

Omnipresent Rail in 2050: A Vision for the Future

In 2050, railways will be omnipresent in Zuid-Holland, connecting even the furthest corners of the province to each other. Travelling on rail will be the backbone of the regio's mobility system. Your journey also will no longer be about getting from A to B. Instead, mobility will be an experience of its own, no longer a subservient means towards enabling other activities.

In 2050. The transportation system has developed with a focus on sustainability, health, safety, sociability, comfort, culture, convenience, and on providing a great experience for transit passengers. Thanks to a **context-based approach**, various modalities are used to service the types of environments where they make the most sense.

The hybridization of railway-based transit

There is no longer a strict division between trams, light rail, metro, and commuter rail. The different train types have merged into one hybrid variant, which can both serve shorter and longer distances. Thanks to improved technology, these hybrid vehicles work well at high speeds as well as at slow speeds.

Urban Environments

The private automobile has vanished from urban environments in line with the ever-increasing density of the cities that make up the Randstad. With this **densification**, the **urban rail networks** have vastly **expanded** and **increased**.

The urban railways of the future, moreover, are not just located at the **surface**; **underground** and especially **above-ground railways** have **expanded**, following the proliferation of high-rise buildings in the cities of the Randstad. There are now railways that connect the 10th story of high-rise buildings in the cities, creating a second, elevated surface level. At the same time, the railways that still are running at the surface level have been greened radically, providing dense cities with much needed new green corridors.

Suburban and rural environments

Suburbs and exurbs that are a part of the metropolitan areas of Rotterdam and The Hague, will be **integrated** with their **transit networks**. In 2050, **each village in Zuid Holland** will have **railway access**, with smaller remote hamlets connected by bus. Rail transit will have become the backbone of the transportation system in suburban and rural areas, with walking and cycling being prioritized for the first and last mile.

Travelling as an Experience

Due to ever increasing customer demands, the interiors of public transit vehicles have also improved drastically. The **interiors** of 2050 have **meeting rooms, working spaces, on-board restaurants, and family carriages**, making it so that people can use their travel time just like how they would have used their time otherwise. This applies to railway stations too, these have become **multifunctional neighbourhood hubs**, where many amenities can be found. Time spent travelling now seamlessly blends in with time spent on other things.



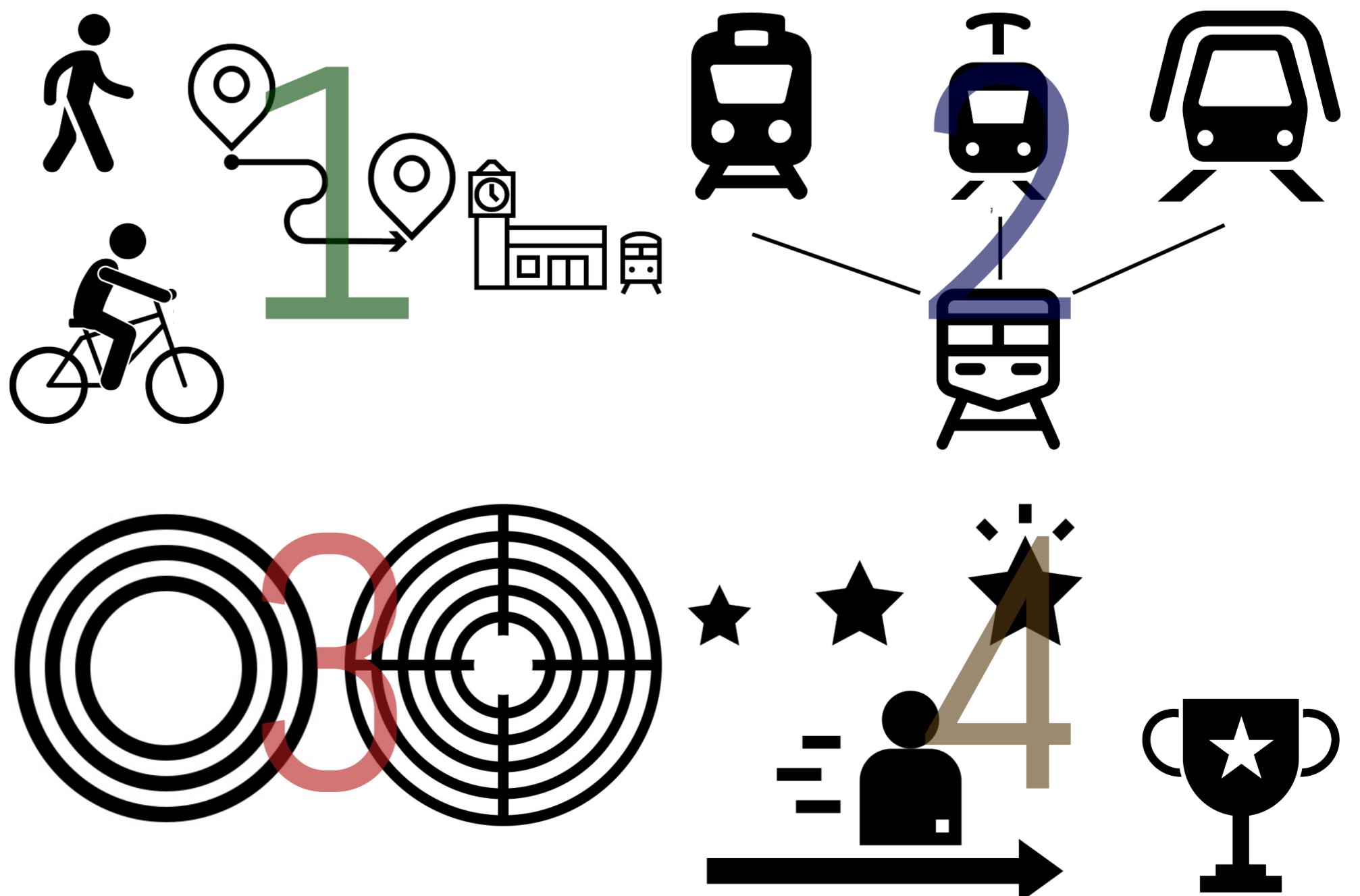
Design Principles

#1 **Rail transit** will have become the **backbone of the transportation system** in **urban, suburban and rural areas**, with walking and cycling being prioritized for the first and last mile

#2 The **hybridization of rail transit**: There will be **one type of rail vehicle** which can be used flexibly for all distances and speeds.

#3 Urban, Metropolitan, and Regional **railway networks** as a series of **concentric rings** (with NSEW corridors)

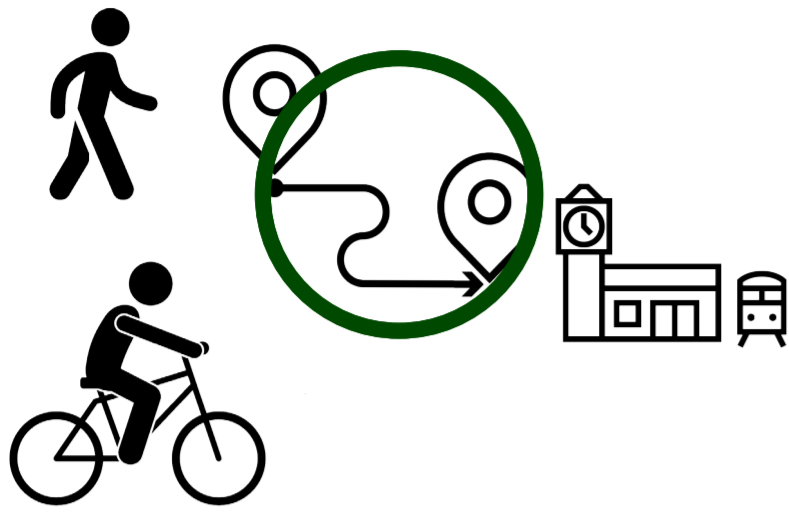
#4 Travelling in 2050 is a **great experience**



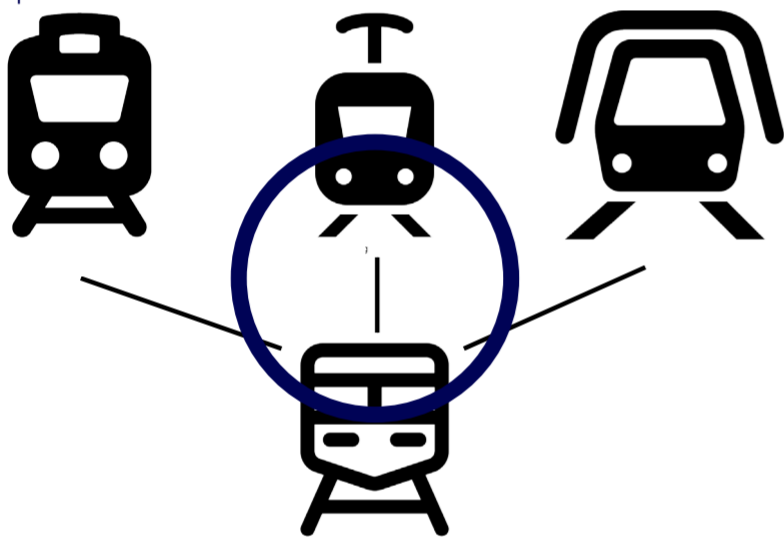
Design Principles & Building Blocks

Design Principles

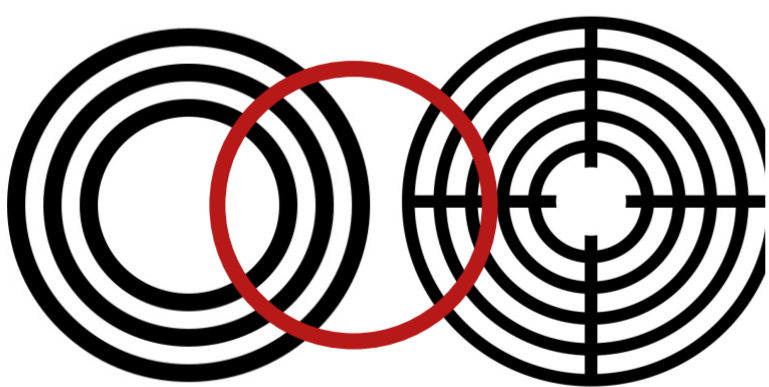
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#3 Urban, Metropolitan, and Regional **railway networks** as a **series of concentric rings** (with NSEW corridors)



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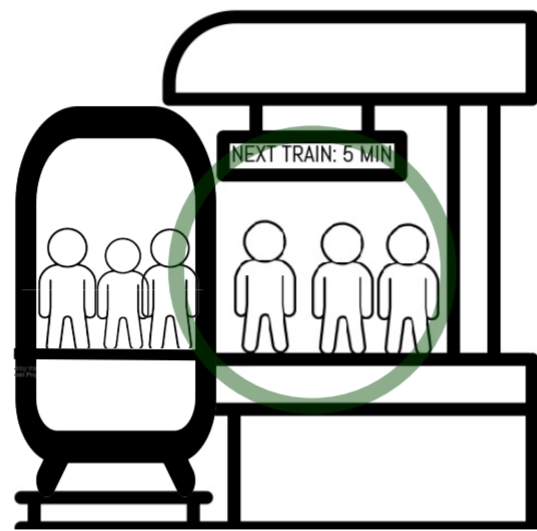


Building Blocks

#1 In **urban areas**, **omnipresent rail transit** provides the backbone of the mobility system



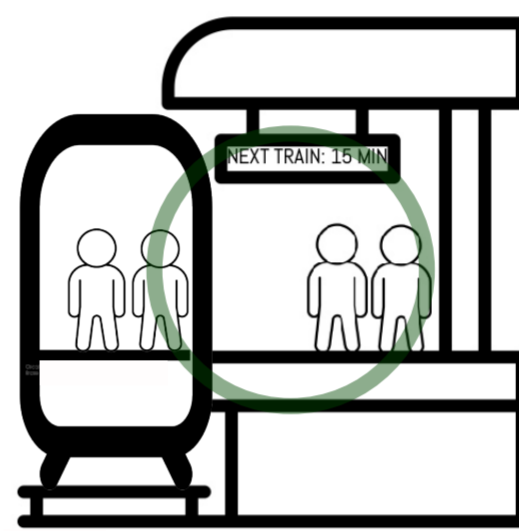
#2 Urban areas will be serviced by **high frequency, high capacity** transit



#3 **Suburbs and exurbs** that are a part of a **larger metropolitan area** like Rotterdam and The Hague, will be **integrated** with their **transit networks**



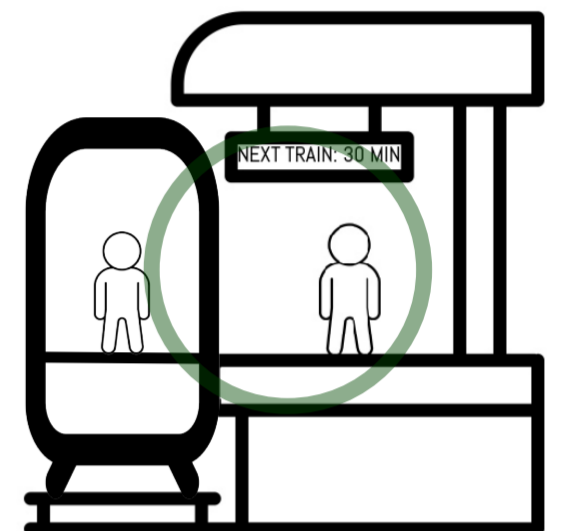
#4 Suburban areas will be serviced by **intermediate frequency, intermediate capacity** transit



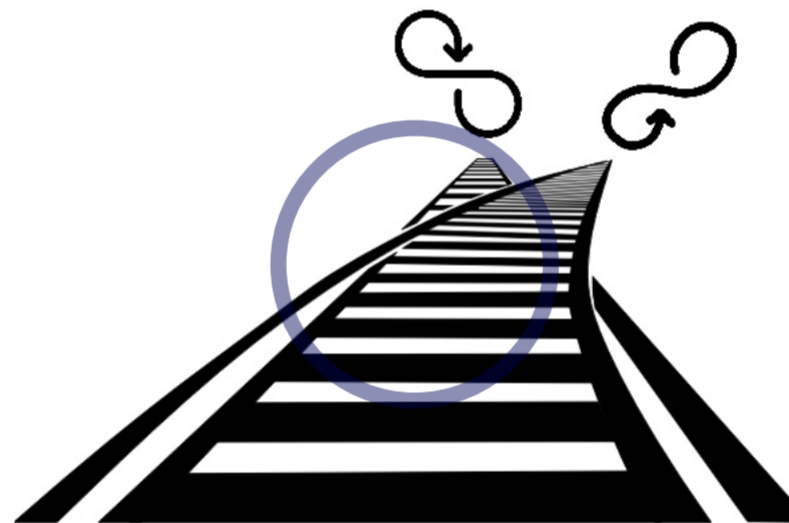
#5 **Every rural village** in Zuid Holland will have a **transit station**



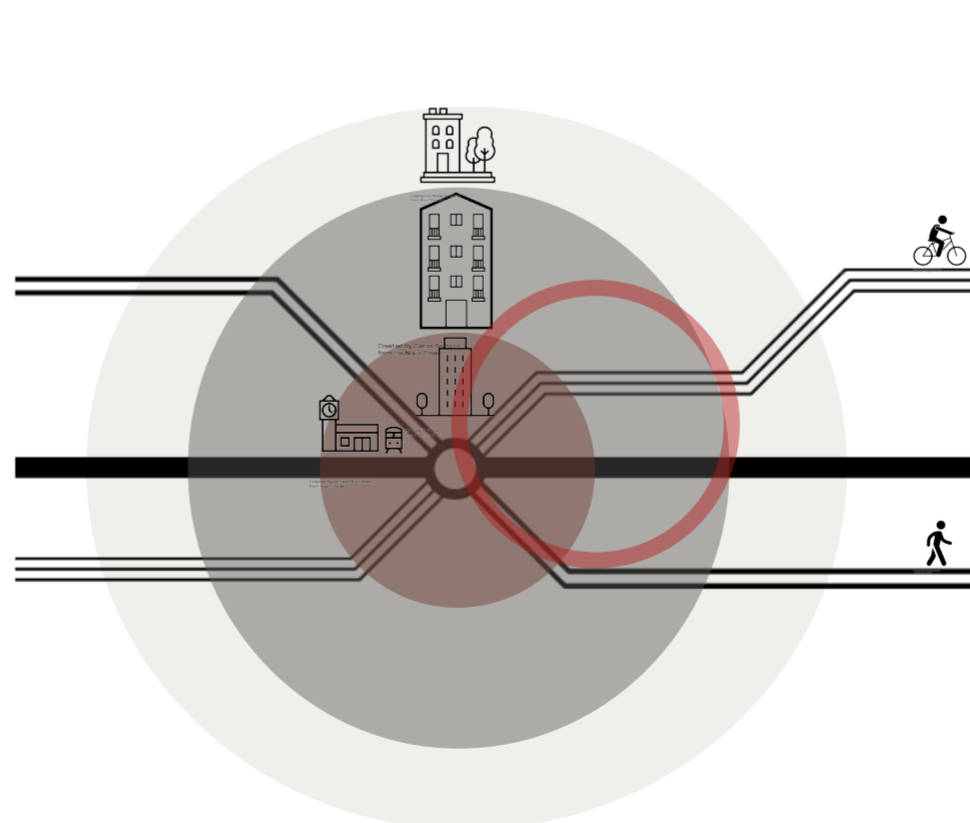
#6 Villages in the region will be serviced by **low frequency, low capacity** transit



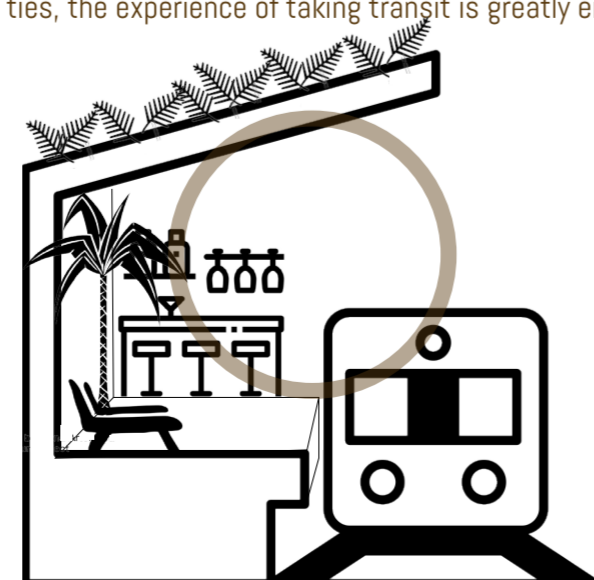
#7 **Uniform Tracks**: **All train vehicles** run on the **same type of tracks**, which all have the **same width**. All trains carriages have the **same number of wheels**, and the same turning radius. Thanks to improved technology, these hybrid vehicles work well at **high speeds** as well as at **slow speeds**.



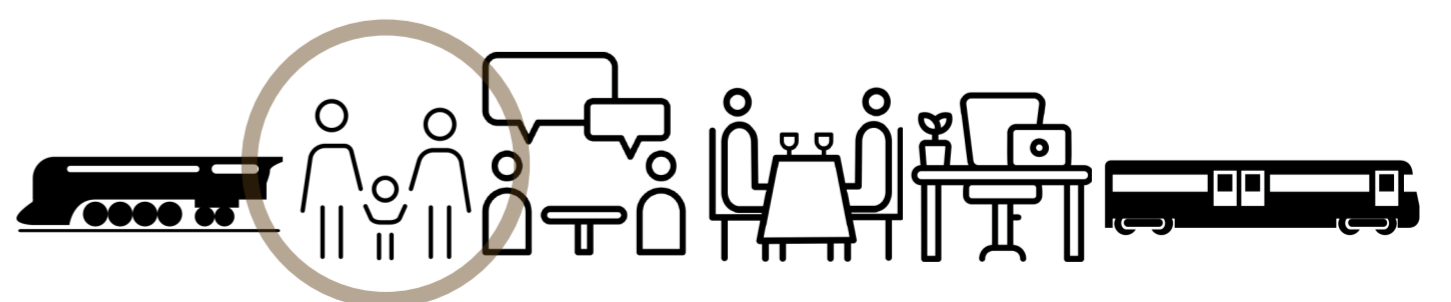
#8 The suburbs and villages will be built as **Transit-Oriented Developments**, with a spatial differentiation in **concentric circles**. There will be a **dense** mixed-use **center** right around the **rail station**, and with density decreasing the more you go towards the outside of the suburb or village.



#9 **Transit stops** become multifunctional **neighbourhood hubs**, where many **amenities** can be found. By providing amenities, the experience of taking transit is greatly enhanced.



#10 The transit **interiors** of 2050 have meeting rooms, working spaces, on-board restaurants, and family carriages, making it so that people can use their travel time just like how they would have used their time otherwise.



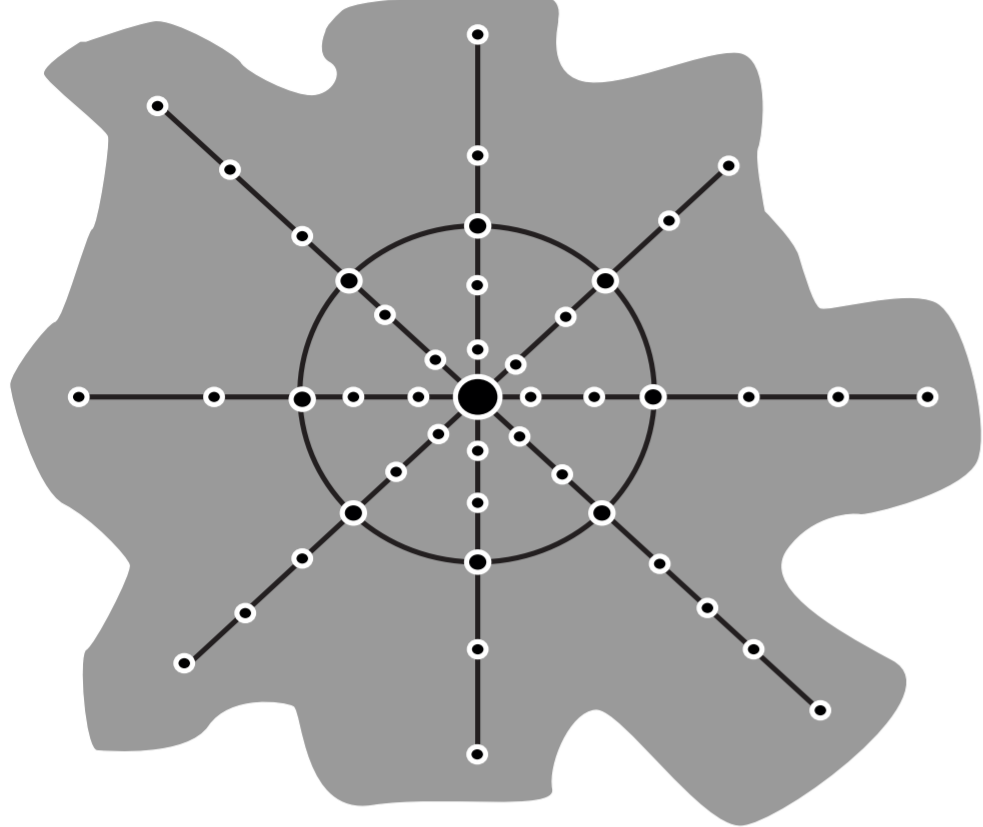
From Conceptual Systems to Regional System Design

Conceptual Systems

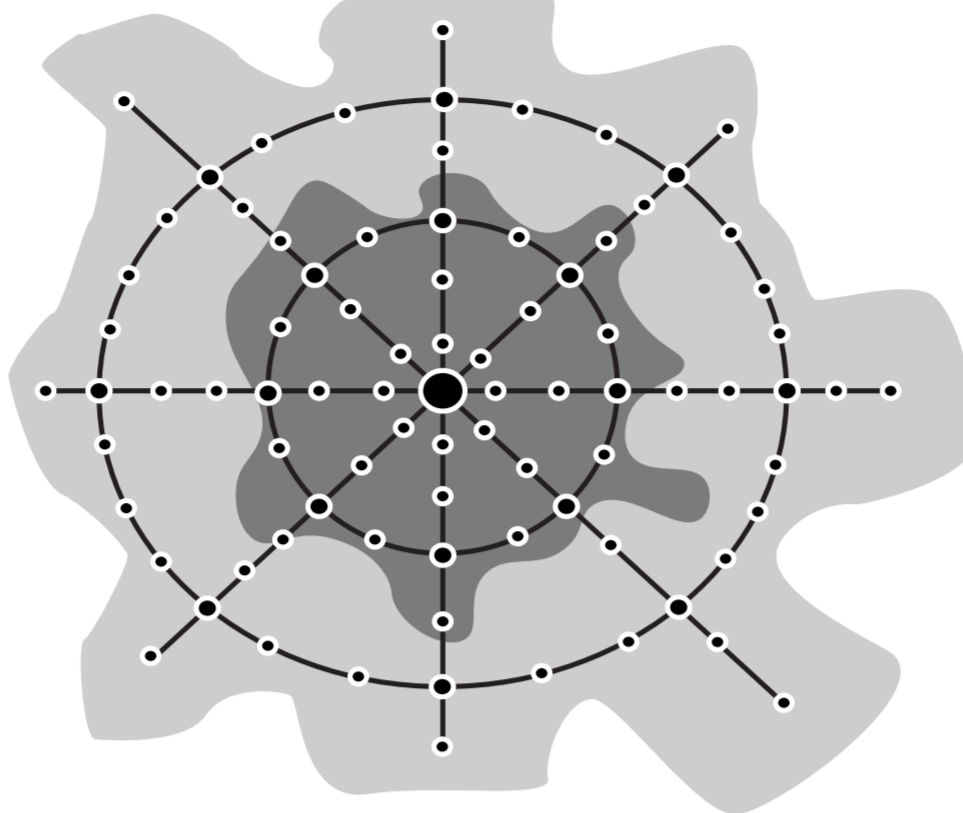
LEGEND

- Central Station ●
- Decentral Node ●
- Regular station ●
- Railway line —

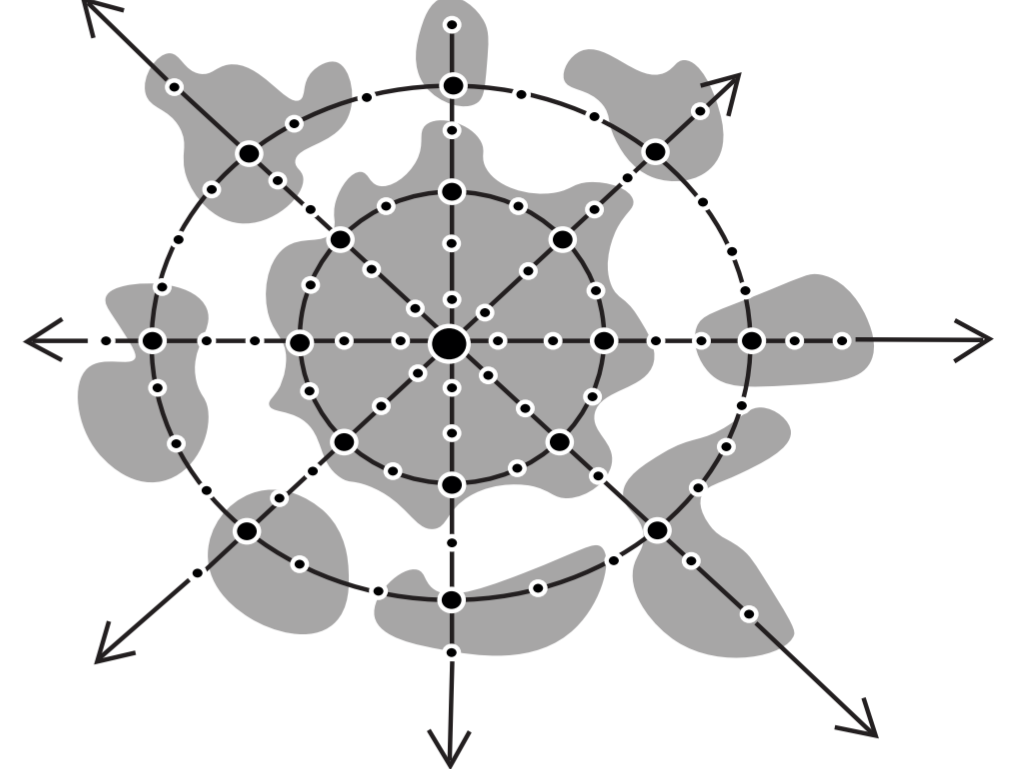
Urban Railway Network



Metropolitan Railway Network



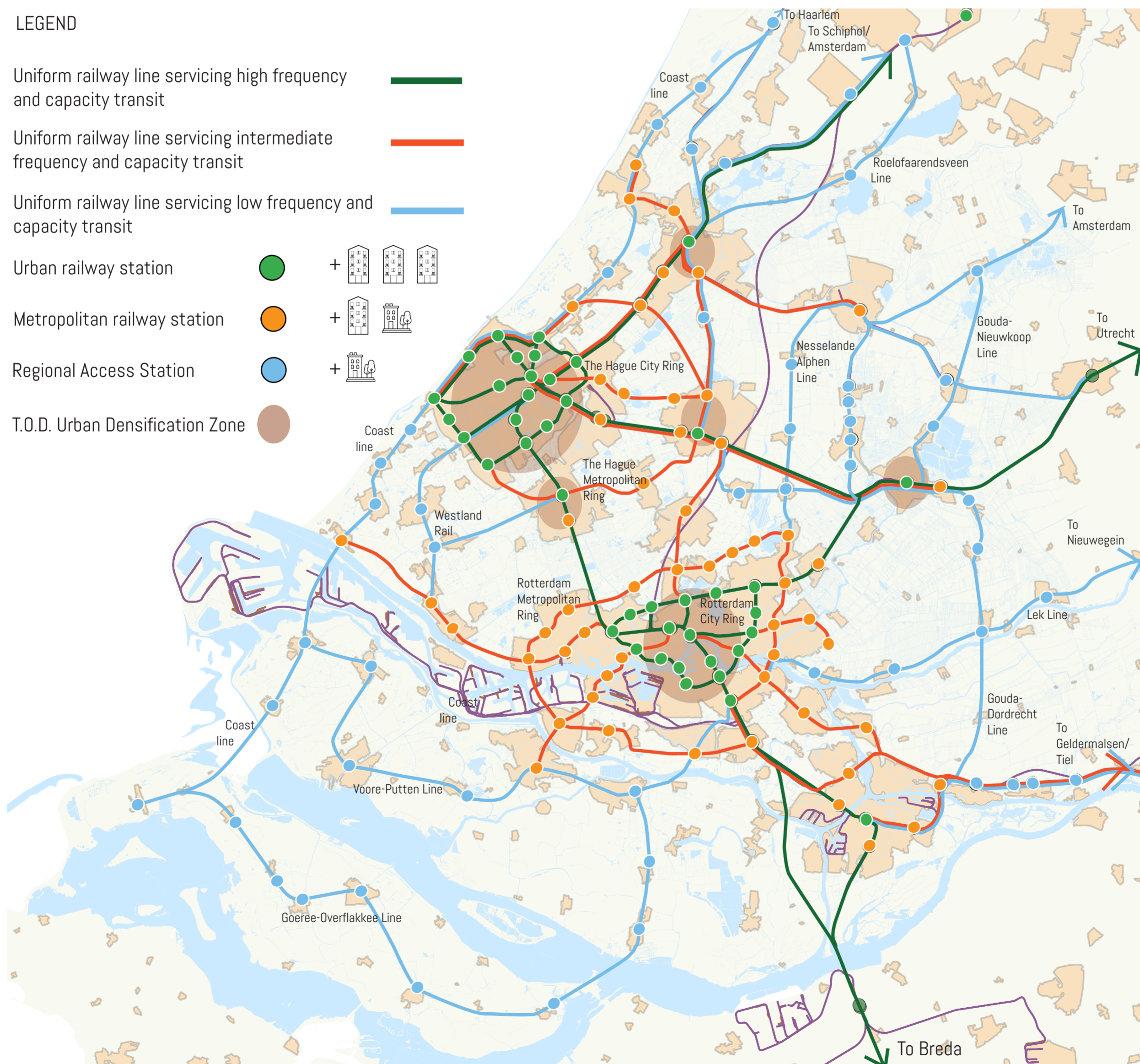
Regional Railway Network



Regional System Design

LEGEND

- Uniform railway line servicing high frequency and capacity transit — (thick green line)
- Uniform railway line servicing intermediate frequency and capacity transit — (thick red line)
- Uniform railway line servicing low frequency and capacity transit — (thick blue line)
- Urban railway station ● (green circle) + [house icons]
- Metropolitan railway station ● (orange circle) + [house and train icons]
- Regional Access Station ● (blue circle) + [train icon]
- T.O.D. Urban Densification Zone ● (brown circle)



T.O.D. Urban Densification Zones

City	Present Density (inh. per square km)	Future Density (inh. per square km)	Future Reference	Newly added homes (per square km)
Den Haag	6822	8450	Naples	814
Rotterdam	3053	4300	Birmingham	624
Delft	4688	5250	Bordeaux	281
Zoetermeer	3688	4750	Manchesterr	531

New Rail Infrastructure

High capacity & frequency

Present lines: 4
New lines: 7 (+12 in zoom)
New rail infrastructure: 78,2 km



Intermediate capacity & frequency

Present lines: 4
New lines: 11 (+ 4 in zoom)
New rail infrastructure: 234,71 km



Low capacity & frequency

Present lines: 4
New lines: 13
New rail infrastructure: 387,2 km

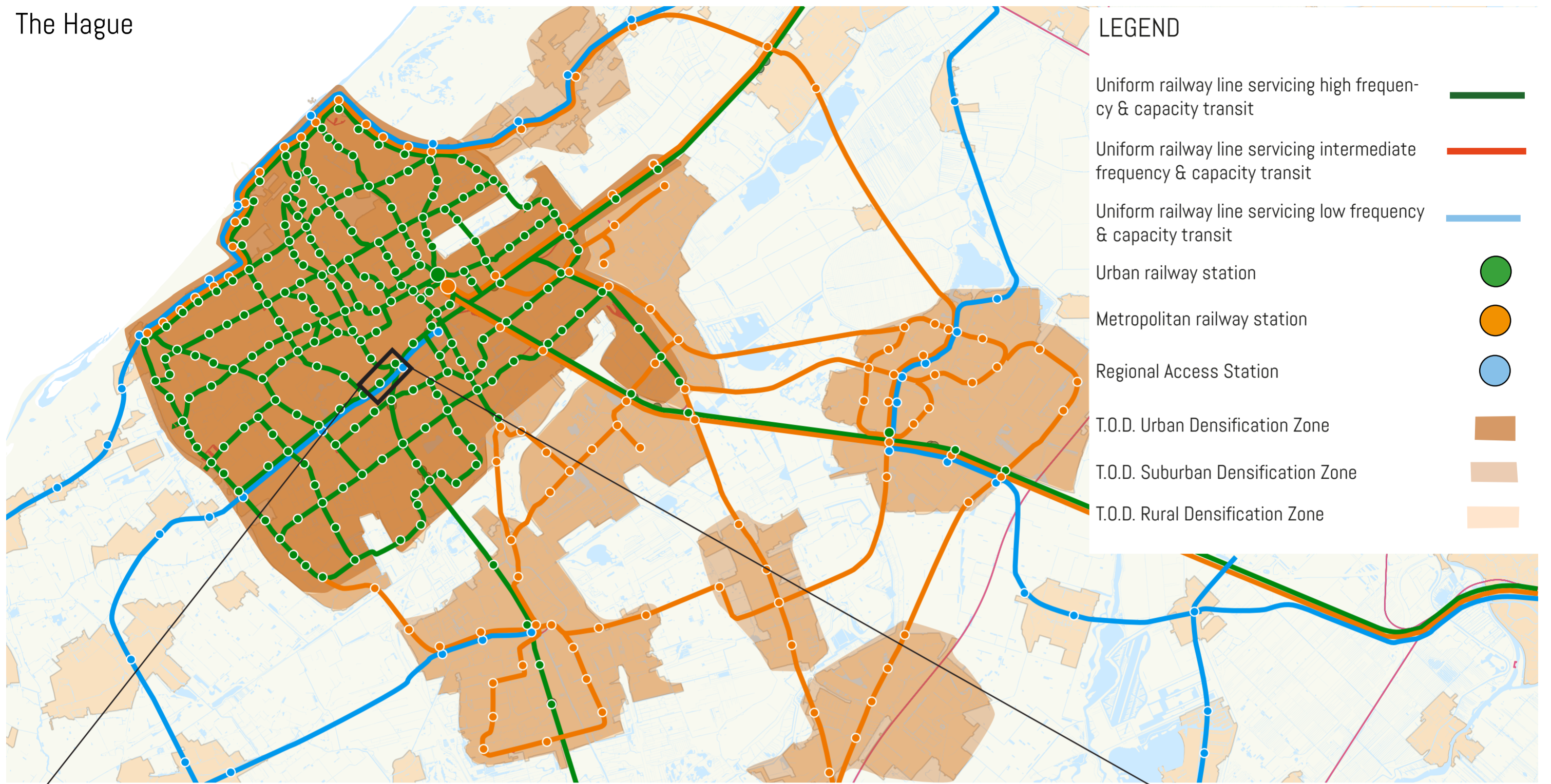


Total

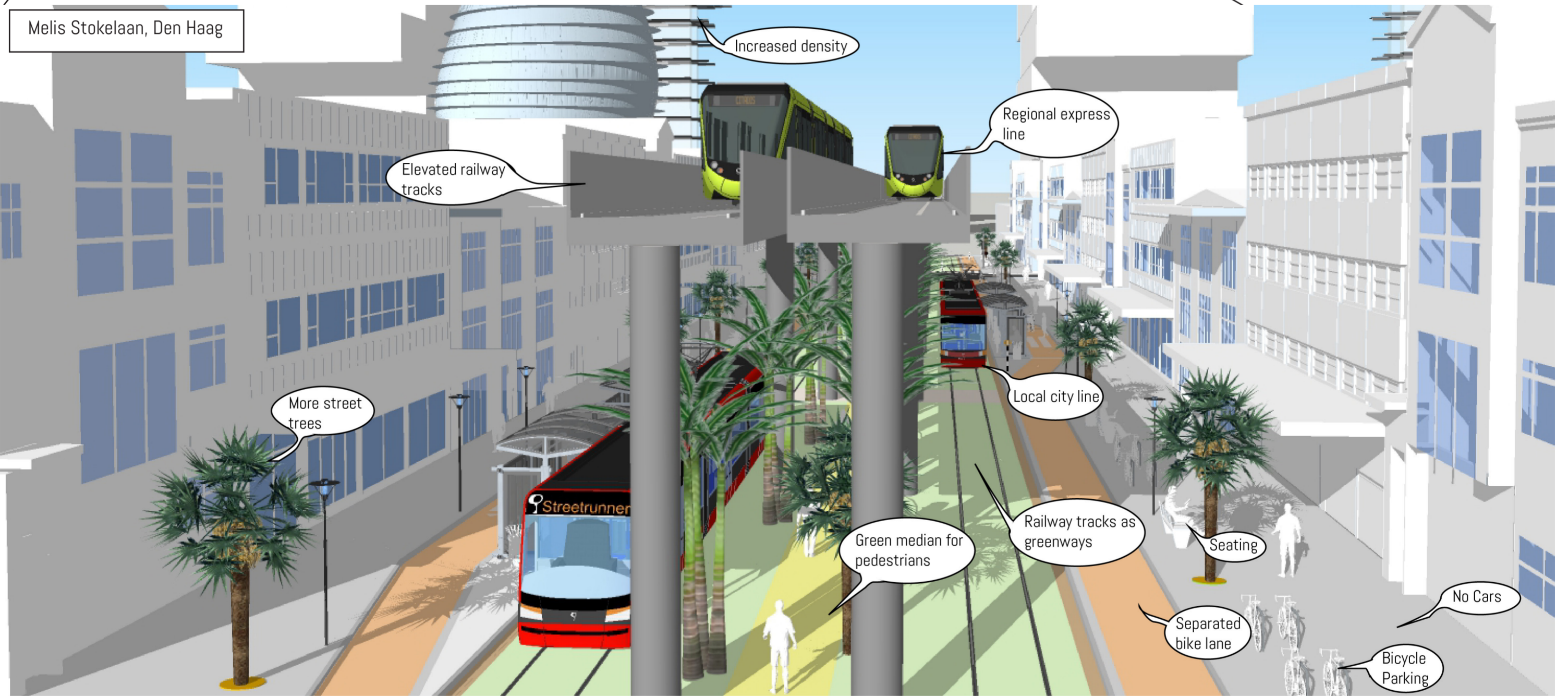
Present lines: 12
New lines: 31
New rail infrastructure: 700,11 km

Zoom-In: Metropolitan Level + Street & Station Level

The Hague



Melis Stokelaan, Den Haag



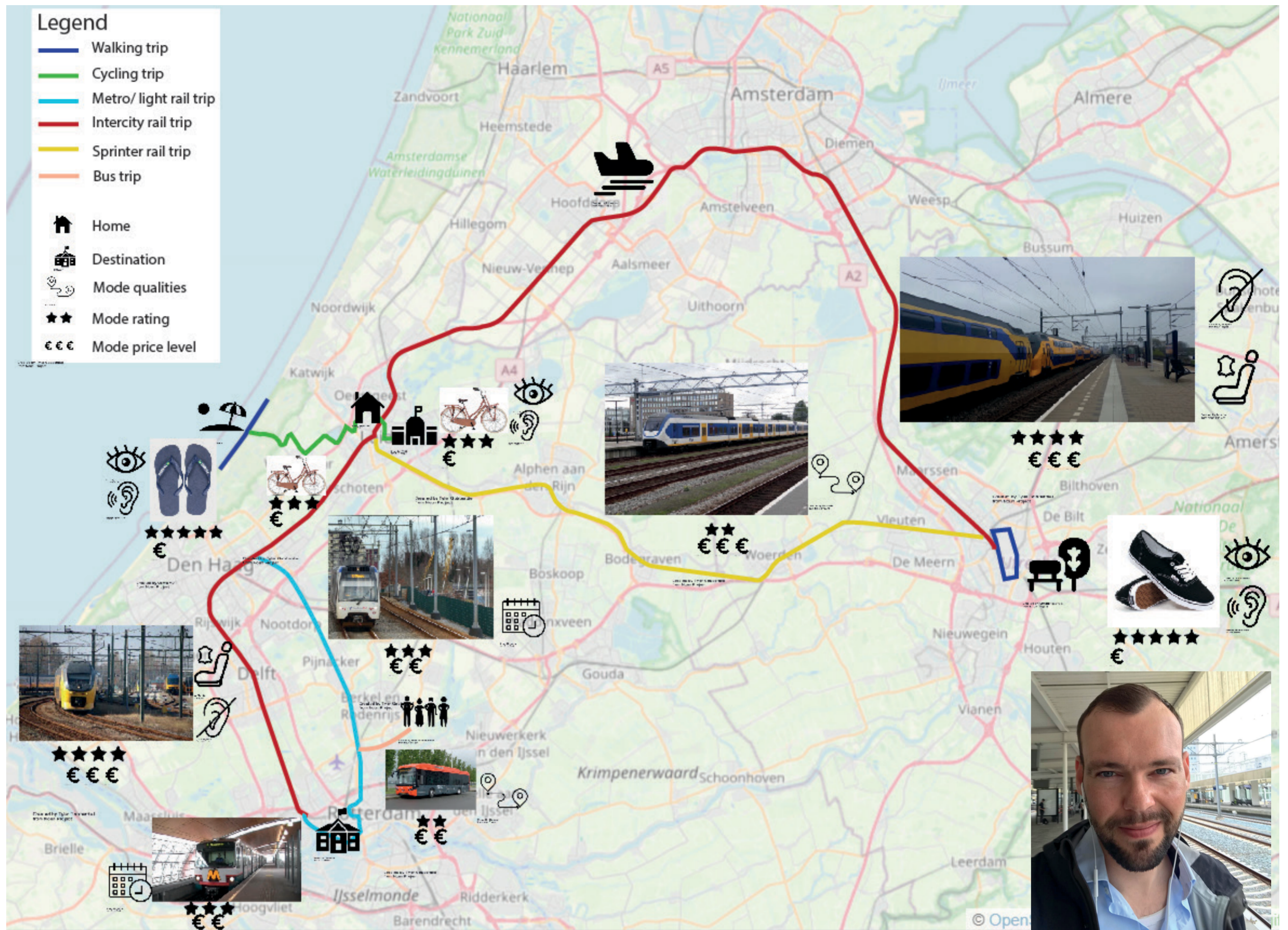
Station Den Haag Schilderswijk



My Personal Trips in 2023 and 2050

2023

Hi, my name is Ronald, and I am a first-year student in urban design at the Rotterdam Academy of Architecture. I specifically choose the "Assembling Future Mobilities" studio, because it deals with the regional scale. To me it's important to start my studies at this level, so that I can zoom in further afterwards with an understanding of how everything fits together at the higher scale level of the region. For our first exercise, I analysed my trips around the Randstad. I use public transport, my bike, and my feet to get around. I never drive, because I think cars are unfit for urban areas, as they contribute to air pollution and take up too much space. I use public transport to get to other towns from Leiden where I live, for instance to visit my family or to go to the academy in Rotterdam. I also often take the train to get to Utrecht, where I used to live as a bachelor student. Once there, I take a walk around the historical town and along the Singel, perhaps the best urban walk in the Randstad! Closer to my home, I often bike to Leiden's City Hall to work there, or to the nearby beach at Wassenaar for a nice walk along the beach. Of all modes of transport, I enjoy walking the most, as it's a very relaxing activity. I can also really enjoy taking a ride on the intercity trains, as they are very comfortable. I find both the metro and the busses and sprinters to be more functional; they get you from A to B, but they are less of an experience.



2050

I grew up in Bergschenhoek. I lived there until I moved to Utrecht when I was 19. That was in 2006. I always hated living in Bergschenhoek, because of the isolation. The public transport options there were very limited; there were only 2 buslines connecting the village to Rotterdam and Zoetermeer, and there was only one bus every half an hour. Getting to these cities by bike was not easy either; it took me 30 minutes just to get to Rotterdam's city limits, where my high school was located. Because of this isolation, I didn't like Bergschenhoek and I moved out as soon as I could.

When a new railway link between Zoetermeer and Rotterdam called the ZoRo line was opened in 2036, Bergschenhoek finally got a convenient transit connection. It became a possibility to live in this quiet suburb, but to have all the amenities of the city within easy reach. I decided to move back to Bergschenhoek. Now that it's 2050, I've enjoyed living back in my hometown for 14 years already! I work in Rotterdam and do volunteer work in Zoetermeer. I can get there very easily now thanks to the ZoRo line.

A few years after the line opened they even introduced coffee places on each platform, complete with many comfortable places to sit! I often spend an hour there before I make my quick trips to Rotterdam or Zoetermeer. The stations have become a cozy and convenient "third place" where I can do some work, read a newspaper or magazine whilst I enjoy a coffee. I always run into my familiar people there too. They also added lots of plants. It gives the station a much calmer and a much more attractive vibe. And they also make the station look very gezellig.



The new ZoRo line between Zoetermeer and Rotterdam is scheduled to open in 2036 and replaces a dedicated busway, which has long acted as a placeholder for a future rail connection. The line connects Zoetermeer to Rotterdam via Lansingerland, a fast-growing suburban municipality in 2050.

