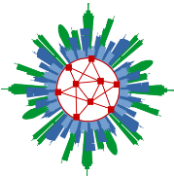


Routing in Oldenburg

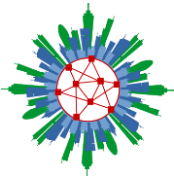
Johannes Meier, Oliver Theel, Andreas Winter



Project Group „Routing in Oldenburg“ (RiO)

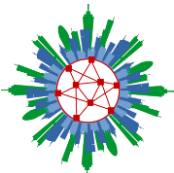
- Project Group of 11 Master's Students in Computing Science and Business Informatics:
 - Muhammad Ekbal Ahmad, Maik Appeldorn, Jan Brunnberg, Jan Johannes Haskamp, Sona Hayrapetyan, Tamme Janßen, Jacqueline Klimmek, Christian Linder, Dennis Rupprecht, Gerrit Schöne, Marcell Stosun
- Duration: 1 year
- University Groups
 - Software Engineering
 - System Software and distributed Systems
- External Partners
 - BTC
 - Embeteco
- Funding





- A high environmental impact is not perceptible to humans and is nevertheless harmful to their health
 - According to a study by the European Environment Agency (EEA), fine dust is jointly responsible for the premature death of approximately 66,000 people in 2014
- Highest fine dust values are found in urban agglomerations, e.g. large cities
 - Introduction of fine dust sticker in 2008
- Installation of sensors
 - E.g. measuring station at Heiligengeistwall





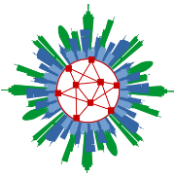
Problem Scenario

Carl

Carl wants to go to the Central Station



Fine Dust everywhere???

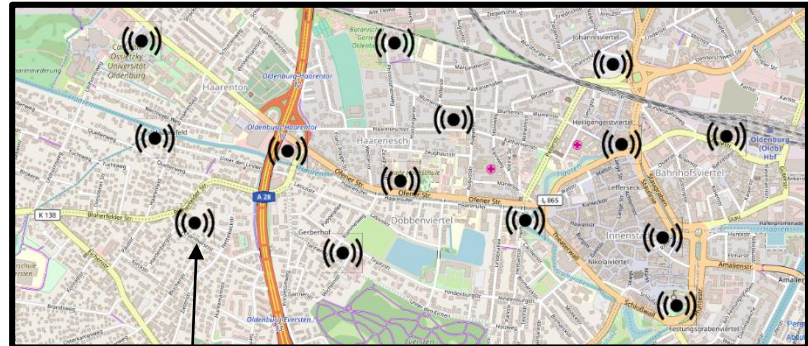
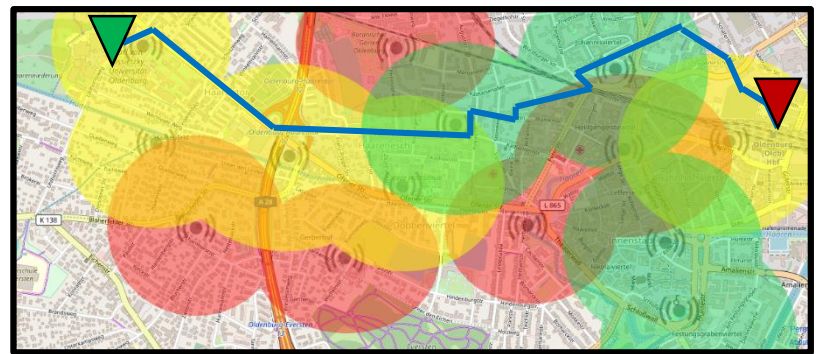


Solution Idea

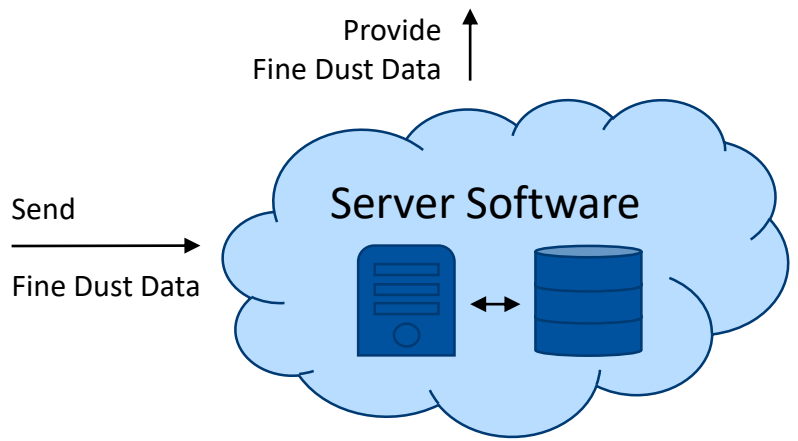
Navigation App

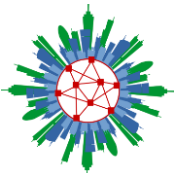


Information regarding
Fine Dust Pollution



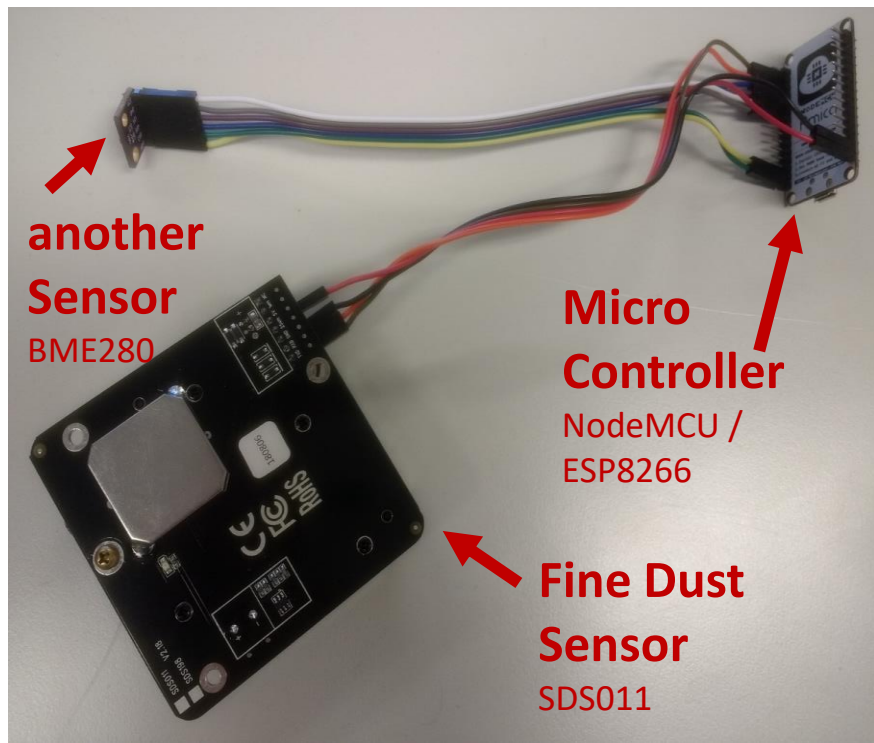
Install and configure
Sensor Nodes

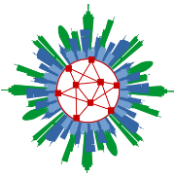




Sensor Nodes

- Installation in Oldenburg requires ...
 - lots of sensors
 - low cost
- Stuttgart Sensor (luftdaten.info)
 - Enhancements and Extension

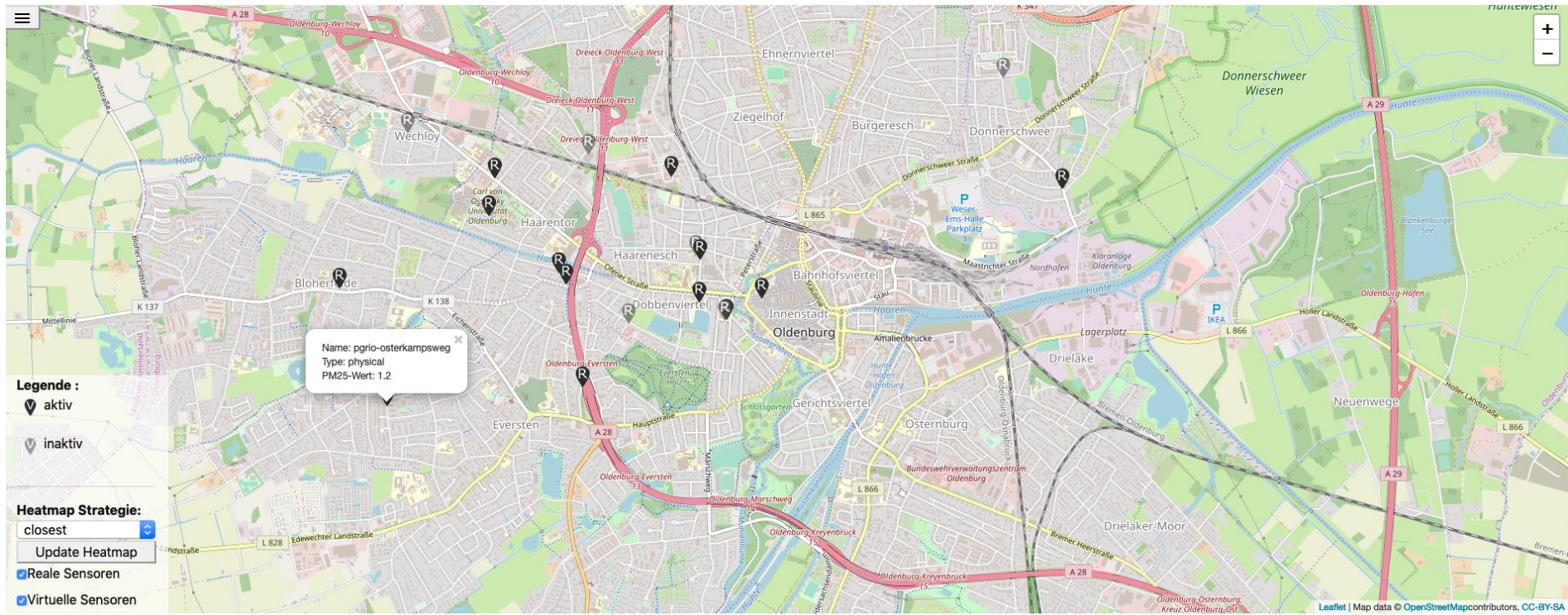




RiO Website: Deployed Sensors

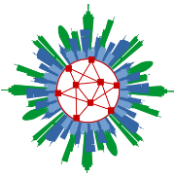


Home Map Mitmachen



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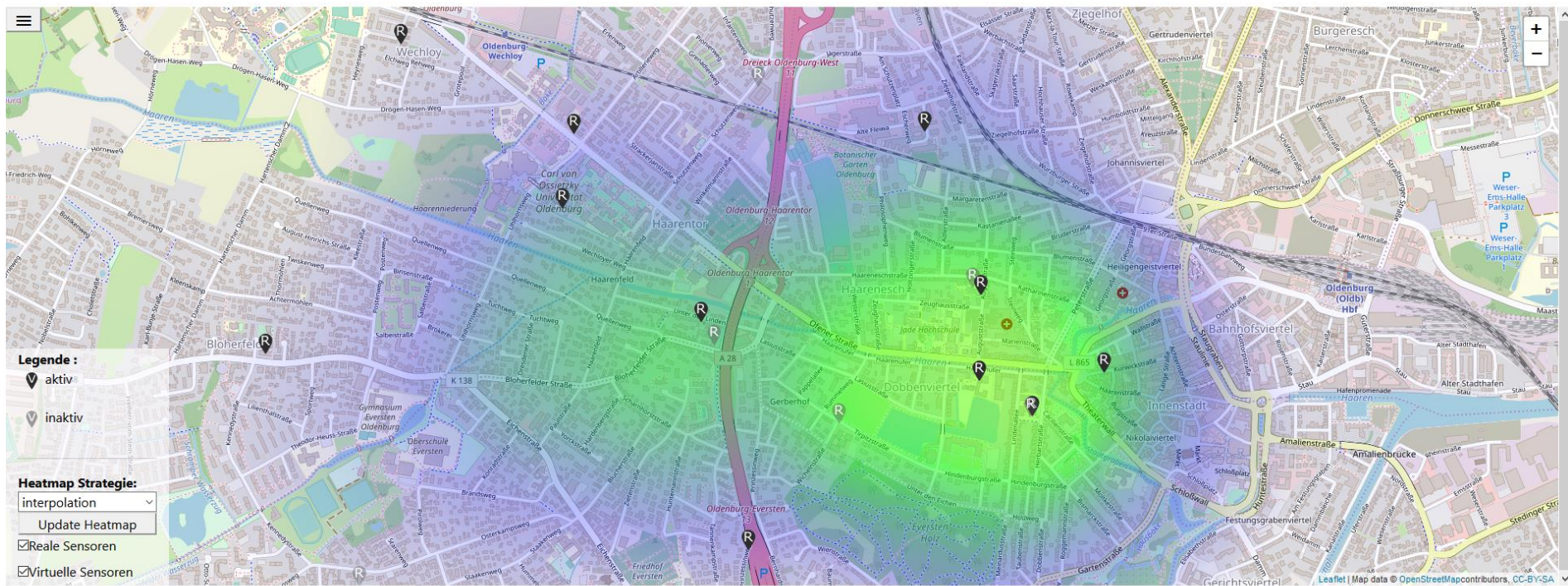
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RiO Website: Deployed Sensors



Home Map Mitmachen

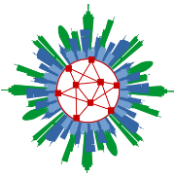


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Low Pollution
(Minimal Value: 0)



High Pollution
(Maximal Value: 40)



PG-Rio Dashboard Maps Messtation-PG-Raum-Theel-01

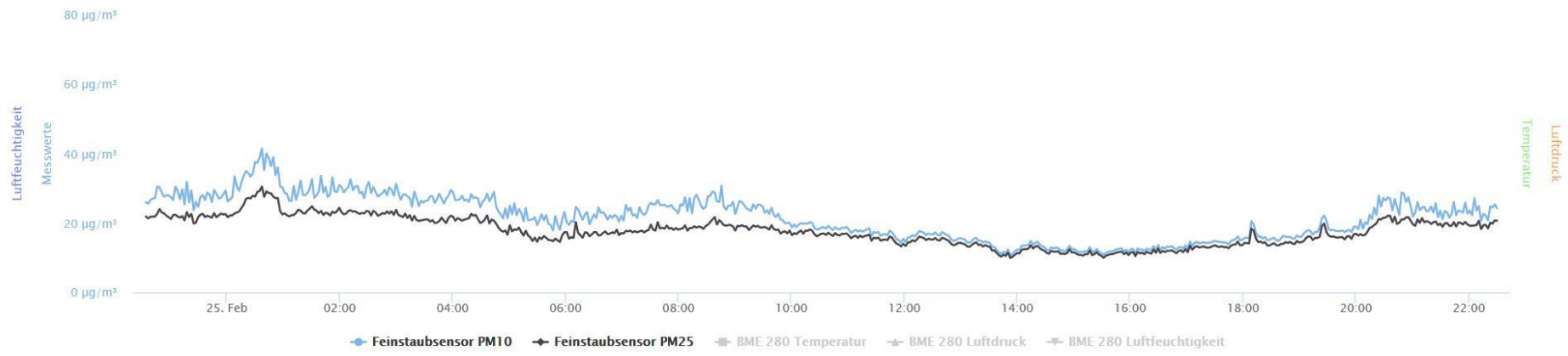
Dashboard für Sensordaten

PM 2,5 20.67 µg/m ³	PM 10 24.27 µg/m ³	Temperatur 7.25 °C	Luftdruck 1037.32 hPa	Luftfeuchte 49.13 %RH
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Werte Anzeigen von

2/24/2019, 10:31 PM ~ 2/25/2019, 10:31 PM

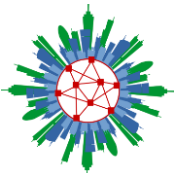
Feinstaubwerte



[Impressum](#)[Datenschutz](#)

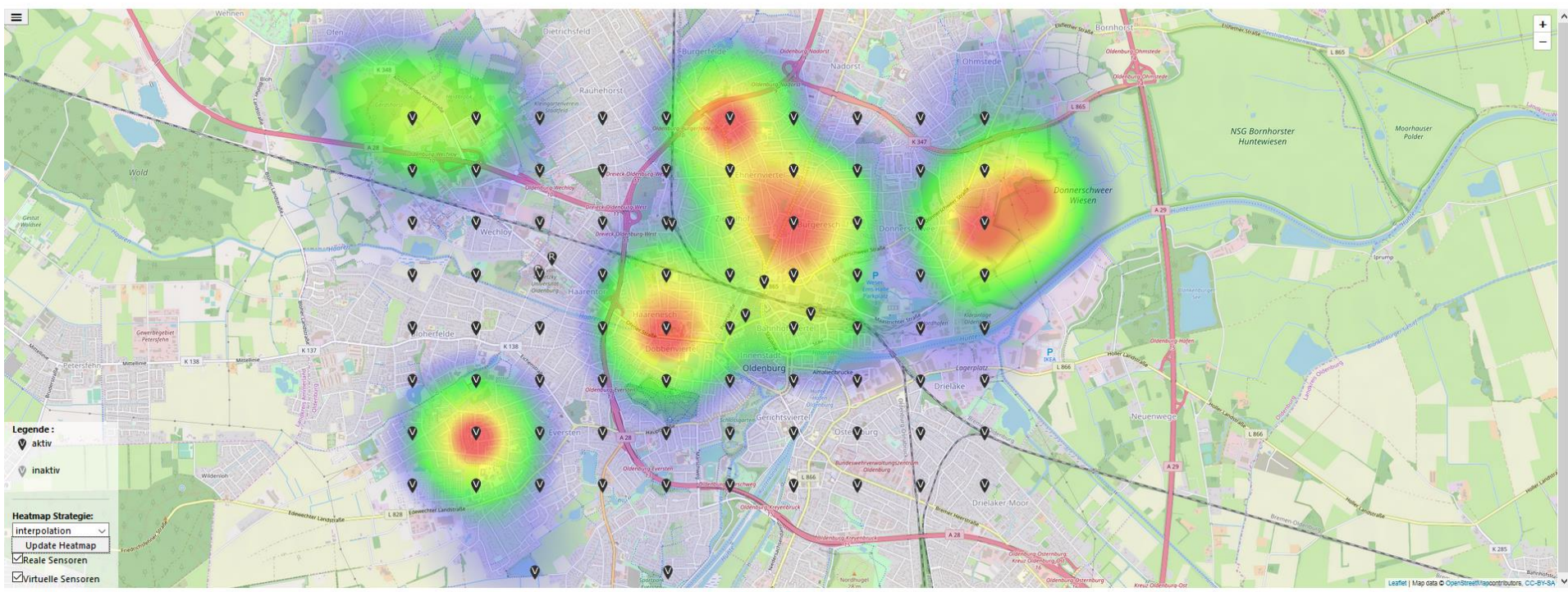
Material Icons by Icons8

Highcharts.com



RiO Website: Fine Dust Pollution

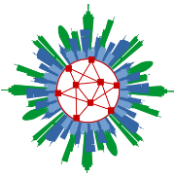
RiO Home Map Mitmachen



Low Pollution
(Minimal Value: 0)



High Pollution
(Maximal Value: 40)



Navigation App

Route

Steckeninformation

Fahrzeug **Fahrrad** ▾

Start

Aktueller Standort

Ziel

Oldenburg, Niedersachsen, 26122

Zeitintervall 00:10

ROUTE BERECHNEN

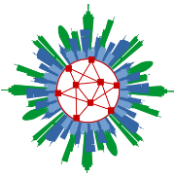
Strecke Einstellungen

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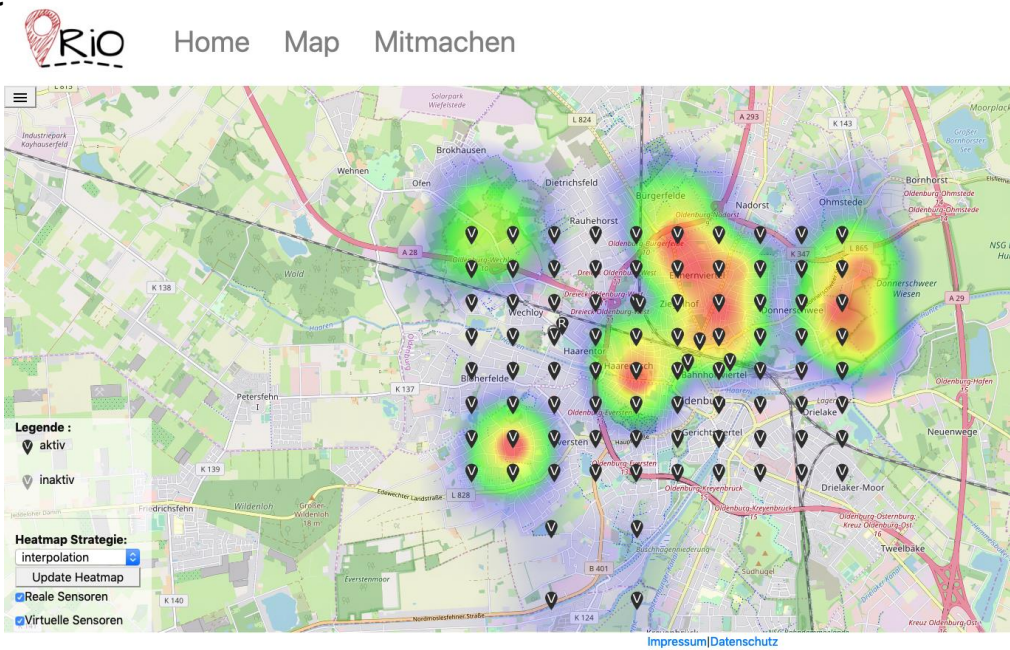
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rechts abbiegen auf Ofener Straße, L 865 nach 23.70 Metern

Abbrechen



- Sensor Node
 - support more and different Sensors
 - push data to different Servers (PG-RiO, Madavi (planned), ...)
- Server Software
 - Virtual Sensors with different strategies (mocking, weighted, ...)
 - Different strategies for calculating pollution heatmaps (nearest sensor, interpolation, ...)
 - Routing strategies with different weights for edges
- Navigation App
 - Different Apps can be supported by Web Service
 - Support further regions
- Data Quality
 - Data Collector uses different strategies for improving data





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