

RailMaps en GeoBlocks

FOSS4GNL 2026



ProRail

Verbindt. Verbetert. Verduurzaamt.

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Welkom

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3 Things

1. Opensource saves money
2. Opensource solution (GeoBlocks)
3. Opensource works (RailMaps)



Achtergrond



“RailMaps is een geografische webapplicatie waarmee je de spoorinfrastructuur kunt bekijken en informatie kan opvragen over objecten”



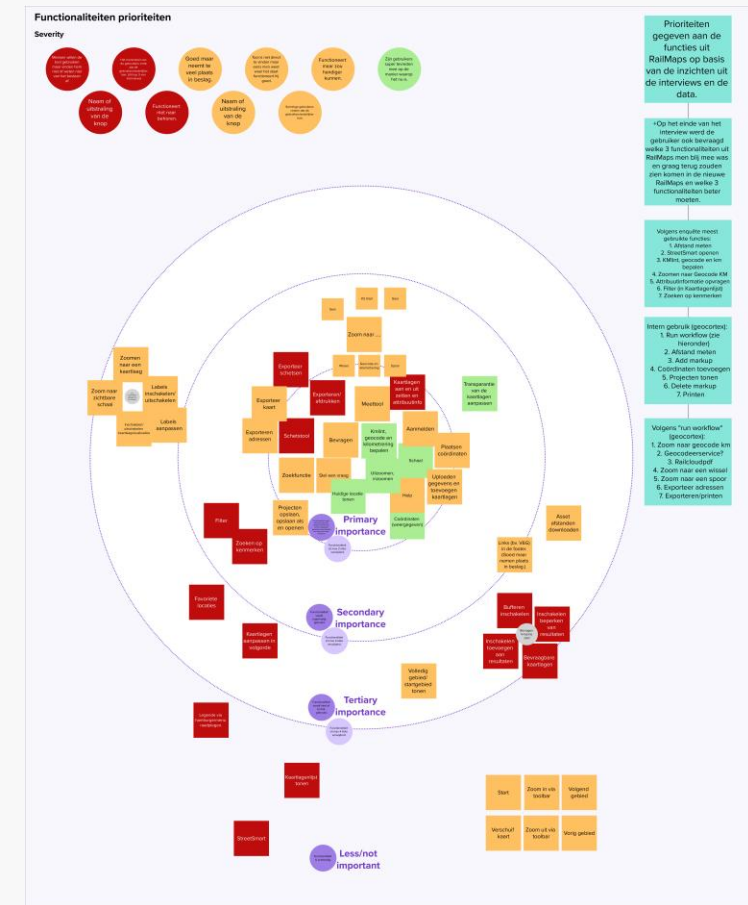
Achtergrond

- Interne en externe viewer: www.railmaps.nl
- Primair een generieke viewer.
- Aantal unieke gebruikers per maand: +/- 3200, zoals:

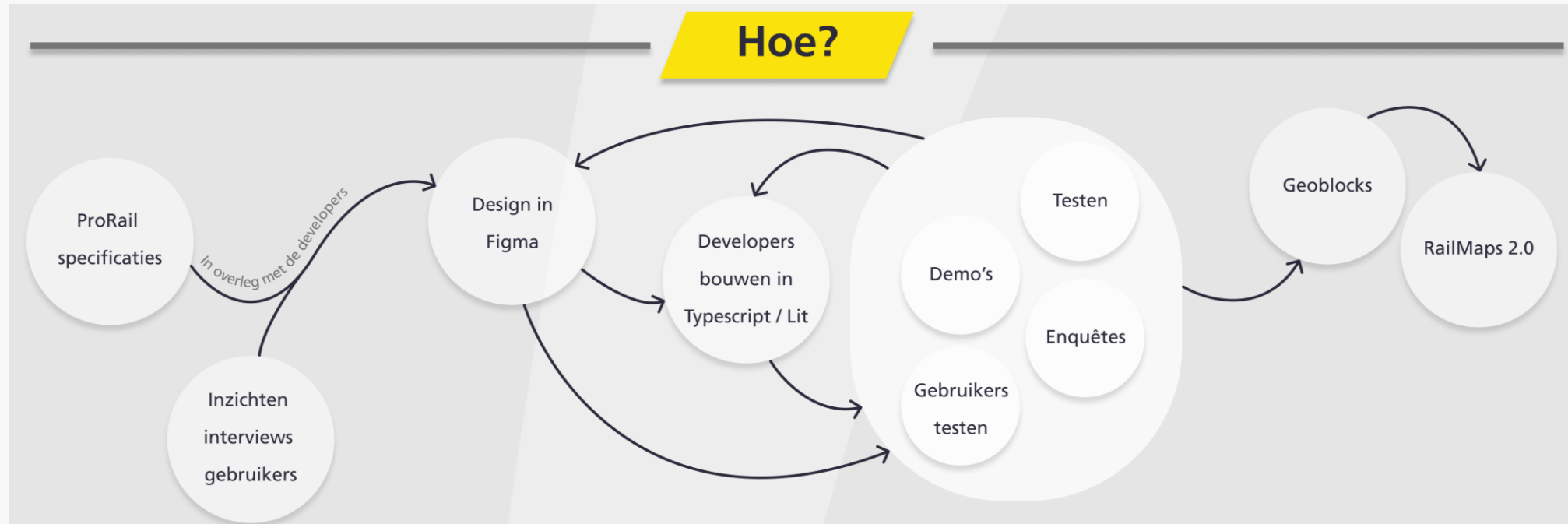


Achtergrond

- Aanleiding
 - Techniek achter huidige RailMaps is eindig en hogere Kosten.
 - Primaire doel: herbouw (open source, generieke componenten).
- Gebruikers
 - Interviews.
 - Demo's.
 - Testen.
 - Enquêtes.



Achtergrond



- Proces en werkwijze
 - Agile framework (scrum): roadmap, backlog en sprints.
- Planning
 - Start: 05-2025.
 - Livegang 07-2026.

GeoBlocks

- The challenge
- The solution
- Storybook
- Examples



The Challenges

High Technical Debt

Without a shared standard, old code piles up—making future changes slow and expensive.

Vendor Lock-in

Relying on proprietary software creates high licensing costs and limits our flexibility, leaving roadmaps controlled by big tech vendors.

Redundant Code

Development teams create basic mapping layers, map controls, side panels, and query tools multiple times to fit their needs

Inconsistent User Experience

Different geo-platforms across ProRail struggle to maintain UI/UX alignment



Common Geo-Architecture



Central Map

The core canvas handling coordinate rendering, basic zooming, panning, and spatial projections



Map Layers

The standard toggle system for switching base maps, rail infrastructure layers

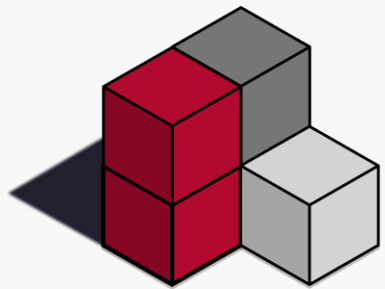


Sidebar Tools

Container hosting custom user actions, search tools, and features



The Solution



GeoBlocks

Componenten bibliotheek

ProRail • CGI

OpenLayers

High-performance
mapping engine
handling heavy GIS
data

WebAwesome

The robust component
foundation ensuring
design system
alignment

Lit Elements

Lightweight, enterprise-
grade web components
that power the UI

Open Source

Built transparently for
cross-team
collaboration and
contribution

Framework Agnostic

Works seamlessly
across Angular, React,
Vue, or vanilla JS
platforms



Storybook

- **Interactive Components**
- **Adjustable Properties**
- **Copy "Code Snippets"**

Getting Started

Start here to quickly run GeoBlocks locally and integrate the package in your own app.

GeoBlocks was designed to be easy to get started with, so you can have a map up and running in minutes, that being said, it is a library that can be used for complex applications.

GeoBlocks provides a set of core map components and built-in access to common geospatial data sources, so you can focus on setting up the basics and at the same time have the flexibility to customize and extend as needed. Please note that GeoBlocks is a JavaScript framework, but the examples here are kept simple and framework-agnostic for easy copy-pasting. The intent is to be as possible, so we won't dive into framework-specific patterns or optimizations here. For framework-specific guidance, check the resources for your chosen framework.

This guide covers.

- 5 minute quick start with Vite (no framework setup required) - basic understanding of how to set up a map and add layers
- Minimal example using Configuration and core components that you can adapt to your app
- Enabling customizations

A first reference is the Storybook documentation, which includes live examples and API details for all components and features. Another way to explore the capabilities of GeoBlocks and see how different components can be used together.

1 - Use Storybook for interactive documentation and examples

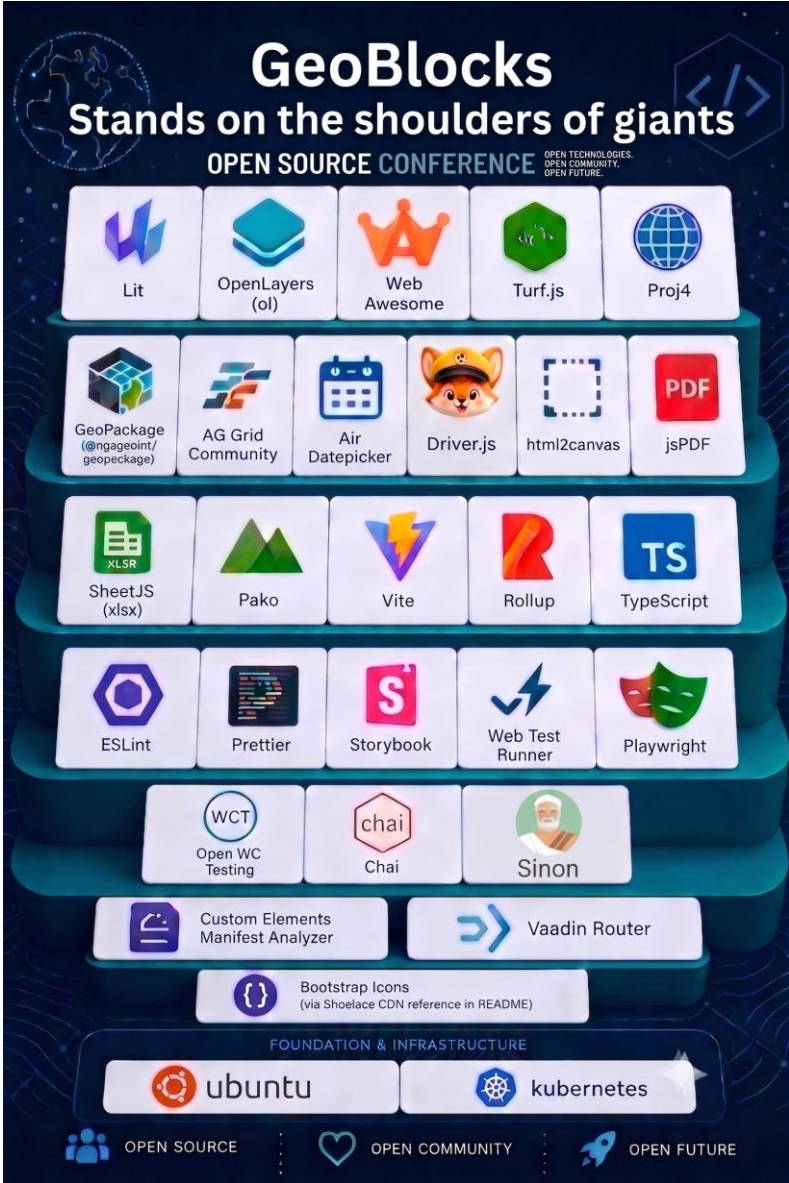
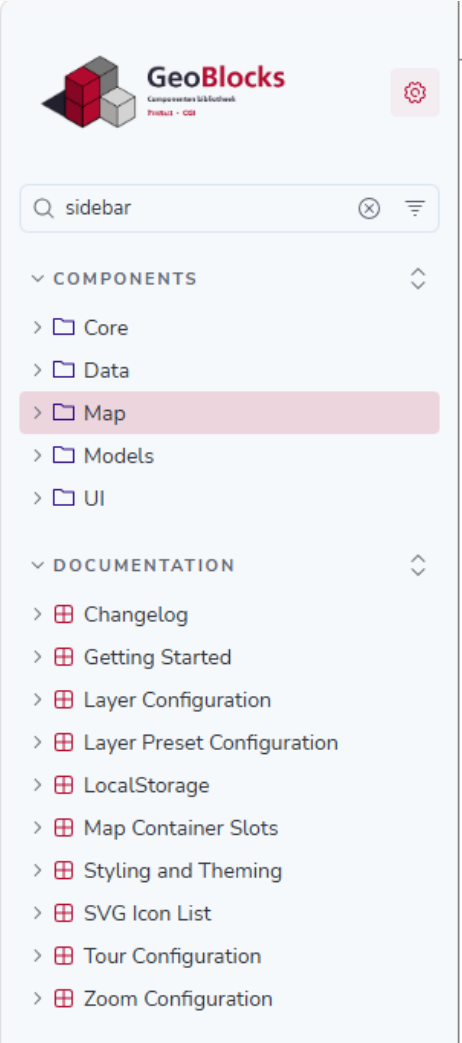
Step 1: Install GeoBlocks

```
npm install @prorail/geoblocks
```

Step 2: Run this repository locally

```
npm install  
npm run dev
```

Examples



Map Container

lightgray

Map container

The map container element is a component to handle all map related issues like initial zoom and position, events and interactions. It will maintain the core map object to distribute amongst childnodes. A childnode could be a layer or button controls to get the reference to the main Map object. In this example a `prorail-map-layer-wmts` component will get this reference to handle accordingly.

```
<prorail-map-container>
  <prorail-map-layer-wmts></prorail-map-layer-wmts>
</prorail-map-container>
```

```
<div class="map-parent-container">
  <prorail-map-container lat="52.1" lon="5.3" rotatable>
  </prorail-map-container>
</div>
```

Setting the map container height

By default `prorail-map-container` has `height: 100%;` styling, so it will expand to fill the parent element. To achieve this set the `height` CSS property on your parent element, i.e. `height: 100vh` to make use of the total height of the viewport.

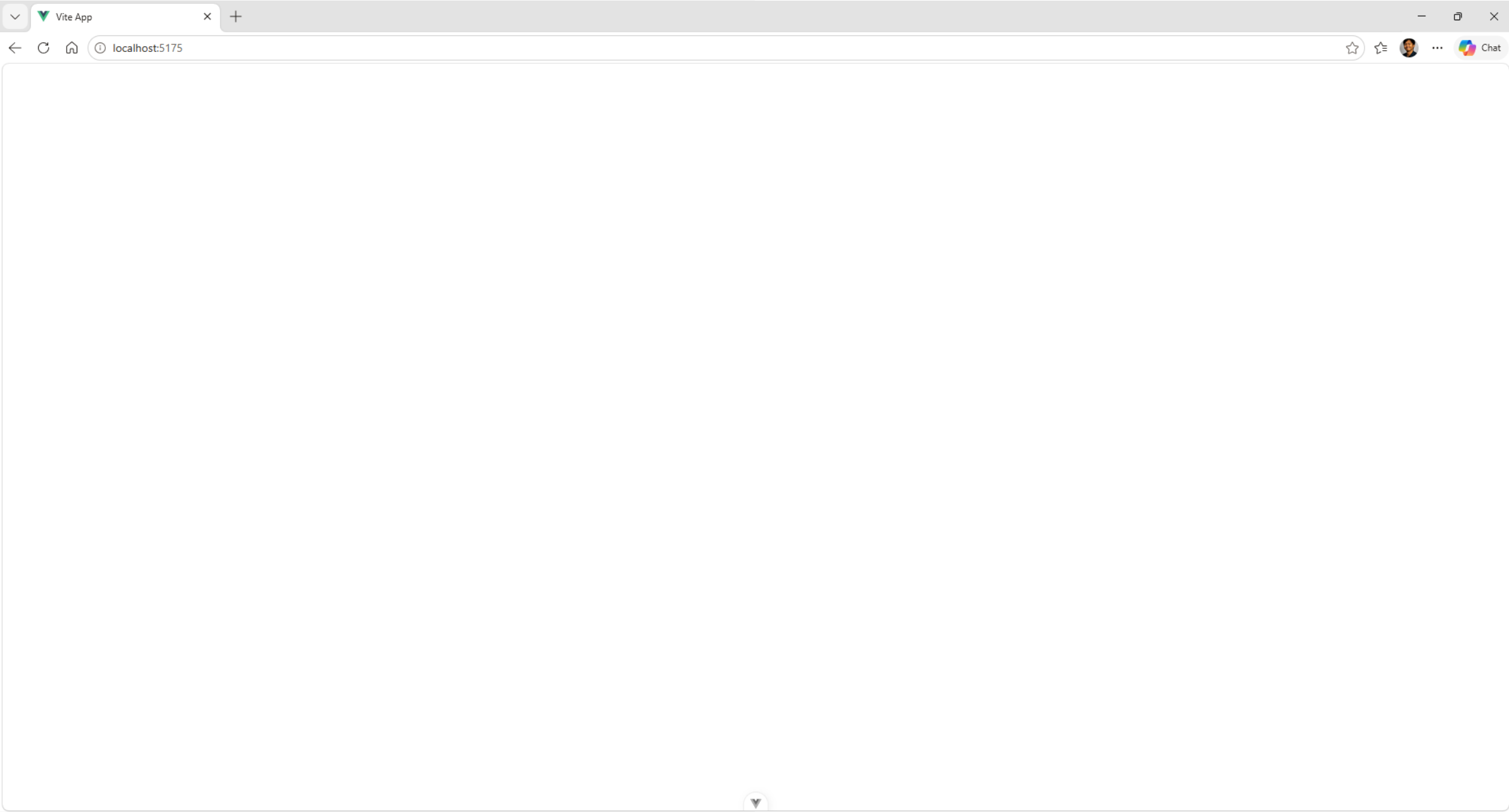
```
<div id="parent">
  <prorail-map-container> ... </prorail-map-container>
</div>
```

```
#parent {
  height: 100vh;
  width: 100%;
}
```

```
.map-parent-container {
  position: relative;

  height: 98vh;
}
```





Vite App

localhost:5175

<!DOCTYPE html>

<html lang style="--vueuse-safe-area-top: env(safe-area-inset-top, 0px); --vueuse-safe-area-right: env(safe-area-inset-right, 0px); --vueuse-safe-area-bottom: env(safe-area-inset-bottom, 0px); --vueuse-safe-area-left: env(safe-area-inset-left, 0px);">

<head>

</head>

<body>

<div id="app" data-v-app>

<div data-v-7a7a37b1 class="map-parent-container">

<prorail-map-container data-v-7a7a37b1>

</div>

</div>

<script type="module" src="/src/main.ts?t=1782975796439"></script>

<script src="http://localhost:5175/@id/virtual:vue-devtools-path:overlay/devtools-overlay.mjs" type="module"></script>

<div id="vue-inspector-container" data-v-app>

<div id="__vue-devtools-container__" data-v-inspector-ignore="true" data-v-app>

</div>

</body>

</html>

html body div#app div.map-parent-container prorail-map-container

Styles Computed Layout Event Listeners DOM Breakpoints Properties Accessibility

Filter

element.style {}

:host {display: block; height: 100%; position: relative;}

Inherited from html

style attribute {--vueuse-safe-area-top: env(safe-area-inset-top, 0px); --vueuse-safe-area-right: env(safe-area-inset-right, 0px); --vueuse-safe-area-bottom: env(safe-area-inset-bottom, 0px); --vueuse-safe-area-left: env(safe-area-inset-left, 0px);}

:where(:root), :host {

</style>

Console Issues

Layers



Components library

Find components ^ K

COMPONENTS

- Core
- Data
- Map
 - Coordinates and Scale
 - Draw
 - Interactions
 - Layer List
 - Layers
 - ArcGIS
 - GeoJSON
 - Loader
 - WMS

Docs

- Default
 - WMTS
- Map buttons
- Map container
- Measure
- Mouse Position Coordinates
- Network status
- Popup
- Scale Line
- Sketch
- Models
- UI

lightgray

WMS

ProRailMapLayerWms is component for loading and displaying a WMS (Web Map Service) layer on an OpenLayers map.

Example usage

```
<prorail-map-layer-wms
  url="https://example.com/geoserver/wms"
  layer="my_layer"
  visible=true
  opacity="0.8"
  zIndex="2"
></prorail-map-layer-wms>
```

Layer properties

- `opacity` Layer transparency (0 = fully transparent, 1 = fully opaque). Default is 1.
- `visible` Whether the layer is shown on the map. Default is true.
- `zIndex` Stacking order for layers. Higher values are rendered above lower ones.
- `name` Display name for the layer.
- `id` Unique identifier for the layer.

Events

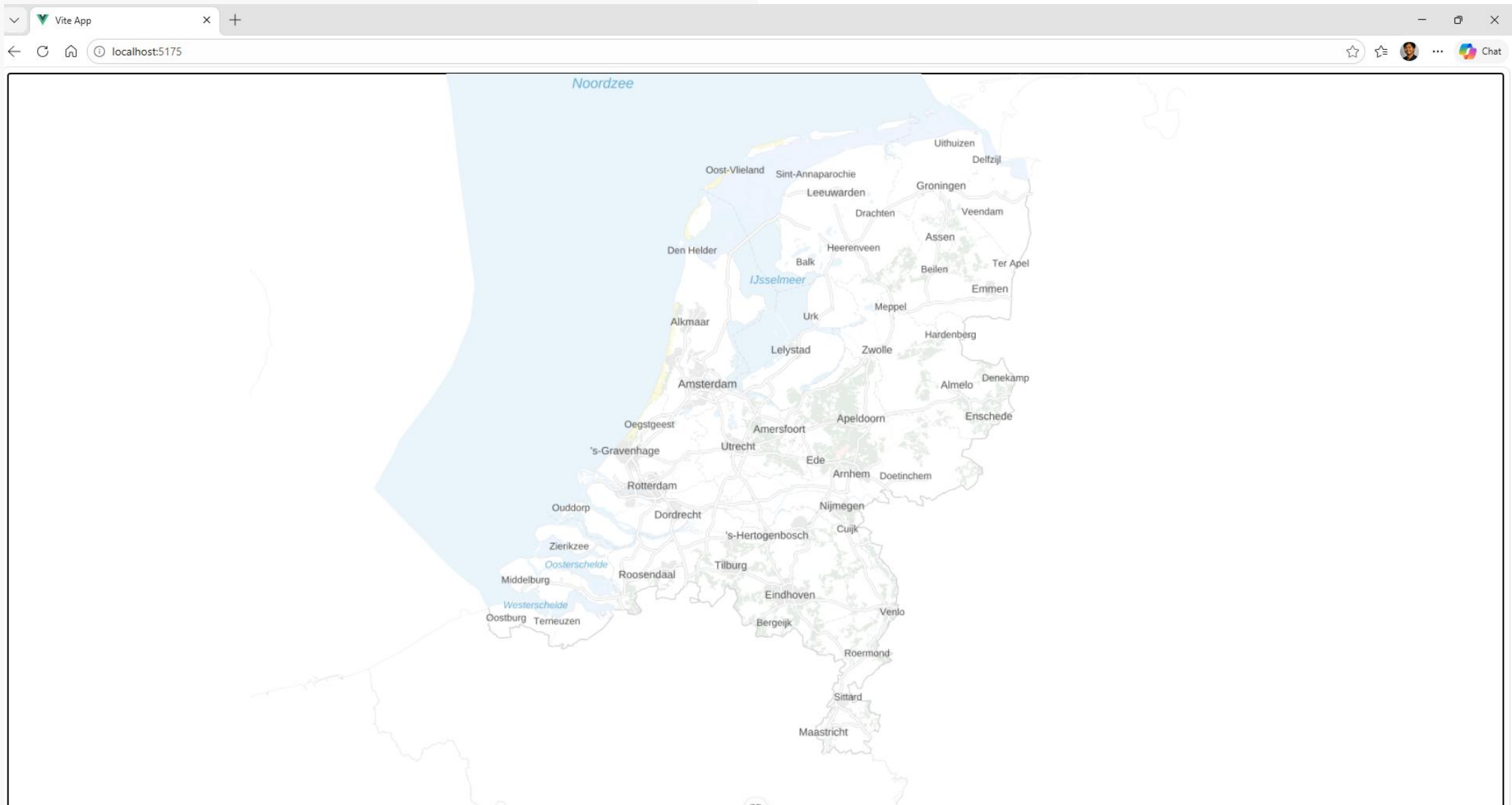
- `on-notify` dispatches whenever the component sends a notification (on `tileloadererror`).

Search icons



```
<div class="map-parent-container">
  <prorail-map-container lat="52.1" lon="5.3" rotatable>
    <prorail-map-layer-wmts layer="grijs">
      <prorail-data-wmts
        url="https://service.pdok.nl/brt/achtergrondkaart/wmts/v2_0"
      />
    </prorail-map-layer-wmts>
  </prorail-map-container>
</div>
```





Layers

```
<div class="map-parent-container">
  <prorail-map-container lat="52.1" lon="5.3" rotatable>
    <prorail-map-layer-wmts layer="grijs">
      <prorail-data-wmts
        url="https://service.pdok.nl/brt/achtergrondkaart/wmts/v2_0"
      />
    </prorail-map-layer-wmts>
    <prorail-map-layer-image
      name="Referetiesysteem"
      url="https://maps.prorail.nl/arcgis/rest/services/Referentiesysteem/FeatureServer"
      :opacity="1"
    >
    </prorail-map-layer-image>
  </prorail-map-container>
</div>
```



Sidebar

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Sidebar

This component will show a sidebar component with icons, panel and collapse/expand button. The component uses slots when rendering the panel contents. This is done by providing a slot property to an element and providing a string value `tab-index` where index is the index value of the corresponding object in the provided `sidebarConfigList`.

Example usage:

```
<prorail-sidebar
  activeTab=1
  sidebarConfigList=${sidebarConfigList}
>
  <div slot="tab-0"></div>
  <div slot="tab-1"></div>
  <div slot="tab-2"></div>
</prorail-sidebar>
```

Configuration

```
[
  {
    icon: "layers",
    title: "Kaartlagenlijst",
  },
  {
    icon: "search",
    title: "Zoeken",
  },
  {
    icon: "gear",
    title: "Instellingen",
  }
]
```

```
<prorail-sidebar
  activeTab="1"
  :sidebarConfigList="sidebarConfigList"
  slot="sidepanel"
>
  <div slot="tab-0">Component 1</div>
  <div slot="tab-1">Component 2</div>
  <div slot="tab-2">Component 3</div>
</prorail-sidebar>
```

Copy

```
var sidebarConfigList = [
  {
    icon: "train-lightrail-front",
    title: "Home",
  },
  {
    icon: "car-front",
    title: "Zoeken",
  },
  {
    icon: "gear",
    title: "Instellingen",
  },
];
```

Copy





Component 1





0 storingen op +4u

Geen storingen in deze periode.



50 km

+4u

Nu

+1u

+2u

+3u

+4u

+12u

+24u

+48u

+3d

+4d

+5d

+6d

+7d



Demo RailMaps



Punt bevraging

Vind gegevens

Zoeken op kenmerken

Afstand

Meten

Oppervlakte

Punt

Wijzigen

Exporteer schetsen

Intekenen met geocode en km

Adressen langs het spoor exporteren

Adressen langs spoor exporteren

Plaats coördinaten

Coördinaten

Kaartlagenlijst

Alles

Filter lagen...

Filter

+

☒ Referentiesysteem

+

☒ Geleidingssysteem

-

☒ Basistopografie

+

☐ Afscherming

+

☐ Overweg

+

☒ Transfersysteem

+

☐ Kunstwerk & gebouw

+

☐ Overige spoorobjecten

+

☐ Overige topografie

+

☐ Kadastraal

-

☒ Luchtfoto ProRail

+

☒ Luchtfoto

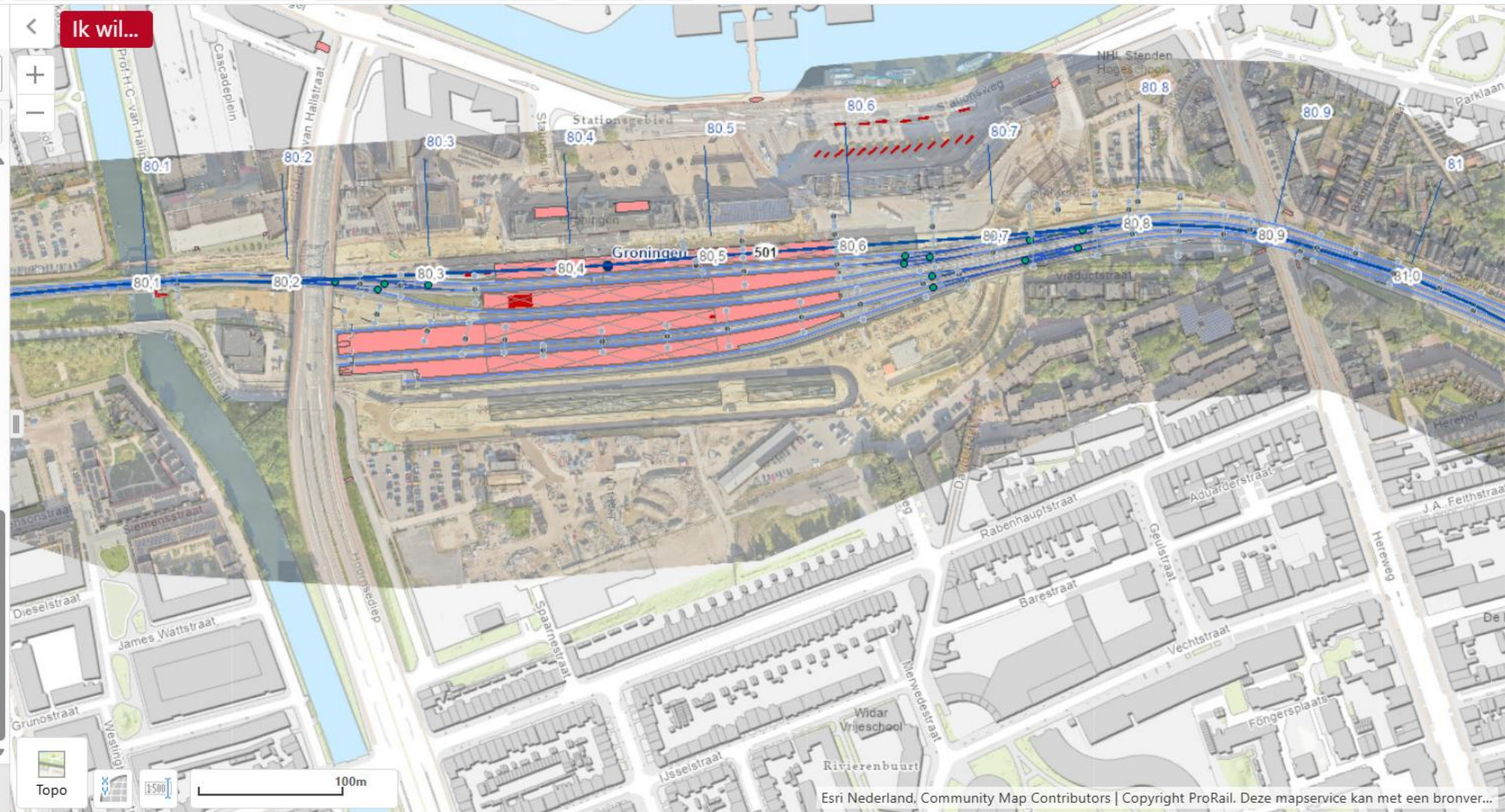
☐ Datum luchtopname

+

☒ Basiskaarten

Start

Kaartlagenlijst





Kaartlagenlijst

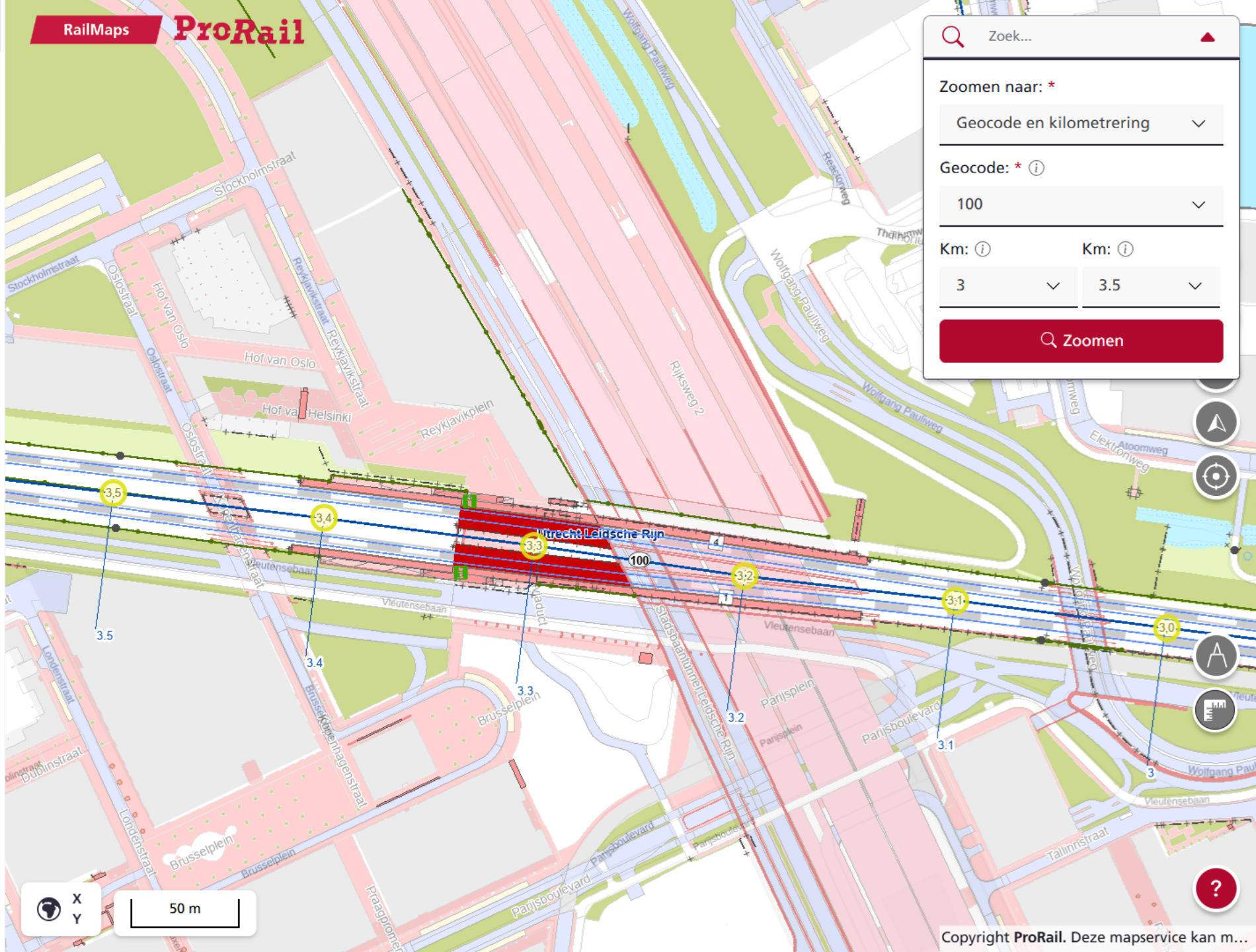
Alle kaartlagen

Filter kaartlagen...

- > ☐ DCMR Baggerspecieloswallen
- > ☐ Gebiedsindelingen ProRail
- > ☐ Gebiedsindelingen Overig
- > ☐ GSM-R
- > ☐ Arbeidsveiligheid
- > ☐ Nuttige Locaties
- > ☐ Kaartbladen
- > ☐ Vergunningen
- > ☐ Treinbeveiligingssysteem
- > ☐ Energievoorzieningssysteem
- > ☒ Referentiesysteem
- > ☒ Geleidingssysteem
- > ☒ Basistopografie
 - > ☒ Afscherming
 - > ☐ Overweg
 - > ☒ Transfersysteem
 - > ☐ Kunstwerken gebouw
 - > ☐ Overige Spoorobjecten
 - > ☒ Overige topografie
- > ☐ Kadastraal
- > ☐ Luchtfoto ProRail
- > ☒ Basiskaarten
 - ☐ Luchtfoto Landsdekkend
 - ☒ Topo

RailMaps

ProRail



Zoek...

Zoomen naar: *

Geocode en kilometrerig

Geocode: *

100

Km: 3

Km: 3.5

Zoomen

← Zoeken op kenmerken

Zoeken naar:

Station

3

Zoekgebied:

Alles

Voorwaarden

AFKORTING

bevat

g

+ Voorwaarde toevoegen

Gdg

Gdm

Gdr

Gerp

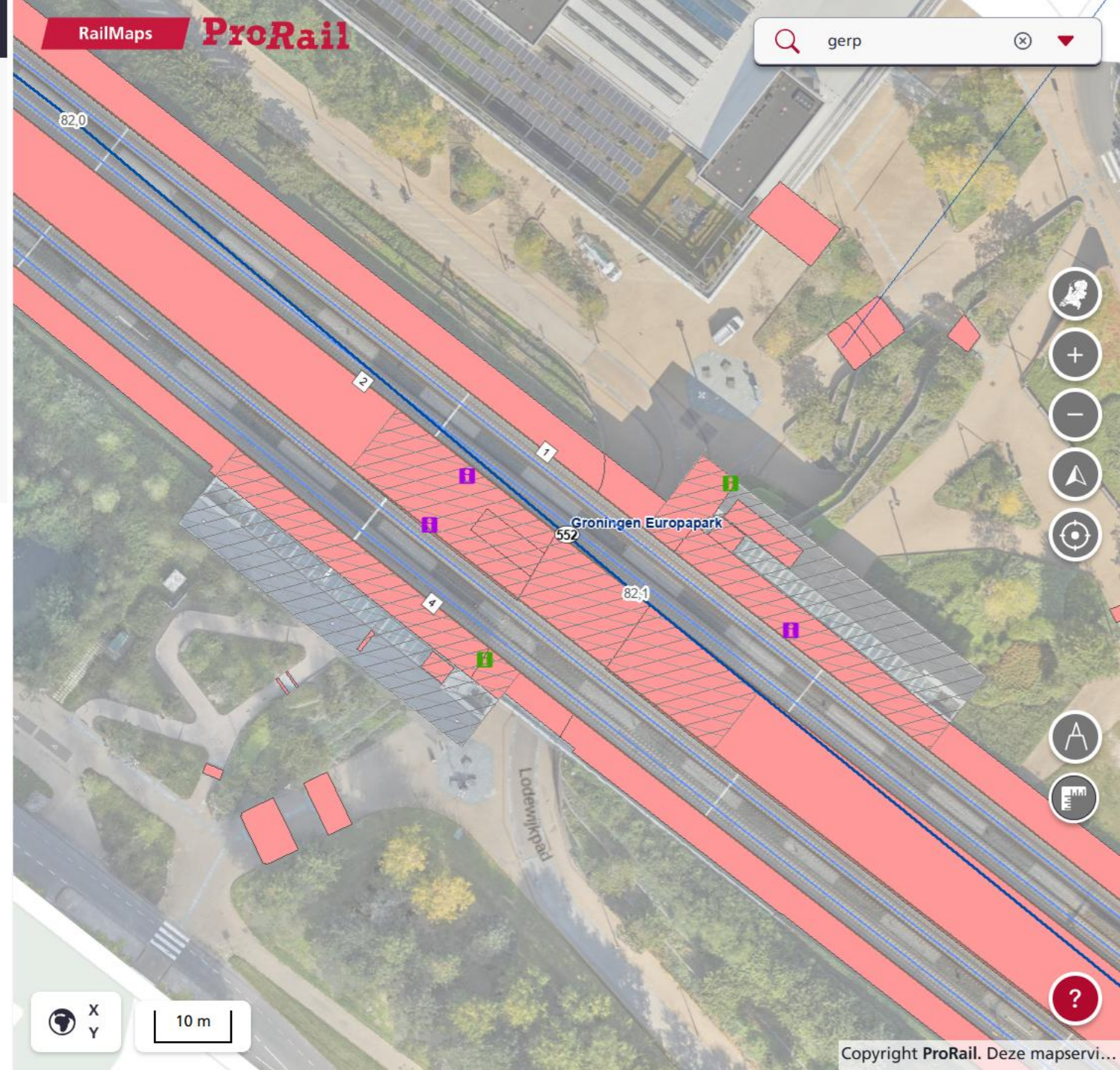
Gk

Glk

Glo

+ Voorwaarde toevoegen

en





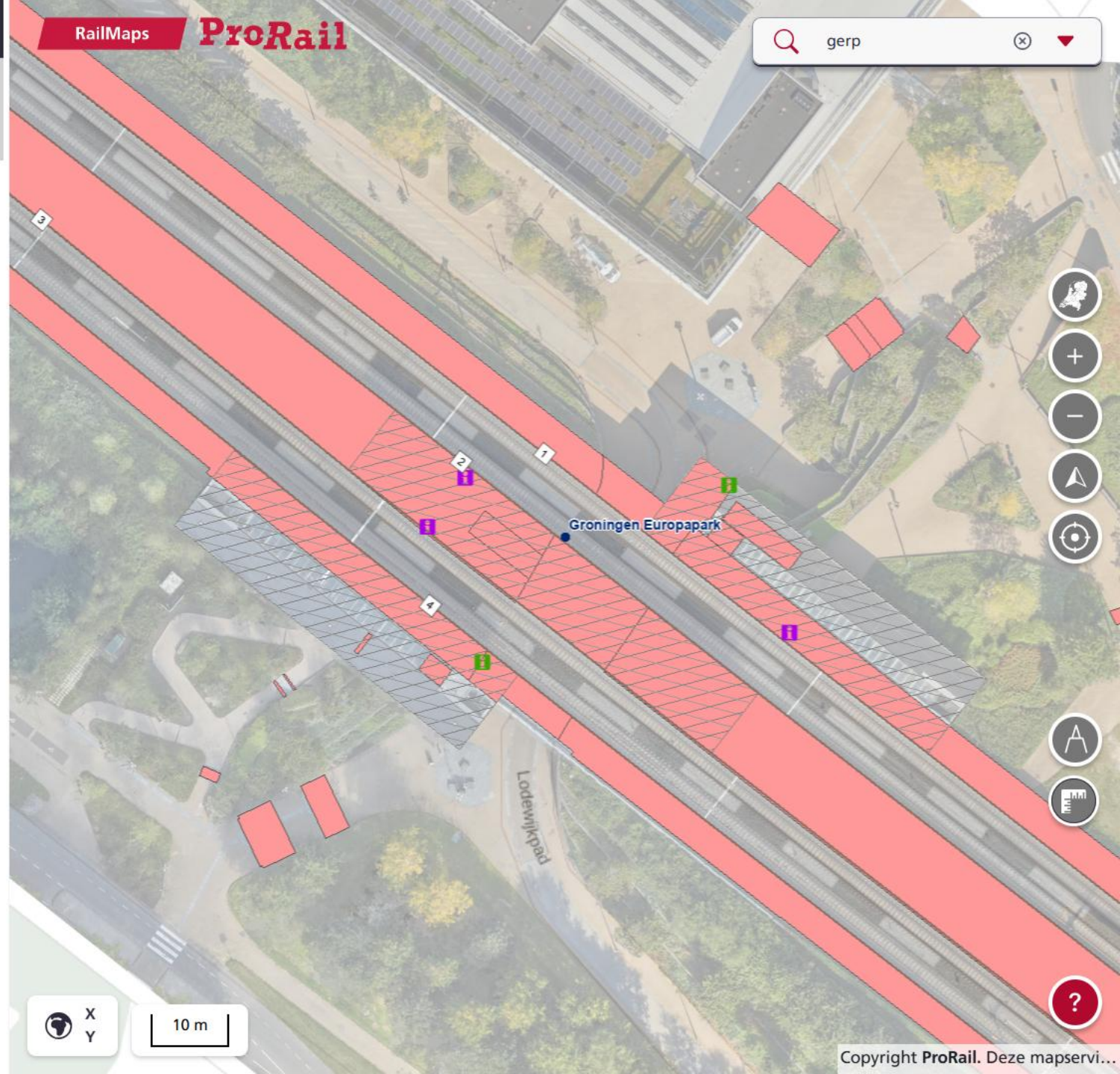
Kaartlagenlijst

FOSS4GNL2026

Filter kaartlagen...

- ✓ ☒ Basistopografie
 - > ☐ Afscherming
 - > ☐ Overweg
 - > ☒ Transfersysteem
 - > ☐ Kunstwerken gebouw
 - > ☐ Overige Spoorobjecten
 - > ☐ Overige topografie
- ✓ ☒ Luchtfoto ProRail
 - ✓ ☒ Luchtfoto
 - > ☐ Datum luchtopname
- ✓ ☒ Basiskaarten
 - ☐ Luchtfoto Landsdekkend
 - ✓ ☒ Topo

- Wijzig volgorde kaartlagen
- Geo bestand toevoegen
- Mapservice toevoegen
- × Sluit menu





Kaartlagenlijst

FOSS4GNL2026

Filter kaartlagen...

- > ☒ Actueel Hoogtebestand Nederland (AHN) WMS
- > ☒ Basistopografie
- > ☐ Luchtfoto ProRail
- > ☒ Basiskaarten

RailMaps

ProRail

Zoek...



100 m



Summary

- Opensource saves money
 - Reduce costs
- Opensource solution (GeoBlocks)
- Opensource works(RailMaps)
 - Advantages – faster, more user friendly



Vragen?

Wat zijn jullie ervaringen?

