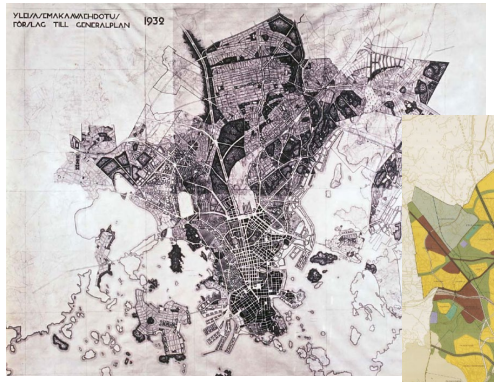
Transportation systems a view point from the City of Helsinki planning office

Niklas Aalto-Setälä
Strategic urban planner

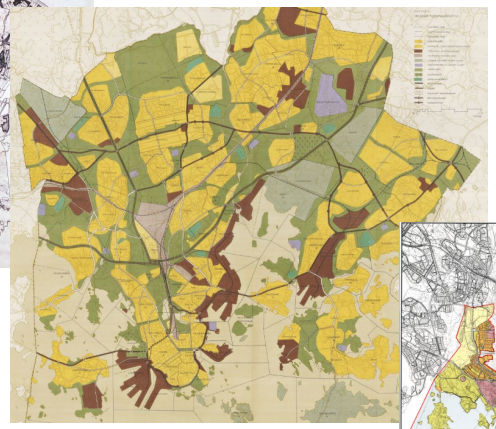
Helsinki, Aalto University
24.11.2020

Helsinki

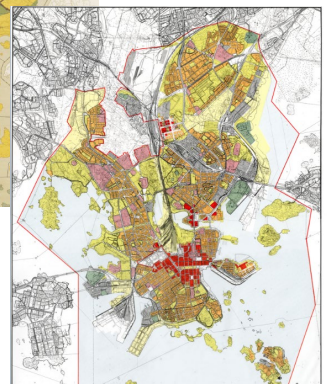
Helsinki's Master Plans



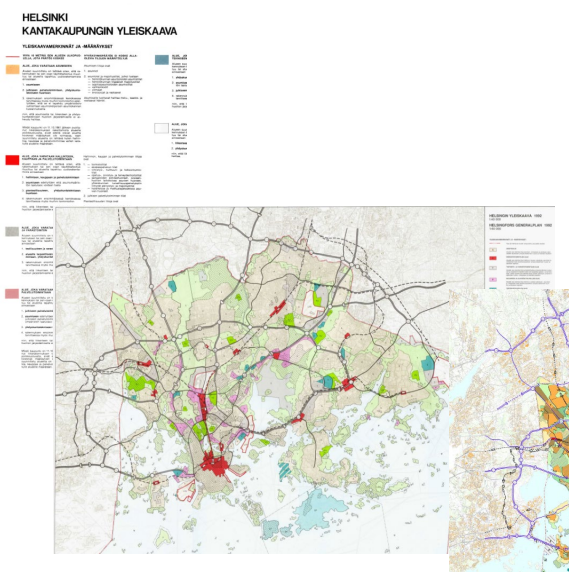
1932



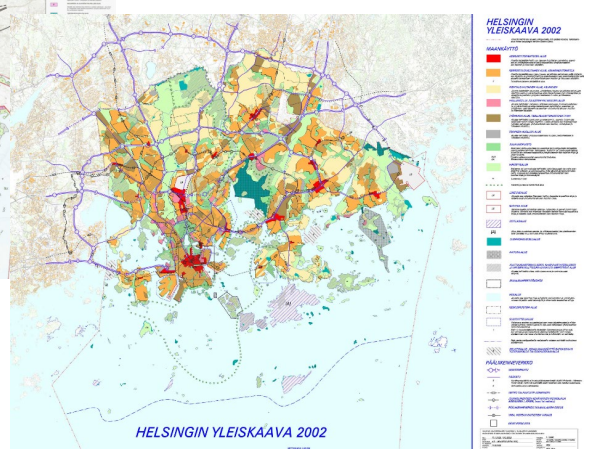
1960



1978



1992



2002

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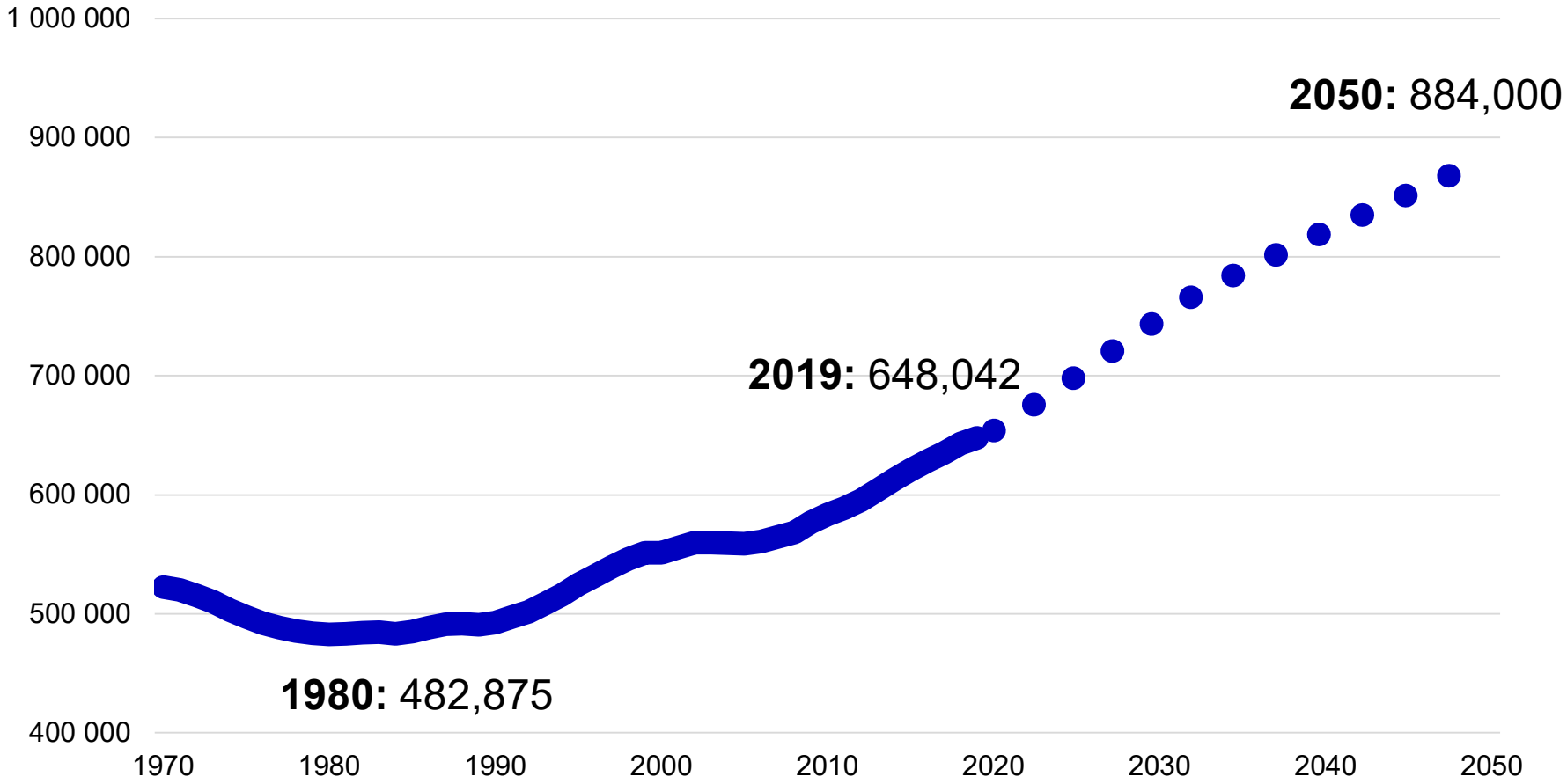
Helsinki is a fast-growing city

Helsinki population 1970–2019 and forecast to 2050



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1930’s

Source: Kaupunginmuseo

Helsinki

1960’s

Source: Kaupunginmuseo

Helsinki

1970’s

Source: Kaupunginmuseo

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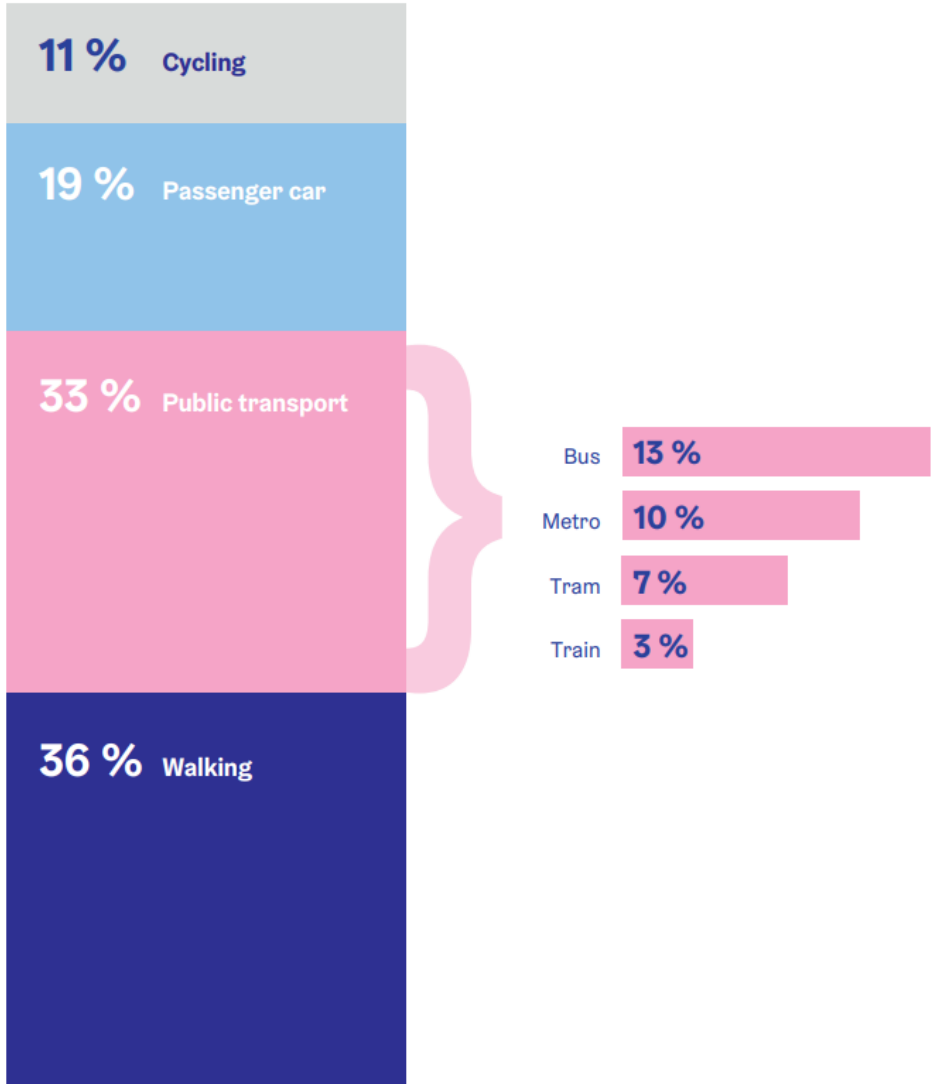
Transport

Modal split
(% of all journeys in Helsinki, 2018)



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Climate Change

Carbon neutrality program

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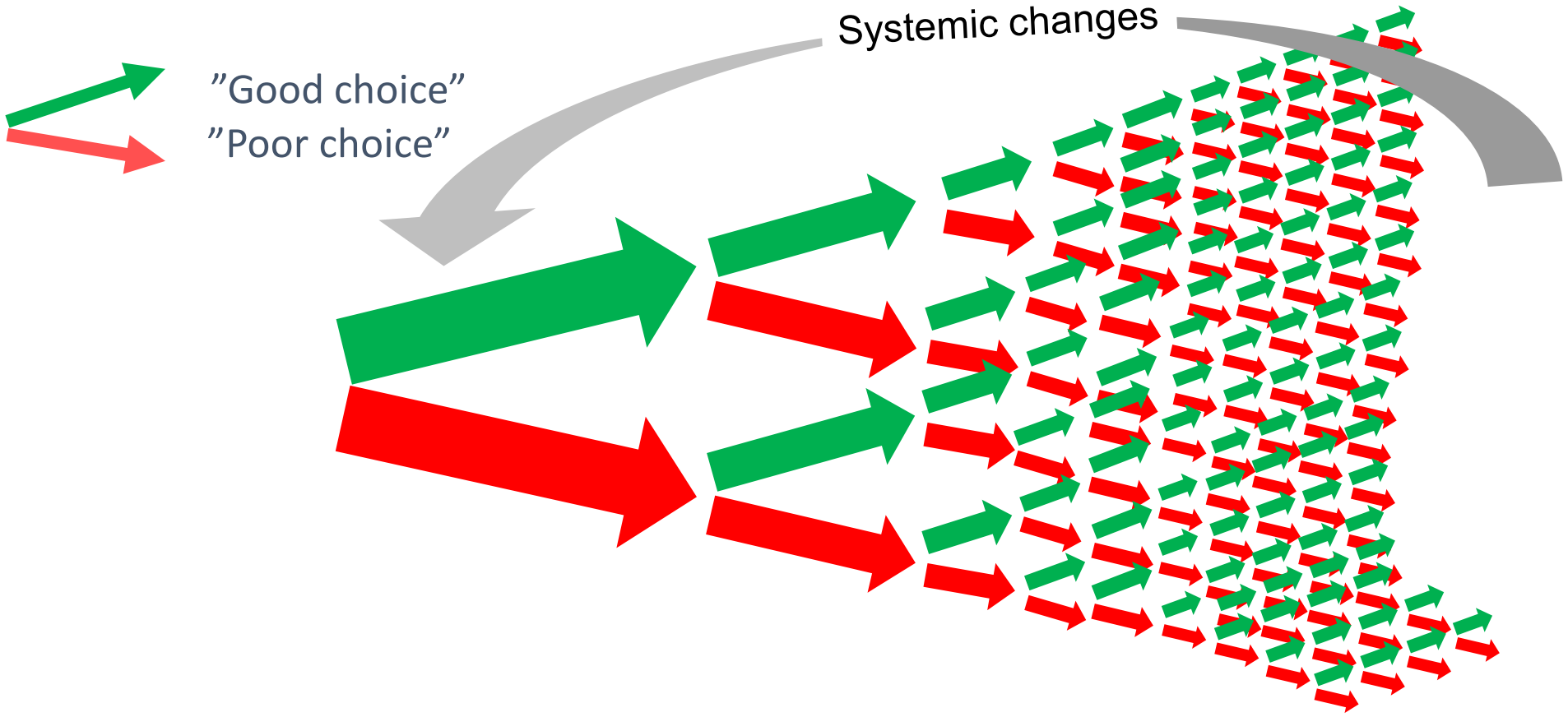
Planning is about making CHOICES!



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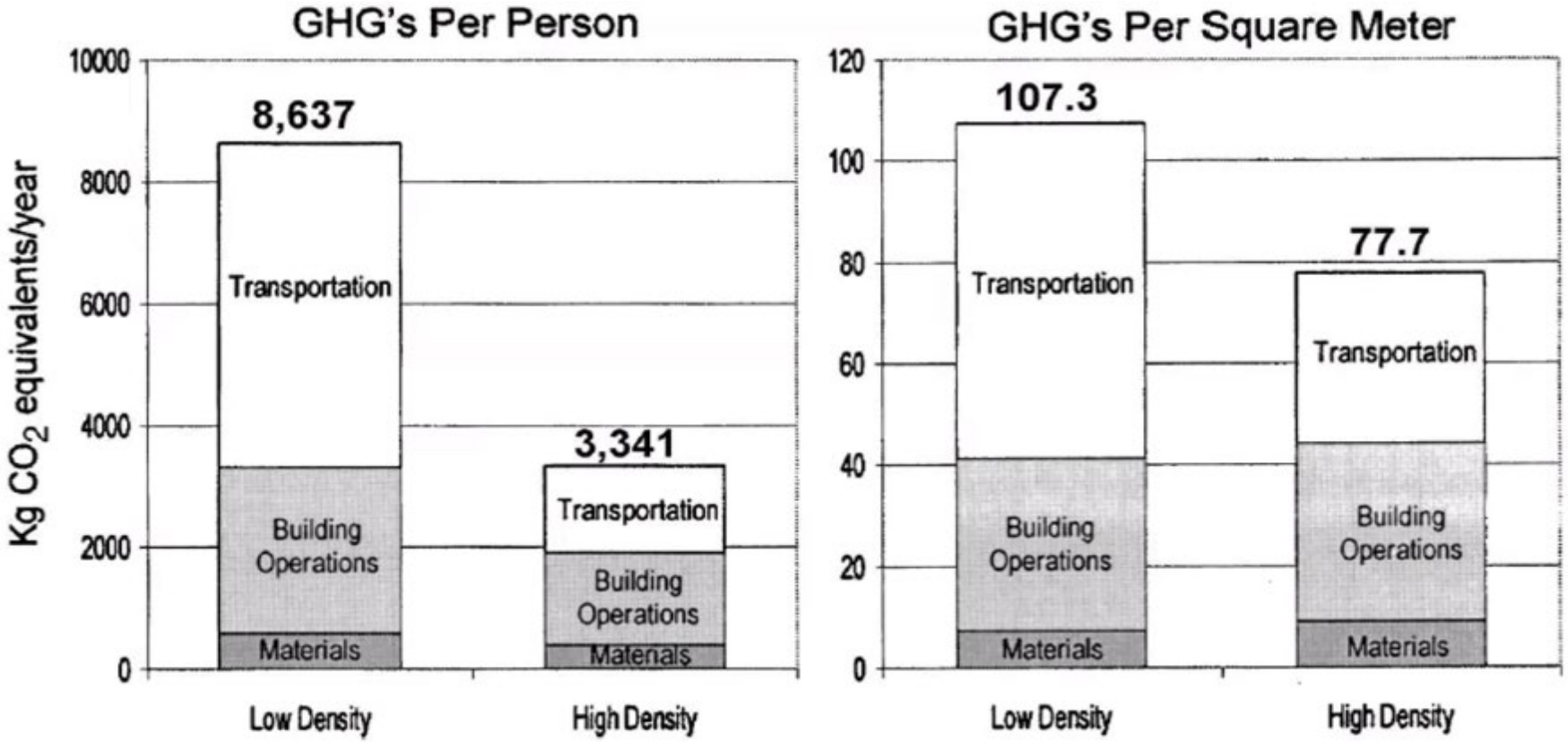
Urban density impacts carbon footprint



Norman, J.; MacLean, H.L.; Kennedy, C.A. Comparing high and low residential density: Life-cycle analysis of energy use and greenhouse gas emissions. J. Urban Plan. Dev. 2006, 132, 10–21

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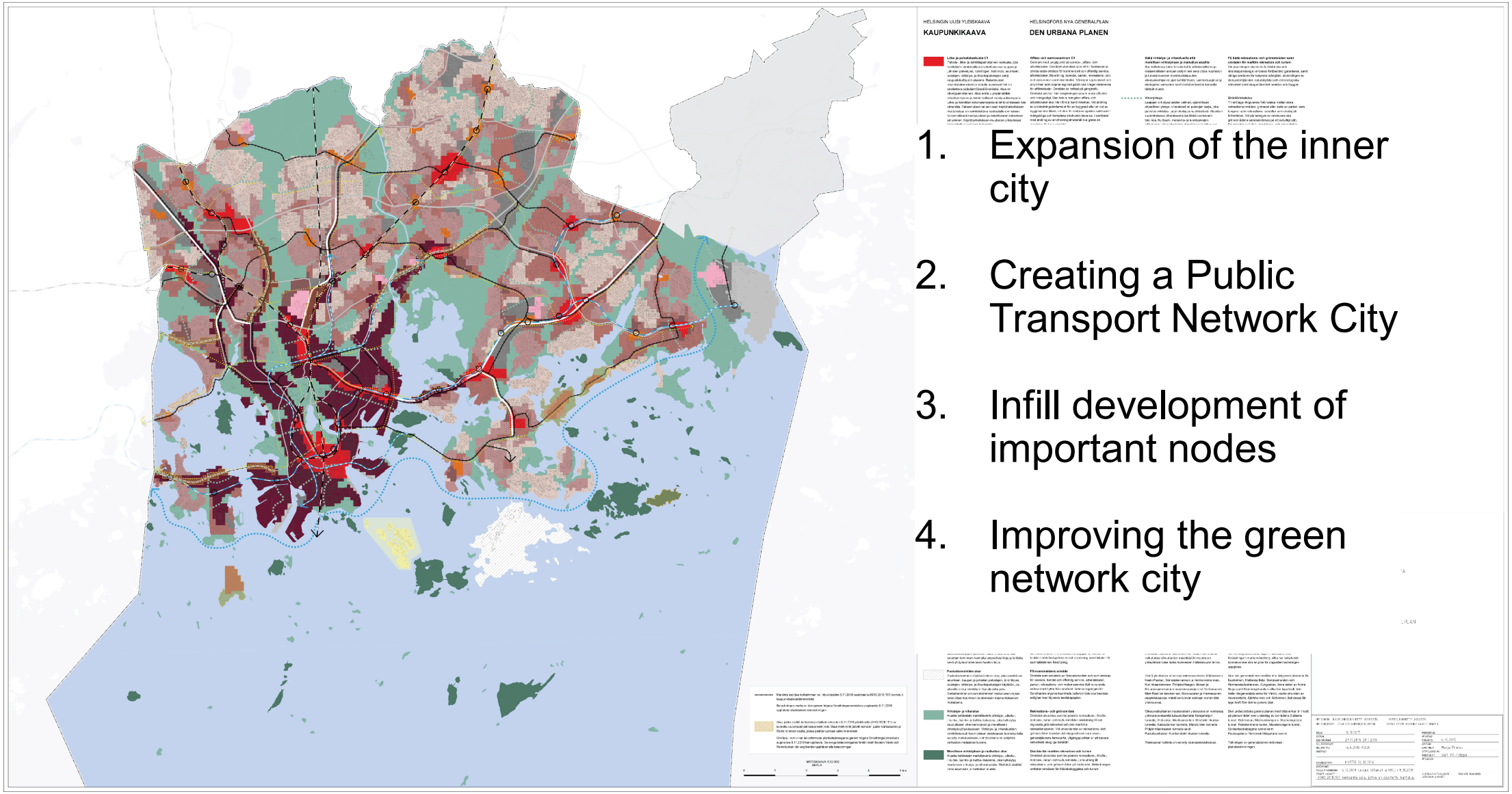
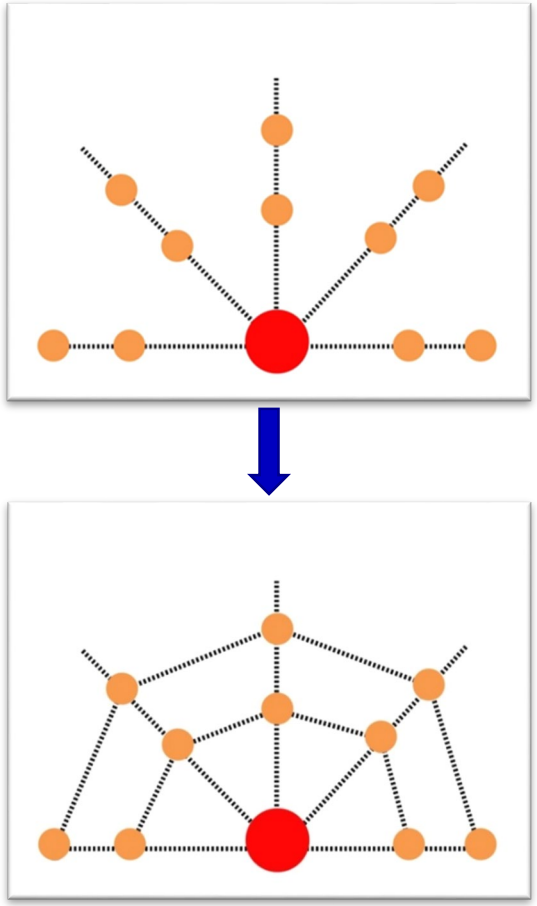
Current master plan: City plan 2016



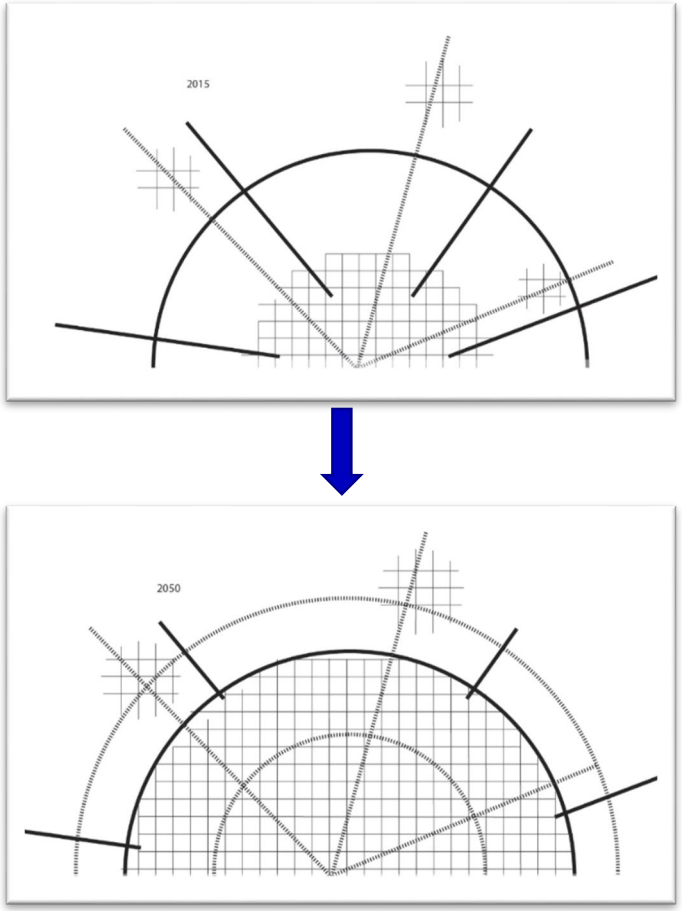
1. Expansion of the inner city
2. Creating a Public Transport Network City
3. Infill development of important nodes
4. Improving the green network city

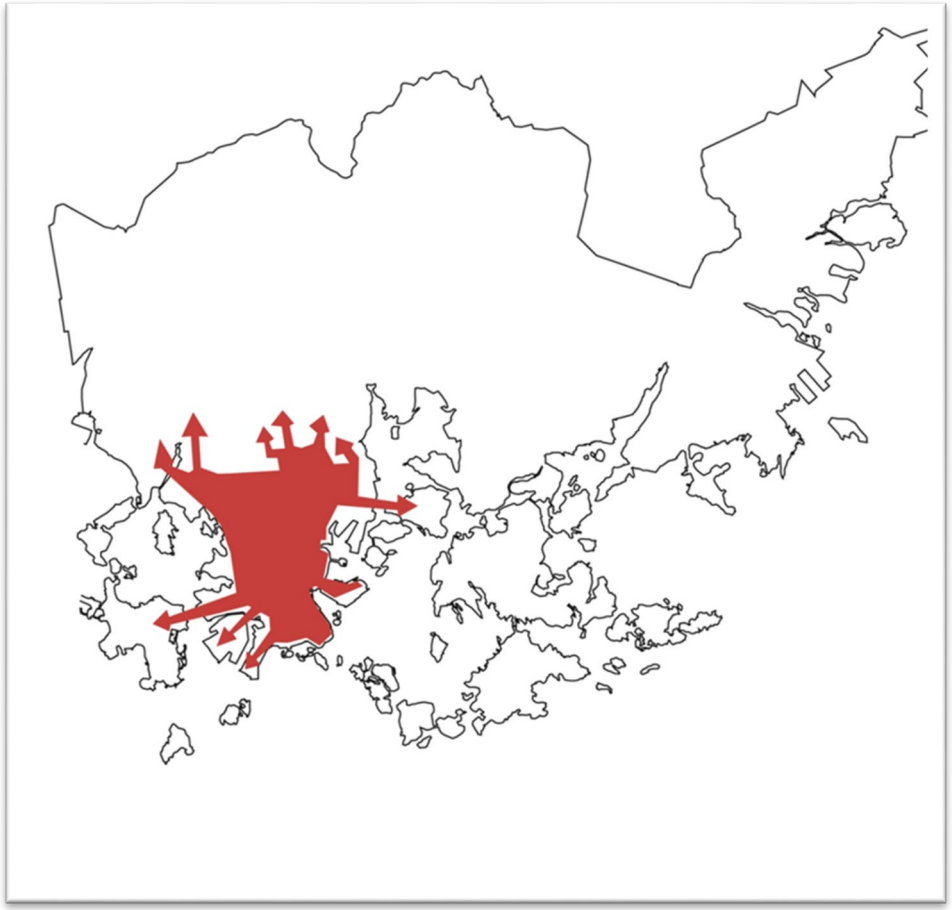
Transforming the urban structure

Public transportation



Land use





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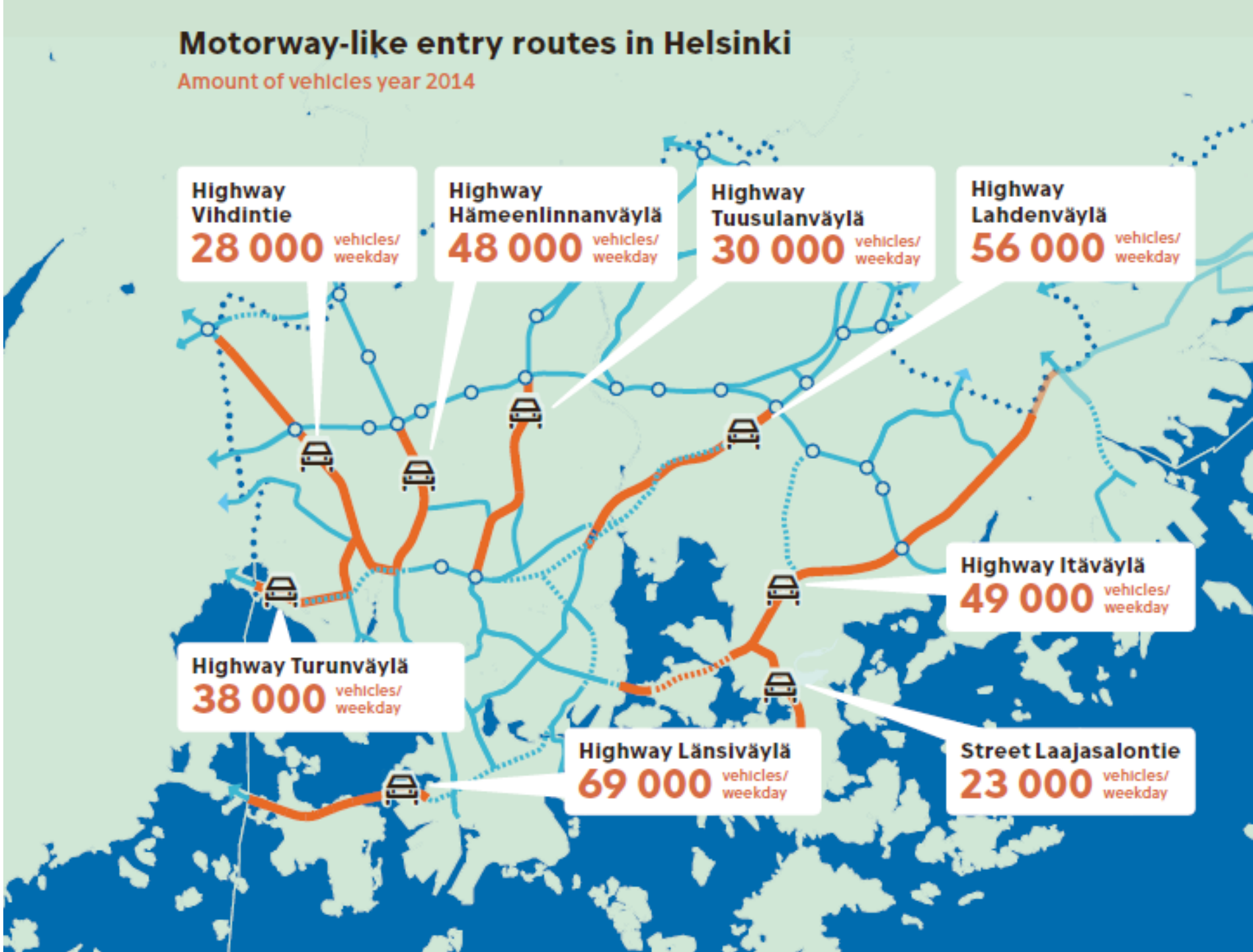
From highways to urban boulevards



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Development 2050

Map: Helsingin kaupunki Kmo, land use plan drafts: Ksv Yos

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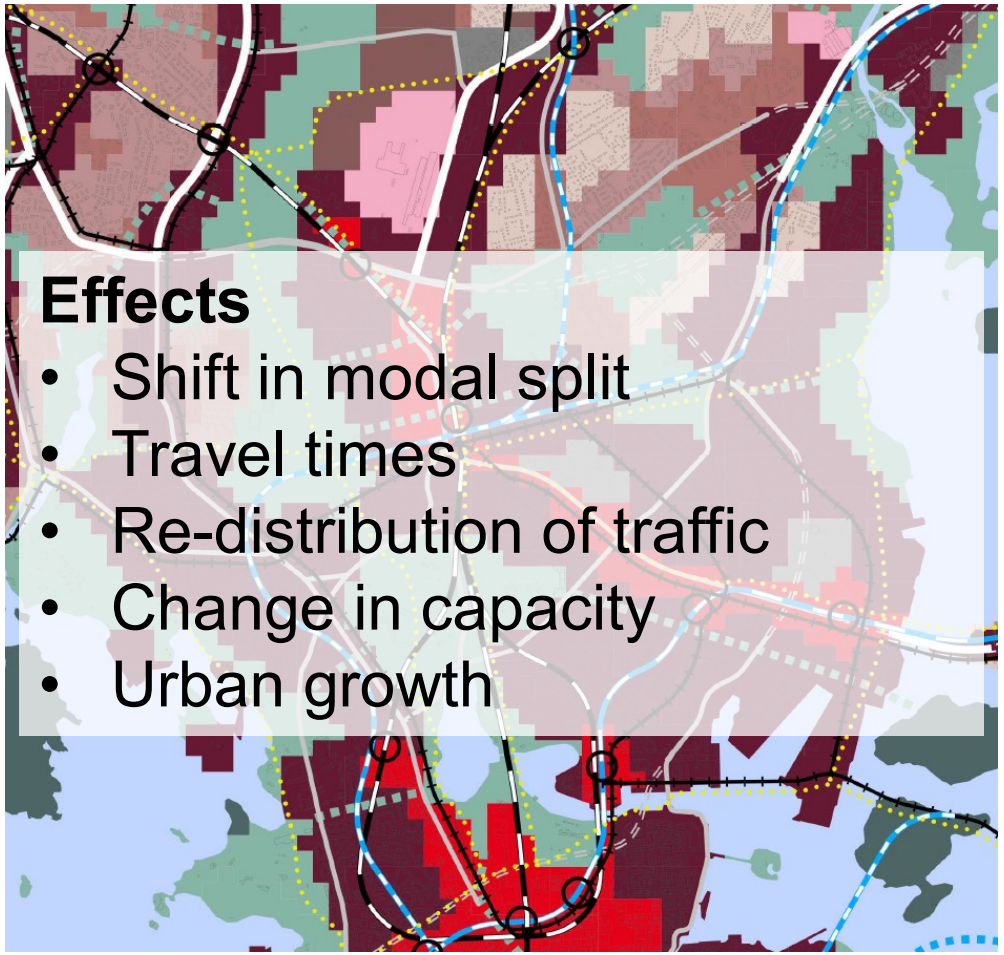
A platform for new urban ecosystems



Effects

- Shift in modal split
- Travel times
- Re-distribution of traffic
- Change in capacity
- Urban growth

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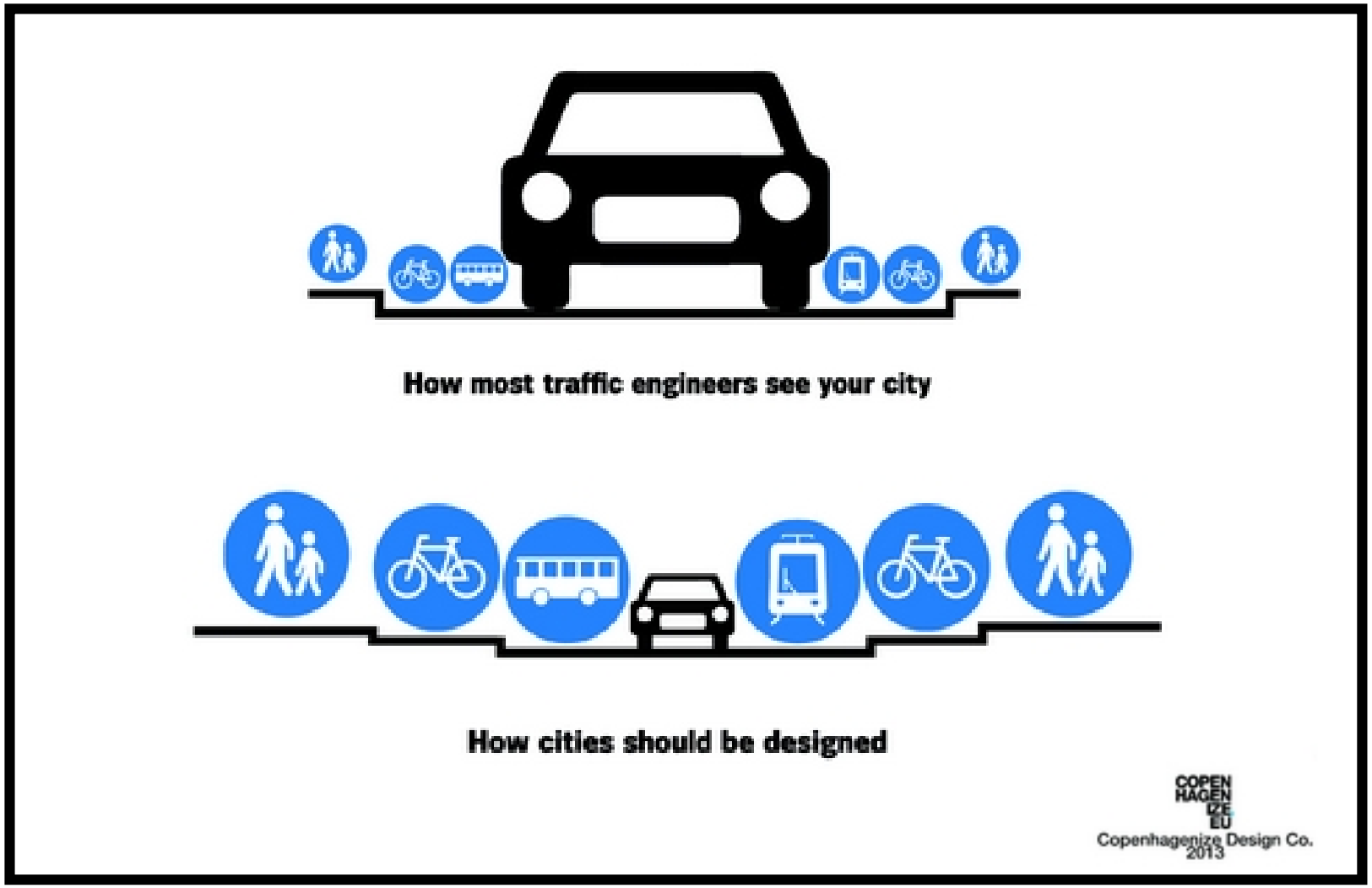
How most traffic engineers see your city
How cities should be designed
COPEN
HAGEN
IZE
EU
Copenhagenize Design Co.
2013

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Cycling as a mode of transport

Helsi

HELSINGIN KAUPUNGIN AINEISTOPANKKI / LAURI ROTKO

LAURI HÄNNINEN

Helsin

Why is cycling important as a transportation mode?

Our transportation system is broken, the bicycle is not THE solutions but its part of A solution.

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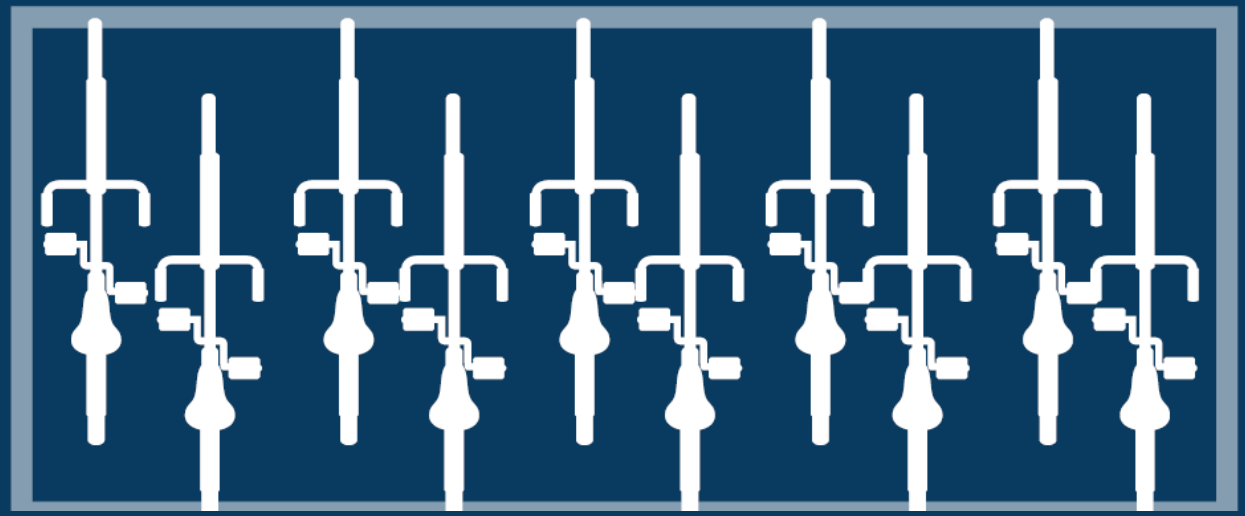
One parking space for cars = Ten bikes



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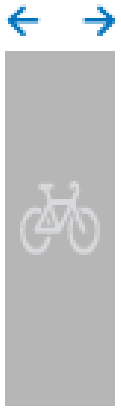
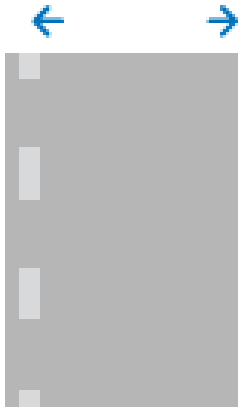
Bicycle traffic offers almost double the efficiency with half of the lane width, compared to car traffic

Cycle lane
Minimum width 1.5m

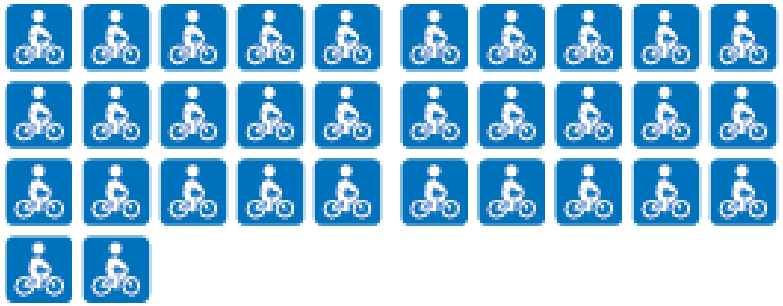


Drive lane
Minimum width 3m



CAPACITY

3,200 bicycles per hour



1,700 cars per hour

Source: *Liikennevirran ominaisuudet*, (Characteristics of the flow of traffic), Helsinki University of Technology 2005

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Securing the circumstances for pedestrians

By improving the circumstances for cycling the circumstances for pedestrians are often also improved.

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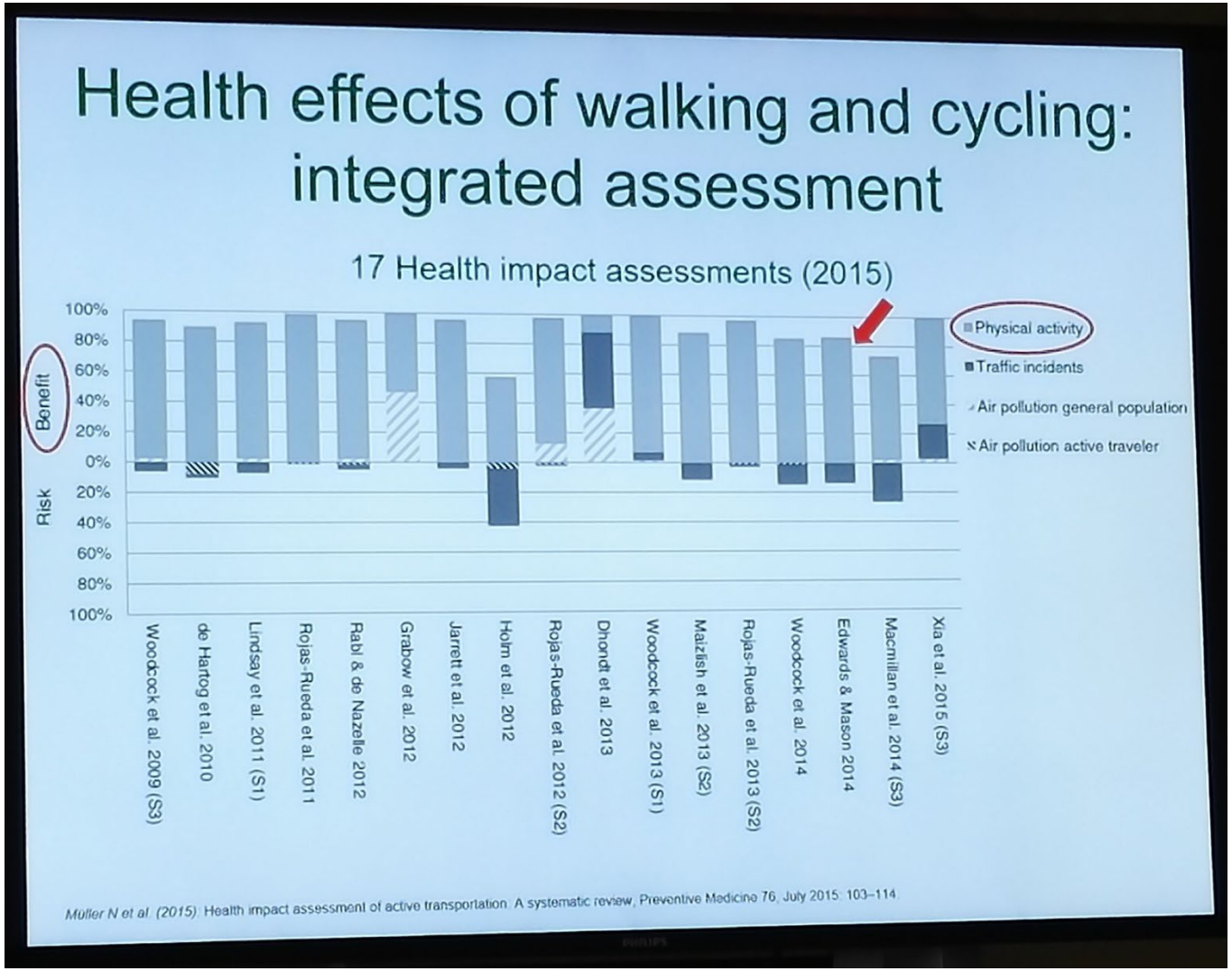
Active mobility matters

We need more **carless drivers** instead of more **driverless cars**



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Health benefits

- Cycling is a transportation mode with all the same **health benefits** as physical **exercise**.

- Reduces the risk for cardiovascular deceases, diabetes and high blood pressure and helps in regulating body weight and healthy blood lipid counts.
-
- Cycling has also an positive effect on mental health.

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Environmental benefits – 0 CO^2 emissions

Cycling creates no emissions which helps in Helsinki's strive towards better air quality. There´s also substantially less noise pollution created from bikes than cars.

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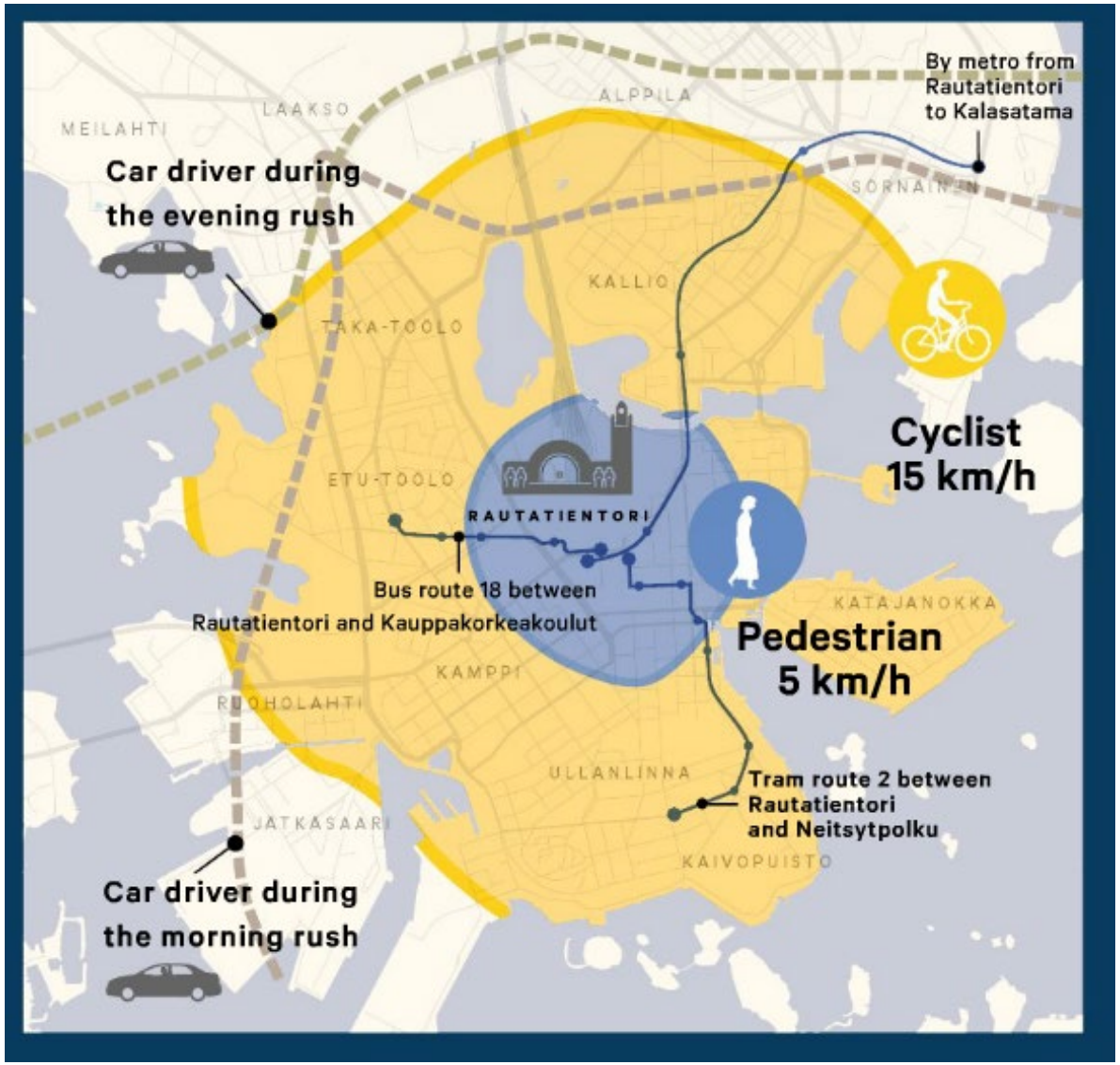
Time savings



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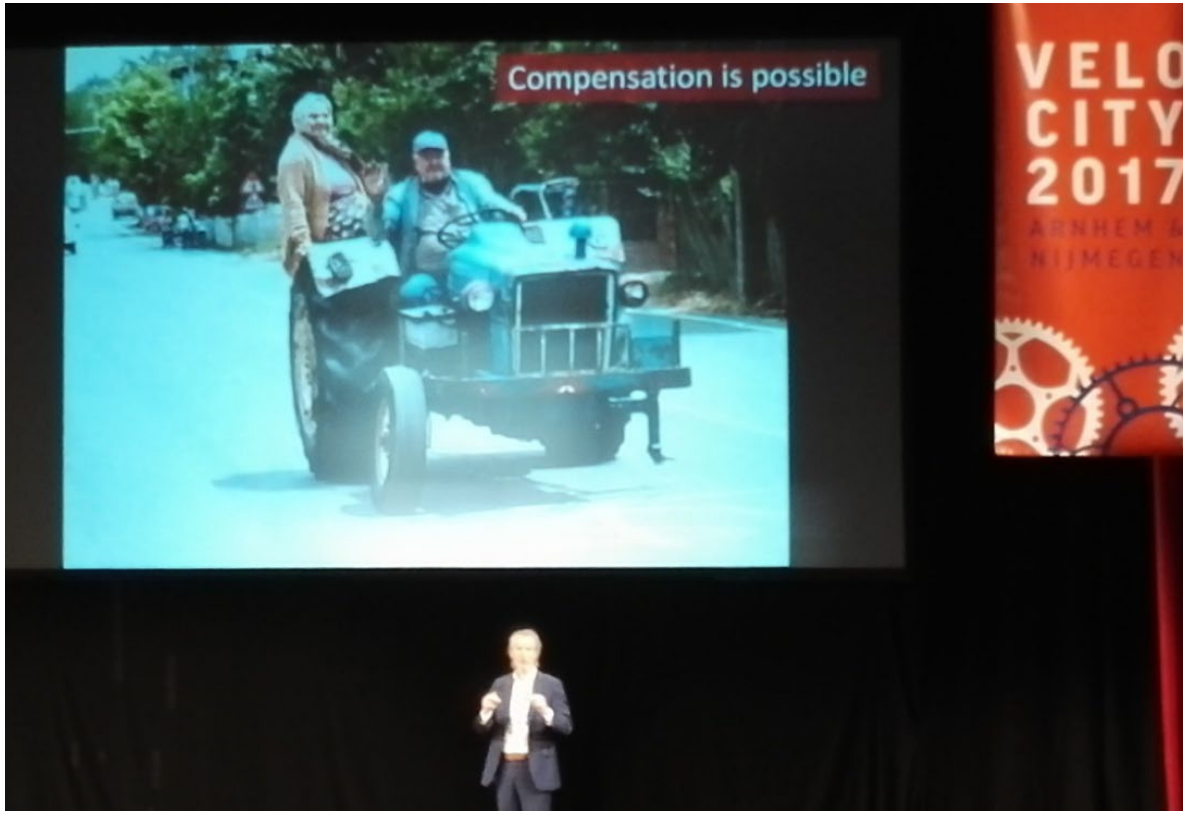
How do we make cycling part of daily life?

- We see cycling as a mode amongst other modes
- We plan for cycling as a part of the transportation system
- We take cycling into consideration in land use planning on every level
- We make cycling possible for EVERYONE



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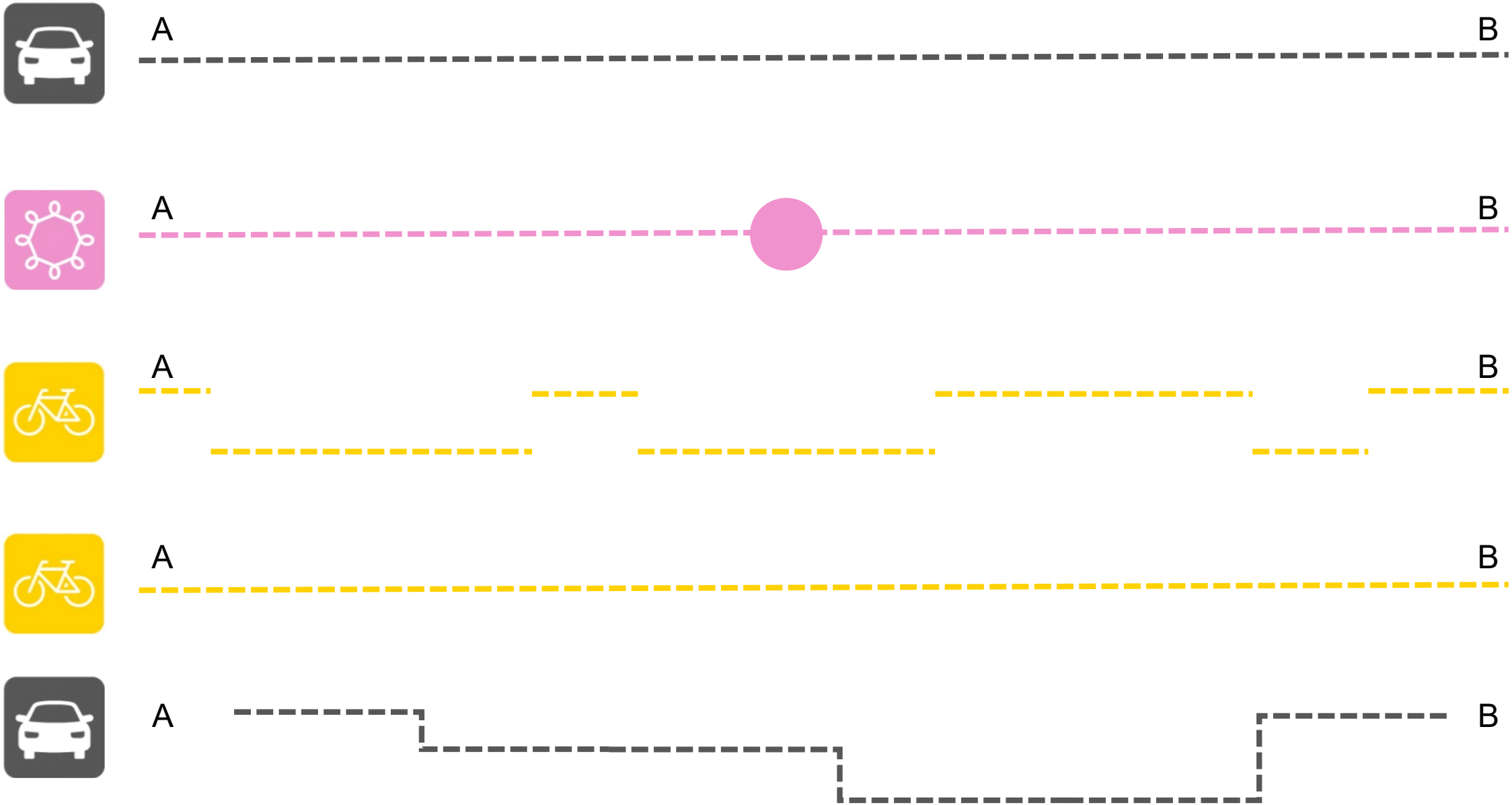
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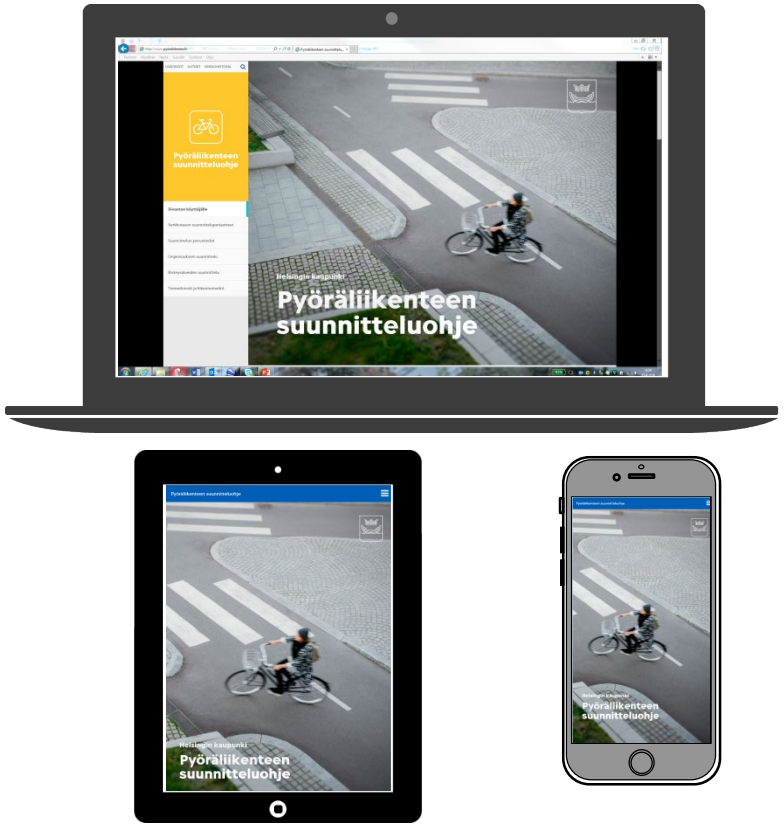
Helsinki standard published in 2016



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www.pyoraliikenne.fi

Questions?

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Public transportation

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Properties of public transport

Rails generate new land use and form the basis for the urban structure

- Route
  - Straightness
  - Connectivity
  - Spatial coverage
  - Nodes
- Speed
- Frequency
- Service hours
- Capacity
  - Per vehicle
  - Line capacity

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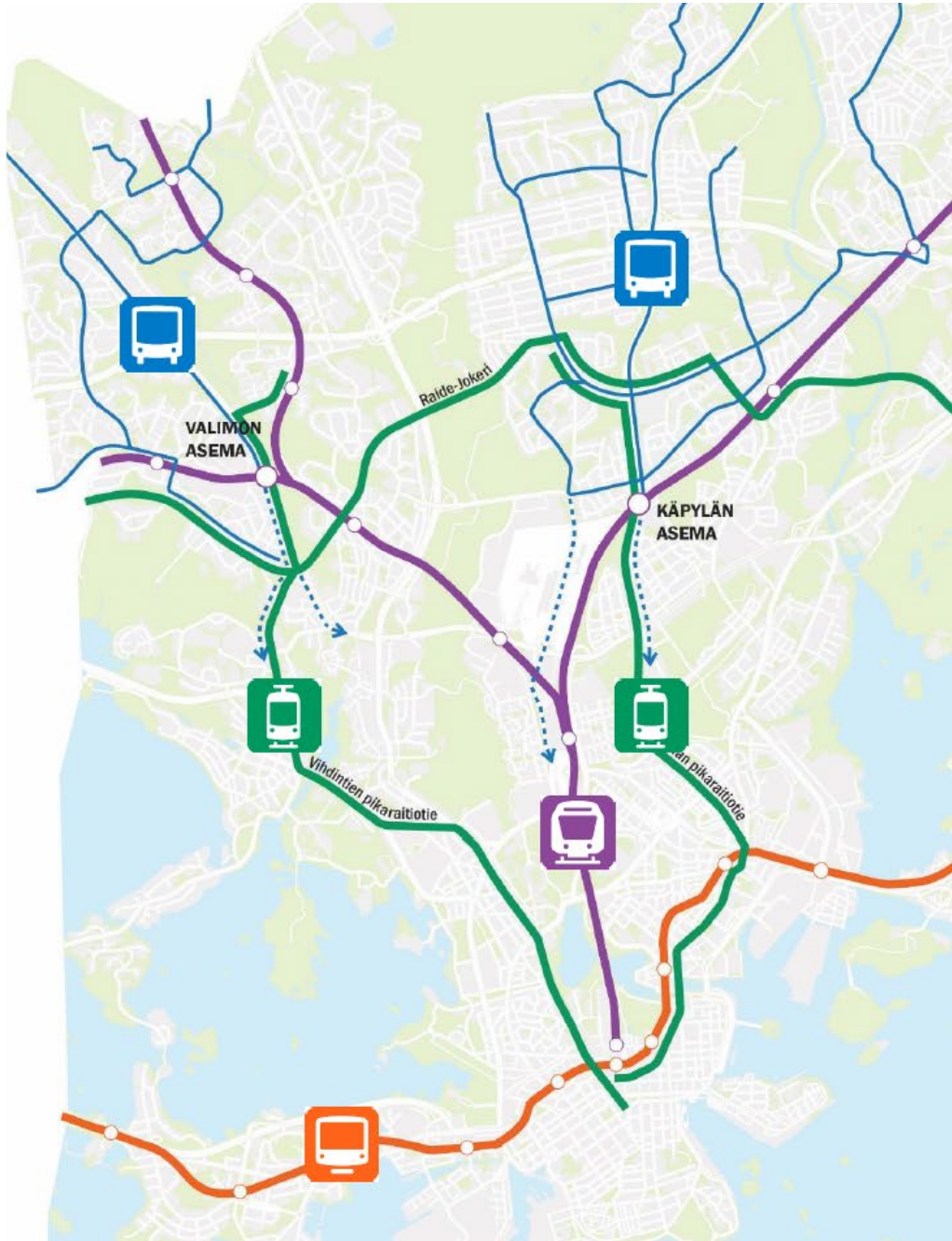
Development principles

- Heavy rail (train, metro) provides primary connections to the city centre
- New light rail creates supporting trunk routes
- Existing tram system serves the inner city
- Transfer terminals are created at the edge of the inner city where train, light rail and bus connections meet

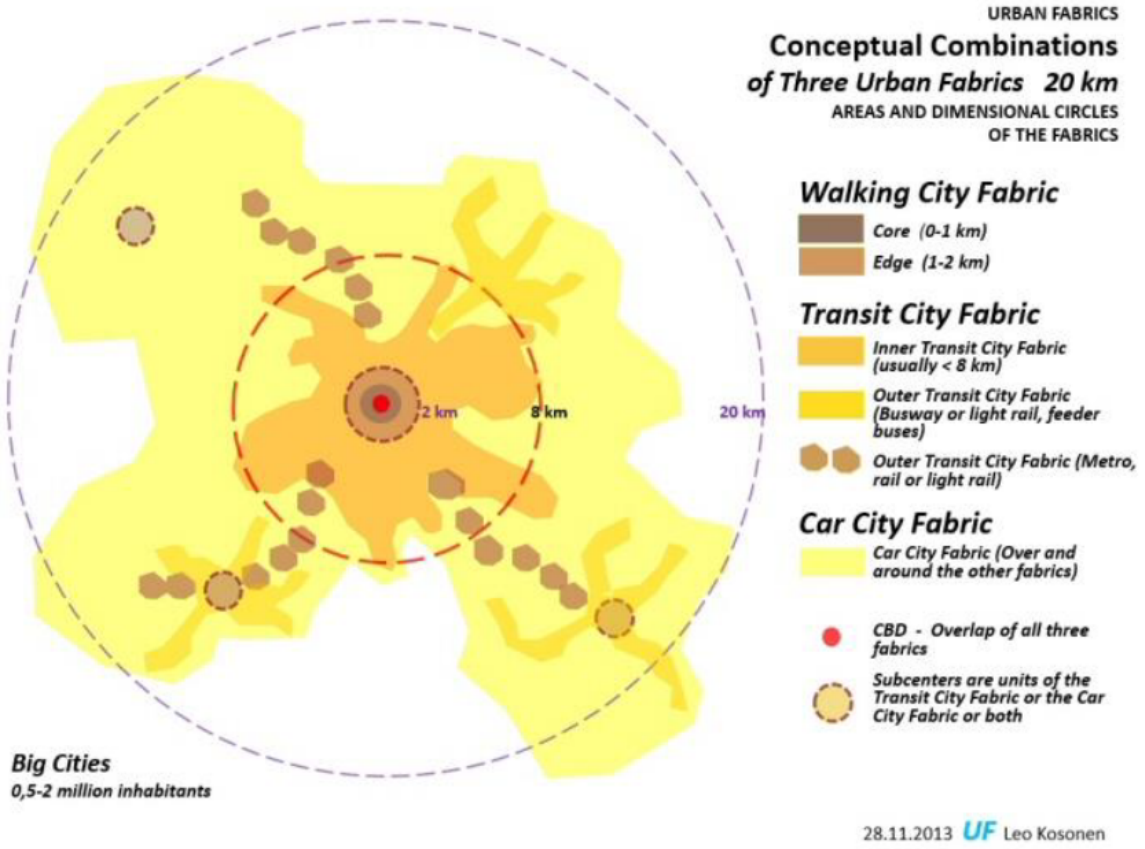
→ Added transfers require a high level of service!



The transit city fabric

- Urban areas can be defined by the dominant travel mode
- The human travel time budget is nearly constant (~1 hour/day)

  → ***Transit speed defines the transit city***



Kosonen 2013. Theory of Urban Fabrics

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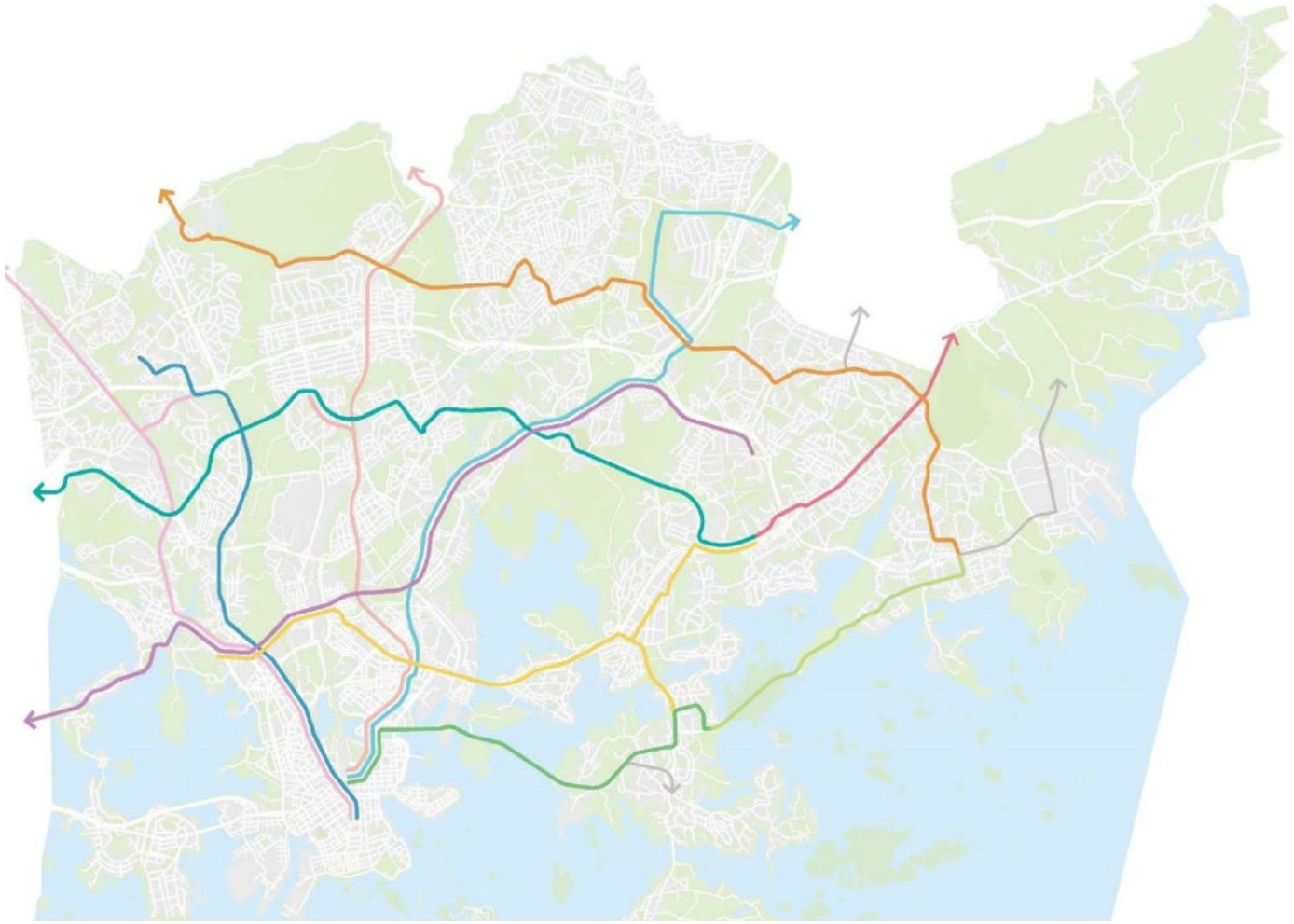
Light rail network

- 10 proposed light rail connections

- Goals:
  - Efficient public transport network
  - Strengthen urban nodes and sub-nodes
  - Reduce bus traffic in the city-center

- Each connection associates with transit-oriented and infill development areas



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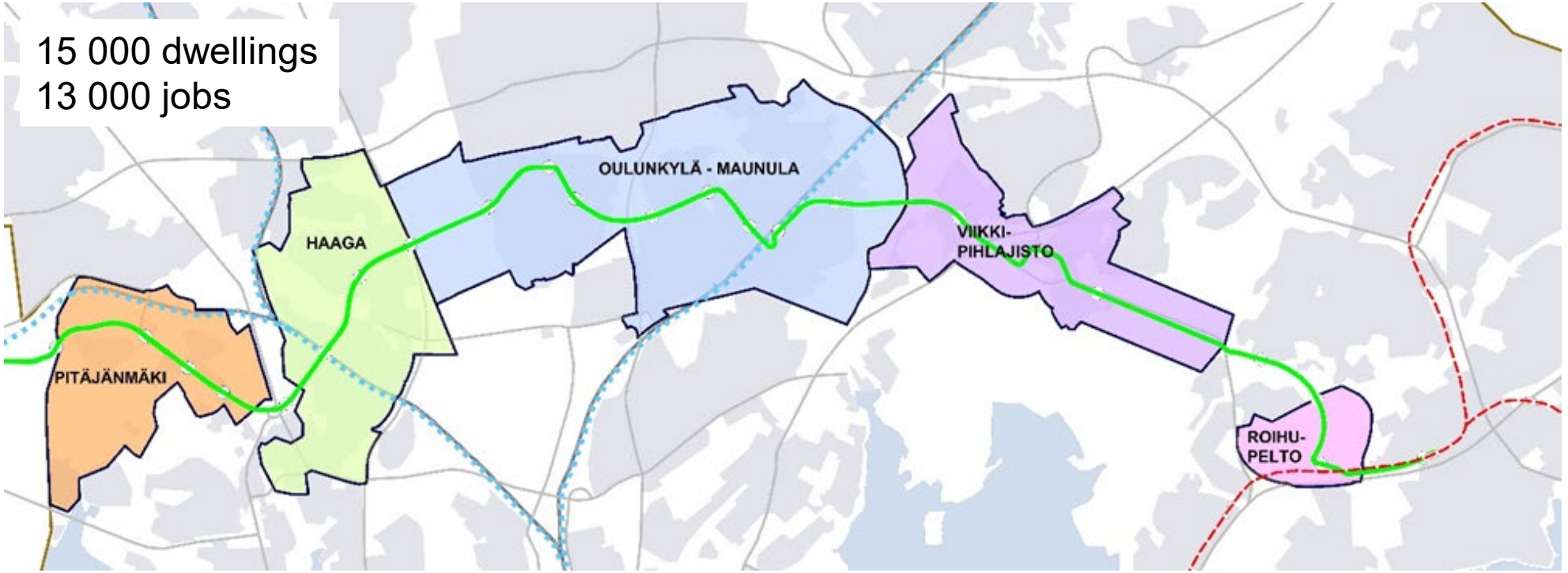
Raidejokeri high speed tram line



- Orbital light rail line from Itäkeskus to Otaniemi
- Regional project: 2/3 in Helsinki, 1/3 in Espoo
- Approx. 25 km, 32–33 stops
- Will replace current bus trunk line 550
- Links to radial metro and commuter train lines
- Modern tramway

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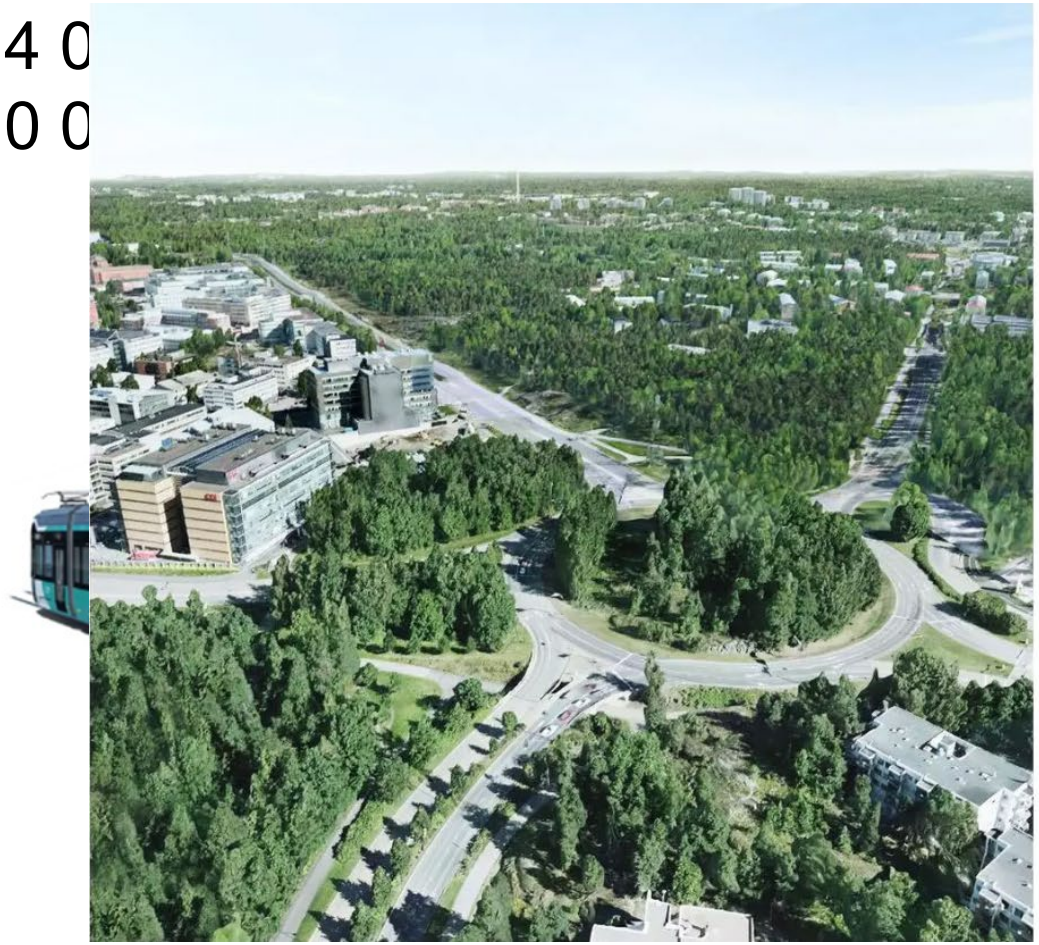
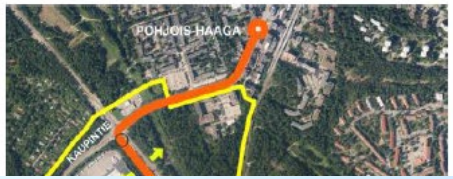
Vihdintie Boulevard

- 14 0
- 10 0



Kuva: HSL/IDIS Design Oy.



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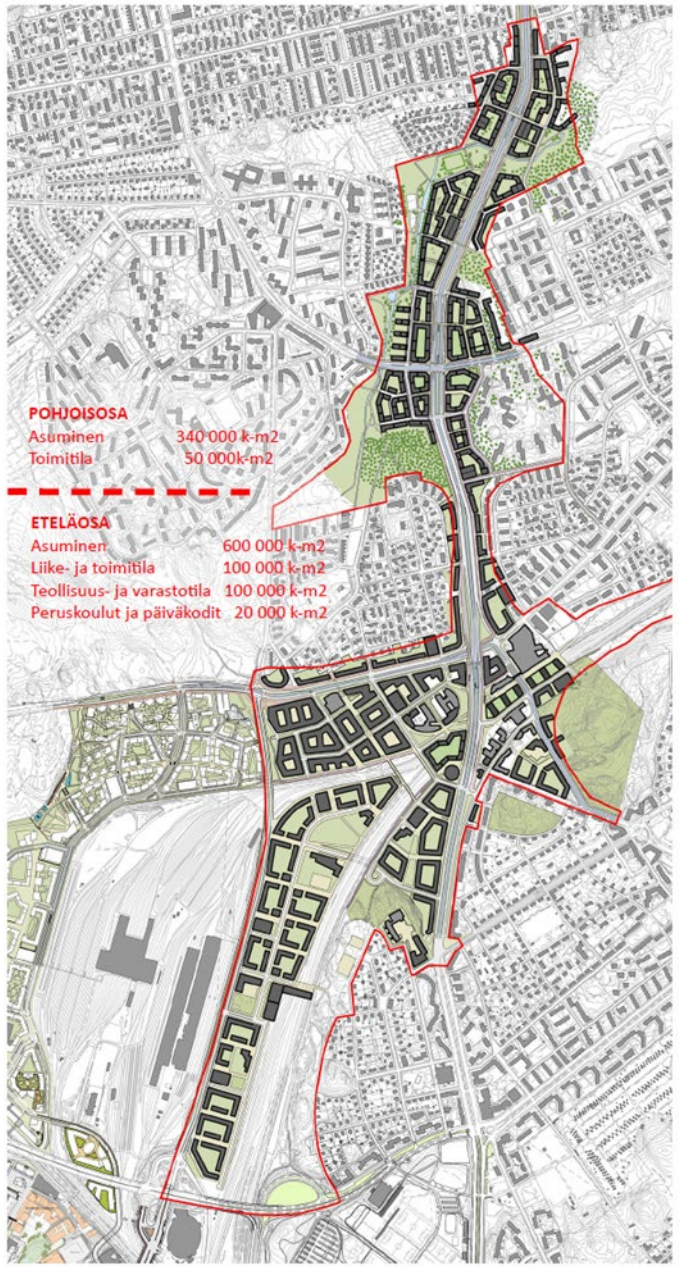
Tuusula Boulevard

Kuva: HSL/IDIS Design Oy.



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CROWN BRIDGES

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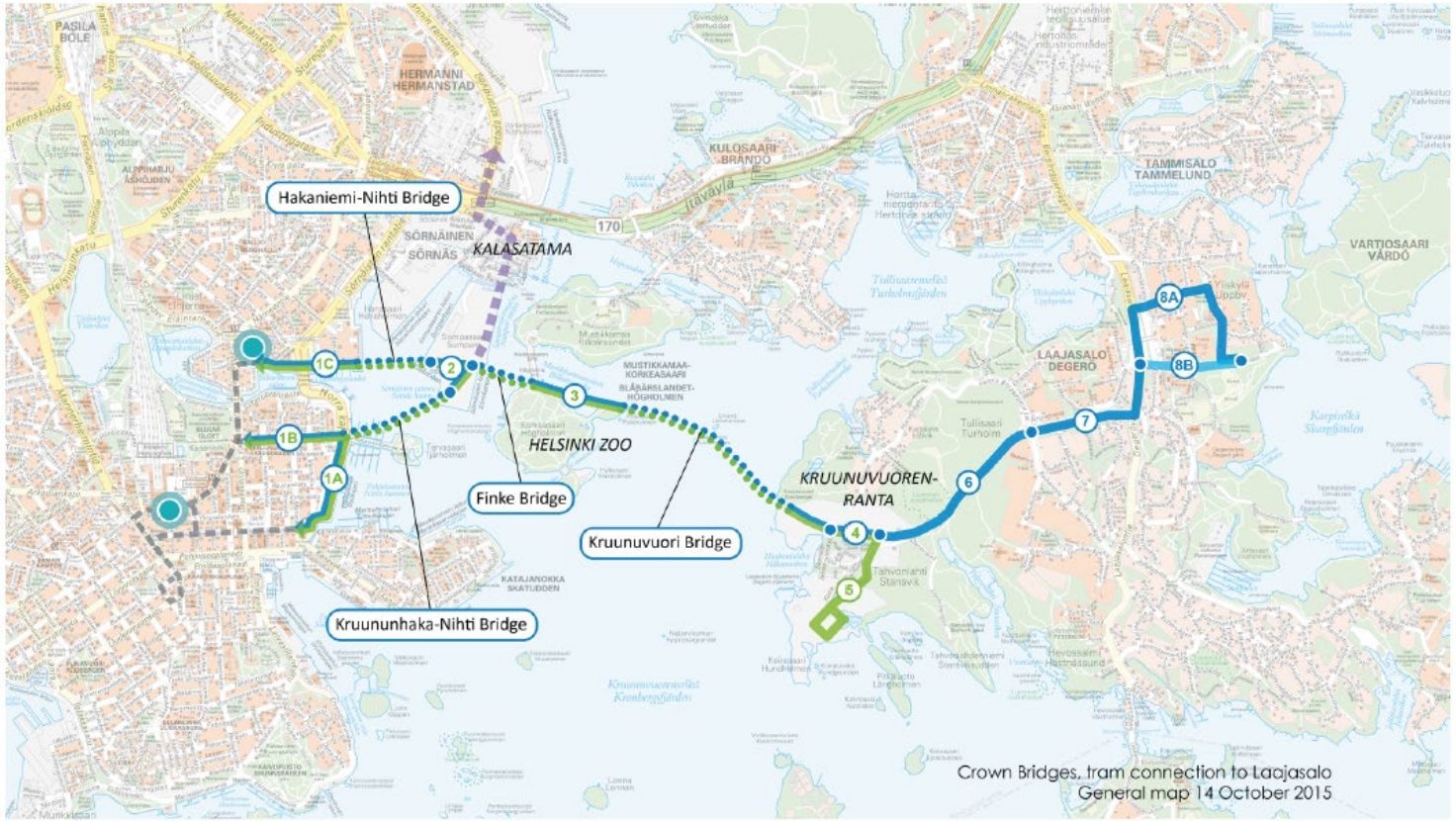

Bridges:

- Longest approx. 1,2 km
- In total approx. 2,0 km

Walking & cycling

- Traveltime to citycenter 20/30 mins
- 3000 users / day

Tram transport

- 10 km of new tramway
- Traveltime to city center 15/20 mins
- Tram line users approx. 30 000/day

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5 min break

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Gruop work

- Use streetmix and create a cross-section for a urban boulevard for the sustainable, urban, 2025-city

- https://streetmix.net

Boulevard section

BULEVARDI / 2+2 / 41 m / VE1

Iillustration: Ksv Yos Tuulikki Peltomäki

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Kiitos!
Tack!
Thank you!

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