



1700



1910



2026

Ir. Lotte Notelaers

2-2-2026

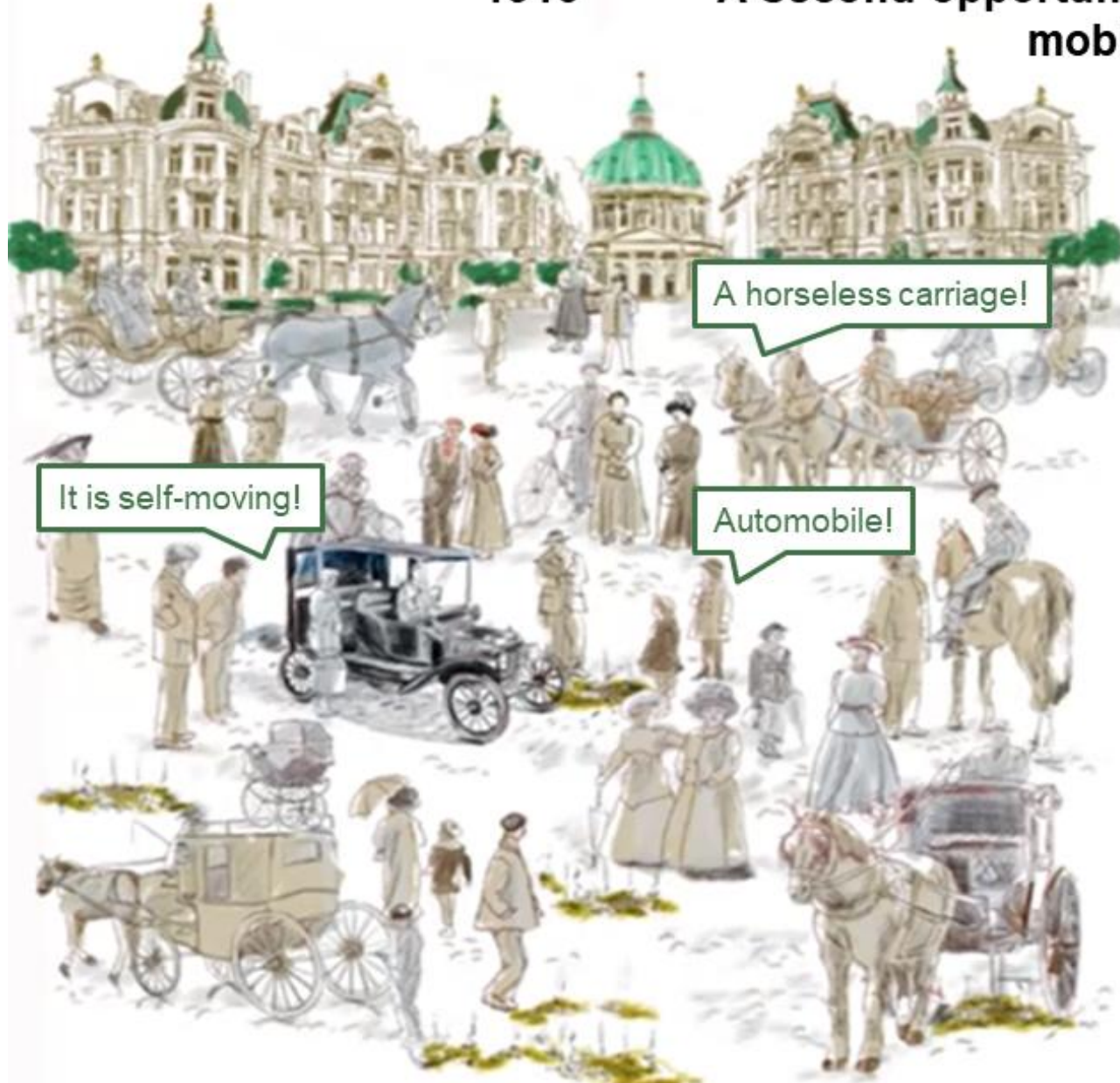
Prof. dr. ir. Chris Tampère

Prof. dr. ir. Claudio Roncoli

1910

A second opportunity for sustainable mobility

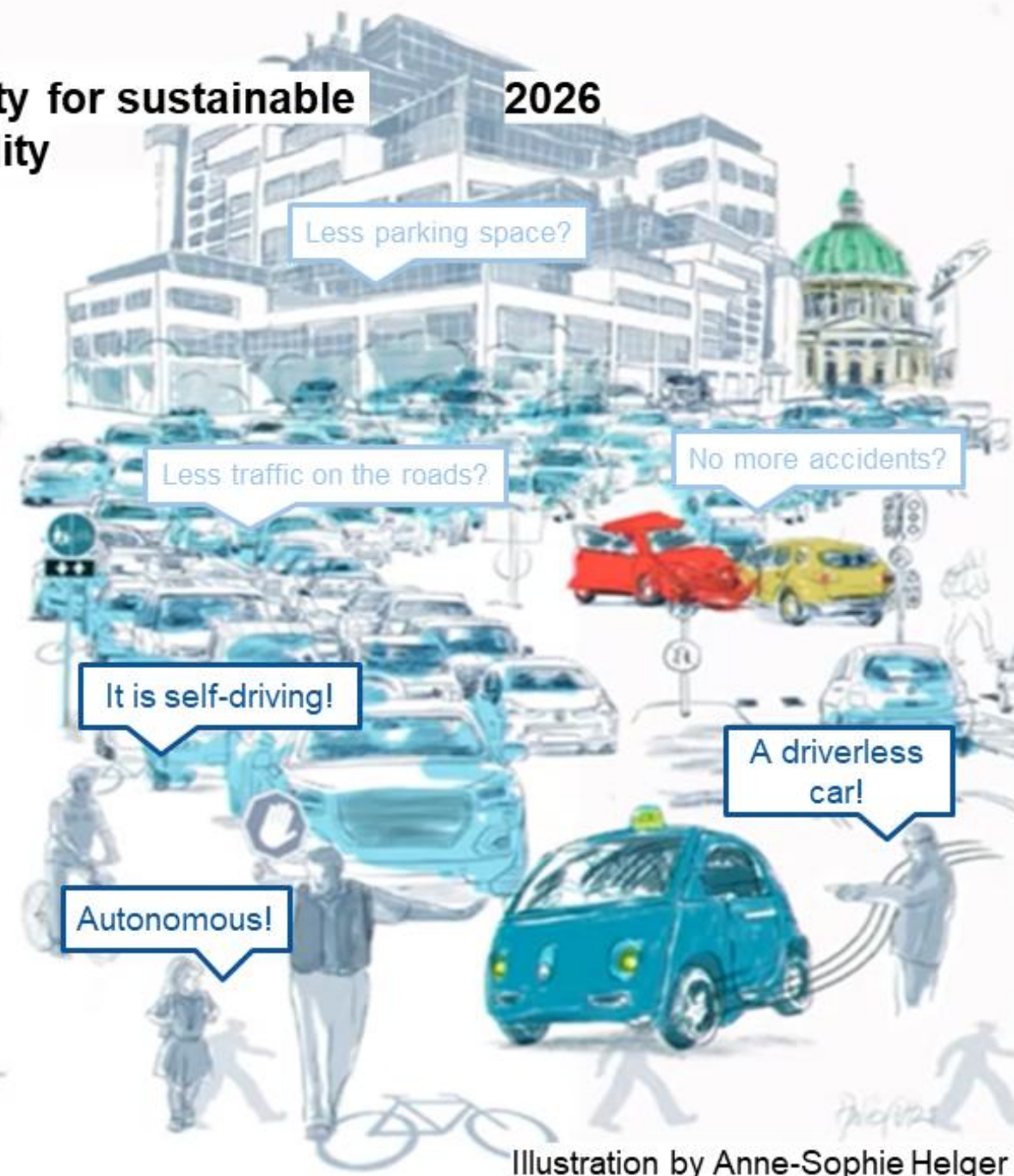
2026



A horseless carriage!

Automobile!

It is self-moving!



Less parking space?

Less traffic on the roads?

No more accidents?

It is self-driving!

A driverless car!

Autonomous!

Illustration by Anne-Sophie Helger



TRANSPORT PLANNING



VERKEER



ACTIEPUNT



TRANSPORT PLANNING



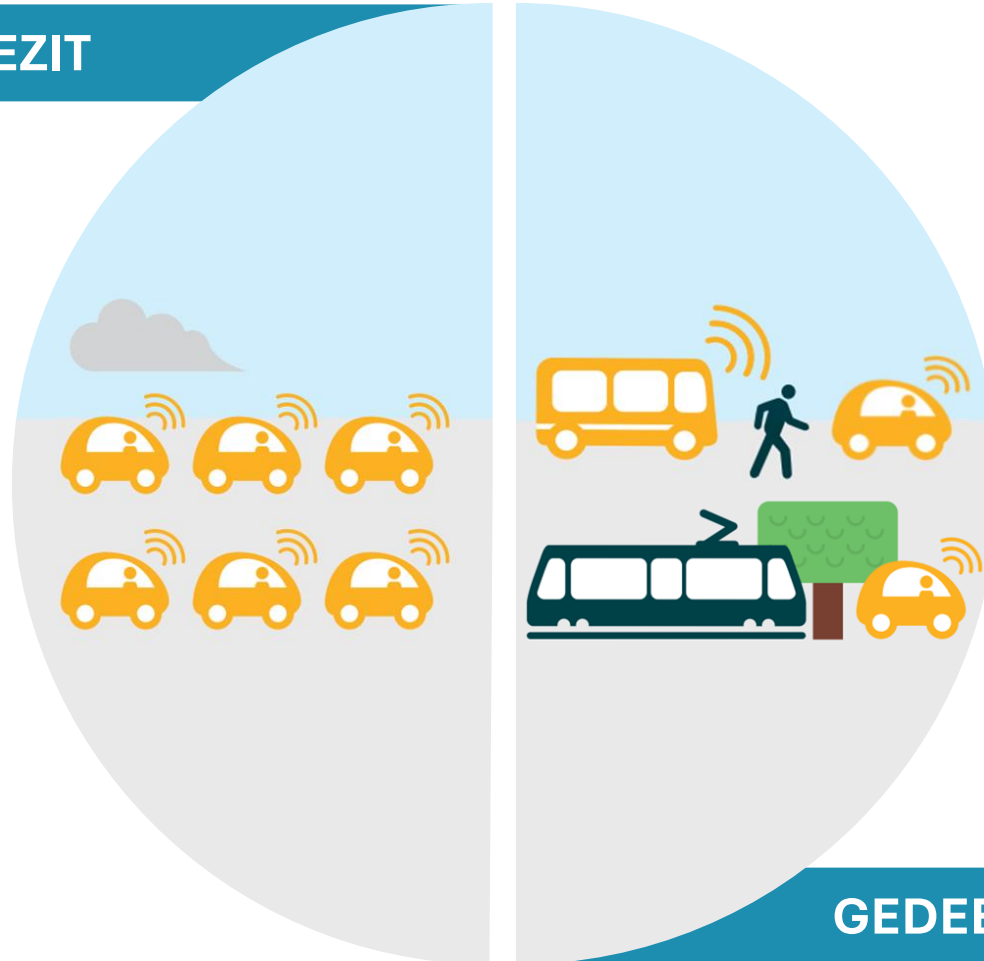
VERKEER



ACTIEPUNT

TOEKOMST SCENARIOS MET AUTONOME VOERTUIGEN

PRIVE BEZIT



GEDEELD GEBRUIK

PRIVE BEZIT



AUTO BEZIT

- 9.5% daling in auto bezit
- 48 km meer per dag per verminderde auto (= +50% per huishouden)
- In totaal 13,5% **meer gereden kilometers**

Vast
verplaatsingsgedrag
Atlanta, US
(Zhang et al., 2018)

LEGE VERPLAATSINGEN NAAR PARKEERLOCATIES

- 56% van de respondenten negeert de energiekosten geassocieerd met het herverplaatsen
- **Extra verplaatsing** van gemiddeld 6 min om 1 euro te besparen (WTR)
- WTR is afhankelijk van trip doeleinde

Seattle & Kansas
City, US
(Jia et al., 2022)

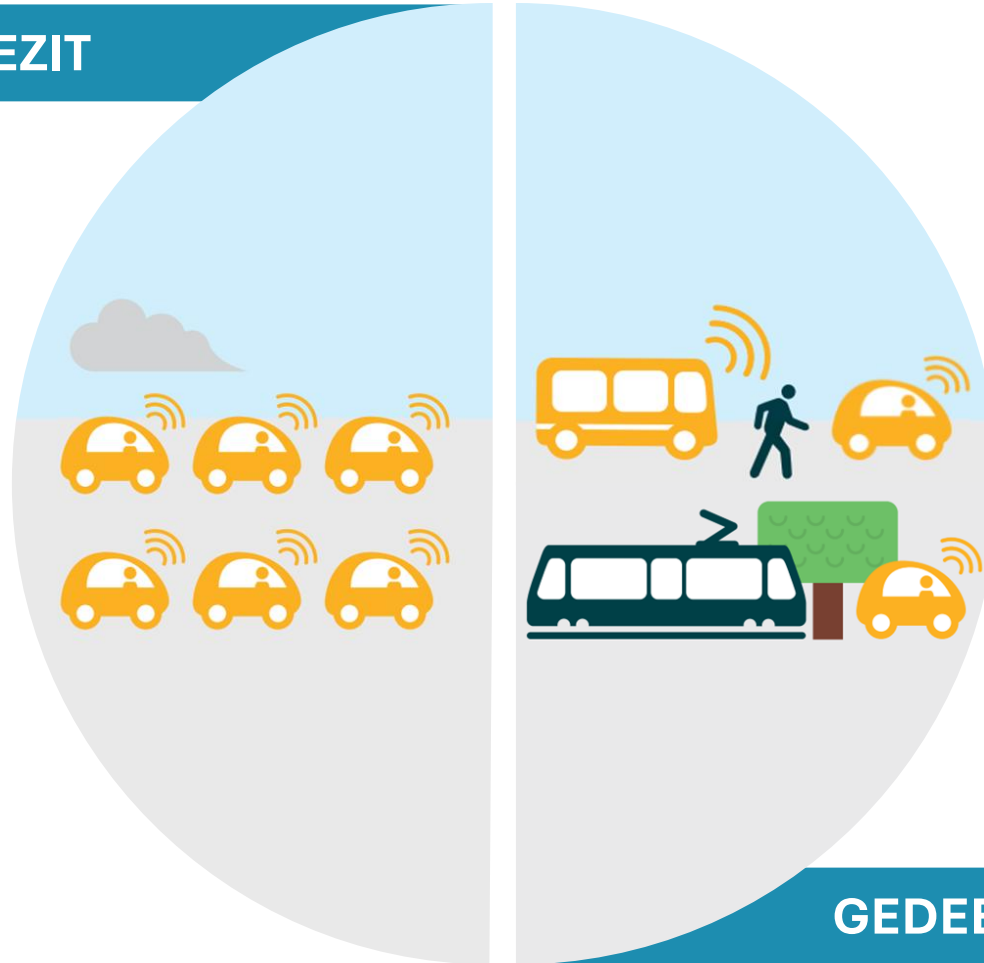
DALING IN REISTIJDWAARDERING (VOT)

- -30%
- **Grotere verplaatsingsafstanden**
- Ruimtelijke verspreiding ↑

(Huda et al. 2023;
Notelaers et al,
2025)

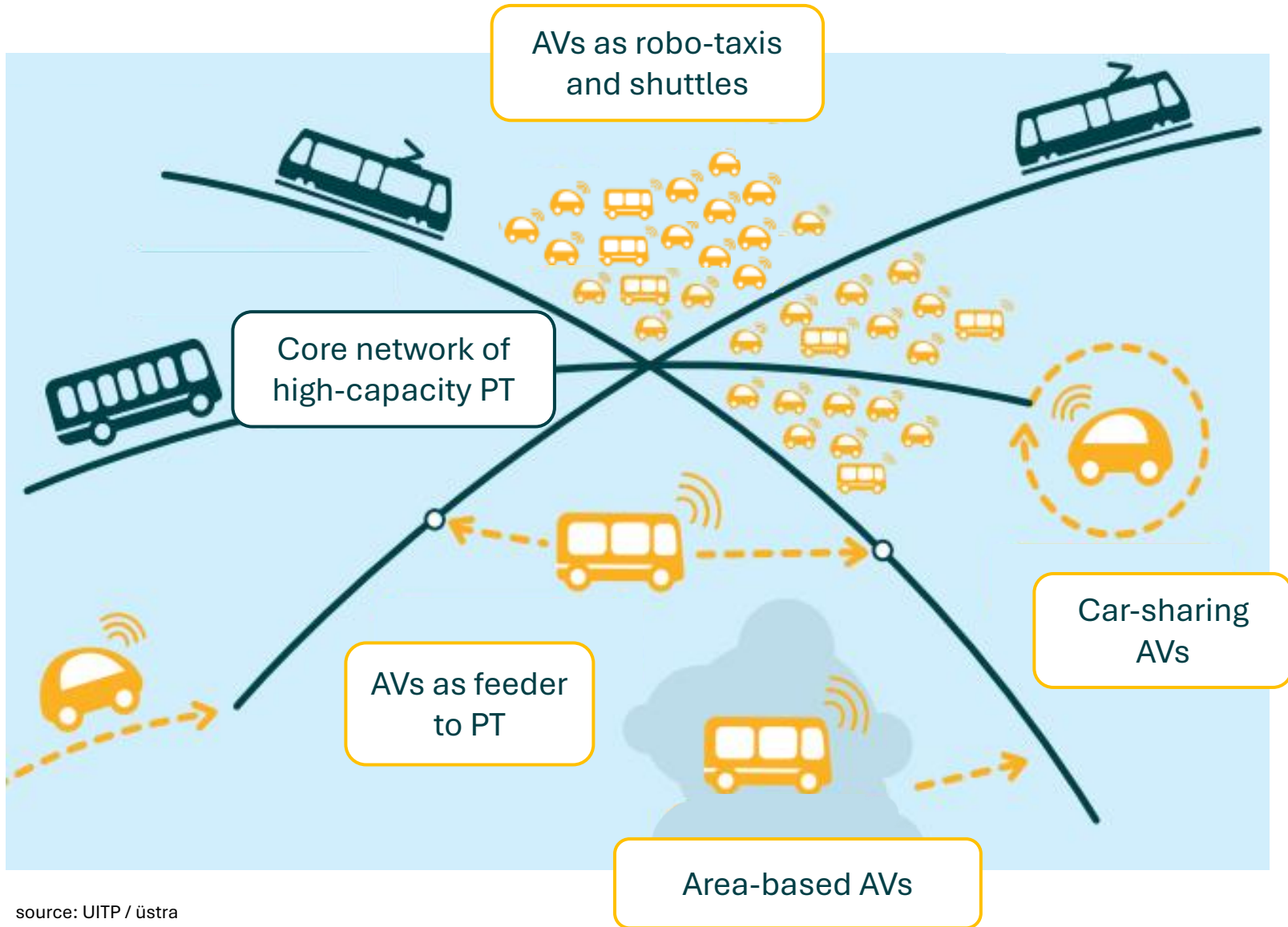
TOEKOMST SCENARIOS MET AUTONOME VOERTUIGEN

PRIVE BEZIT



GEDEELD GEBRUIK

GEDEELD GEBRUIK



source: UITP / üstra



GEDEELD GEBRUIK

- +9% gereden kilometers voor dezelfde vraag door **lege kilometers**

Austin, US
(Fagnant et al.,
2018)

GEDEELD GEBRUIK ↔ PRIVE GEBRUIK

- -20% gereden kilometers voor dezelfde vraag
- -30/50% autonome voertuigen
- -10/20% laadstations

Vaste vraag
Austin, US
(Farhan et al.,
2018)

STOP-TOT-STOP ↔ DEUR-TOT-DEUR

- -2 a 3% gereden kilometers
- vergroot de mogelijkheden om ritten te delen
- - 27% gereden kilometers tov solo-robotaxi

Vaste vraag
Bloomington, US
(Gurumurthy et al.,
2022)

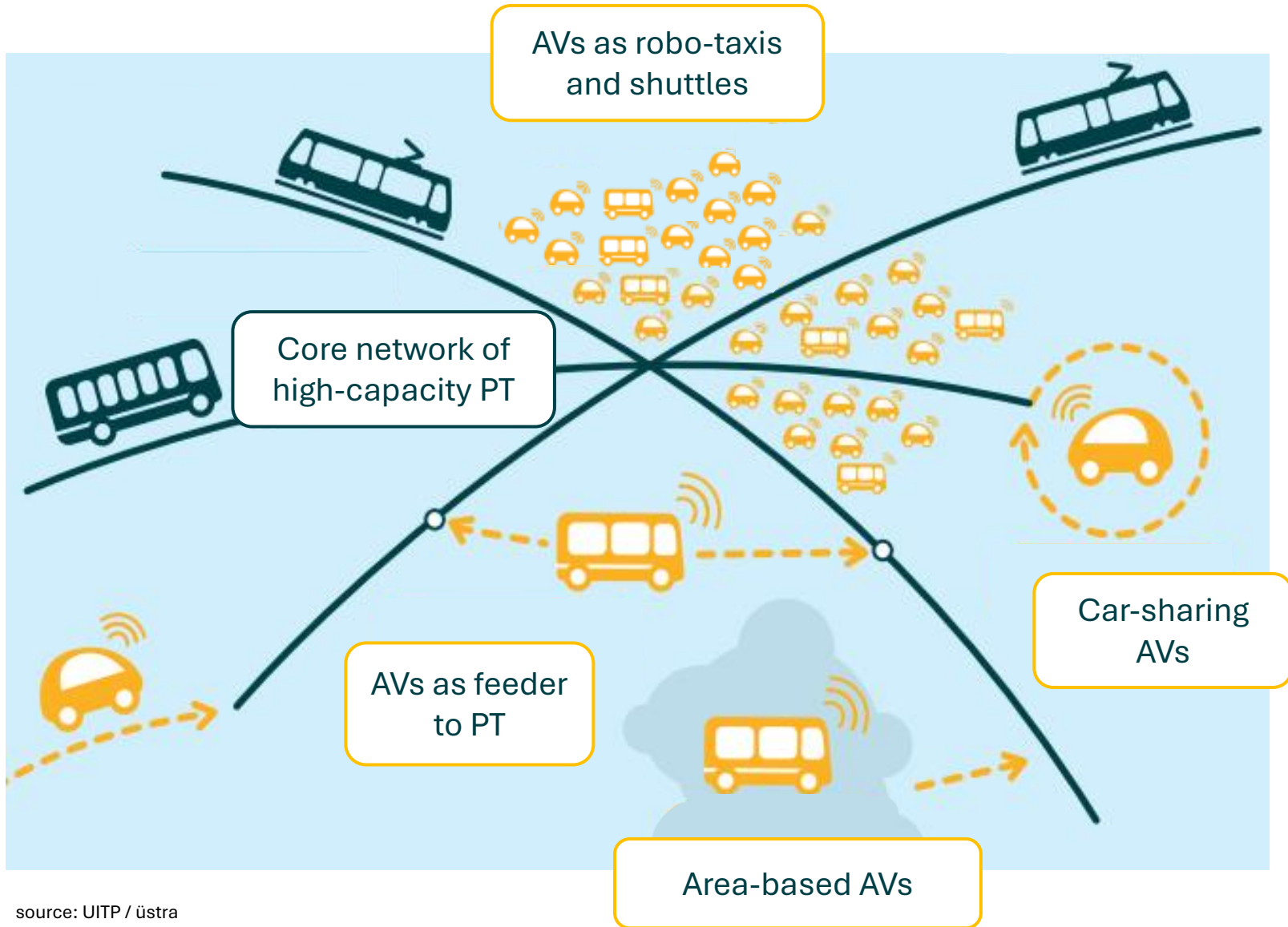
IMPACTEN HANGEN AF VAN

- Densiteit – Verplaatsingsafstand – Diversiteit in land use – Urban form

(Wang et al., 2021)



GEDEELD GEBRUIK



source: UITP / üstra



BRUSSEL CENTRAAL

ENTREE - INGANG



ENTREE - INGANG

*“MOETEN TREINEN NOG
BESTAAN?”*

TOEKOMST SCENARIOS MET AUTONOME VOERTUIGEN

PRIVE BEZIT

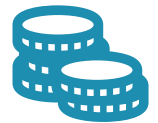


GEDEELD GEBRUIK

STURINGS MAATREGELEN



Slim Ontwerp – Goede alternatieven
– kernnet met vervoer op maat



(lege) Kilometerheffing –
parkeerkosten per zone



MaaS – Transparantie van
keuzemogelijkheden



Bewustmakingscampagnes



TRANSPORT PLANNING

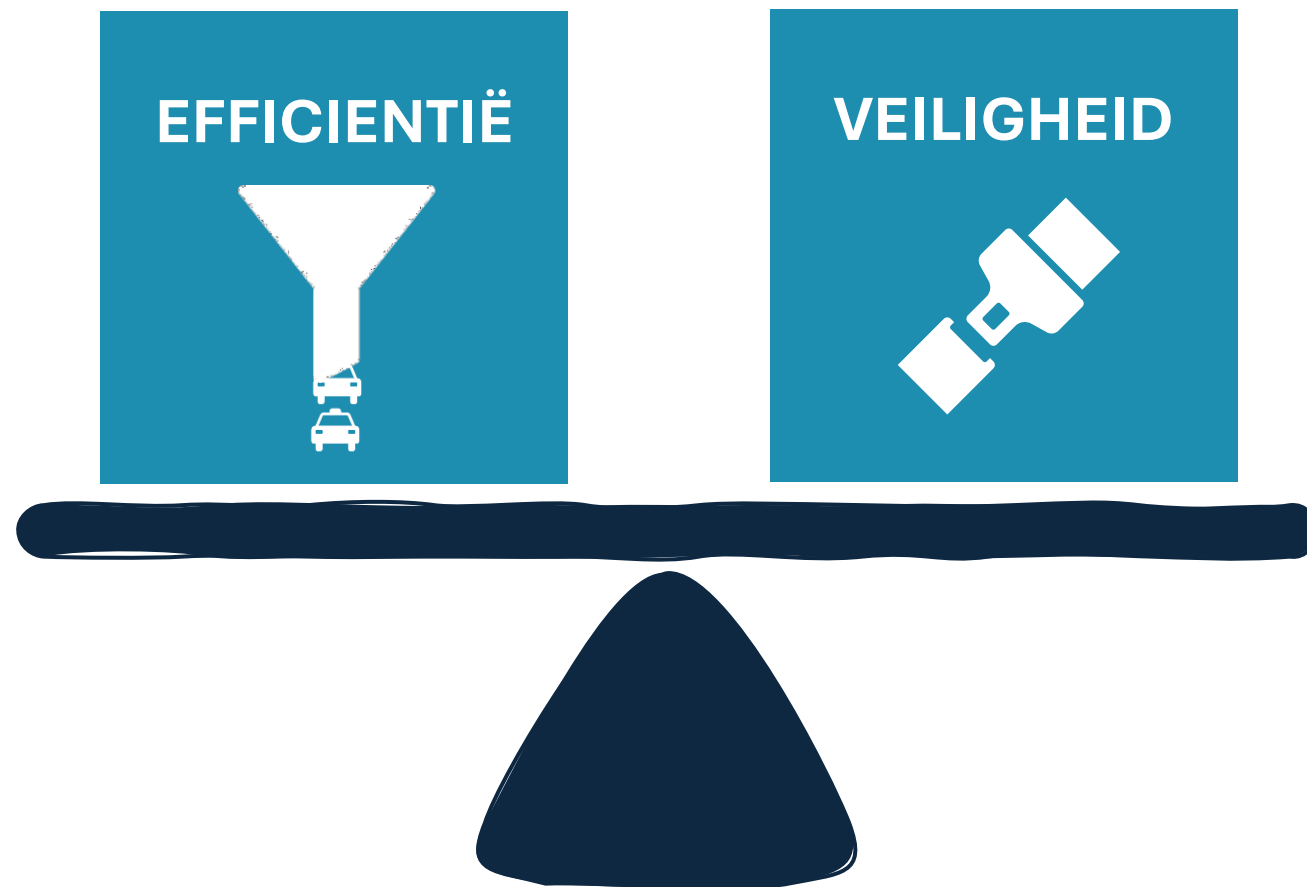


VERKEER

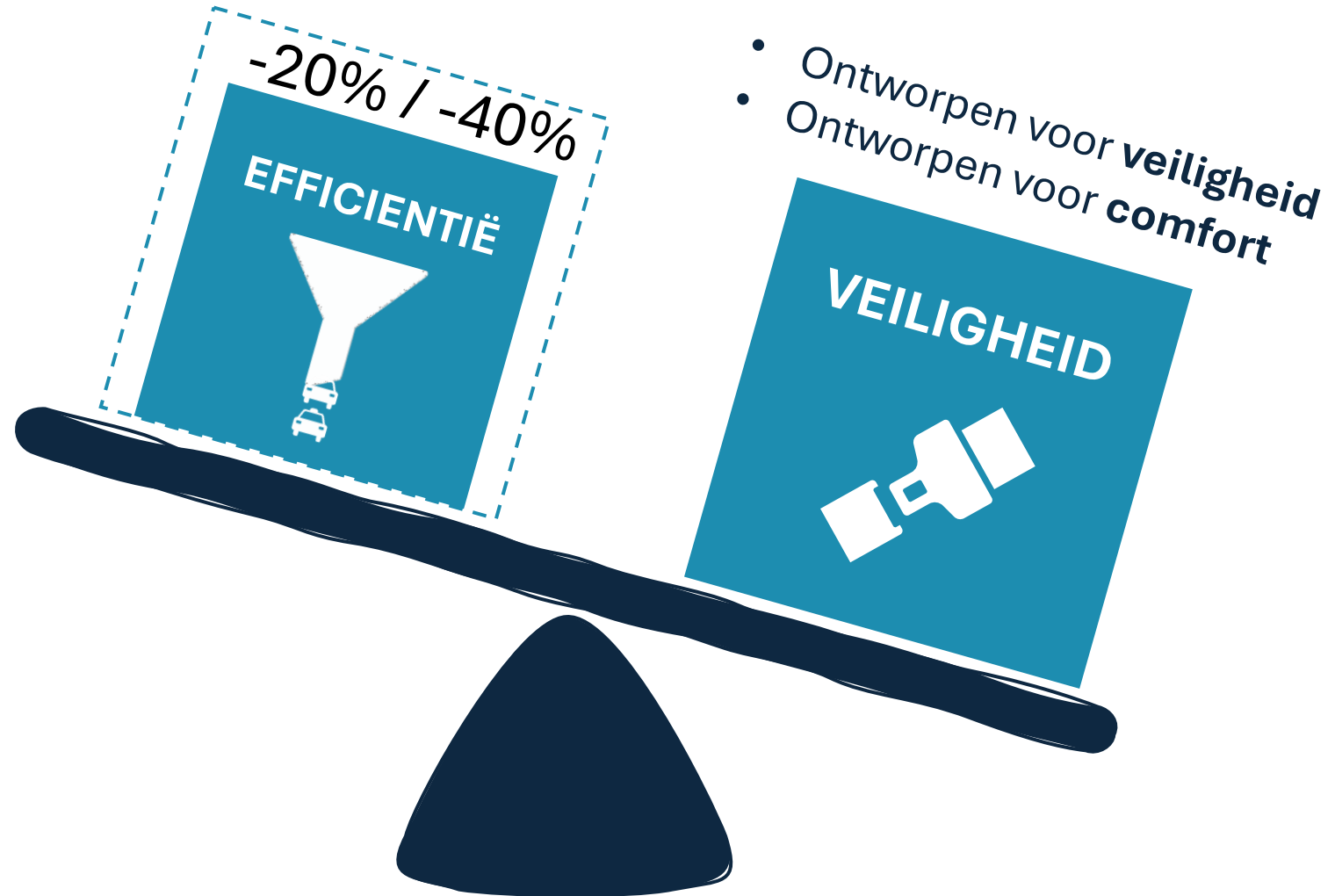


ACTIEPUNT

VERKEERS MANAGEMENT



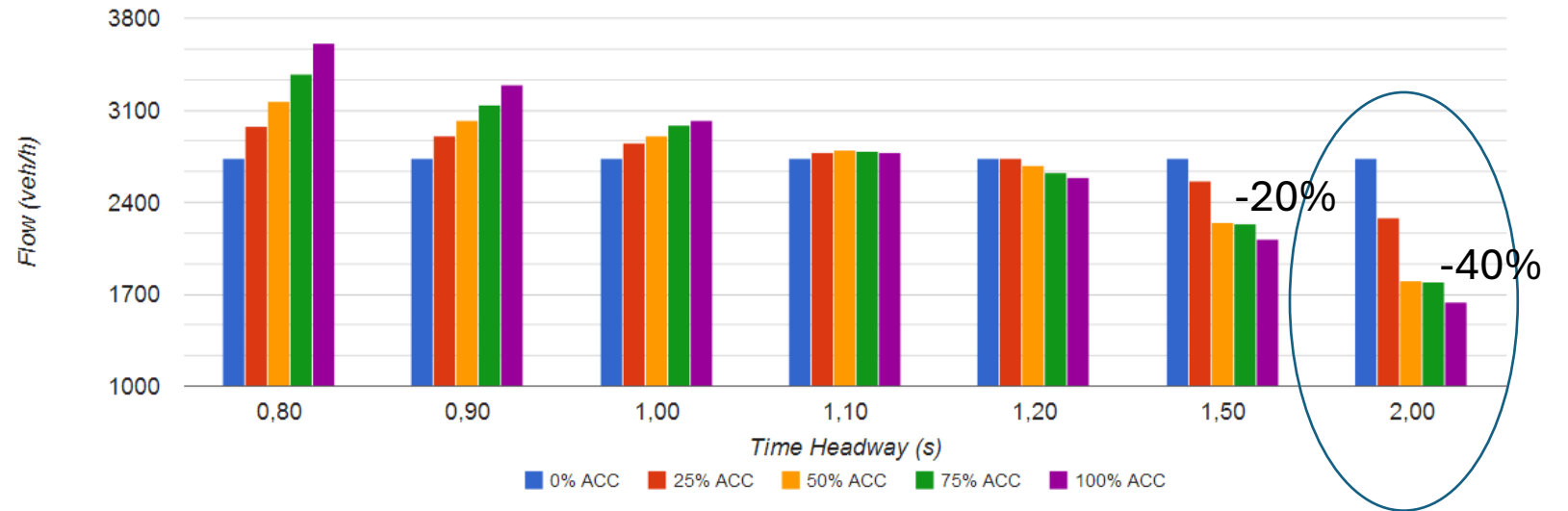
VERKEERS MANAGEMENT



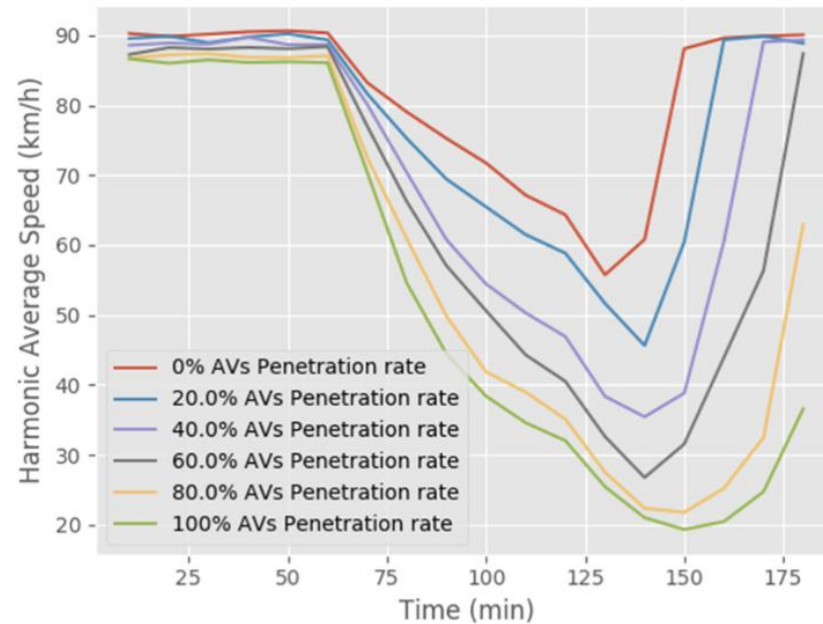
VERKEERS MANAGEMENT



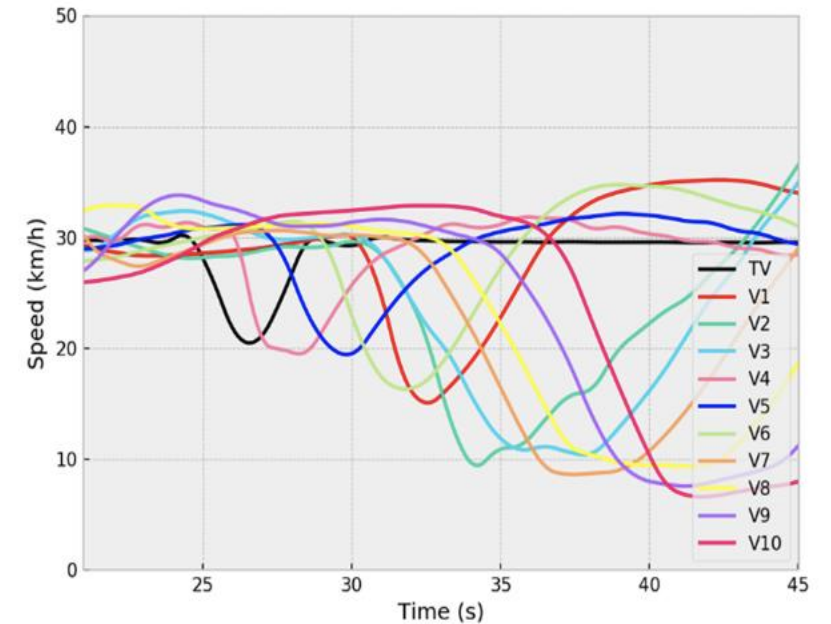
CAPACITEIT



GEMIDDELDE SNELHEID



VARIABILITEIT in SNELHEID



EFFICIENTIË



HOMOGEEN
AFGESCHIEDEN



EFFICIENTIË



ONDERHANDELING-
GEBASEERDE
INTERACTIES



GECONTROLEERDE
INTERACTIES



EFFICIENTIË



HETEROGEEN
GEMENGD



EFFICIENTIË



CONNECTIVITEIT & COOPERATIE



WAAR ZIJN DE ANDERE WEGGEBRUIKERS?
NOG DECENNIA LANG GEMENGD VERKEER!

...this reduces traffic congestion, fuel
use, and harmful emissions.

STURINGS MAATREGELEN



ODD – geofencing – subnetwerk



Curbside management



Operationeel verkeersmanagement



Infrastructuur – weg ontwerp



Inzetten op gedeeld vervoer



Connectiviteit en Cooperatie



TRANSPORT PLANNING



VERKEER

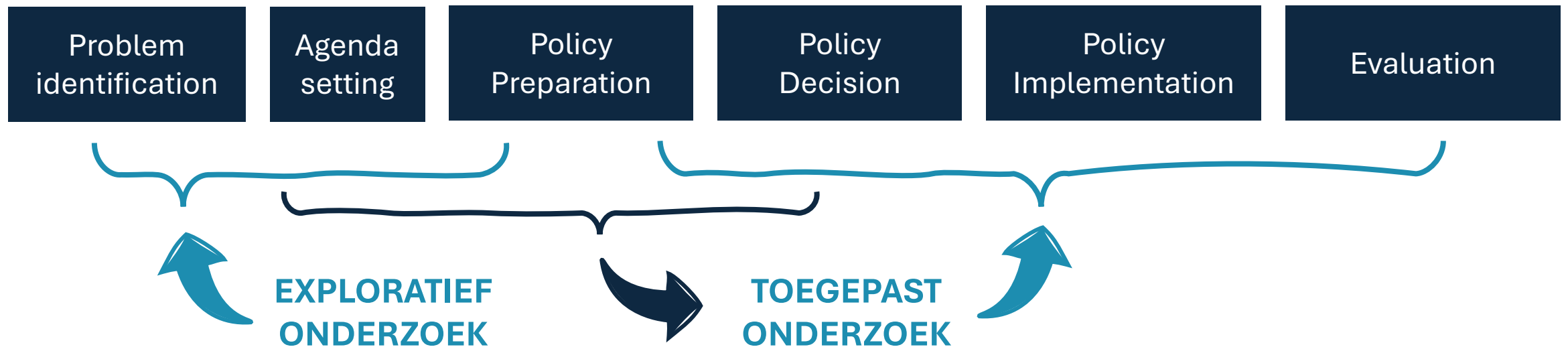


ACTIEPUNT



**INVESTEER IN
ANTICIPATIE!**

SCIENCE 4 POLICY

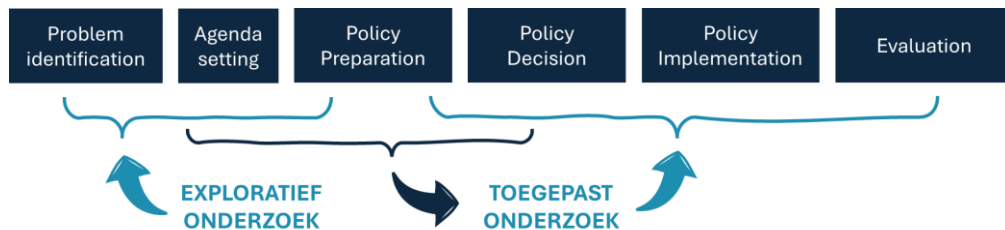


- *Let's meet & talk*
- Gezamenlijke beleids- en onderzoeksagenda
- Science4Policy project oproepen met budgetten
- Open data

INVESTEER IN STRUCTURELE SAMENWERKING ROND ANTICIPATIE VAN AUTONOME MOBILITEIT!



SCIENCE 4 POLICY



- *Let's meet & talk*
- **Gezamenlijke beleids- en onderzoeksagenda**
- **Science4Policy project oproepen + budgetten**
- **Open data**

Thanks! Questions?

LinkedIn:



Email:

lotte.notelaers@kuleuven.be
chris.tampere@kuleuven.be
claudio.roncoli@kuleuven.be

Bevraging Gedeeld Autonoom Vervoer
Vlaanderen:

[SAV Survey Flanders](#)



Simulatie Case Study Leuven:

*Coming soon
Available on request*

KU LEUVEN



INSTITUTE FOR MOBILITY

Referenties:

(GEDEELD GEBRUIK)

- Fagnant, D.J., Kockelman, K.M. Dynamic ride-sharing and fleet sizing for a system of shared autonomous vehicles in Austin, Texas. *Transportation* 45, 143–158 (2018). <https://doi.org/10.1007/s11116-016-9729-z>
- J. Farhan, T. Donna Chen, Impact of ridesharing on operational efficiency of shared autonomous electric vehicle fleet, *Transportation Research Part C: Emerging Technologies*, Volume 93, 2018, Pages 310-321, ISSN 0968-090X, <https://doi.org/10.1016/j.trc.2018.04.022>.
- Krishna Murthy Gurumurthy, Kara M. Kockelman, Dynamic ride-sharing impacts of greater trip demand and aggregation at stops in shared autonomous vehicle systems, *Transportation Research Part A: Policy and Practice*, Volume 160, 2022, Pages 114-125, ISSN 0965-8564, <https://doi.org/10.1016/j.tra.2022.03.032>.
- Kaidi Wang, Wenwen Zhang, The role of urban form in the performance of shared automated vehicles, *Transportation Research Part D: Transport and Environment*, Volume 93, 2021, 102744, ISSN 1361-9209, <https://doi.org/10.1016/j.trd.2021.102744>.
- Joschka Bischoff, Michal Maciejewski, Simulation of City-wide Replacement of Private Cars with Autonomous Taxis in Berlin, *Procedia Computer Science*, Volume 83, 2016, Pages 237-244, ISSN 1877-0509, <https://doi.org/10.1016/j.procs.2016.04.121>.
- R. Engelhardt, F. Dandl, A. Bilali and K. Bogenberger, "Quantifying the Benefits of Autonomous On-Demand Ride-Pooling: A Simulation Study for Munich, Germany," 2019 IEEE Intelligent Transportation Systems Conference (ITSC), Auckland, New Zealand, 2019, pp. 2992-2997, doi: 10.1109/ITSC.2019.8916955.

(PRIVE BEZIT)

- Wenwen Zhang, Subhrajit Guhathakurta, Elias B. Khalil, The impact of private autonomous vehicles on vehicle ownership and unoccupied VMT generation, *Transportation Research Part C: Emerging Technologies*, Volume 90, 2018, Pages 156-165, ISSN 0968-090X, <https://doi.org/10.1016/j.trc.2018.03.005>.

Referenties:

(PRIVE BEZIT)

- Wenjian Jia, T. Donna Chen, Wenwen Zhang, Willingness-to-relocate: Examining preferences for parking relocation of privately-owned automated vehicles, Transportation Research Part D: Transport and Environment, Volume 108, 2022, 103318, ISSN 1361-9209, <https://doi.org/10.1016/j.trd.2022.103318>.
- Huda, F. Y., Currie, G., & Kamruzzaman, Md. (2023). Understanding the value of autonomous vehicles – an empirical meta-synthesis. Transport Reviews, 43(6), 1058–1082. <https://doi.org/10.1080/01441647.2023.2189324>

(VERKEER)

- Papamichail et al. (2019): Motorway traffic flow modelling, estimation and control with vehicle automation and communication systems. Annual Reviews in Control, vol. 48, pp. 325-346.
- Mattas et al. (2018): Simulating deployment of connectivity and automation on the Antwerp ring road. IET Intelligent Transport System, vol. 12, pp. 1036-1044.
- Ciuffo et al. (2021): Requiem on the positive effects of commercial adaptive cruise control on motorway traffic and recommendations for future automated driving systems. Transportation Research Part C: Emerging Technologies, vol. 130, 103305.

Attributions:

- Photo Brussels Central: PhotoNews
- Shuttle Icon: by Slidicon from Flaticon
- Selfdriving car Icon: Mobility icons created by Freepik from Flaticon
- Belgium map: Belgium icons created by Anditii Creative from Flaticon
- Policy icon: Policy icons created by gravisio from Flaticon
- Scenario Figures: : UITP / üstra
- Transport planning afbeelding: ITF
- Verkeer afbeelding: Luchtfoto van Shanghai overbrug bij de nacht van fanjianhua op Freepik

Referenties (extra):

(INTEGRATIE MET OV)

- Baichuan Mo, Zhejing Cao, Hongmou Zhang, Yu Shen, Jinhua Zhao, Competition between shared autonomous vehicles and public transit: A case study in Singapore, Transportation Research Part C: Emerging Technologies, Volume 127, 2021, 103058, ISSN 0968-090X, <https://doi.org/10.1016/j.trc.2021.103058>.
- Jian Wen, Yu Xin Chen, Neema Nassir, Jinhua Zhao, Transit-oriented autonomous vehicle operation with integrated demand-supply interaction, Transportation Research Part C: Emerging Technologies, Volume 97, 2018, Pages 216-234, ISSN 0968-090X, <https://doi.org/10.1016/j.trc.2018.10.018>.

(CURB management)

- [Assessing the impacts of shared autonomous vehicles on congestion and curb use: A traffic simulation study in The Hague, Netherlands - ScienceDirect](#)