

Modeling Railways in OSM: from 2D to ID

State of the Map Europe
Vienna, 17 July 2011



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Overview

- **1. Abstract**

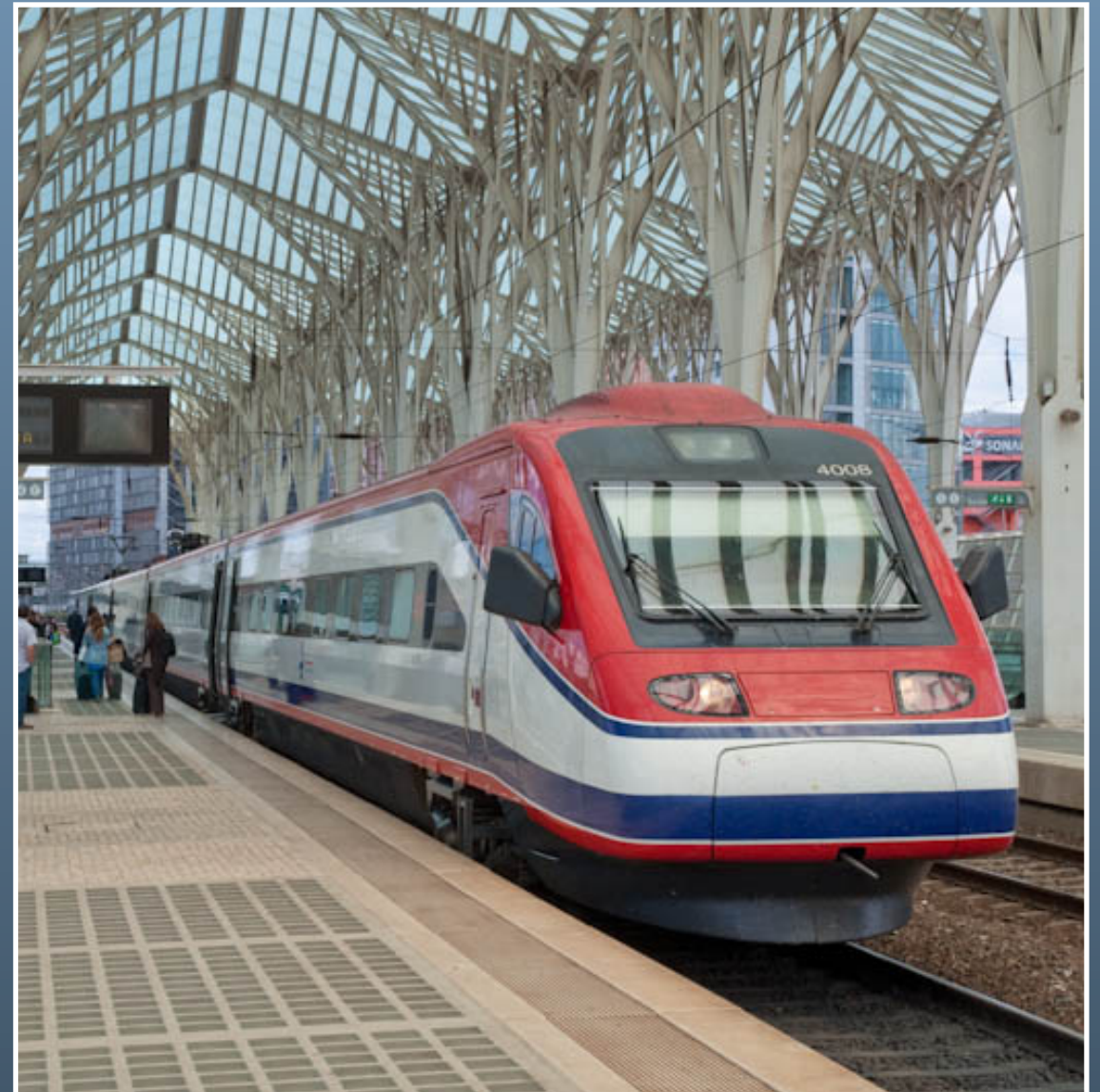
- needs and expectations regarding OSM
- translating between semantic systems

- **2. Concrete**

- creating a heartline

Goal

- Using OSM data for railway purposes
- Route finding
- Passenger information
- Capacity simulation



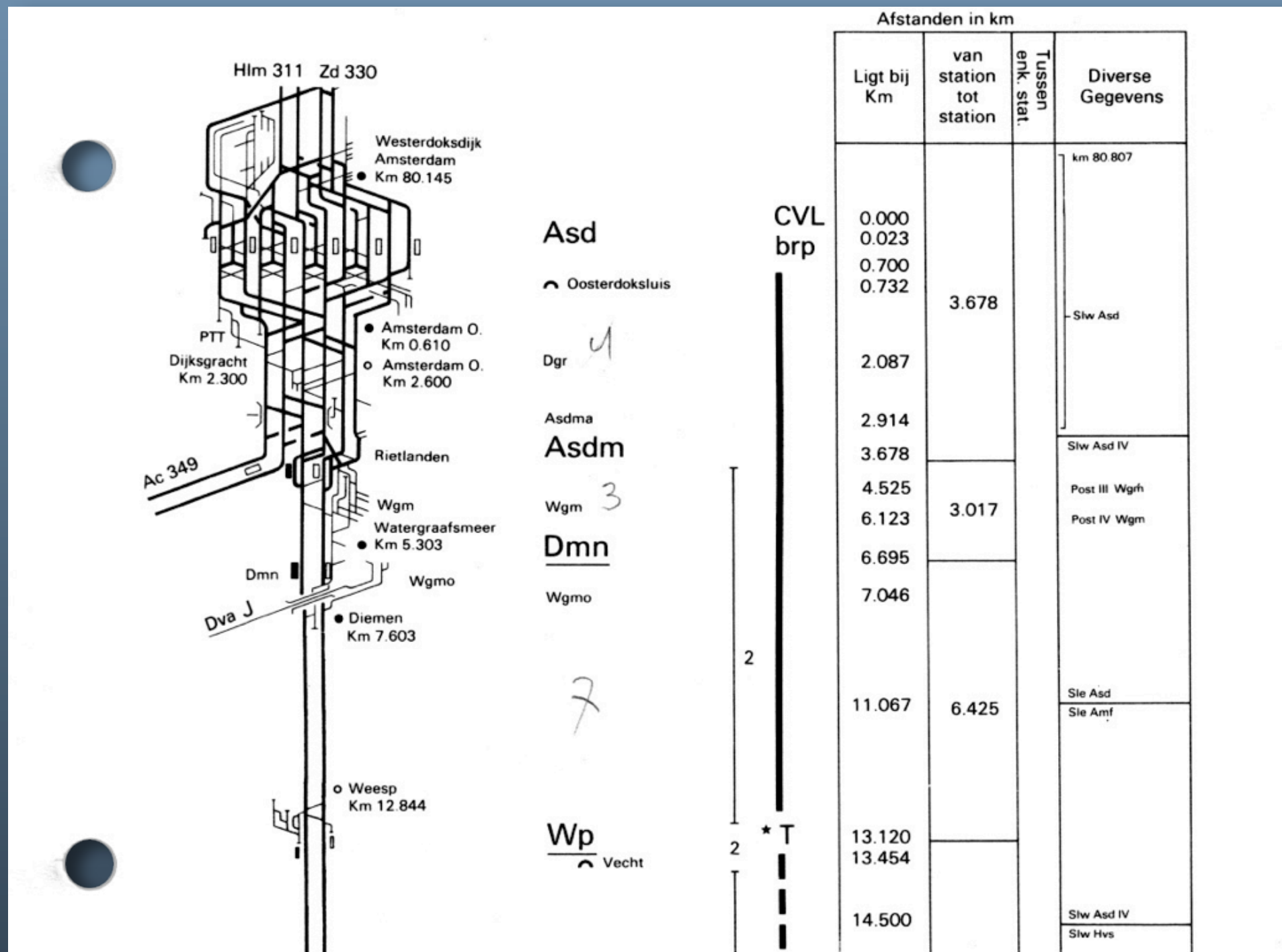
=> Bringing the data in a format that meets the purpose

Reference Systems

- Postal:
Stationsplein 2
3901 ES Veenendaal
- Cartesian:
lat = "52.02822"
lon = "5.53104"
- Mileage:
route = "nl.os05"
km = "32.853"



Describing a Railway

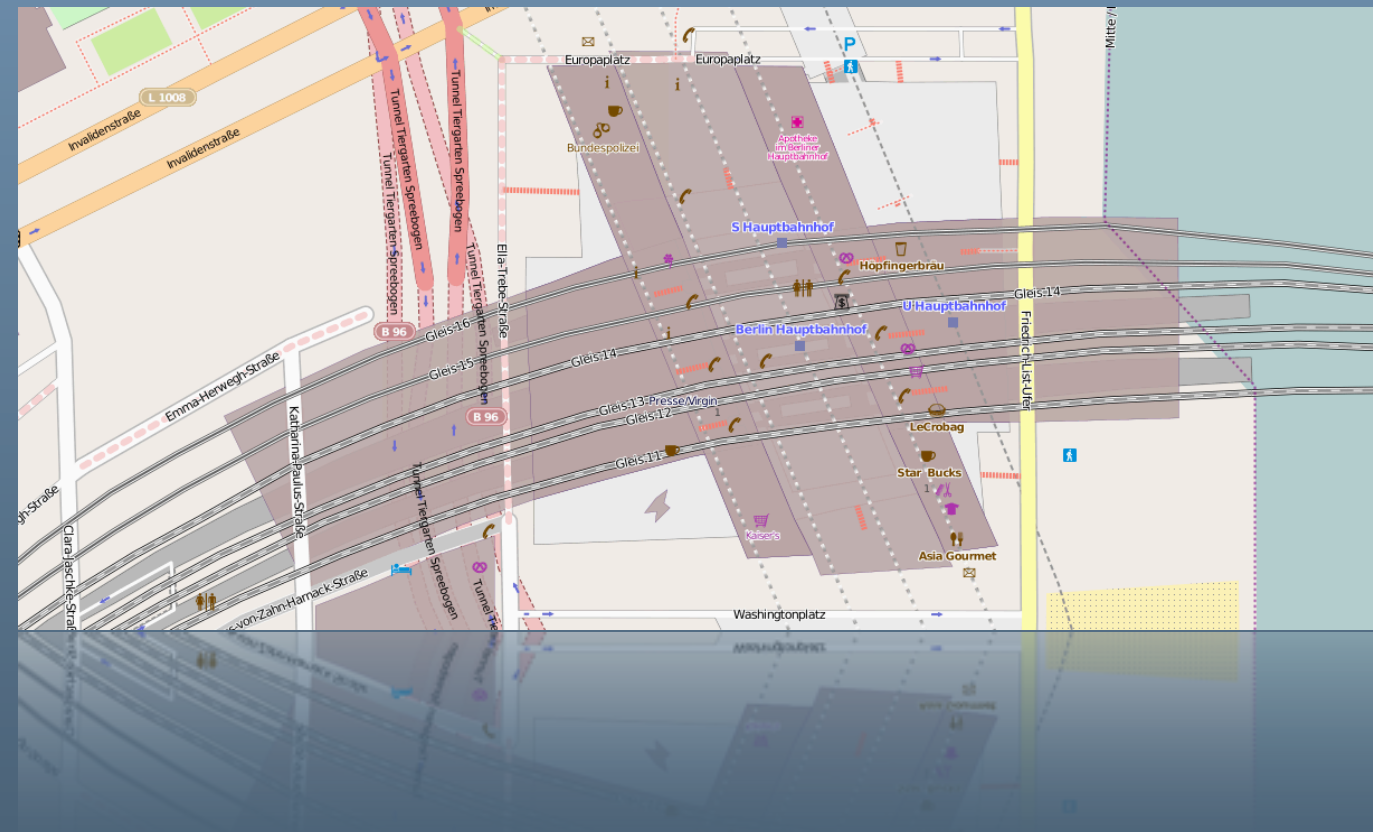


Levels of detail

- Difference between zoom levels in mapping is huge (19 levels in tile server)
- Desired level depends upon your purpose
- OSM has very fine detail...
- ... but difficult to get lower level of detail

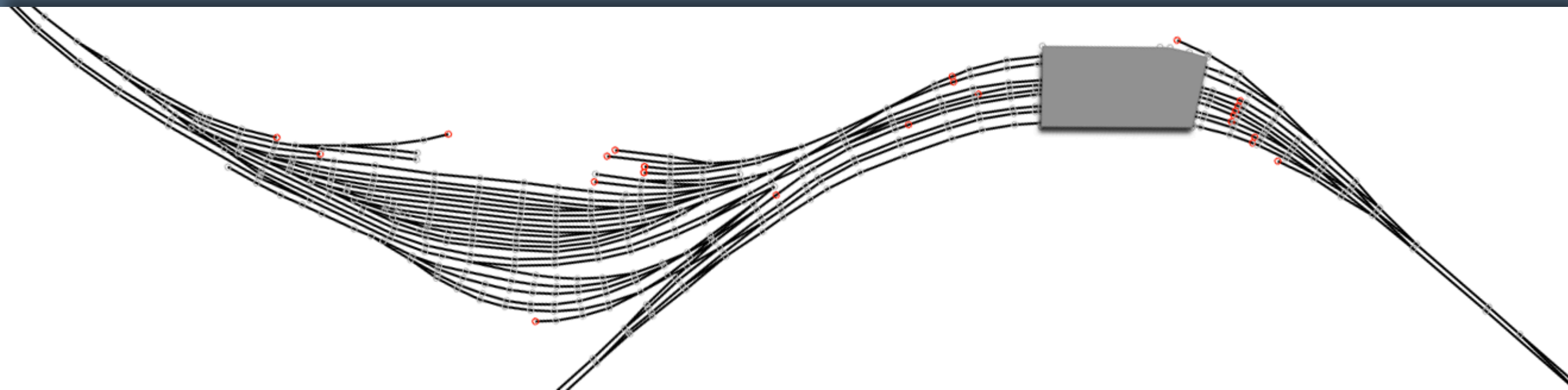
Station level

- Helping passengers find their way
- Requires high level of detail
- Challenge: dealing with multiple physical levels
- Really useful



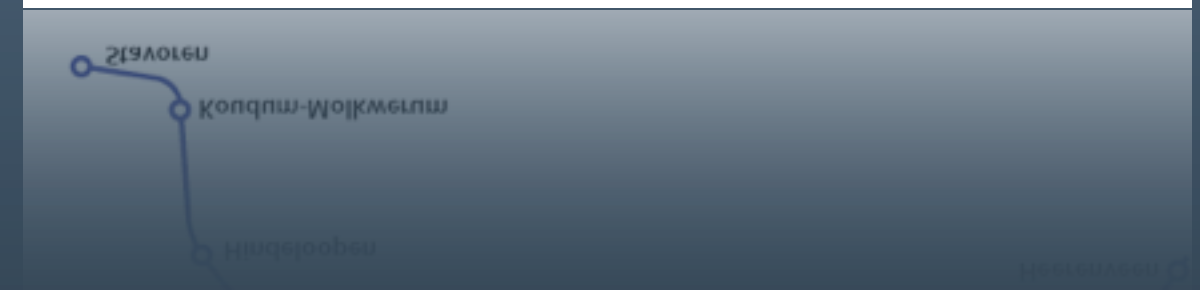
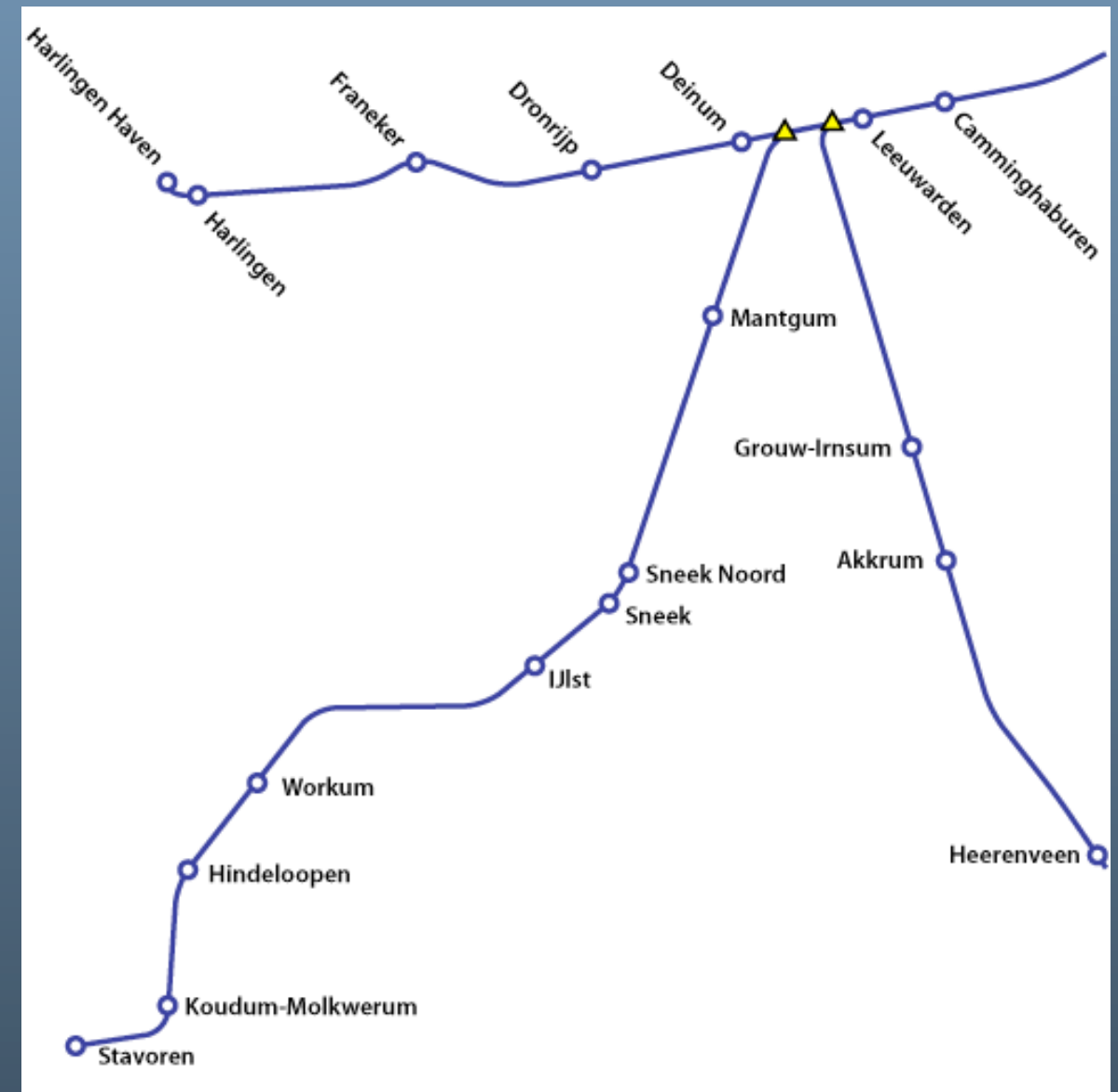
Track level

- Showing individual tracks and switches
- OSM has incredible level of detail
- Railway traffic control uses mimic diagram, no geographical accuracy



Network level

- Basic function of a railway is moving over the network
- Many questions are network related
- This is really what I'm looking for!

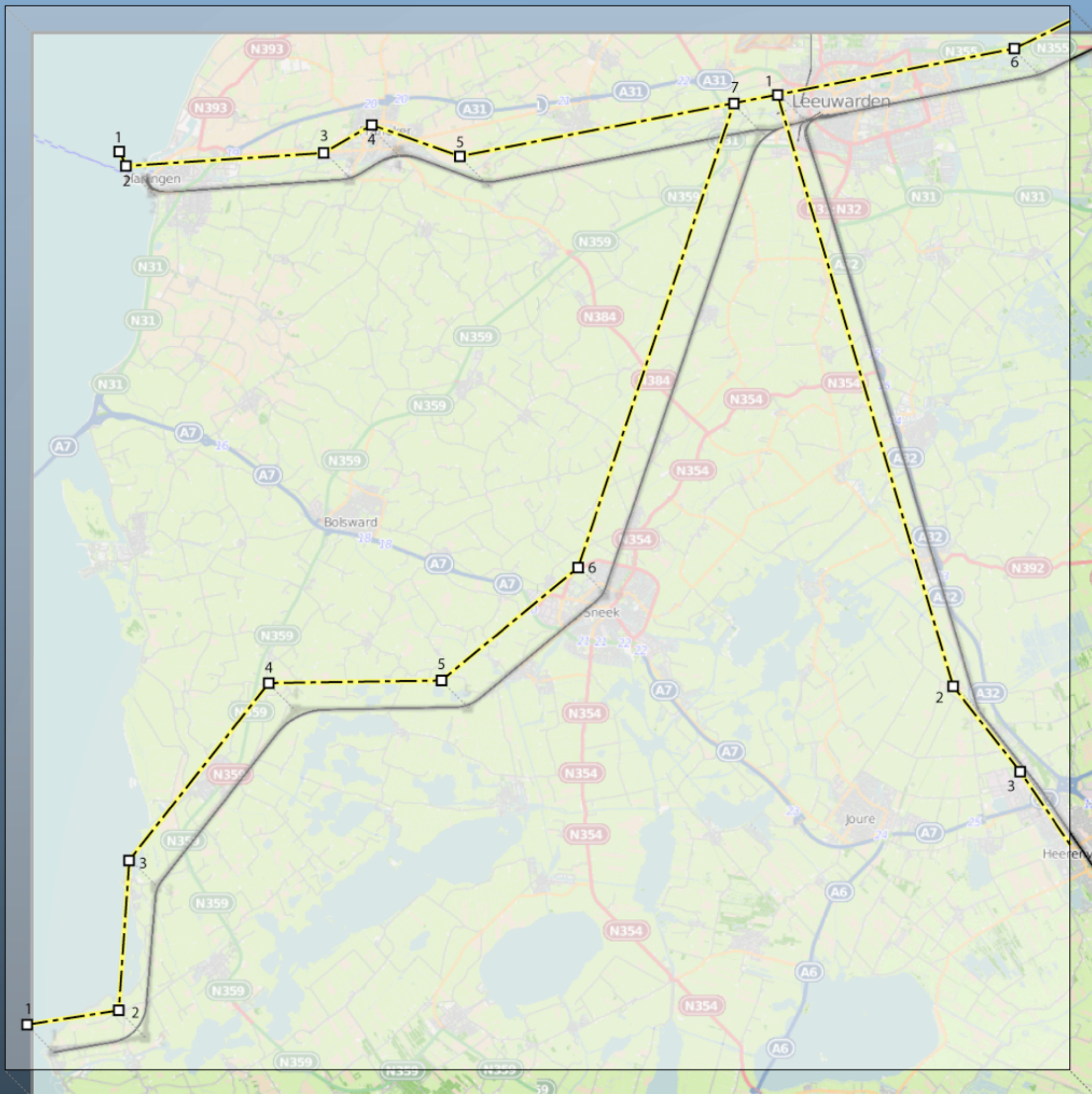


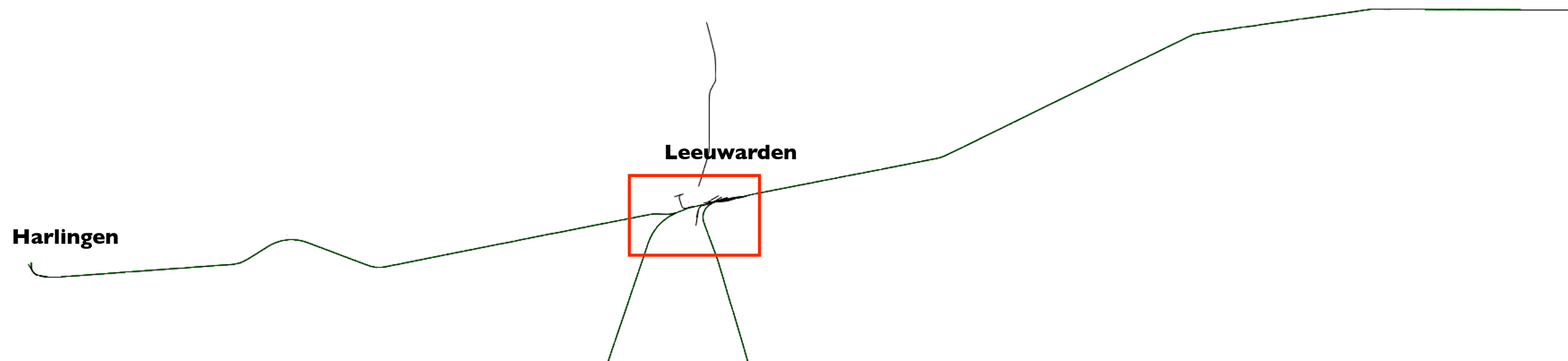
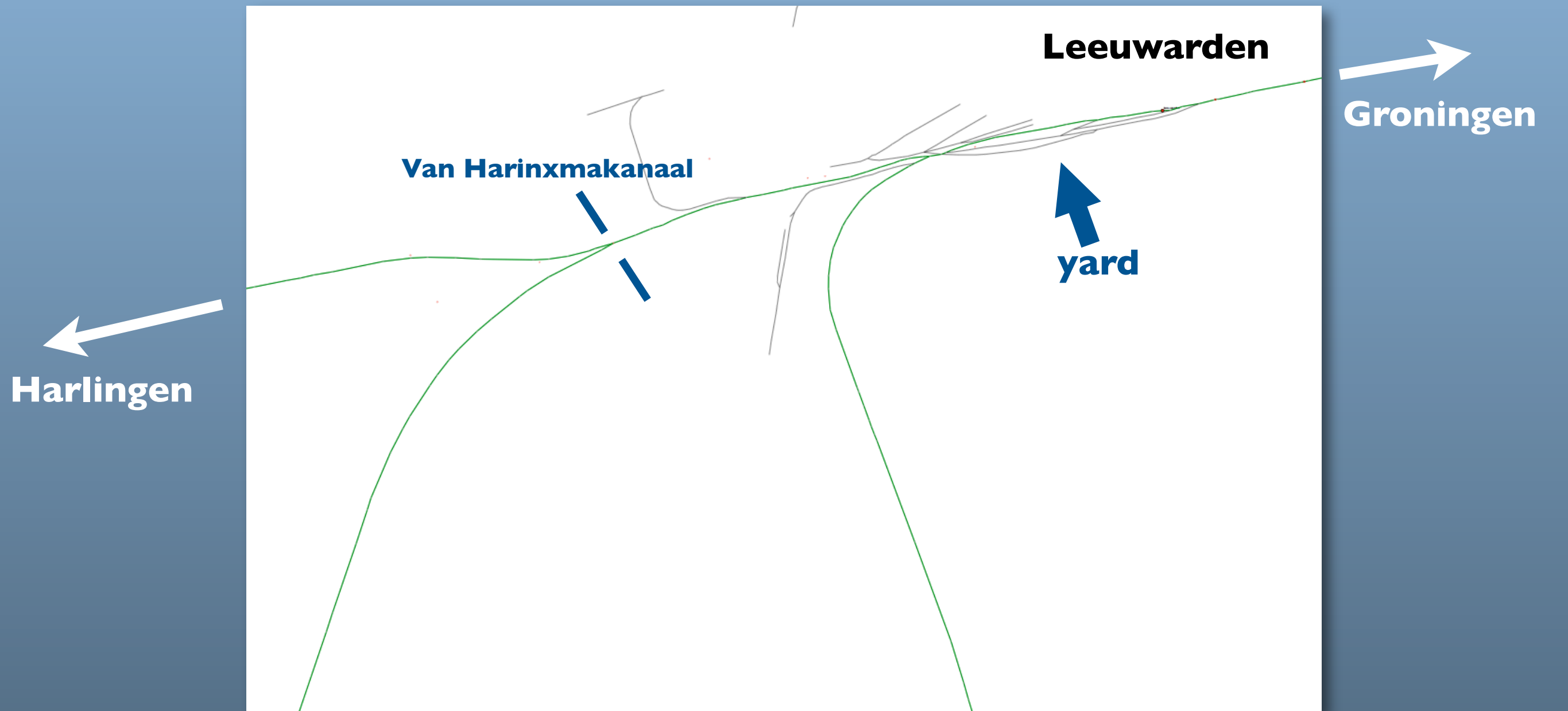
Approach

- Define a heartline that defines the position of a railway
- Strive for geographical accuracy
- Leave out details (no switches etc.)
- Couple to a 'mileage' measurement system
- Provide hooks for additional information

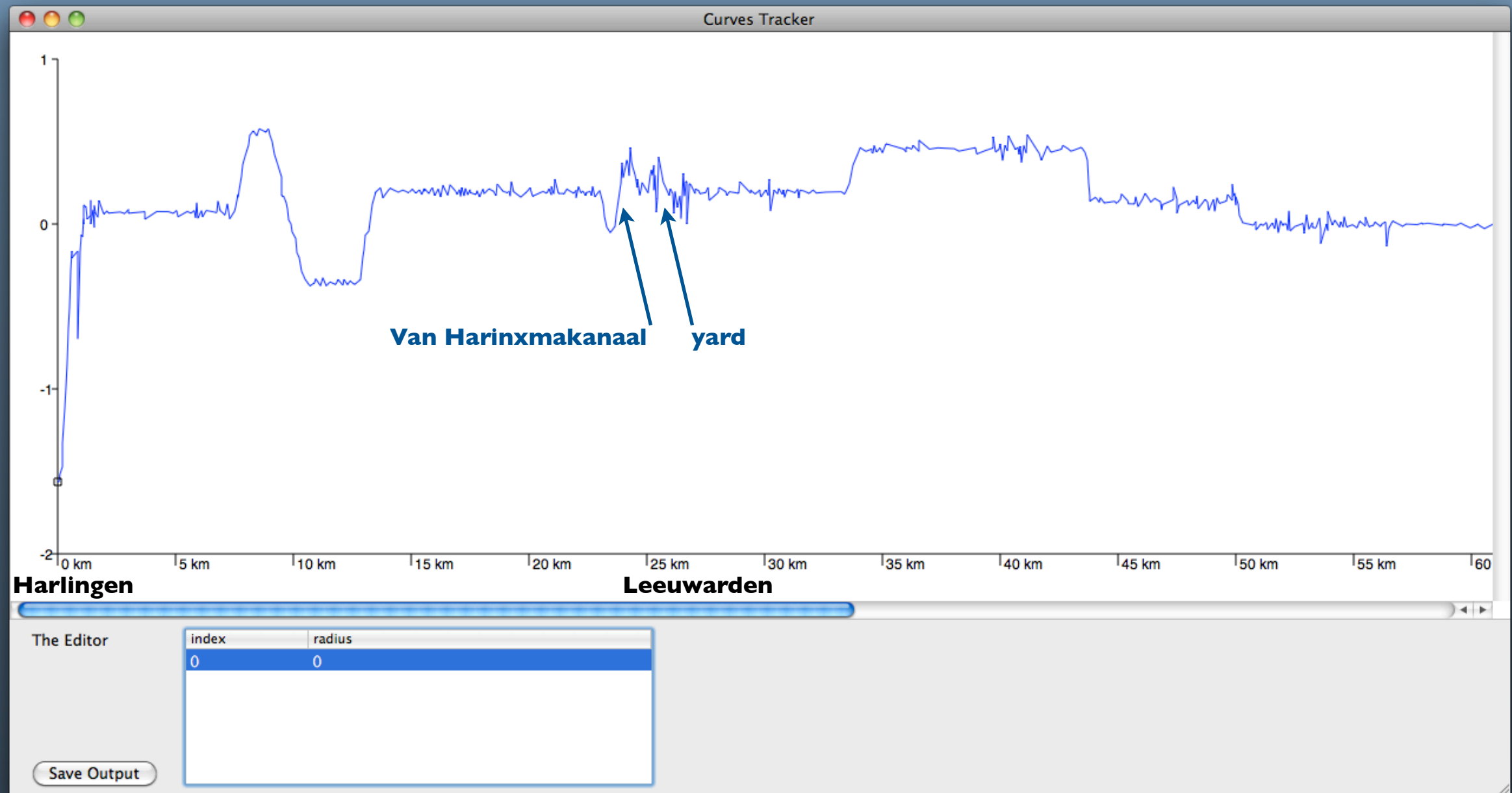
Creating the Heartline



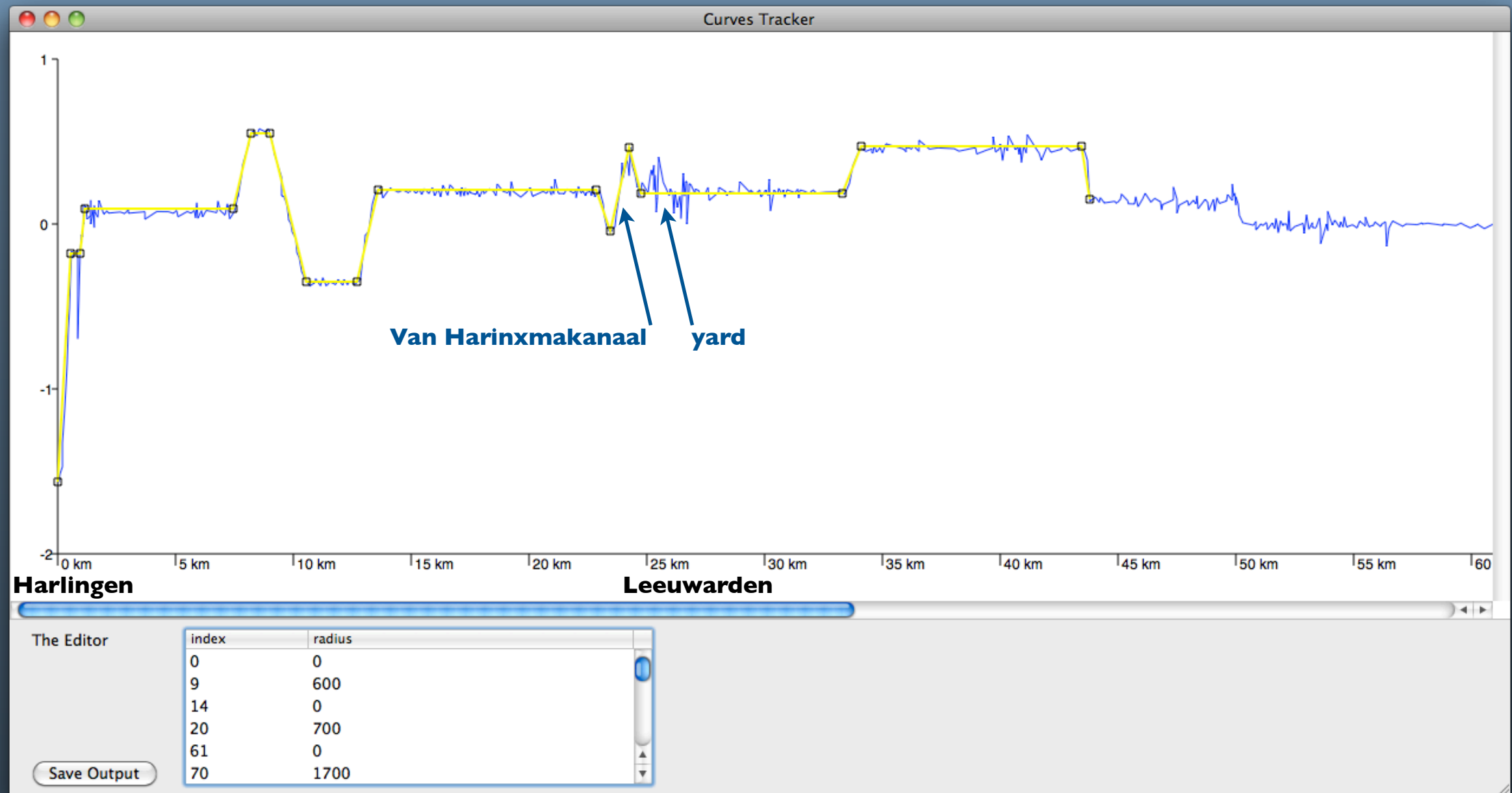


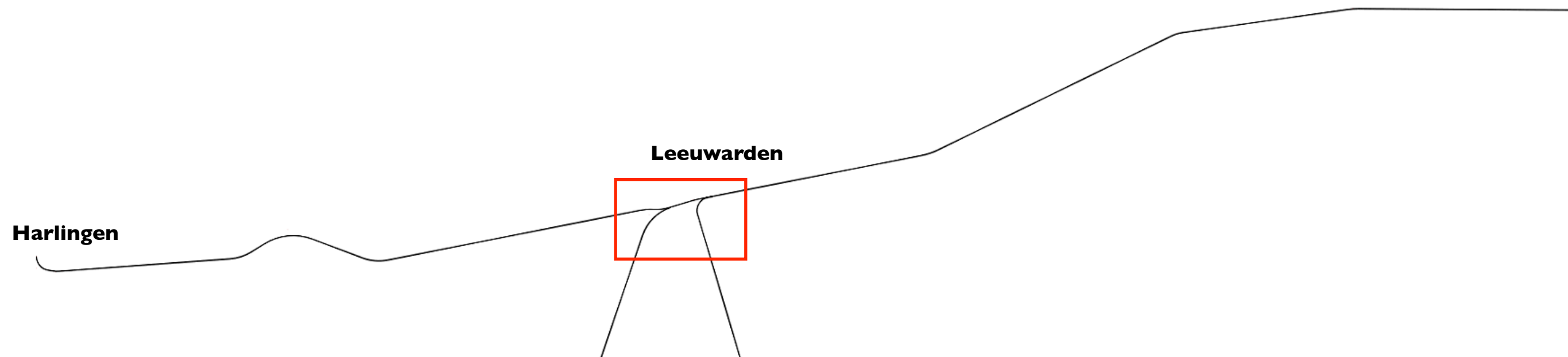
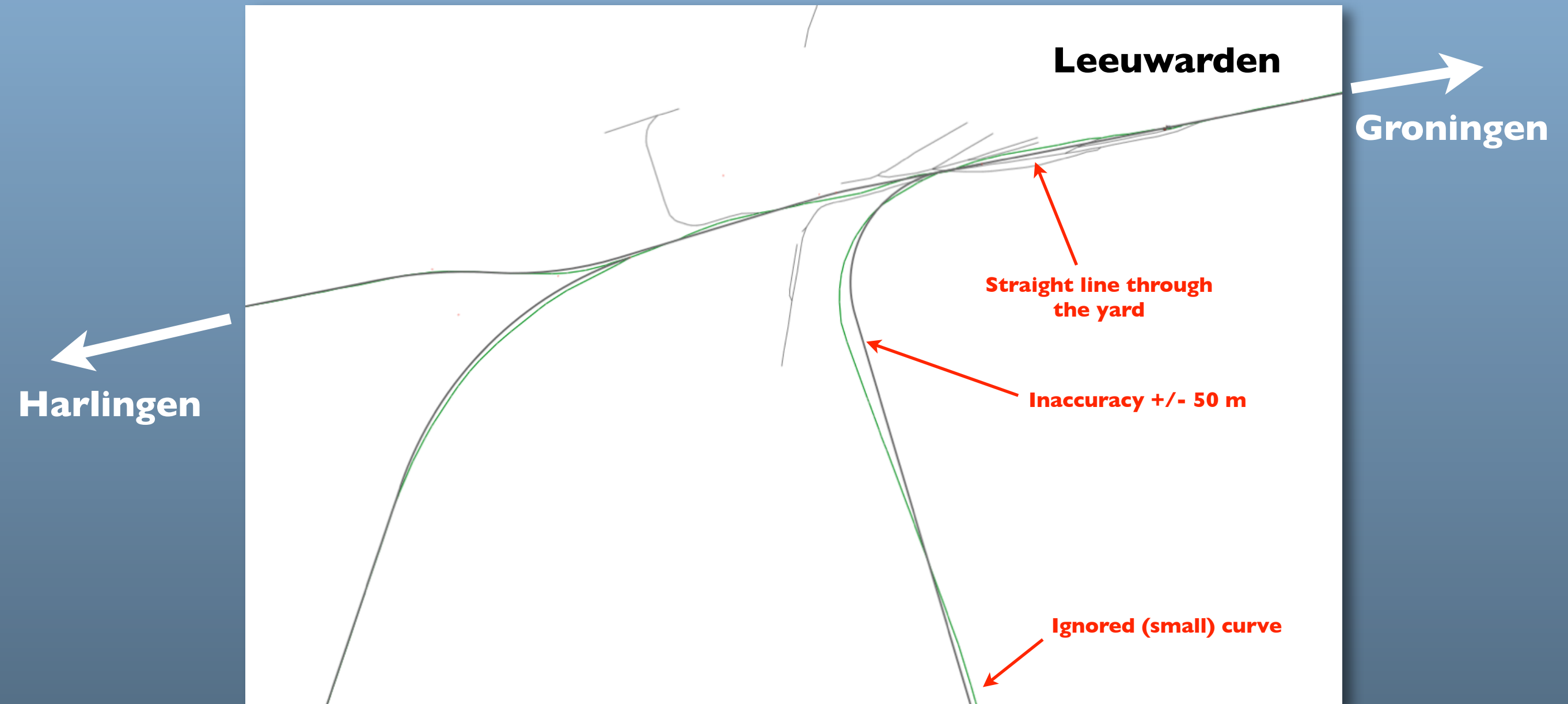


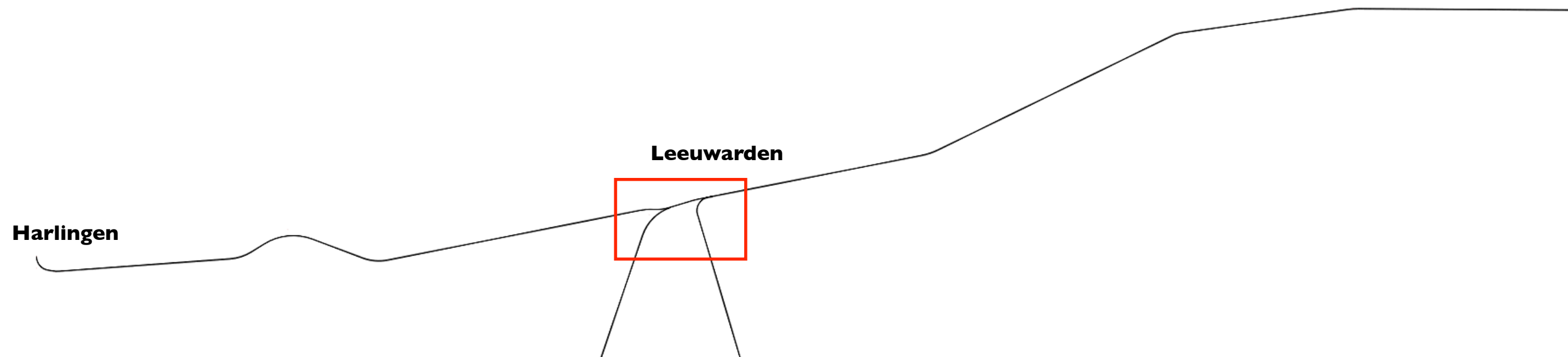
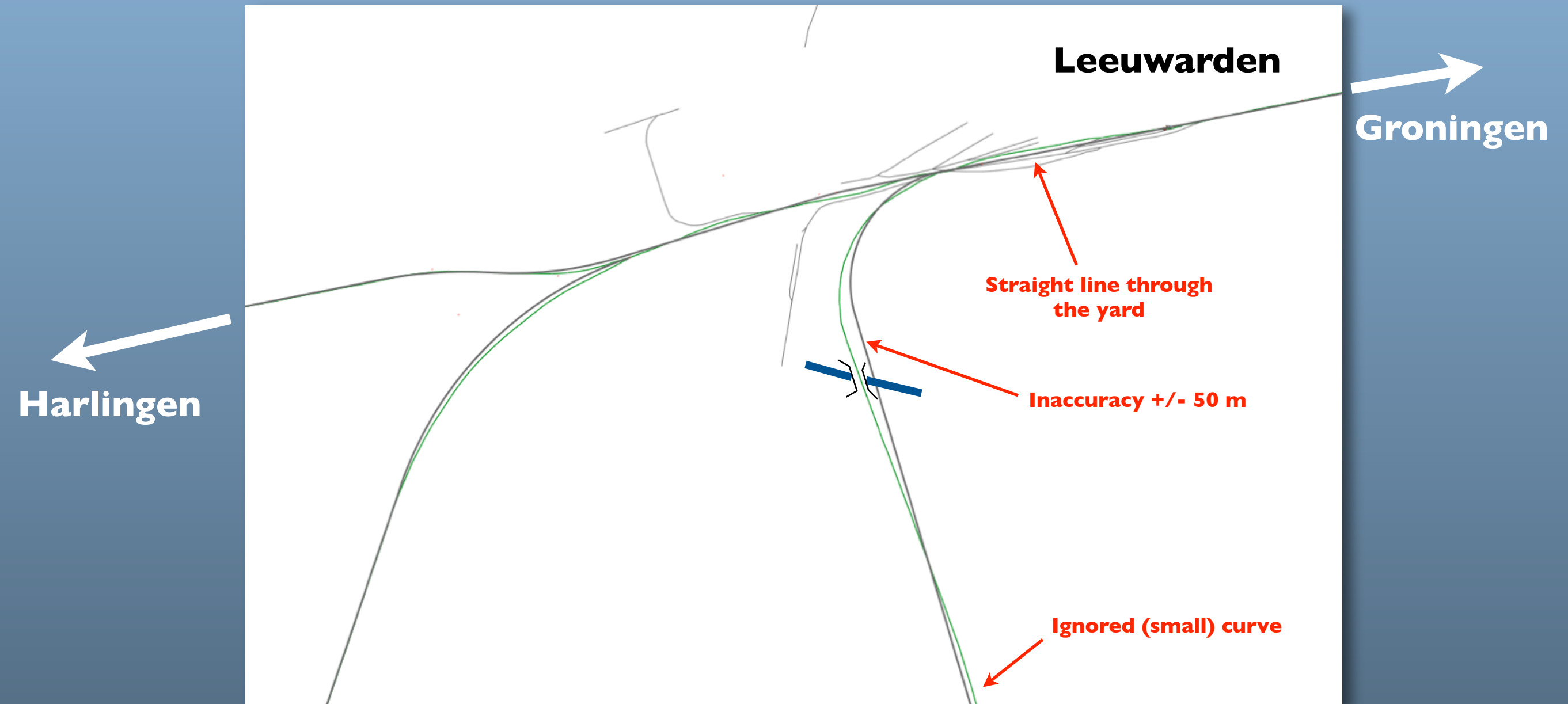
Tracking the curves



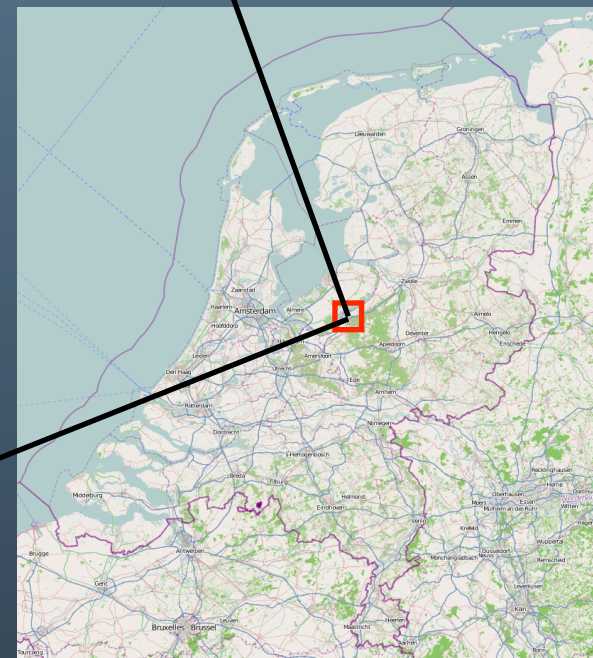
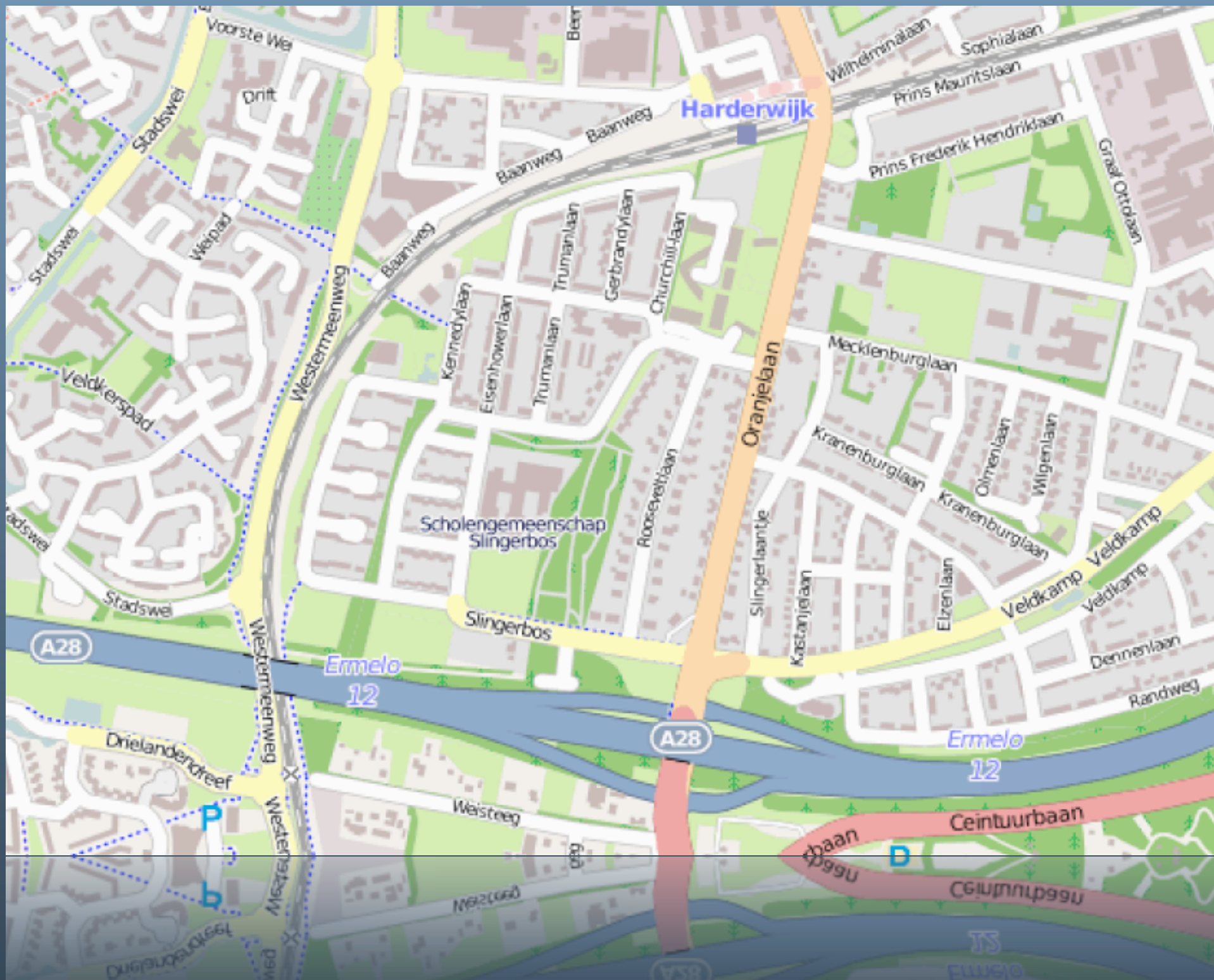
Tracking the curves



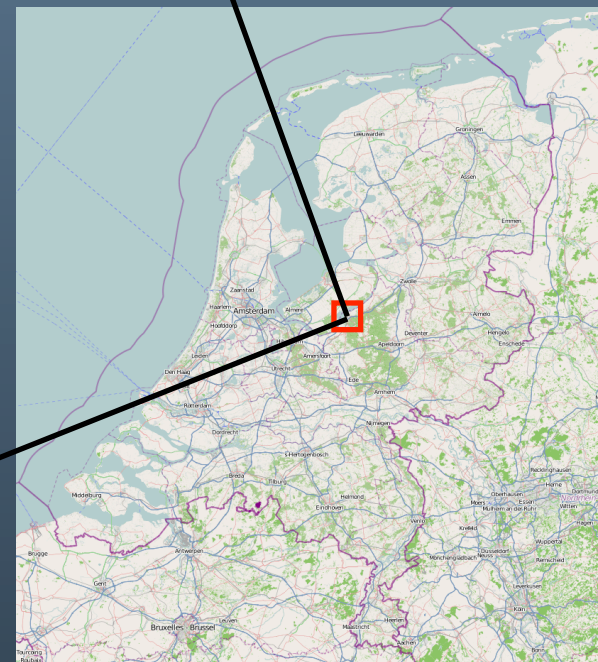
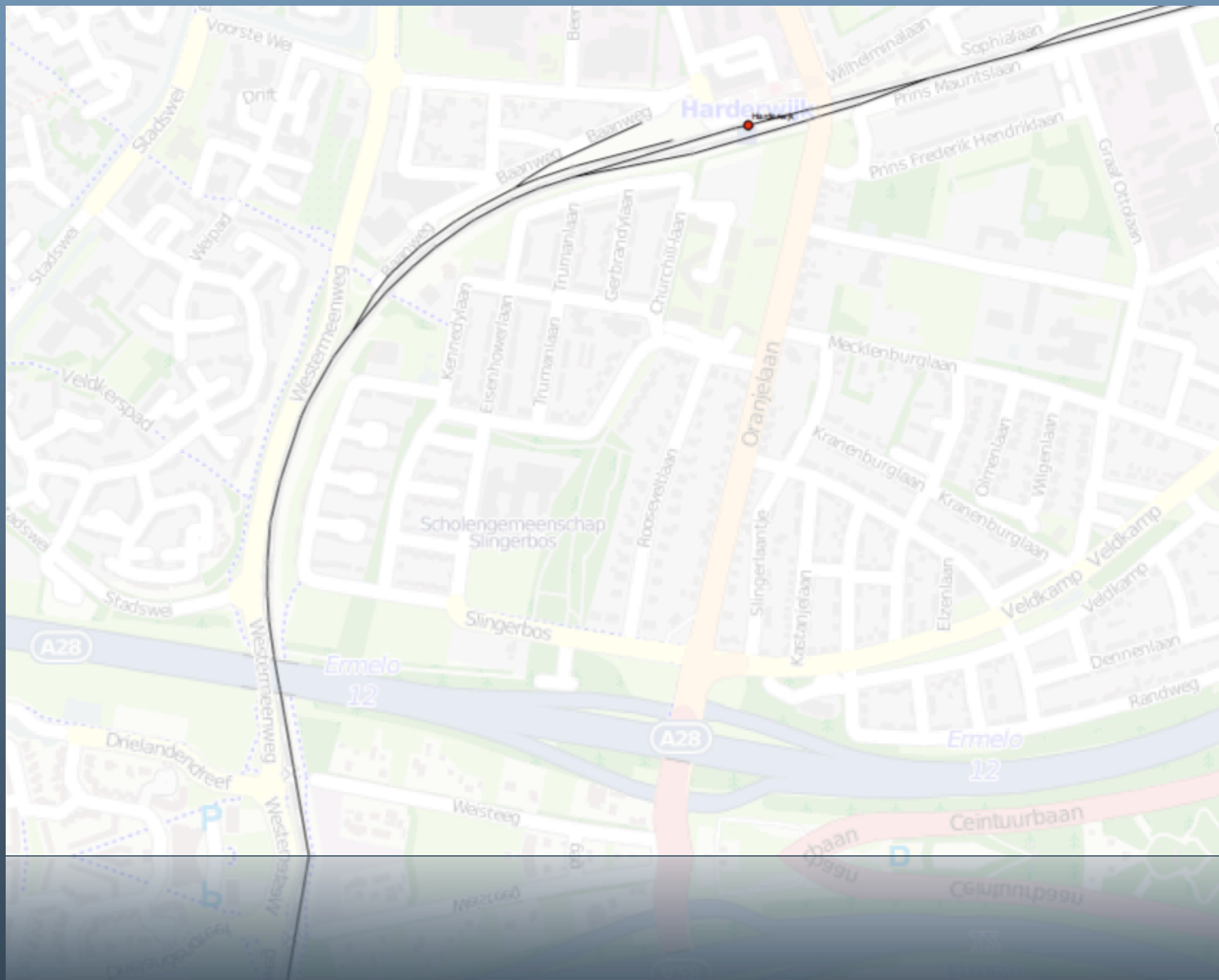




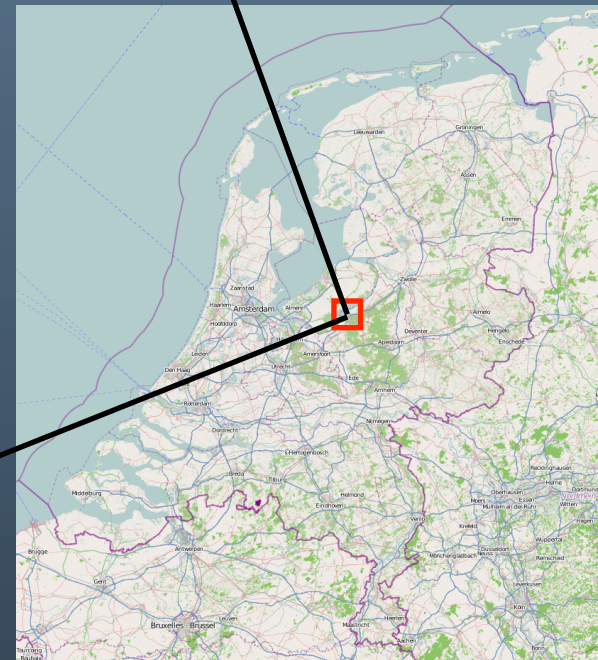
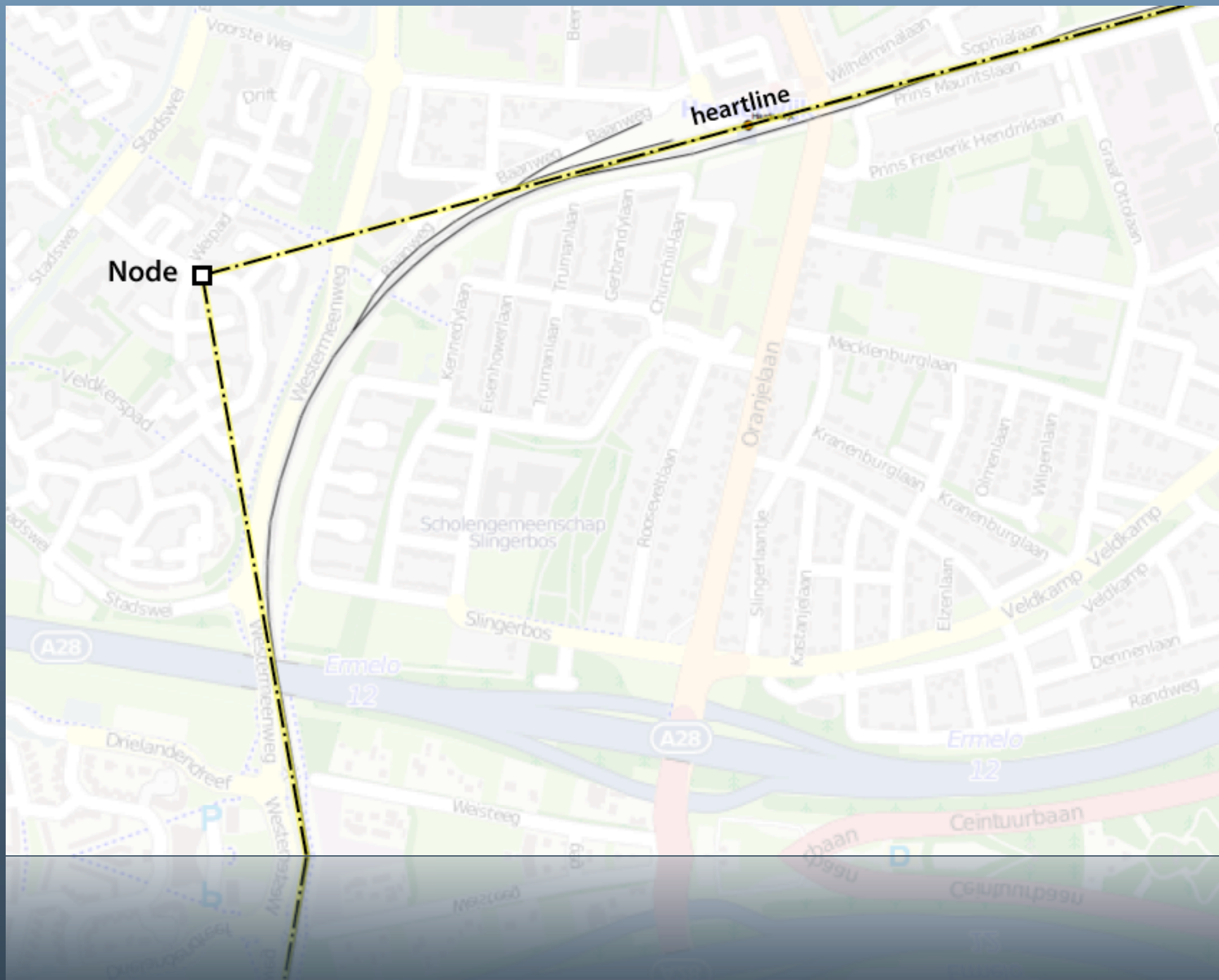
Modeling curves



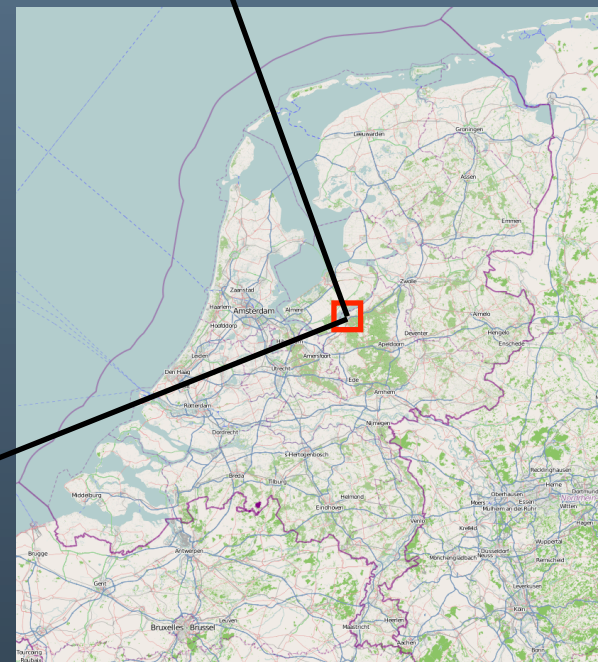
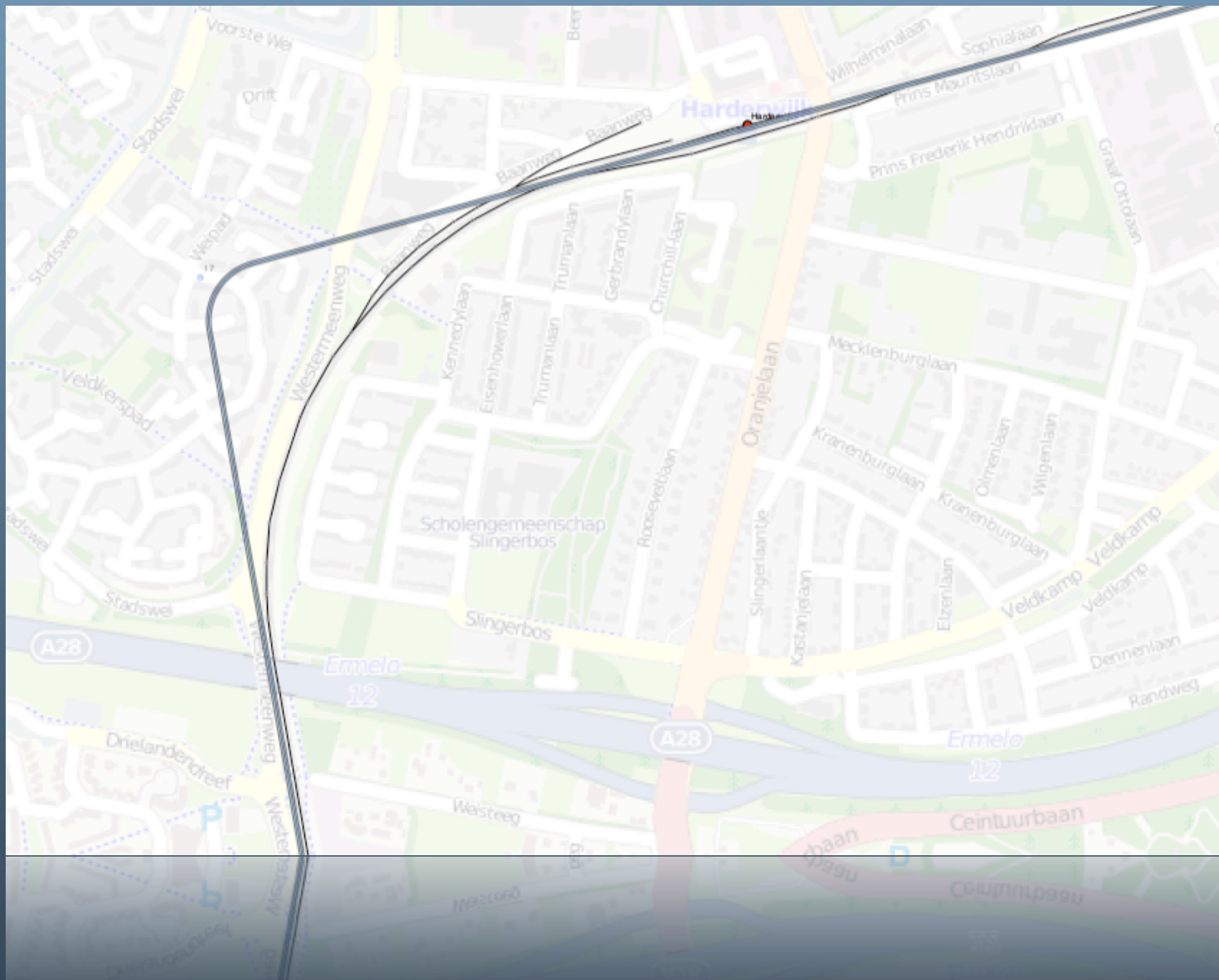
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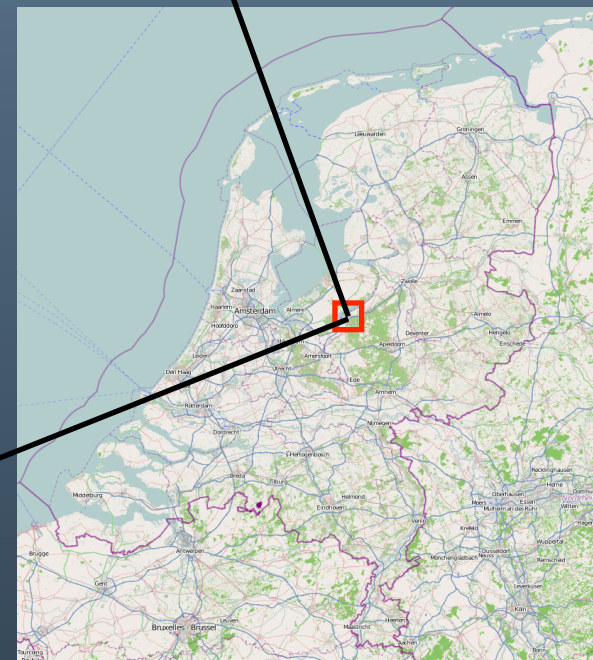
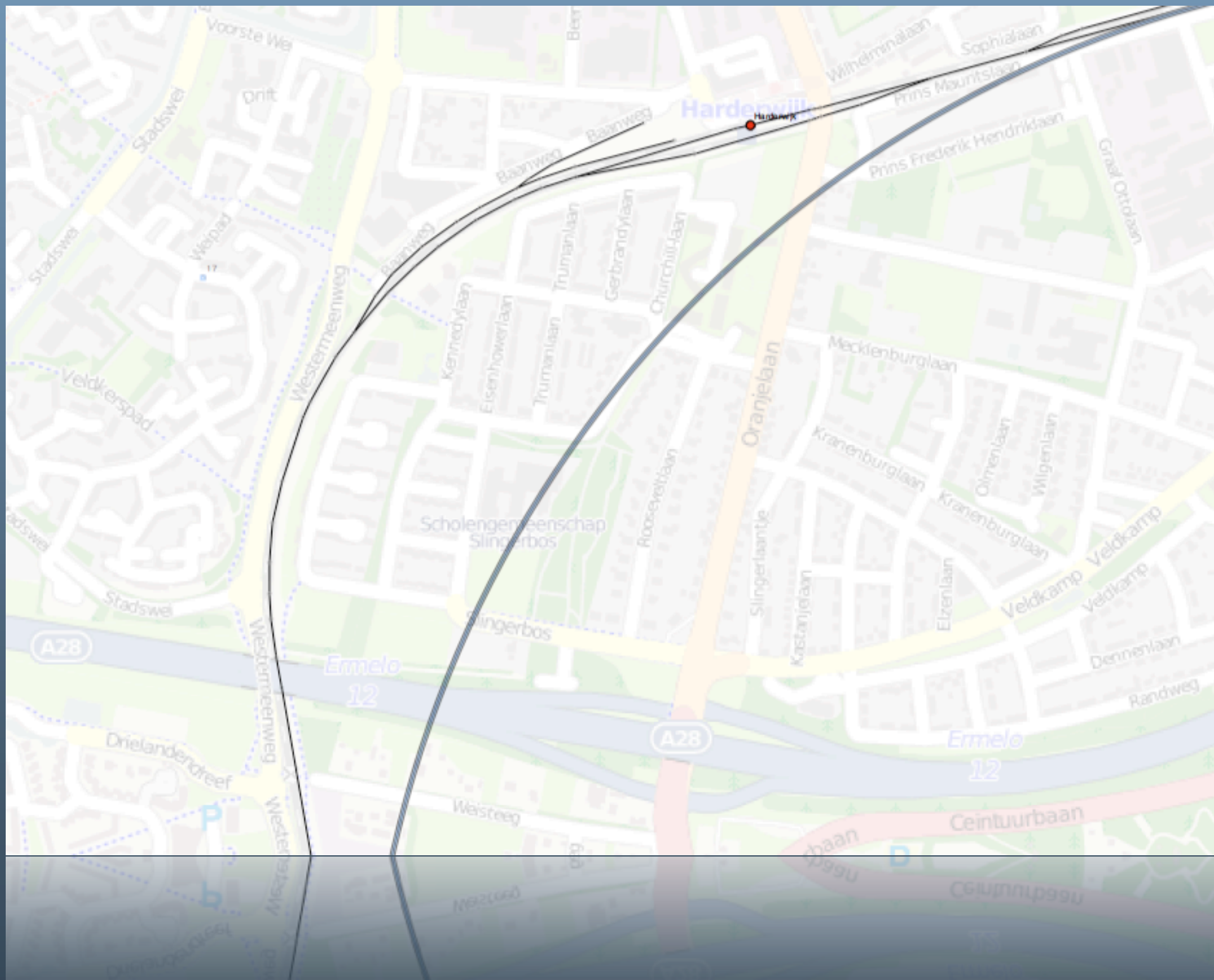
Modeling curves



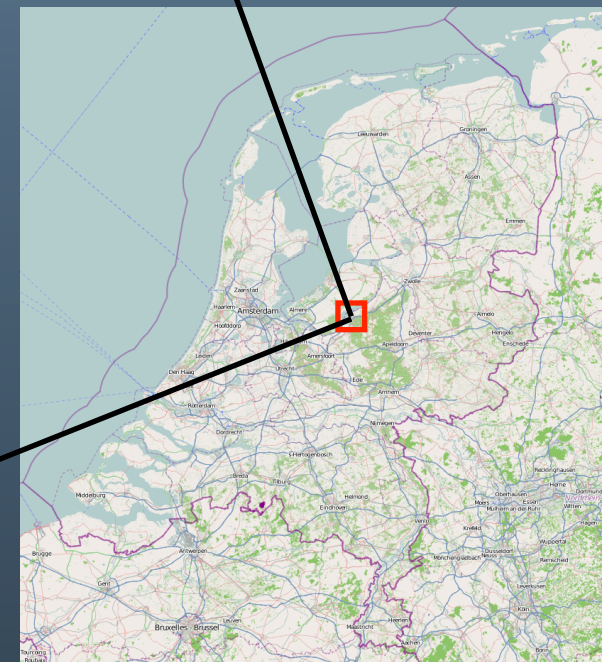
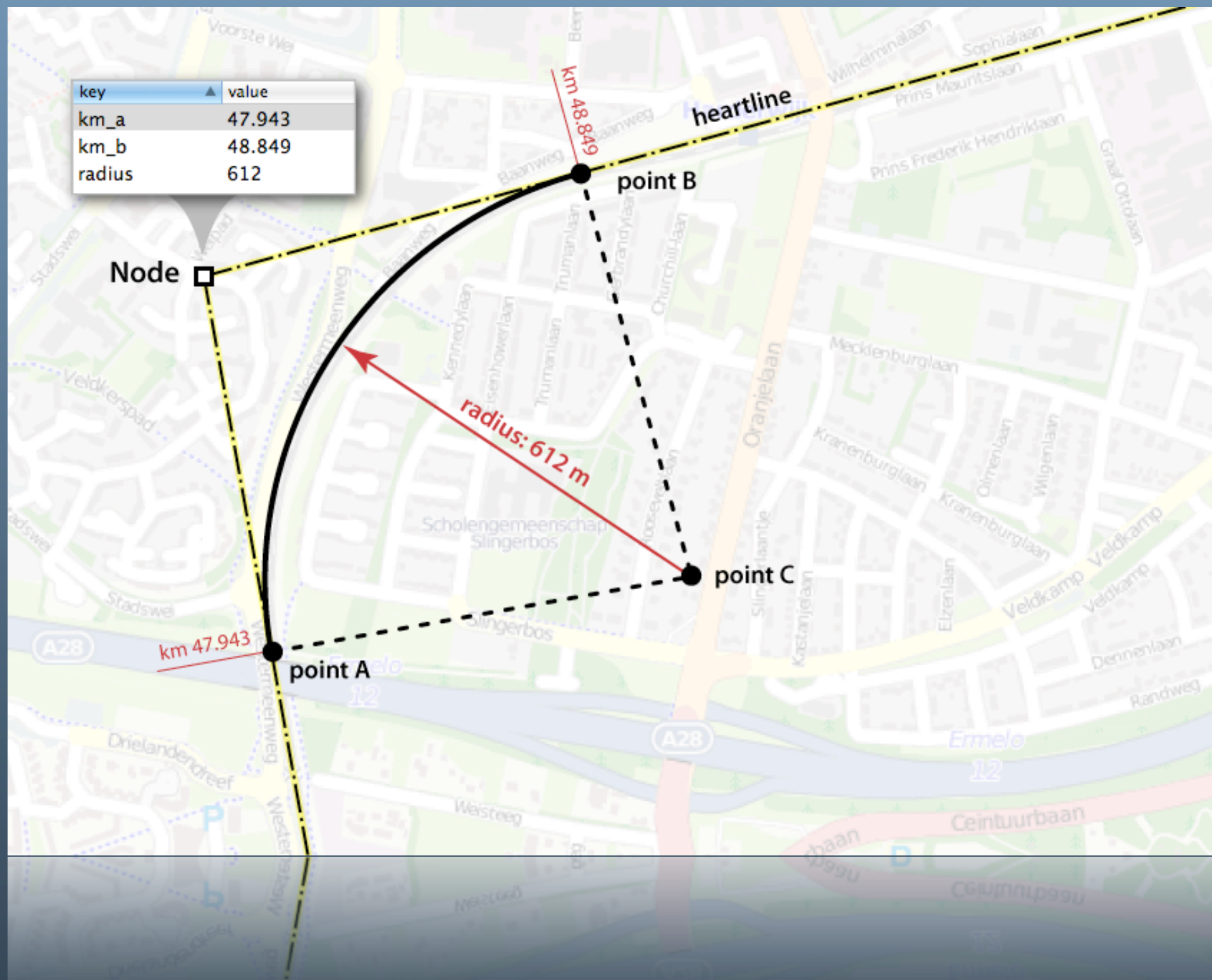
Modeling curves



Modeling curves



Modeling curves



Discussion

- It works!
- An editor is needed
- Heartline is useful as a template
- ... but how to share it?
- Could OSM be a source of aggregated data?