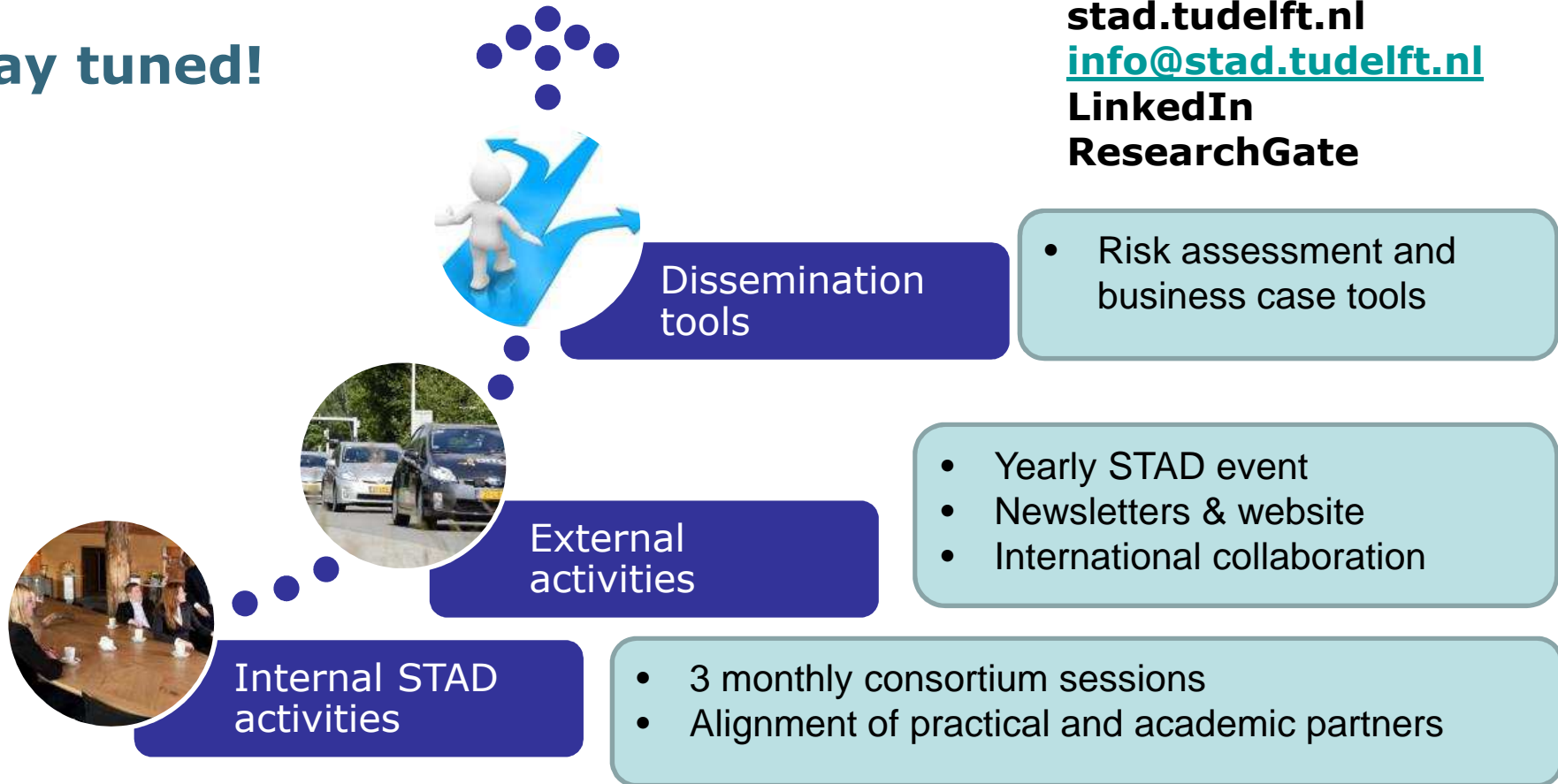
REGIOSPECIFIEK - VITALITEIT - VEERKRACHT

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Stay tuned!



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