



NETWORK PLANNING AS FOUNDATION FOR CYCLE FRIENDLY CITIES

Torsten Perner, 25.09.2026



Torsten Perner

- Mobility Planner specialized in sustainable modes (active mobility and public transport)
- From Germany but worked and lived in various countries
- Interests: Mobility in urban contexts from a human perspective



CONTENT

1. Short history of bicycle planning in the Netherlands
2. Network and street level
3. Fundamentals of Cycling Network Planning



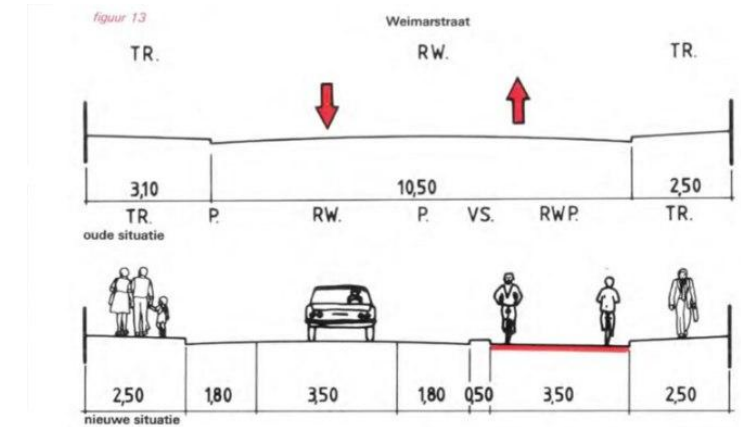
THEN AND NOW



Source (from left to right): Amsterdam Archives,
Amsterdam Archives, Thomas Schlijper



PILOT ROUTES (1970s)



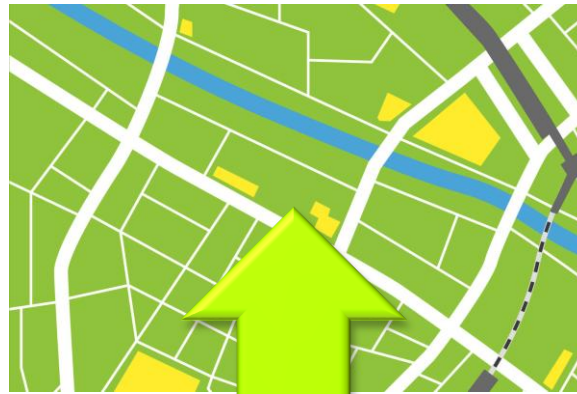
NETWORK APPROACH (1980s)



FINDING BALANCE BETWEEN PLACE & FLOW AT ALL LEVELS



**Place
(staying)**



Network level



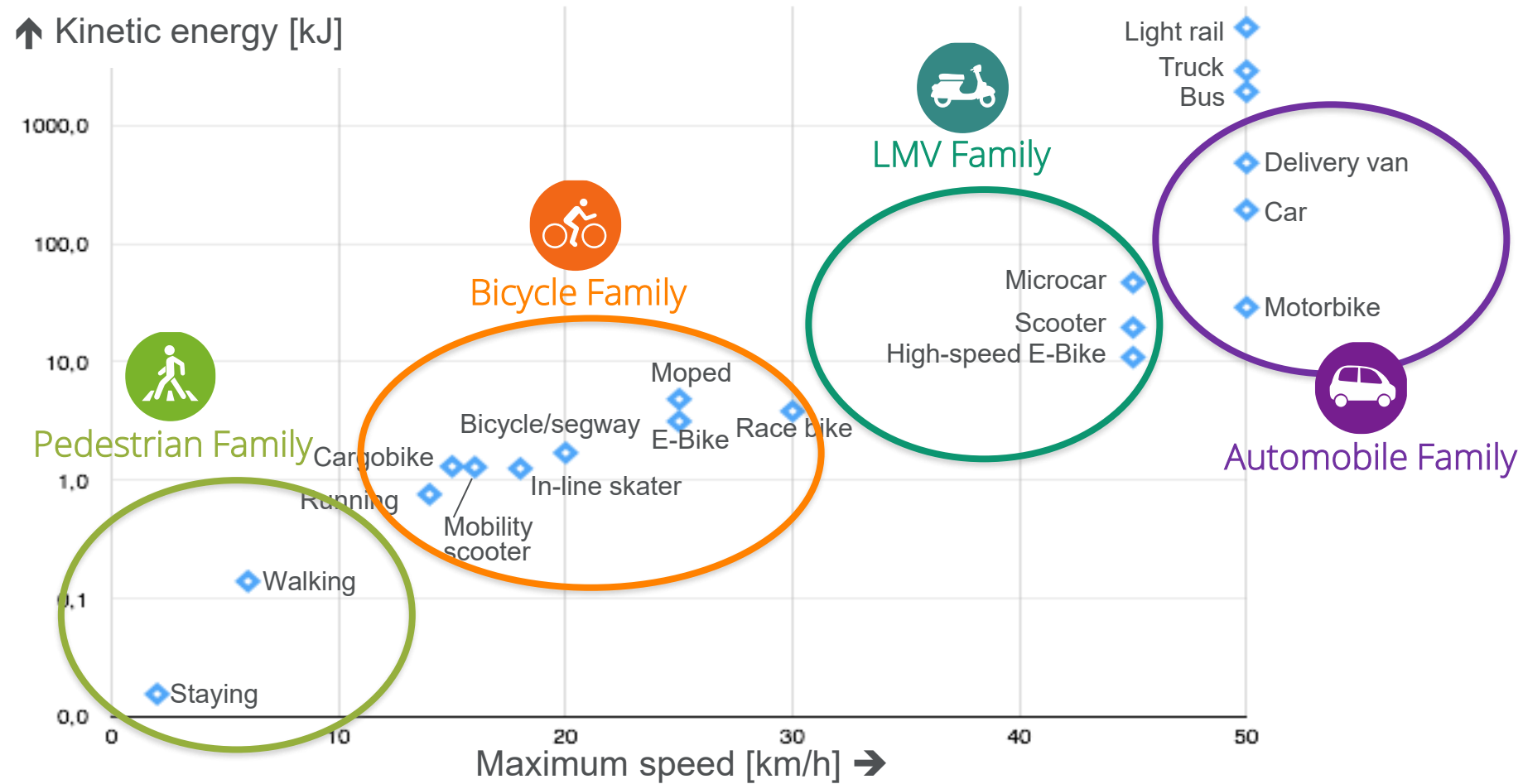
**Flow
(going)**



Street level



A LITTLE PHYSICS: VEHICLE FAMILIES



$$E = \frac{1}{2}mv^2$$

m = mass

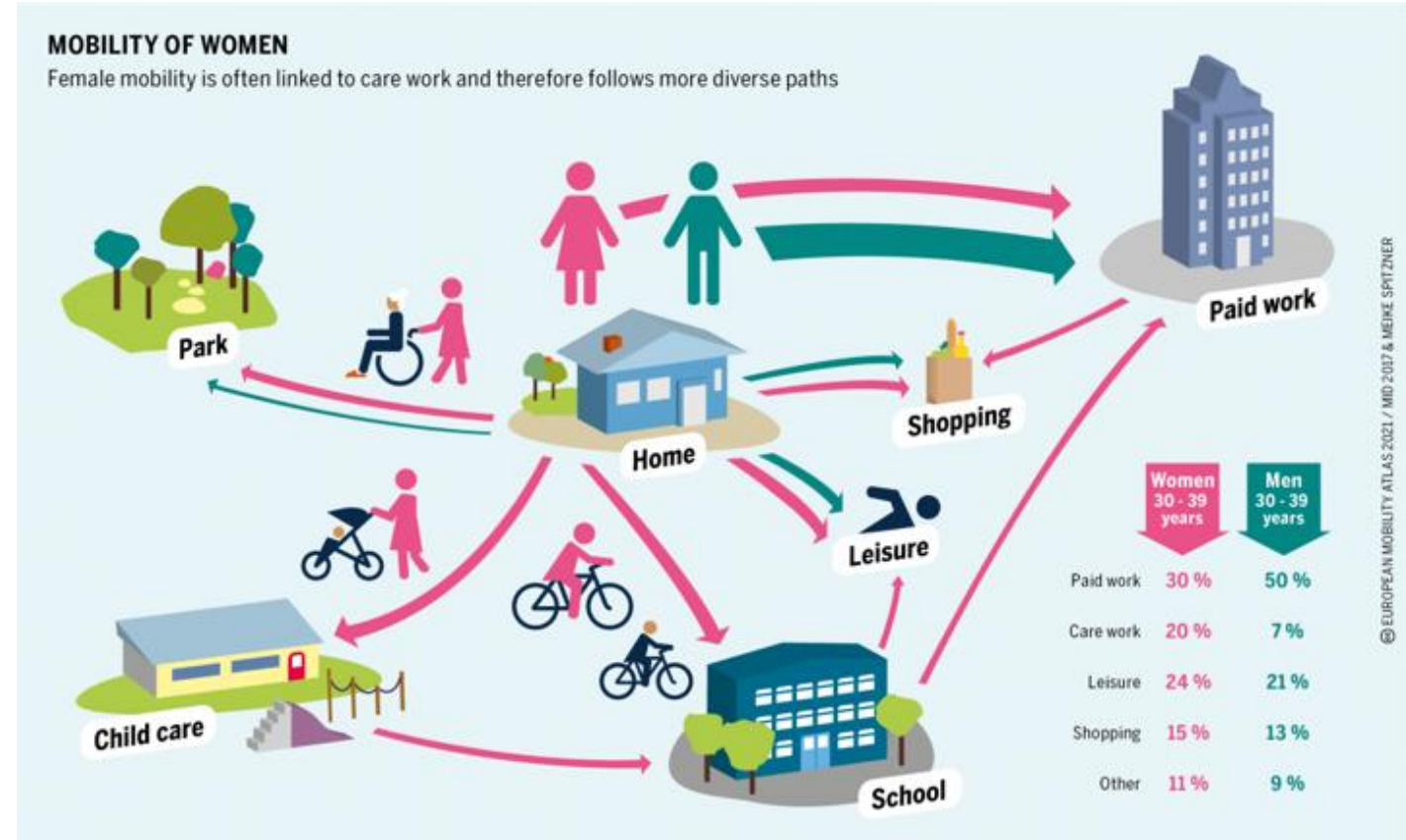
v = velocity



FUNDAMENTALS OF CYCLING NETWORK PLANNING



A NETWORK APPROACH MAKES TRIP CHAINING EASY



Source: EUMA2021 Mobility of Women; picture: Heinrich-Böll-Stiftung

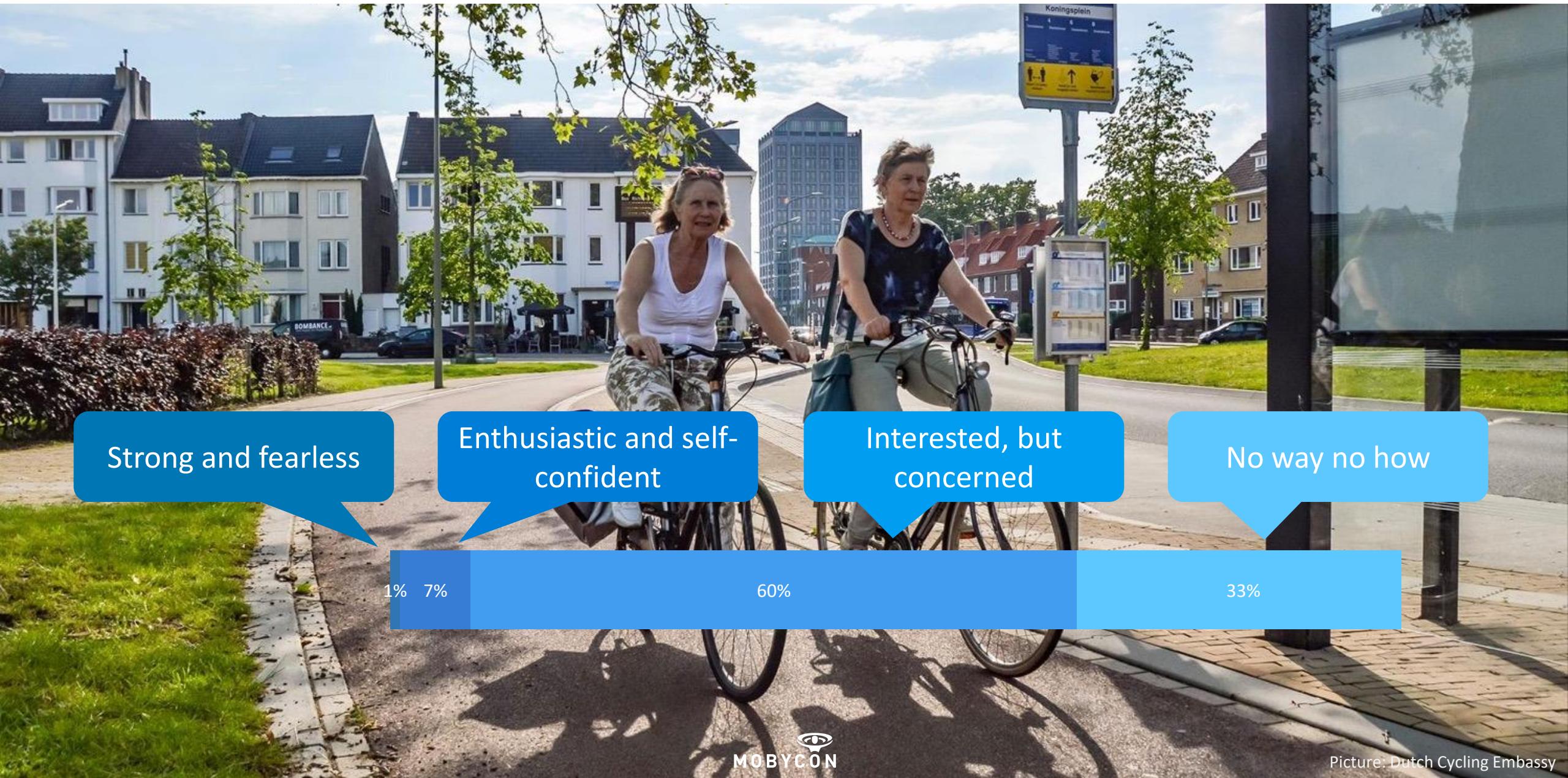


CYCLING NETWORK PRINCIPLES



Safe
Coherent
Direct
Convenient
Attractive

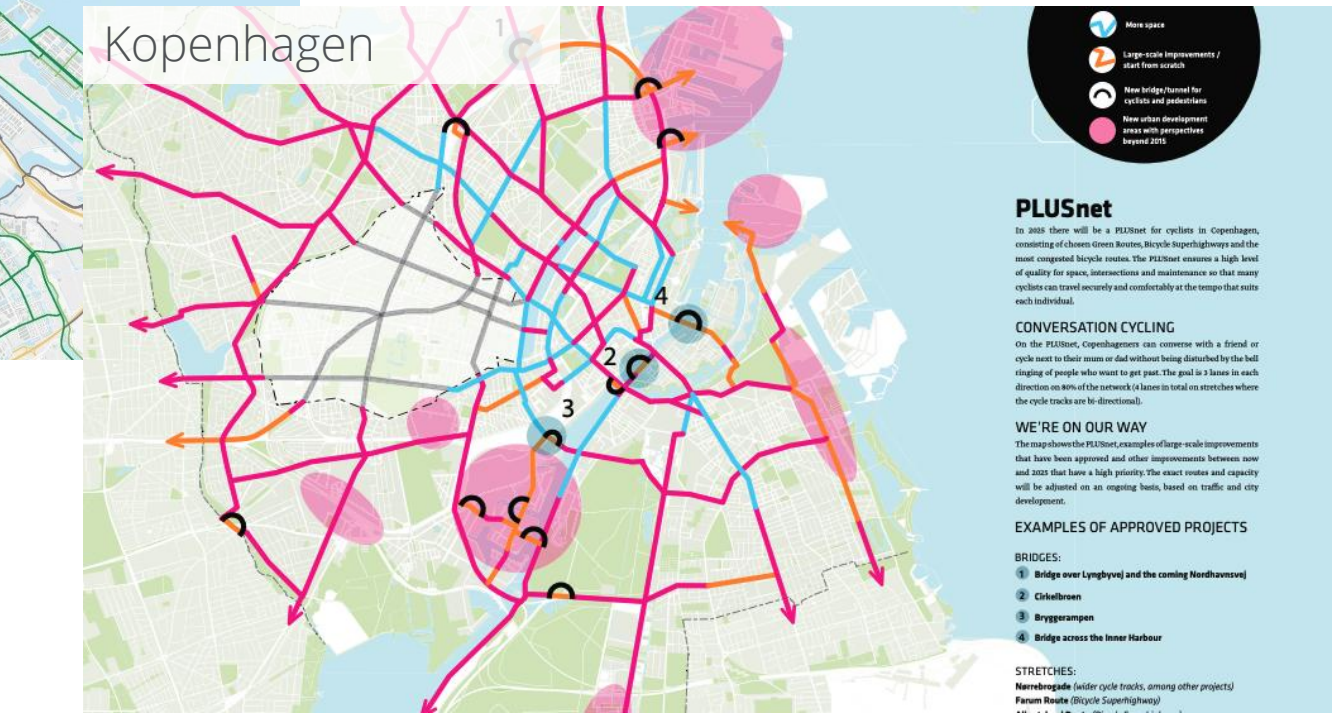
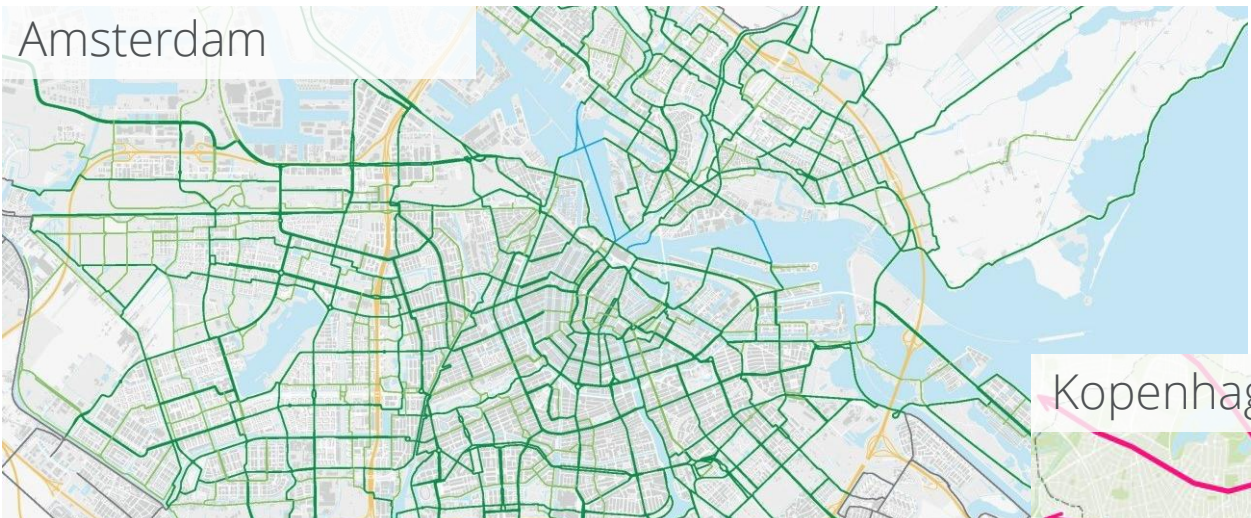
SAFE: PEOPLE'S ATTITUDE TOWARDS CYCLING



SAFE?



COHERENT



3 Levels	
Plus network	Prioritised corridors of the main network
Main network	Citywide network
Base network	Enable home to home journeys



COHERENT



A Short History of Traffic Engineering

Before 1920

1920-1950

From 1950

Prioritizing Sustainable Modes

In industrialised cities:

Before 1920: the compact city

Walking and cycling are the dominant modes of transport. Public transport has an important role in getting people from A to B.

1920 - 1950

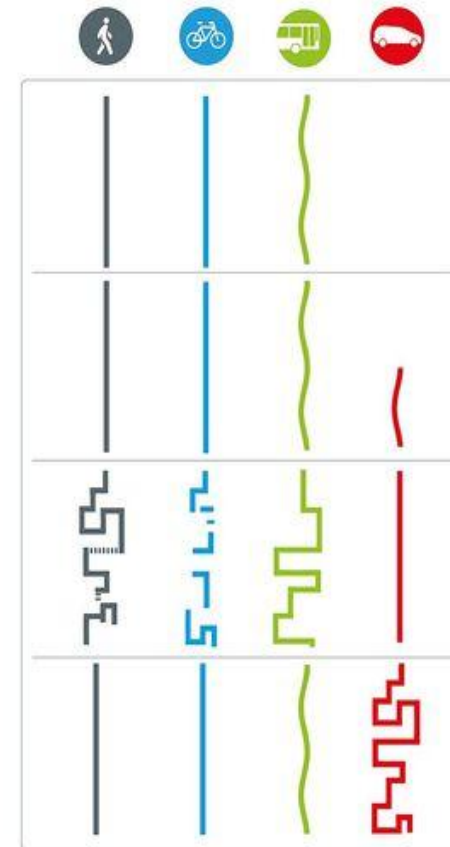
Walking, cycling and public transport are still the most common modes of travel. The car appears in the city and has to adapt to the built up structure.

From 1950: the car-oriented city

The car is prioritised in planning. Every other mode of transport is subordinated to the car and has to adapt.

Planning for the livable city

In order to achieve a livable environment the sustainable modes of transport need to be prioritised.



Disconnected Networks

This may require changes to the car network

Source: Transformative Urban Mobility Initiative (TUMI)



DIRECT



CONVENIENT



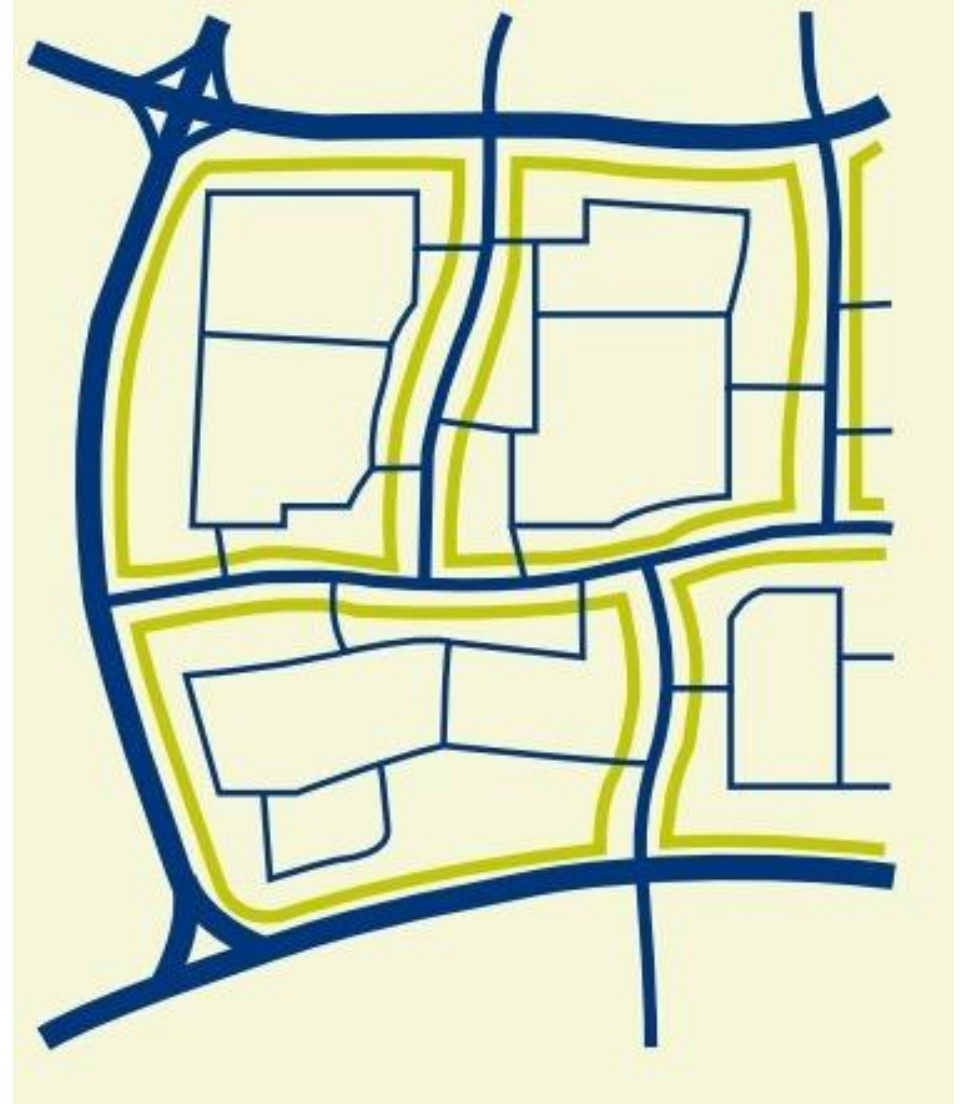
ATTRACTIVE



NETWORK APPROACH

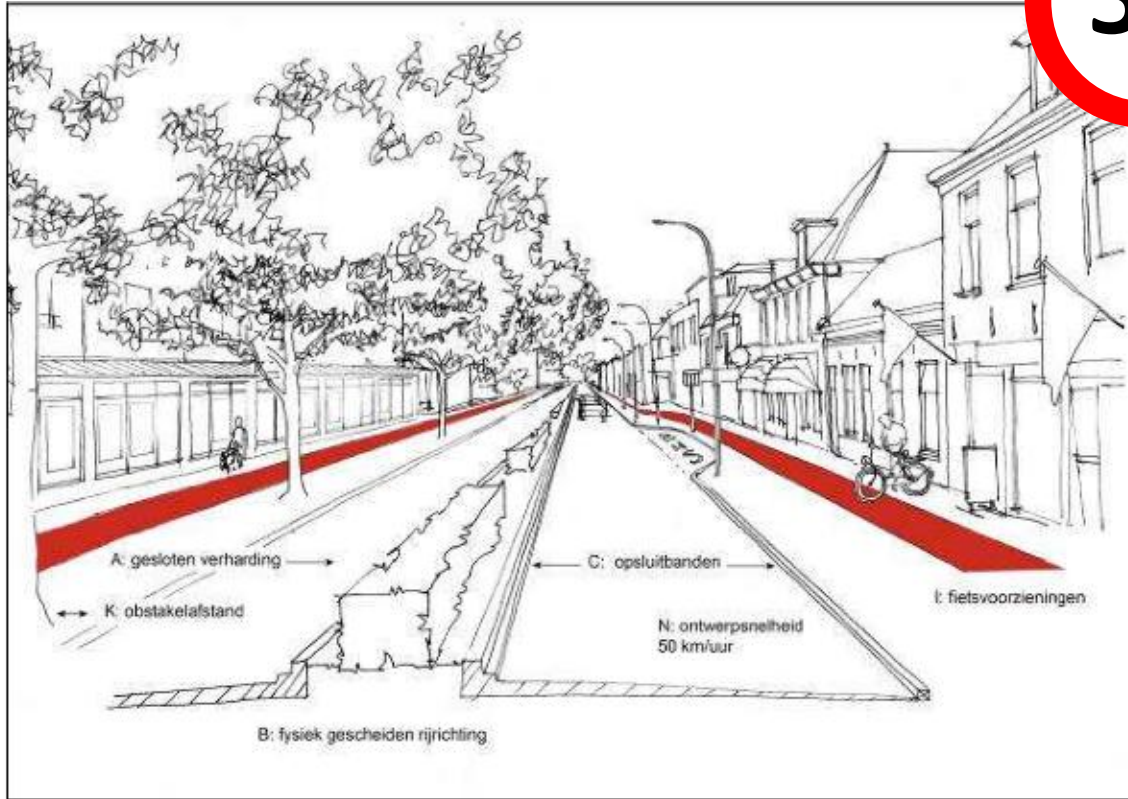
**Categorization of
streets according to
function:**

Flow
Distribution
Access



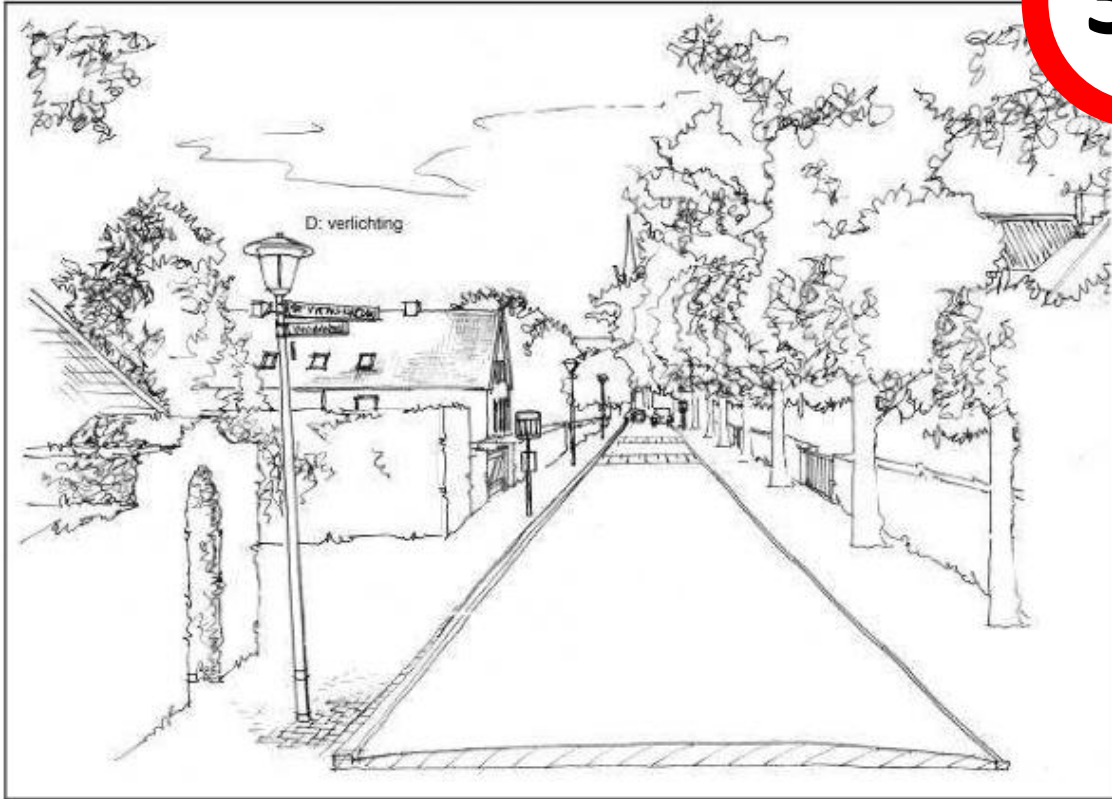
ROAD DESIGN – SEPARATE WHERE NEEDED

50

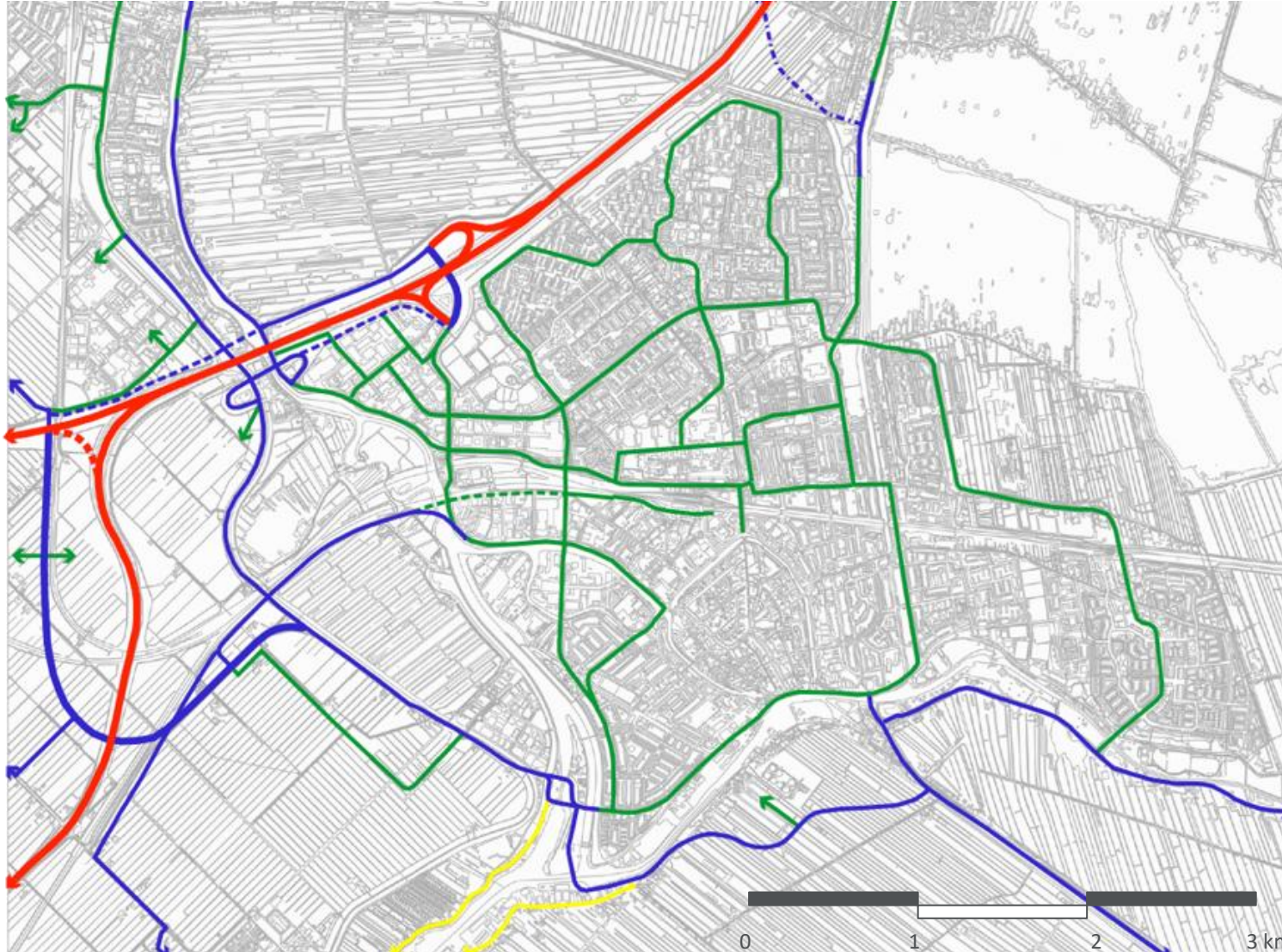


STREET DESIGN – MIX WHERE POSSIBLE

30



NETWORK APPROACH: GOUDA EXAMPLE



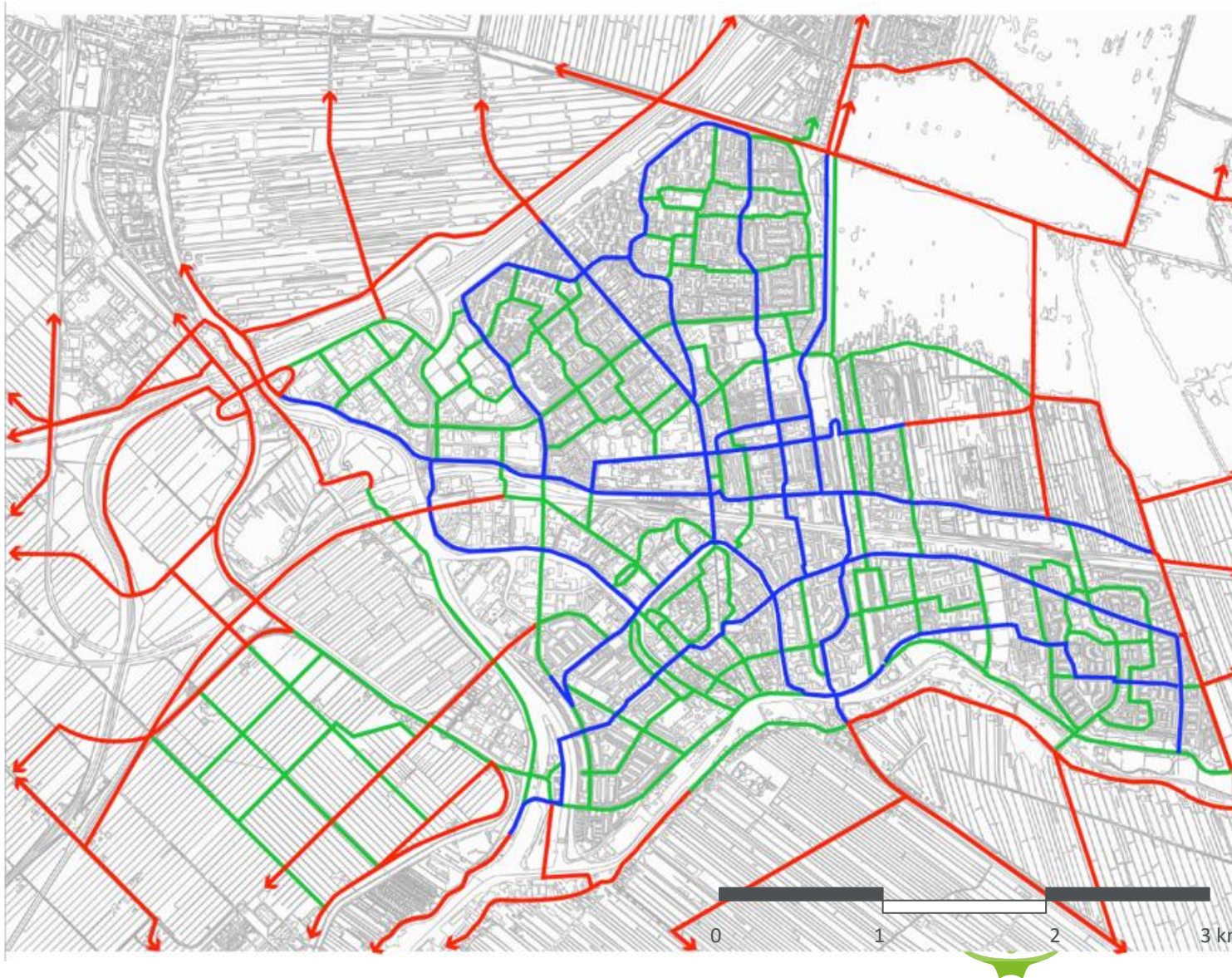
The Car network:

----- Through roads (100 / 120 km/h)

----- Distributor roads (80 / 50km/h)

others Access streets (30 km/h)

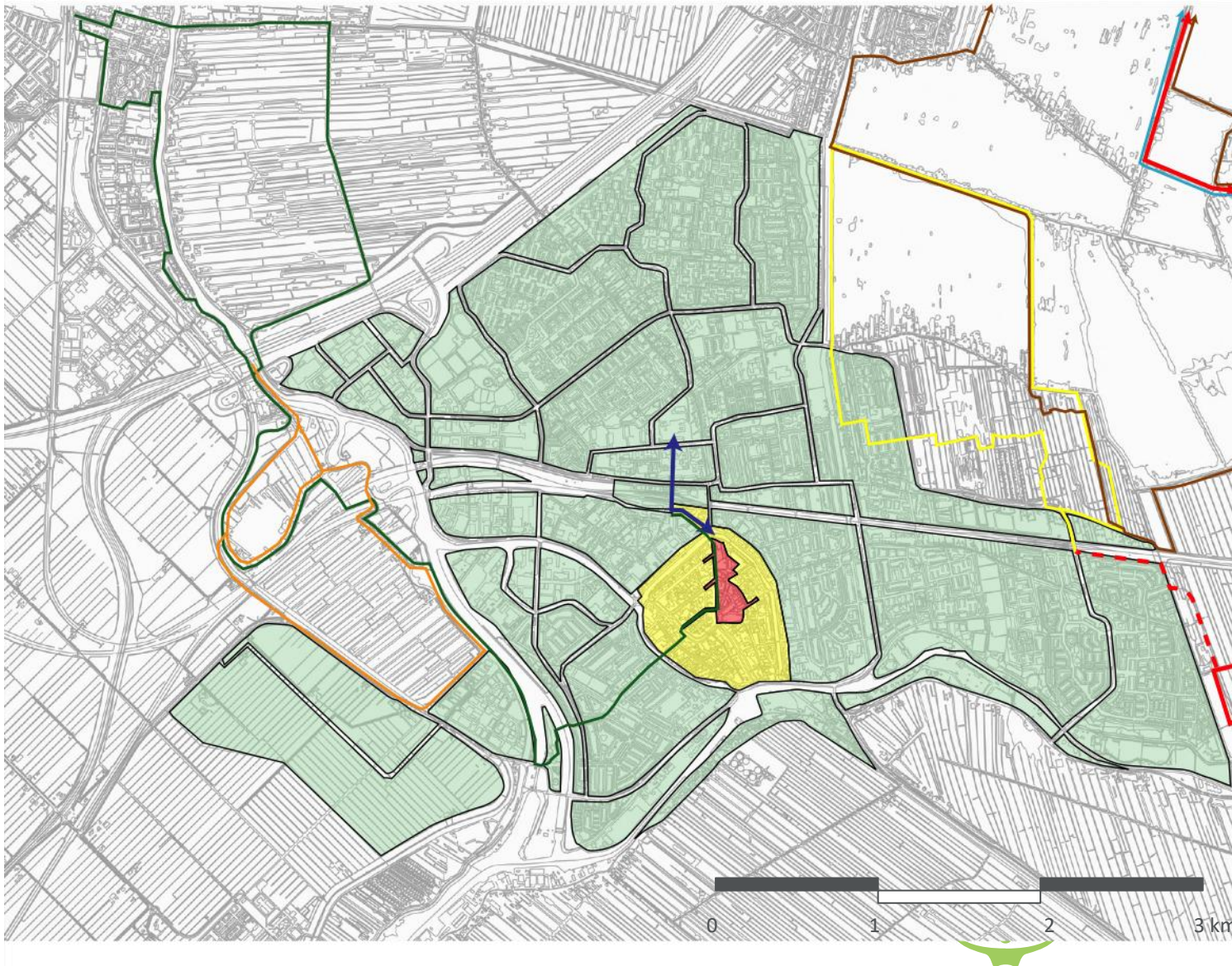
NETWORK APPROACH: GOUDA EXAMPLE



The Cycling network:

- Regional cycle routes
- Primary urban cycle routes
- Secondary urban cycle routes

NETWORK APPROACH: GOUDA EXAMPLE



-  Pedestrian zone
-  30 km/h city center
-  30 km/h residential areas

80% of urban streets are 30 km/h and don't have cycle infrastructure



THANK YOU

