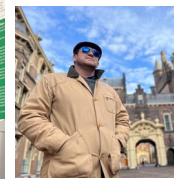
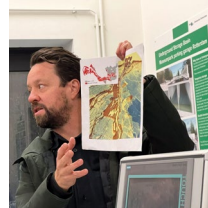


The Netherlands and Belgium

RESILIENCY & MOBILITY TOUR November 11-21, 2023

Michael D. Mallinoff
City of Annapolis
Tranter-Leong Fellowship

BRUGES

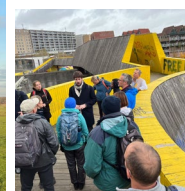


DELFT

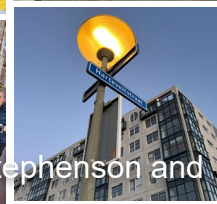
THE HAGUE



ROTTERDAM



ZEELAND



Presentation prepared by Mitchell Stephenson and Julien Jacques

Resiliency Study Tour

Netherlands, November 13-17 2023



Look from above.

Video shot and edited by Julien Jacques

Itinerary: Sat., Nov. 11

City Manager Michael Mallinoff





750,000
People

1.5. Million
Bicycles



Itinerary: Sun., NOV. 12:

Waterways Exploration of Amsterdam



Itinerary:

MON., NOV. 13:

THE HAGUE

- Netherlands Water Partnership (Ministry of Infrastructure & Water)
- Dutch Cycling Embassy
- Dutch Cycling Tour to Scheveningen
- Bosch Slabbers



Itinerary

TUE., NOV. 14:

ROTTERDAM

- Arrival by train, walk to municipality
- Dutch cycling tour with stops at water storage parking garage, Central Station, and Urban Water Square Benthemplein

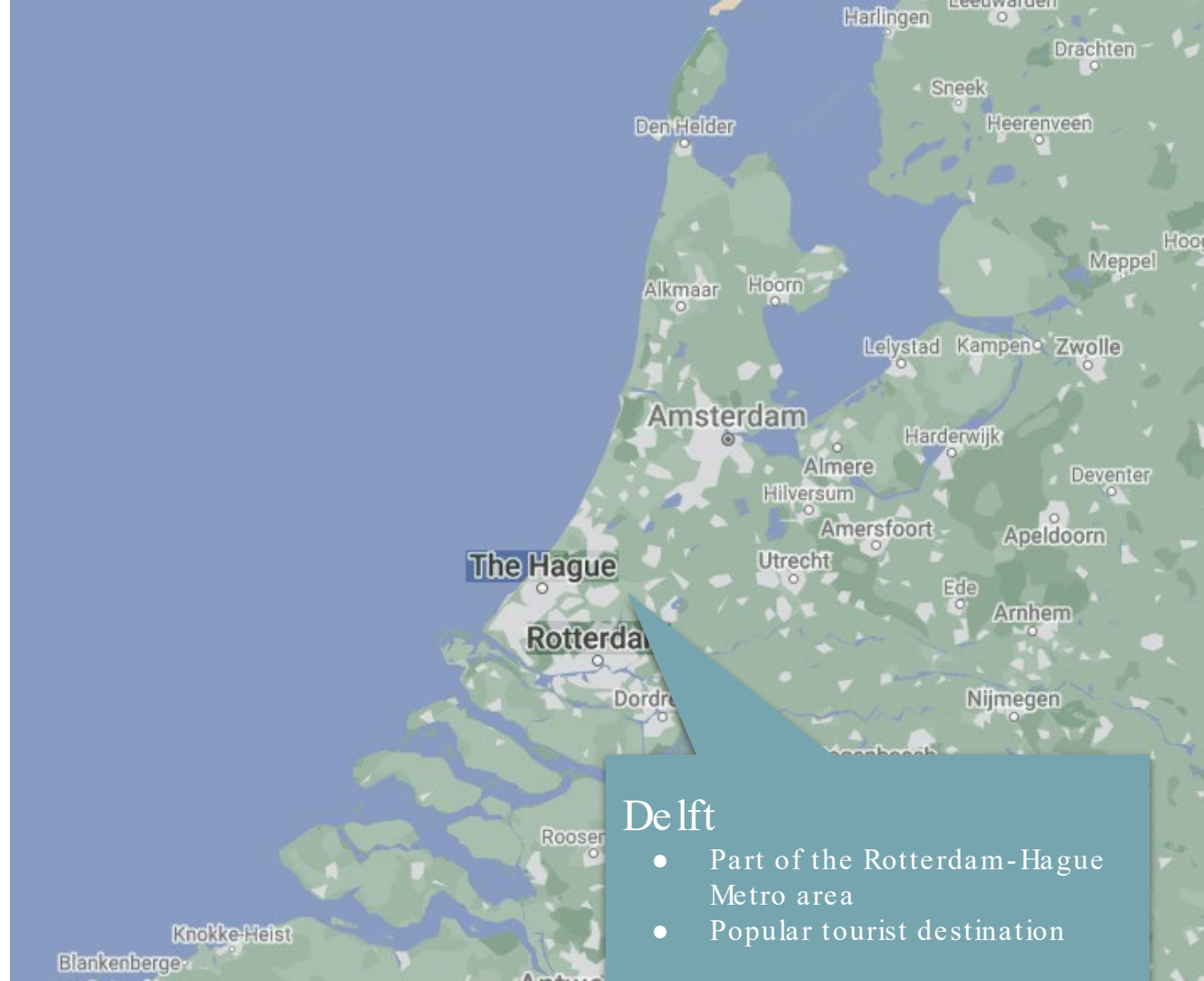


Itinerary

WED., NOV. 15:

DELFT

- Arrival by train at Central Station
- Visit to Hoogheemraadschap Delft and IHE Water Institute
- Visit to TU Delft Campus/Flood Proof Holland
- Dutch Cycling Tour Delft
- Alt: Walking Tour



Delft

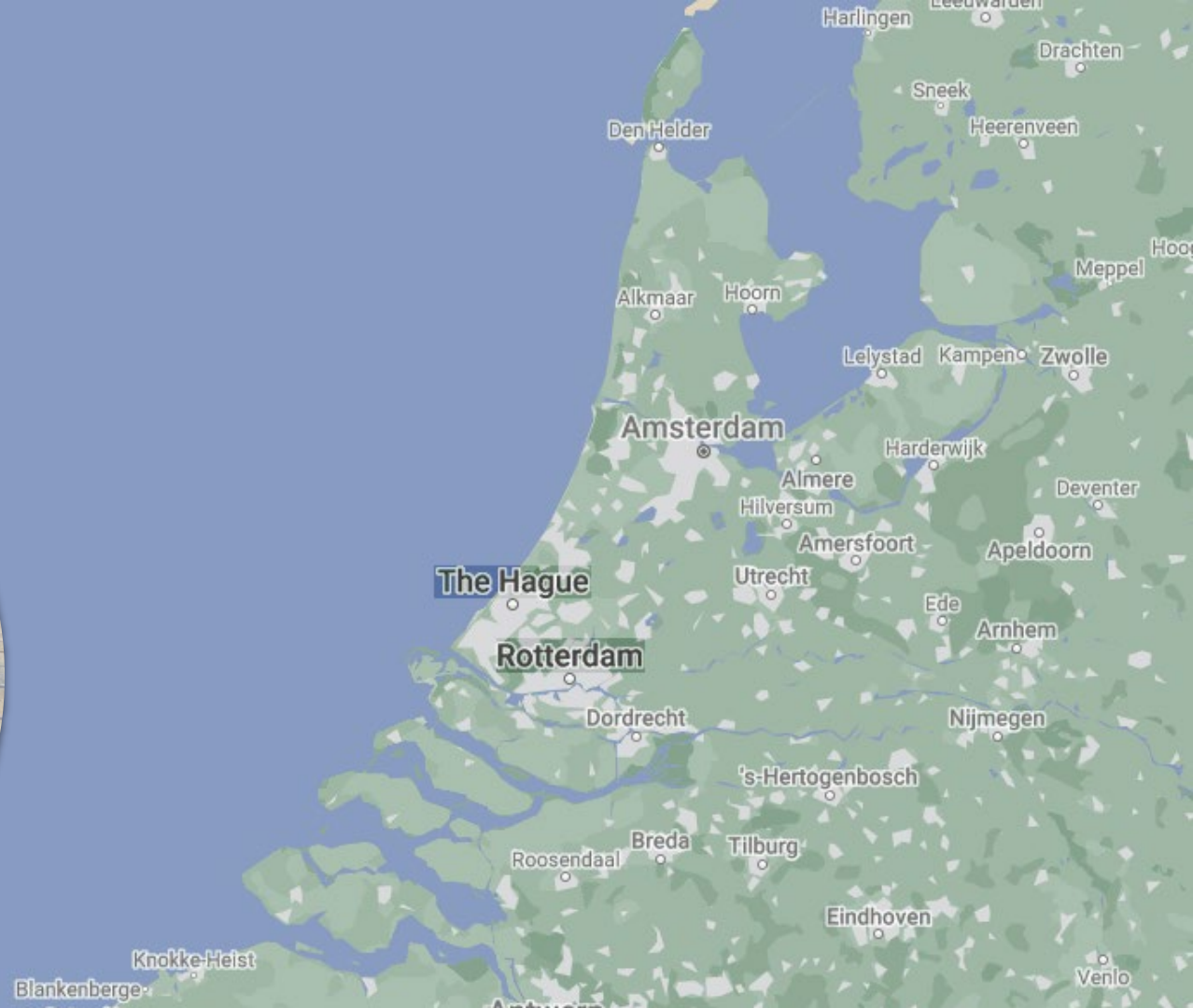
- Part of the Rotterdam-Hague Metro area
- Popular tourist destination

Itinerary

THU., NOV. 16:

THE HAGUE

- International Cycling Safety Conference



Itinerary

FRI., NOV. 17:

ZEELAND

- Maeslant Barrier - Storm Surge Barrier
- Noordwaardpolder
- In-Dune Parking Garage Katwijk aan Zee
- Visit to Van Nelle Factory



Itinerary

FRI., NOV. 17 - 21:

Bruges

- Mobility coordinator presentation on 15 minute city
- Cycle tour of city cycling infrastructure
- Meeting with City Manager
- Resiliency presentation on Blue-Green City
- Walking tour of resiliency infrastructure and related projects
- Tour of North Sea dune restoration

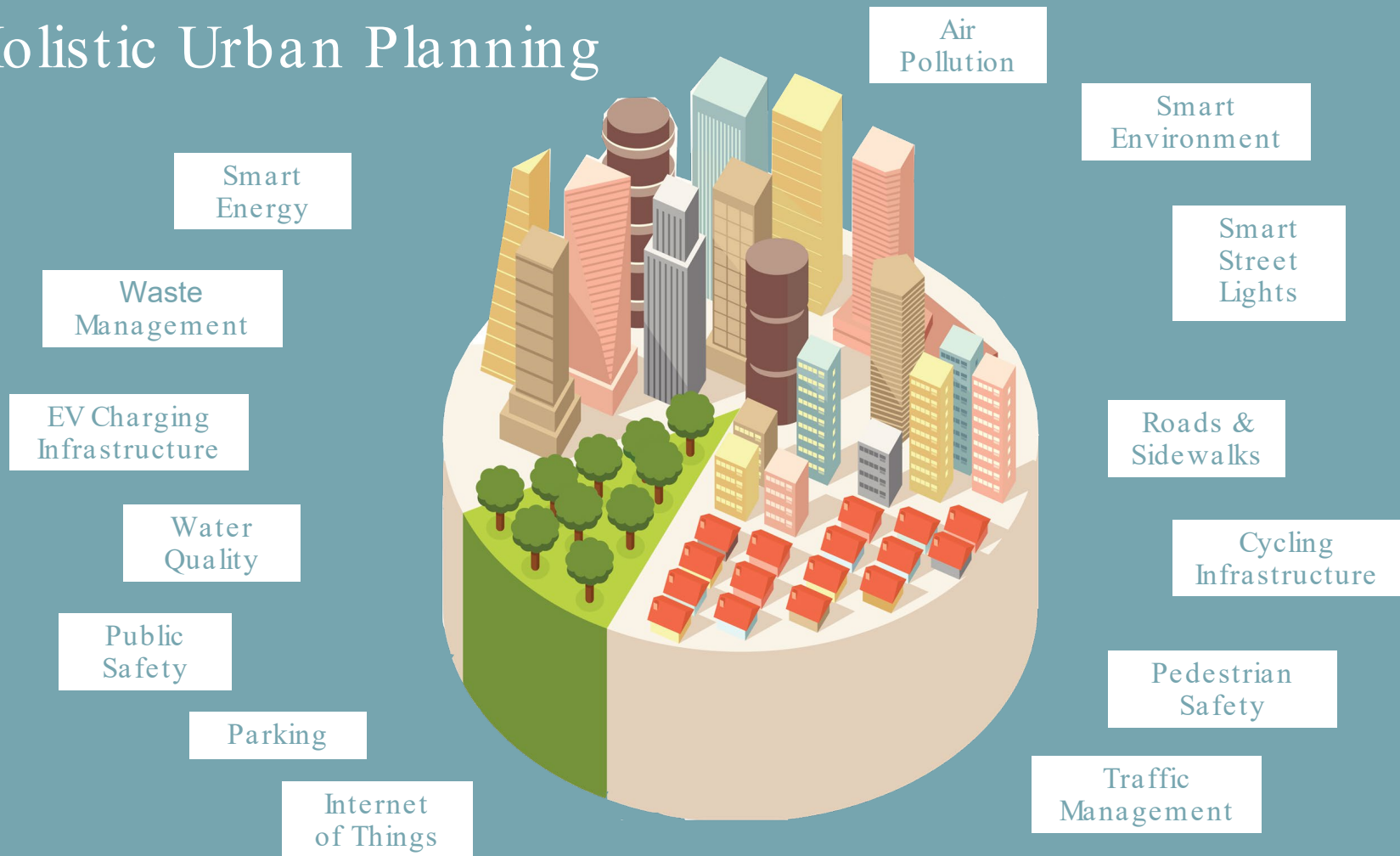


Itinerary: Tue., Nov. 21

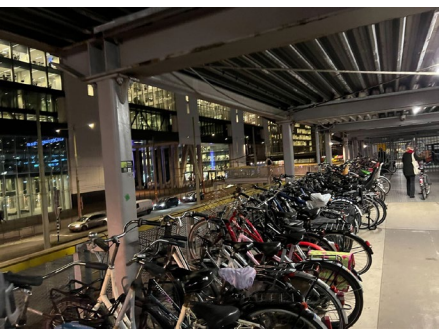
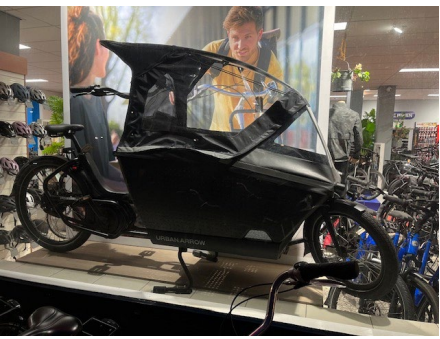
City Manager Michael Mallinoff



Holistic Urban Planning



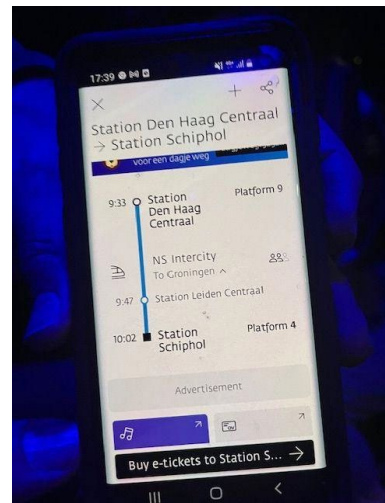
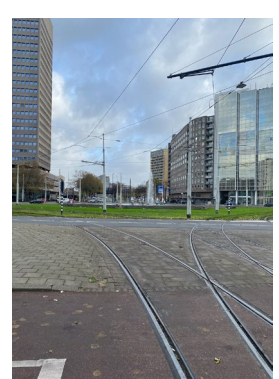
Biking & Alternative/Sustainable Transportation



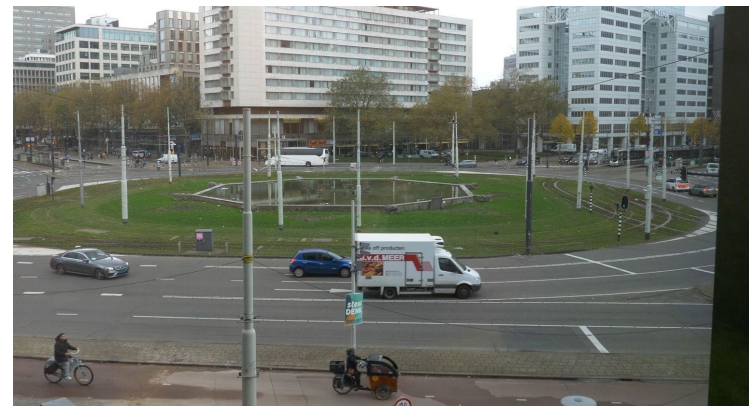
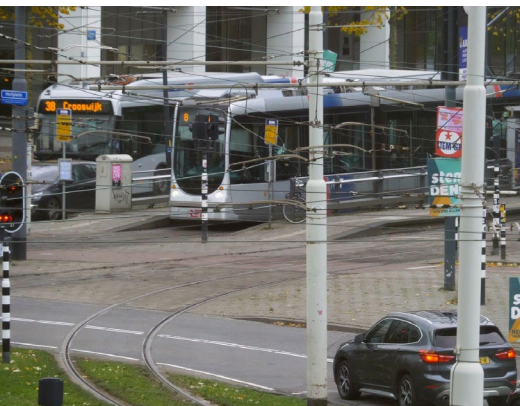


INTEGRATED TRANSPORTATION SYSTEMS

- Trains
- Trams
- Bikes
- Buses
- Scooters



EXAMPLE: HOFPLEIN
SQUARE, an intersection where
pedestrians, bicycles, cars, buses
and trams all safely interact.





Bicycle Parking and Garage

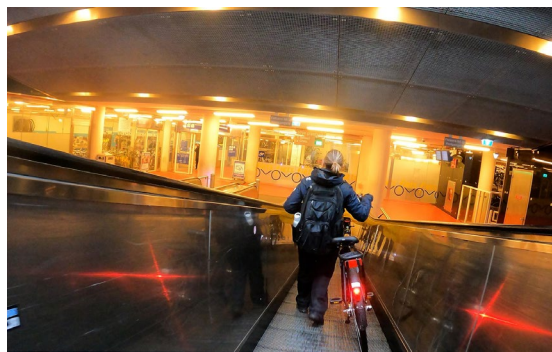
The holistic approach to urban planning requires convenient and adequate storage users.



Holistic Planning - Parking of Bicycles and Cars

Parking - Too Much or Too Little?

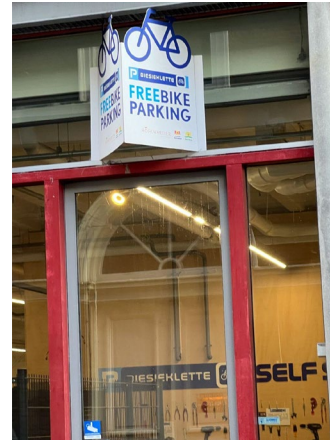
- We often hear complaints in Annapolis about a lack of parking. We do not have a lack of parking - we have a parking complex. People want quick and easy access and convenience.
- Effective rates: parking access closest to downtown should be the highest price.
- Street parking should be for short, quick in -and-out trips, moving longer parkers (1hour +) to garage and surface lots



BIKE PARKING VS. CAR PARKING VS. PUBLIC TRANSPORTATION



- In the Netherlands, they have been working on a 20 percent increase of bike use since 2010.
- They added convenient bike parking areas, close to public transportation and businesses.
- Auto parking garages are often for visitors and tourists.
- Public transportation is convenient, cheap and easy to find/use and integrated.
- Cars are always liable in bike accidents, by law.



The Dutch
Have Built
Communities
Where Bikes,
Trains & Cars
Co-Exist



International Cycling Safety Conference

FACTUM


Motivation

- Collision of truck and cyclists most dangerous situation in road traffic
- Risk of being killed as a cyclist in an accident with a truck 13 times higher than in accidents with other road users

CHRONIC: **Lkw überrollte Radfahrer: tot**

"Tragic and unnecessary": **Truck driver didn't see cyclist hit and killed**

Trucks caused 20% of cyclist deaths in Montreal since 2005



→ Assistance Systems e.g. blind spot assistance might reduce number of accidents

Graz University of Technology | Vehicle Safety Institute
International Cycling Safety Conference
The Hague, November 26th-30th, 2023



Saving More Lives

20 | 16.11.2023 | International Cycling Safety Conference 2023 | Copyright Anadoliv Inc. All Rights Reserved | Public

Autoliv

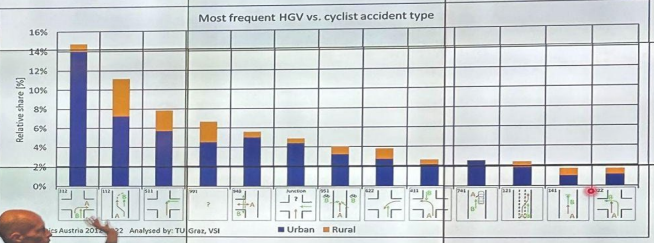
A speaker is visible on the left side of the stage, and an audience is seated in the foreground.

Motivation **Accidentology** Method Results Conclusion

FACTUM

Accident analysis

Most frequent HGV vs. cyclist accident type



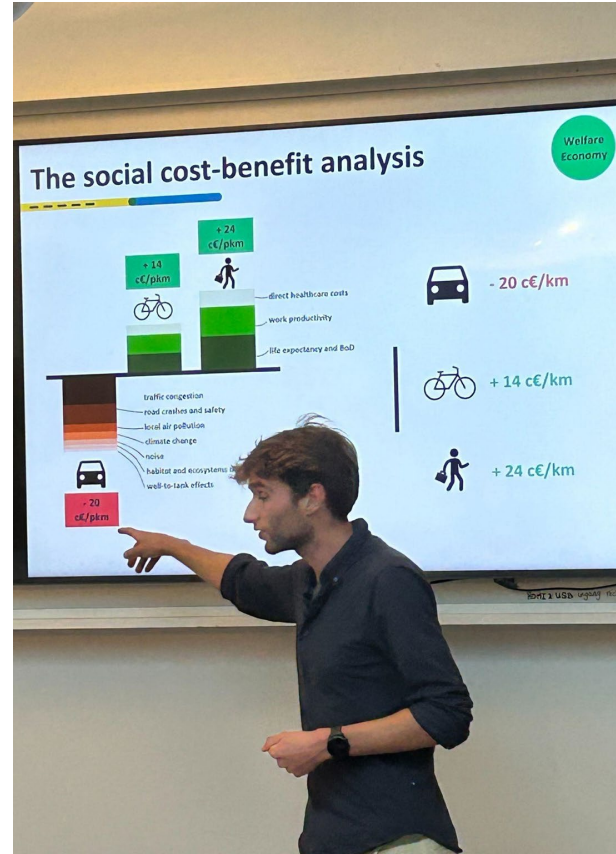
Relative share [%]

Urban Rural

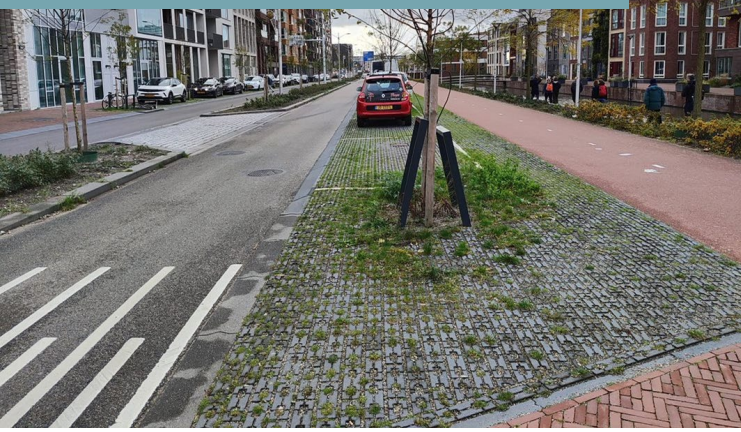
Austria 2018-2022 - Analysed by: TU-Graz, VSI

International Cycling Safety Conference
The Hague, November 26th-30th, 2023

Bikenomics



Permeable bricks in parking spots



ADA, bike parking, bike lane,
shared lane (bricked)

Pavement to Nature

SPACE MAKING & CONSERVATION

- Pavement to pathways
- Conserve habitat and link parks and forests
- Bring people to the water & parks
- Swimming in canals
- **Vegetation EVERYWHERE**



Tiered system of permitting: 1st car: \$25, 2nd car: \$45, 3rd car: \$450. Purchase a bank of visitor parking funds(\$550) to use for guest passes, any amount of time



Form and Function

A garage, built 100 yards from the sea, is underground and landscaped into the surrounding dunes.

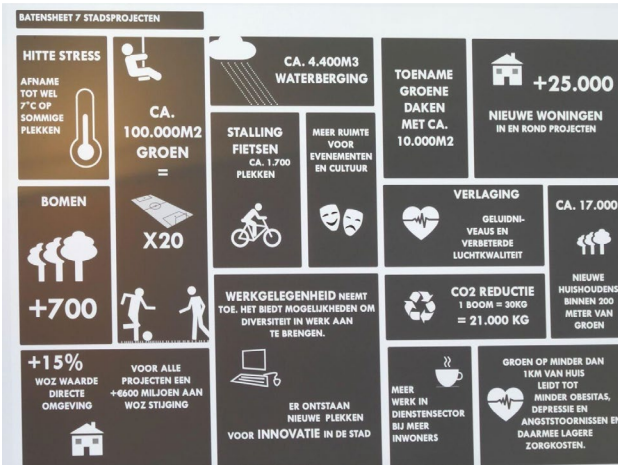
- On Day 5 5 we visited Kawijk aan Zee, an underground parking garage built into the sand dunes.
- **USERS:** mainly tourists, some local residents
- Street parking = residential parking.



Holistic Planning Housing

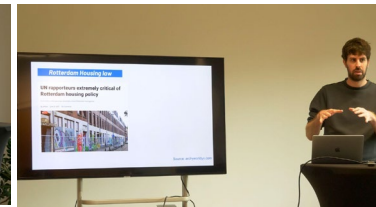
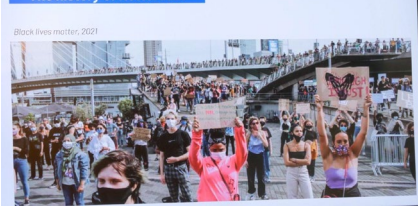
Key Takeaways:

- Mixed Use
- Mixed Income
- Integrated Into the Neighborhood





The history of Rotterdam



“Social Housing” makes up 29 percent of the total housing stock in the Netherlands

Background and Income



Source: centraal bureau statistiek



Source: woonstadrotterdam.nl

GREEN Roofs



INTEGRATED COMMUNITY GARDENS

Stormwater Management:

- Multi-use facilities
- Integrated functions
- Water storage



Multi - use stormwater facilities

- recreation space when empty
- located near school

STORMWATER STORAGE FACILITIES



Water
Roof

ZOHO Letters

Rainwater is not led into the sewer but into the ZOHO letters where it is buffered and when necessary released into the surrounding garden. The built-in smart system looks at the weather forecast via internet. As soon as a heavy rain shower is expected, the tanks release water automatically and create buffer capacity for the coming rain. This sustainable system works on solar energy.



TREES IN PUBLIC PLACES AND WATERFRONTS



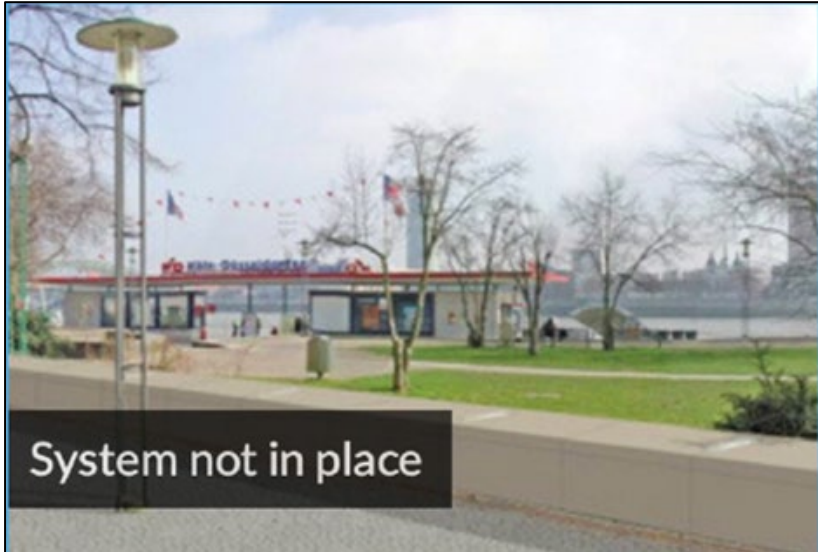
- Mature trees in event spaces
- Co-exist with parking
- Serve as green “walls”
- Provide ecoservices - stormwater filtration & capture, reducing temperatures, carbon capture
- Preserves viewscape



Trees, Tents, and Outdoor Dining. OH MY!



Demountable Systems: an Option for COMPROMISE STREET BULKHEAD



Building Resiliency & Controlling Stormwater



TECHNICAL UNIVERSITY OF DELFT
ALTERNATIVE TECHNOLOGIES

Netics
Geowall



- Hosts and coordinates **Flood Proof Holland II** (FPH II), a test and demonstration site (polder) where alternatives to traditional sandbags are tested for efficacy.
- Civil, hydraulic and offshore engineering students often utilise the facilities to practically apply, providing a unique learning tools.
- Professor for flood risk Matthijs Kok believes that FPH II allows students to “ see what is at stake during floods; to discover how different measures are helpful in reducing the damage [of floods].”

IHE Delft Institute for Water Education - Box Barrier

- Can hold back 80% of water
- Folds for storage and quick deployment



THE DELFT INSTITUTE FOR WATER EDUCATION



Using Dredged Material for BEACH REPLENISHMENT

- Ostend, Belgium: suction hopper barge with floating pipeline
- Allows continuous work = almost 1 mile of beach restoration/7 hrs = 5 week project
- Bulldozers/ excavators filter systems reduce fine dust and nitrogen emissions by 80%



Clean Energy - North Sea Wind Farm

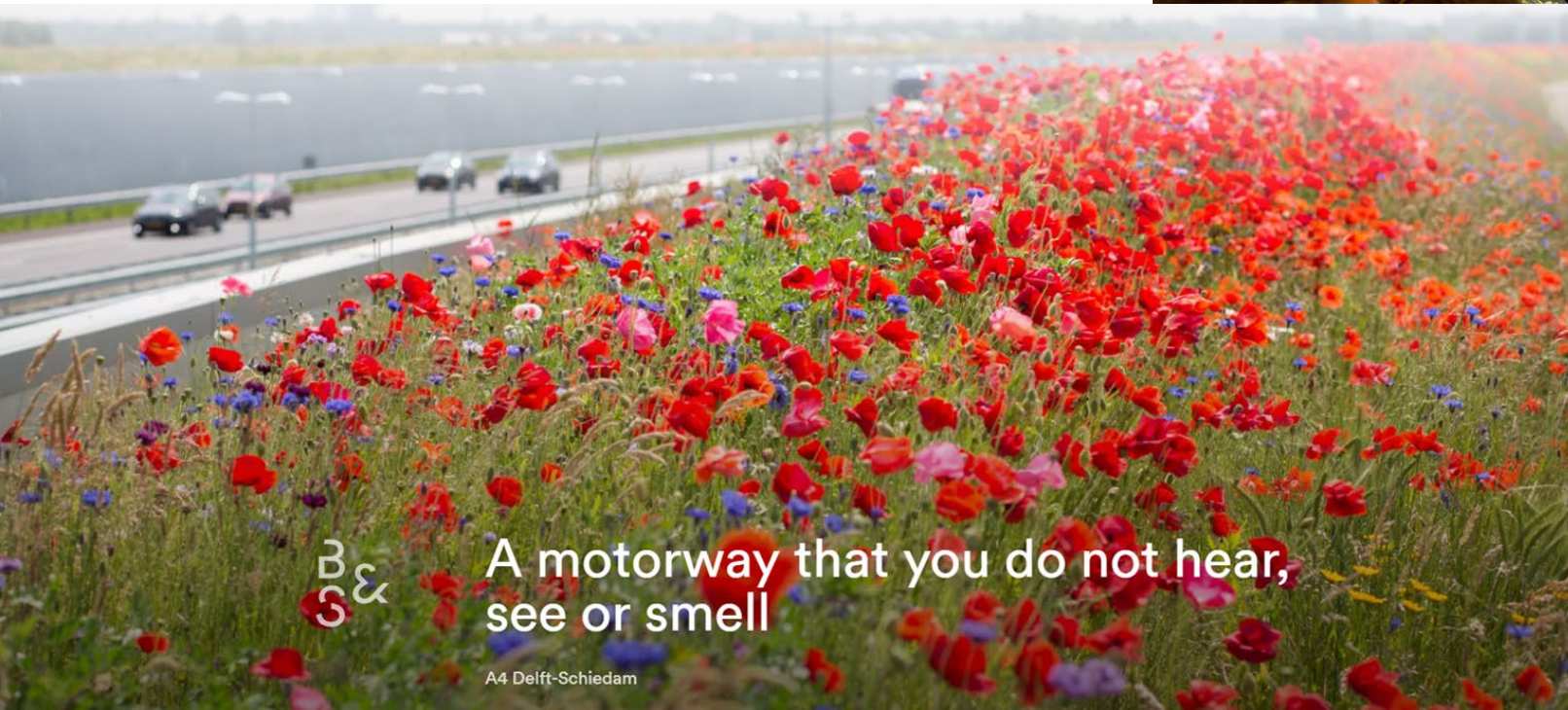
487 MW SeaMade offshore wind farm - Ostend, Belgium

8 wind farms produce 13% of Belgium's electricity needs. Goal is 50%

Goal to provide all Belgians with green power



A4 Motorway Delft-Schiedam BOSCH SLABBER



A motorway that you do not hear,
see or smell

Biesbosch National Park & Deliberate Floodplain



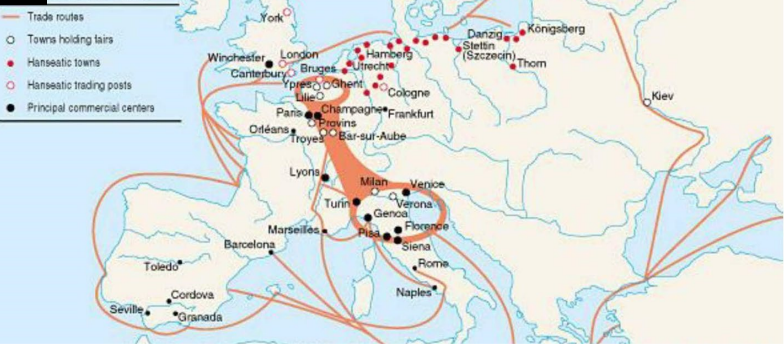
Private land converted into public space for downstream flood control



Maeslant Barrier:

- Storm Surge Barrier
- Two 689-foot gates with two 777 feet steel trusses holding each





A World
Heritage City

A Cycling City
(in the making)

Bruges/Brugge, Belgium



Guide: Bart
Slabbinck
Project
coordinator
Mobility
City of Bruges



Population of downtown area:
20,000



City Hall, Bruges

Built in the 1300s (plaza was a parking lot)



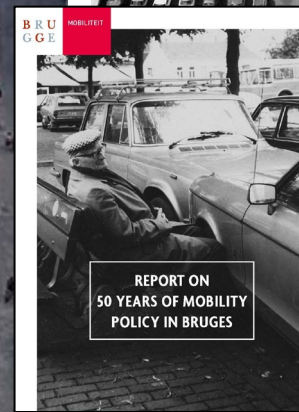
Even the City
Maintenance
person uses a
bike for his work.





BRUGE MOBILITY

City Squares to Parking Lots
to Gathering Spaces



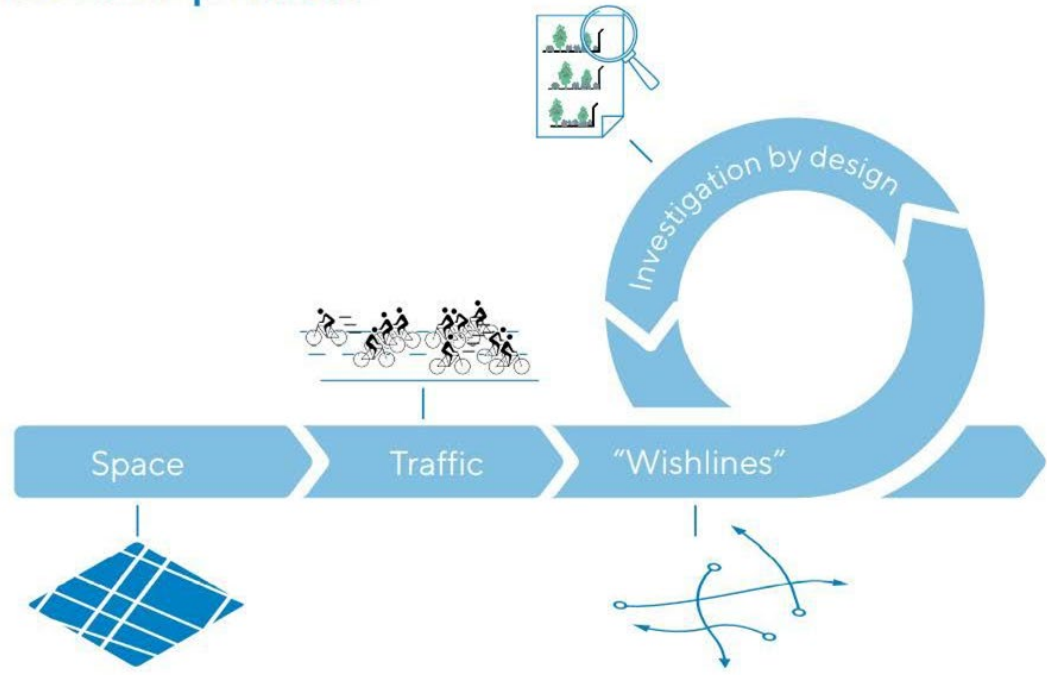
From Car
Centric to
**Quality of Life
Planning**
Building to 40
minute bike
commute

Bruges is now referred to as "THE 15 MINUTE CITY"

The City is planned to get riders anywhere in the city by bicycle in 15 minutes



Iterative process



Working with all stakeholders

KEEPING SAFETY IN MIND



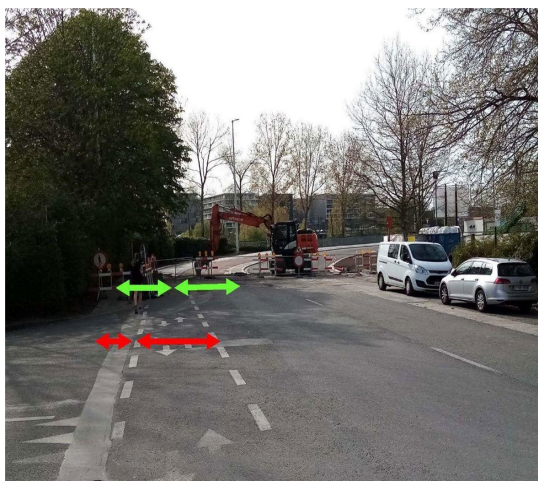
Stop Komvest – Baron Ruzettepark

- ❶ Van 2 naar 1 rijvak vanaf huisnummer 40C Komvest
- ❷ Bestaande doorsteek door de middenberm
- ❸ Enkelrichtingsfietspad van Baron Ruzettepark naar Walweinstraat of Komvest (woonstraat)
- ❹ Enkelrichtingsfietspad van Komvest naar Baron Ruzettepark + voetgangersoversteek
- ❺ Nieuwe vrachtwagenuitrit bedrijf IFF (Gistfabriek)
- ❻ Komvest (woonstraat) wordt fietsstraat
- 🚌 Bushaltes zoals voorzien in het nieuw busplan





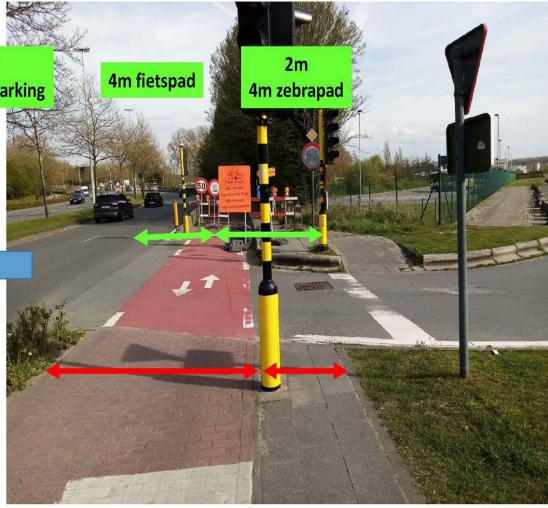
Build to Design

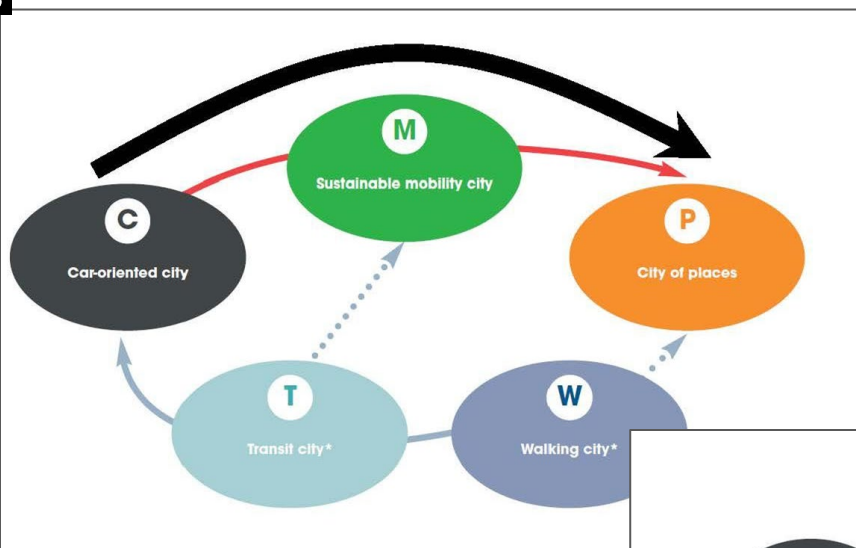


opschuiven R30
schrappen Ketsbruggeparking

4m fietspad

2m
4m zebrapad





Creating an integrated City



- Road building
- Car parking
- Lower density
- Dispersion



- Public transport
- Cycle networks
- Roadspace reallocation



- Public realm
- Street activities
- Traffic restraint
- ToD/mixed use developments

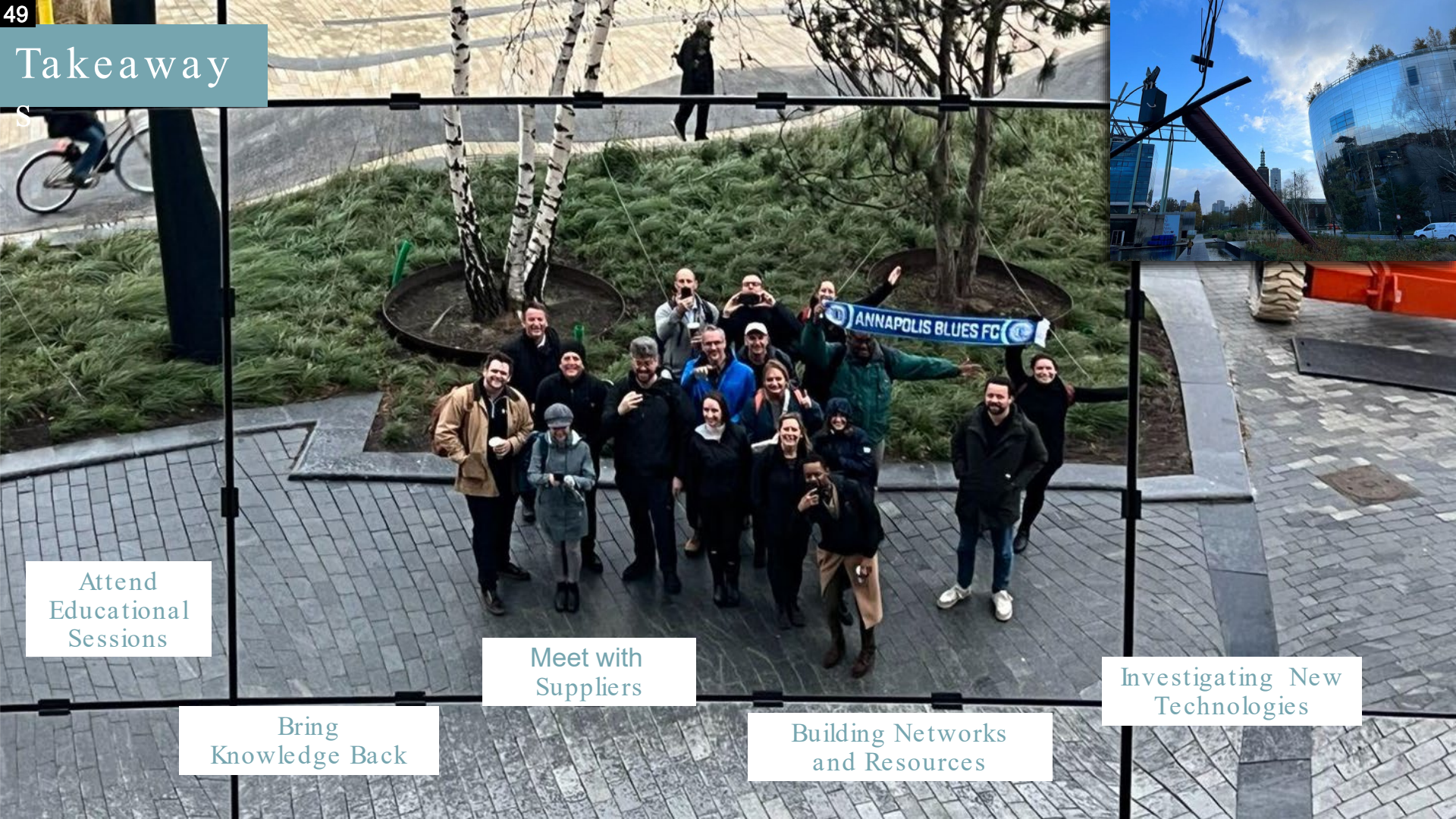


Supporting different city visions, based on:

- Sustainability
- Efficiency
- Equity
- Health and vitality
- Happiness

Takeaway

S



Attend Educational Sessions

Meet with Suppliers

Investigating New Technologies

Bring Knowledge Back

Building Networks and Resources

Q&A