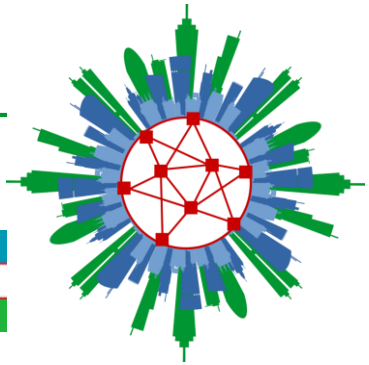
CARL VON OSSIETZKY universität OLDENBURG

SuMoCoS

Sustainability and Mobility in the Context of Smart Cities



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

Fine Dust

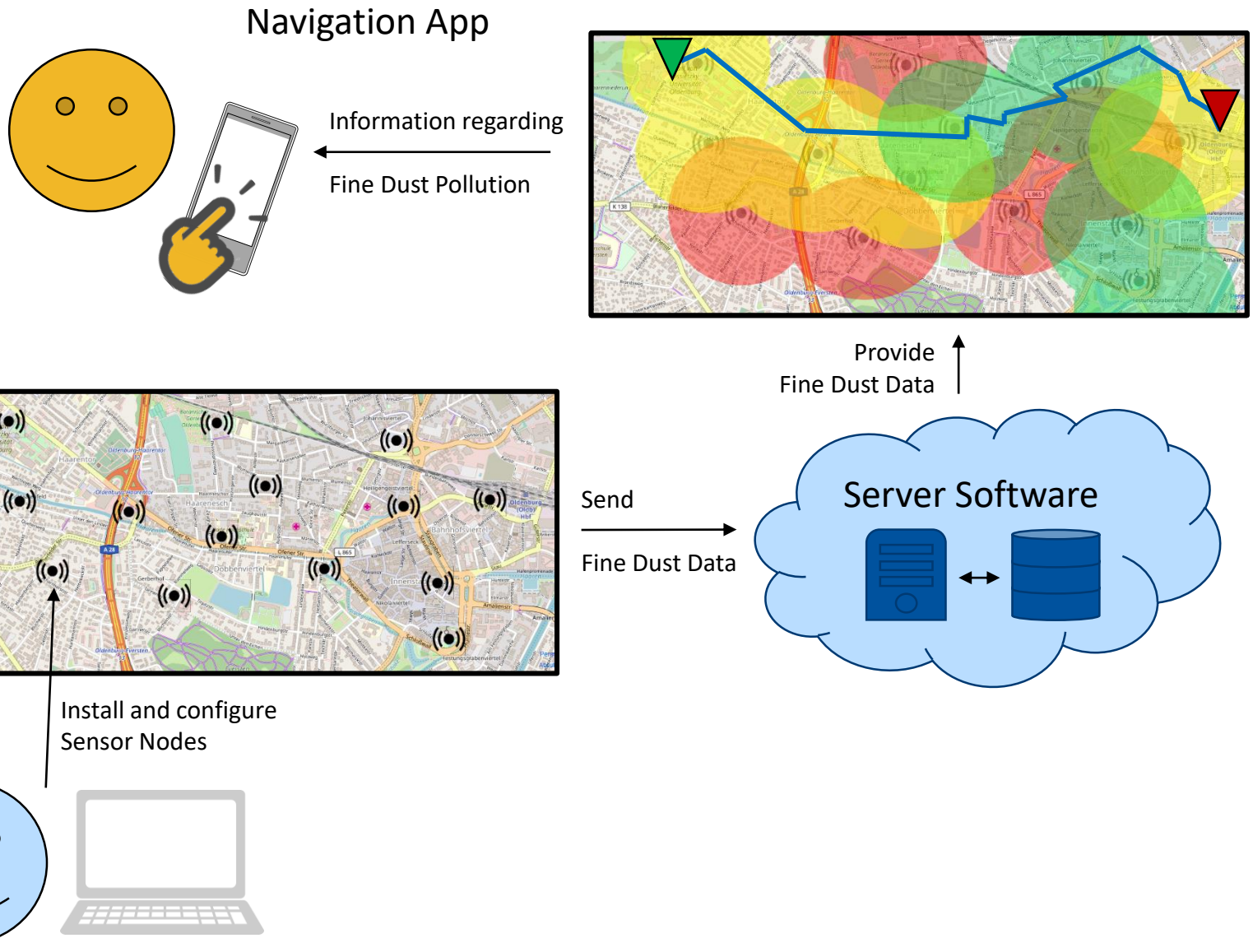
- A high environmental impact is not perceptible to humans and is nevertheless harmful to their health
  - According to a study by the European Environment Agency (EEA), fine dust is jointly responsible for the premature death of approximately 66,000 people in 2014
- Highest fine dust values are found 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

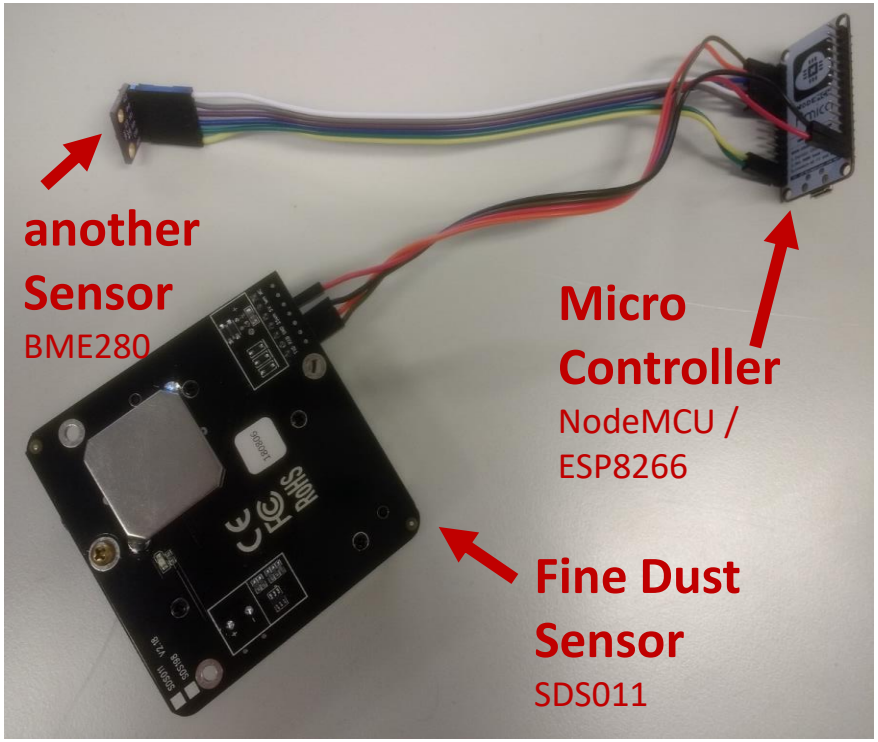
Carl wants to go to the Central Station

Solution Idea

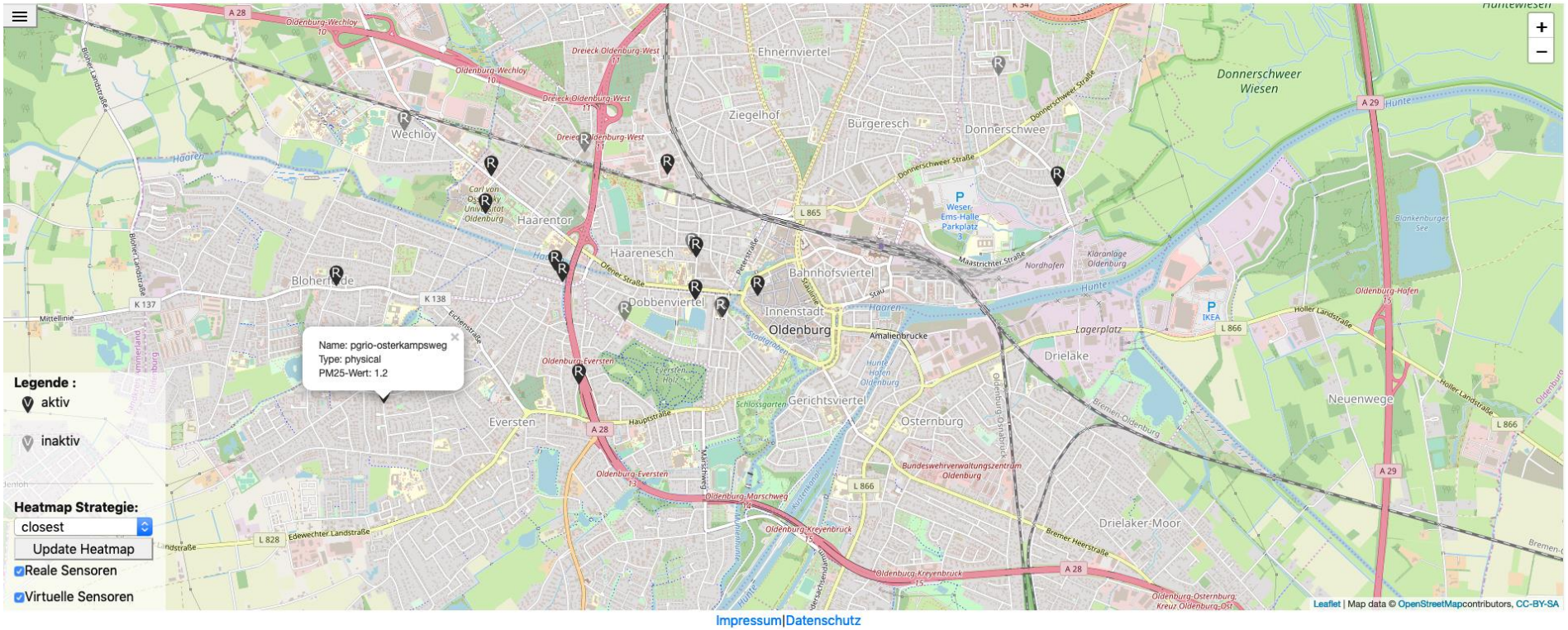


Sensor Nodes

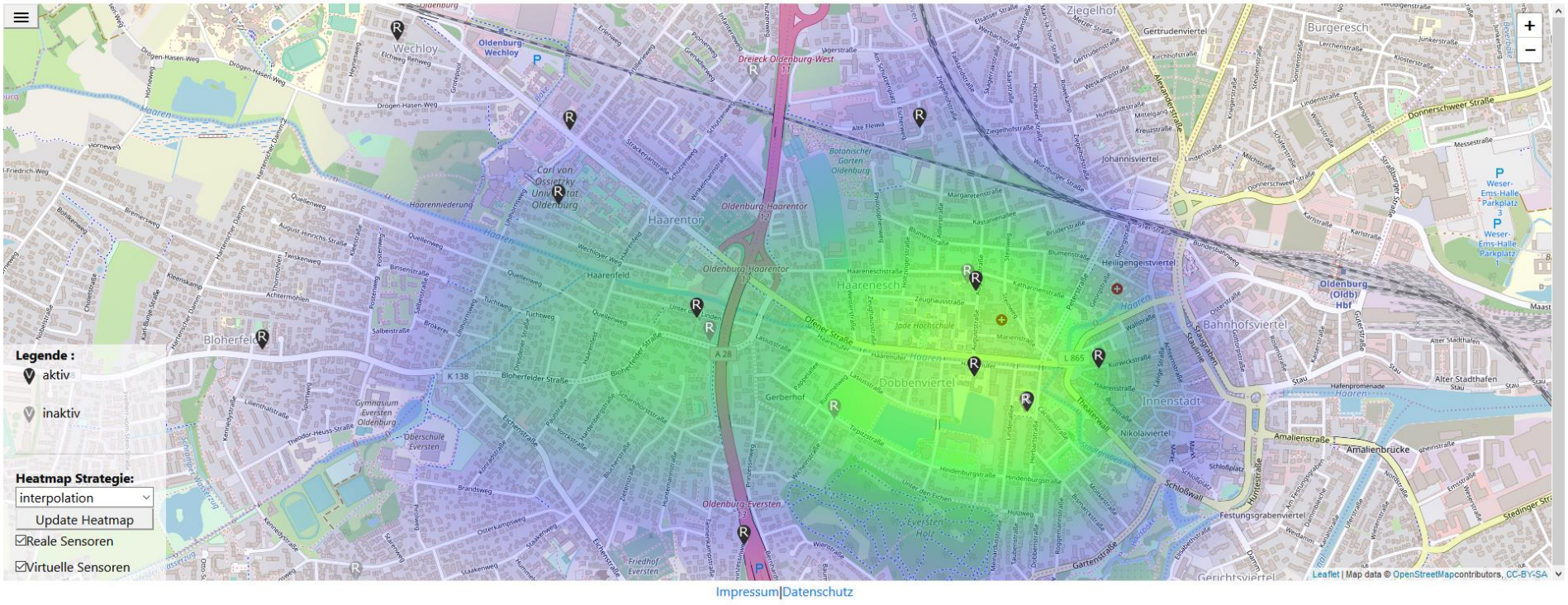
- Installation in Oldenburg requires …
  - lots of sensors
  - low cost
- Stuttgart Sensor (luftdaten.info)
  - Enhancements and Extension



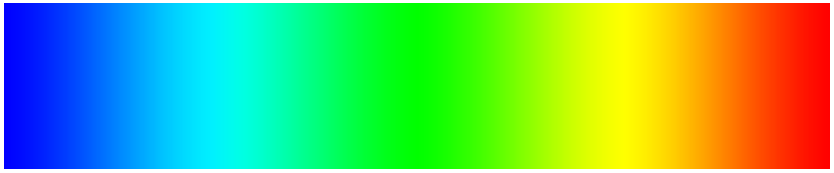
RiO Website: Deployed Sensors



RiO Website: Deployed Sensors

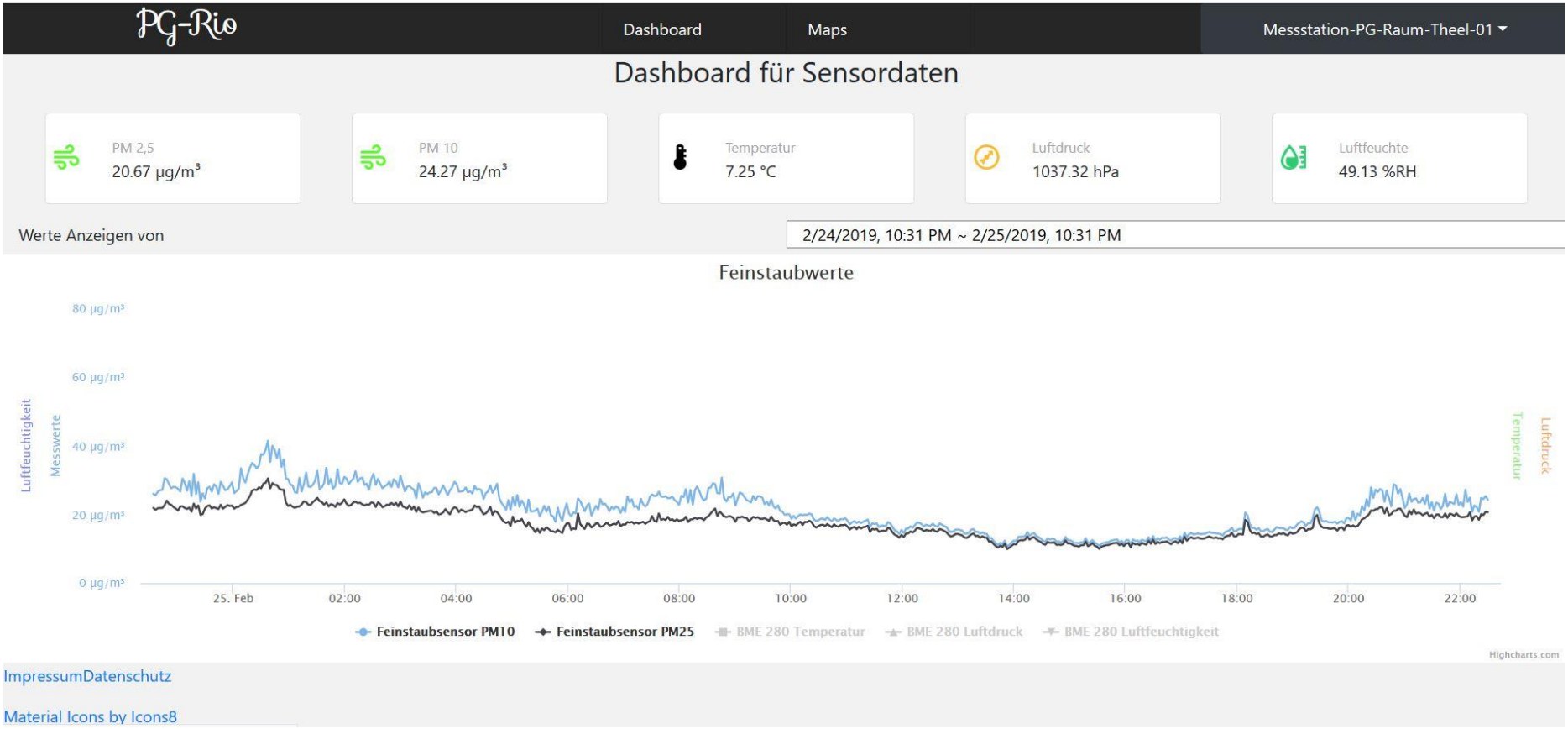


Low Pollution
(Minimal Value: 0)



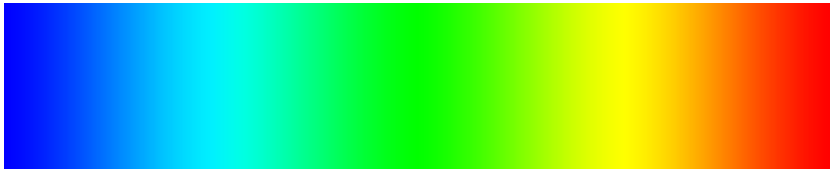
High Pollution
(Maximal Value: 40)

RiO Website: Sensed Data



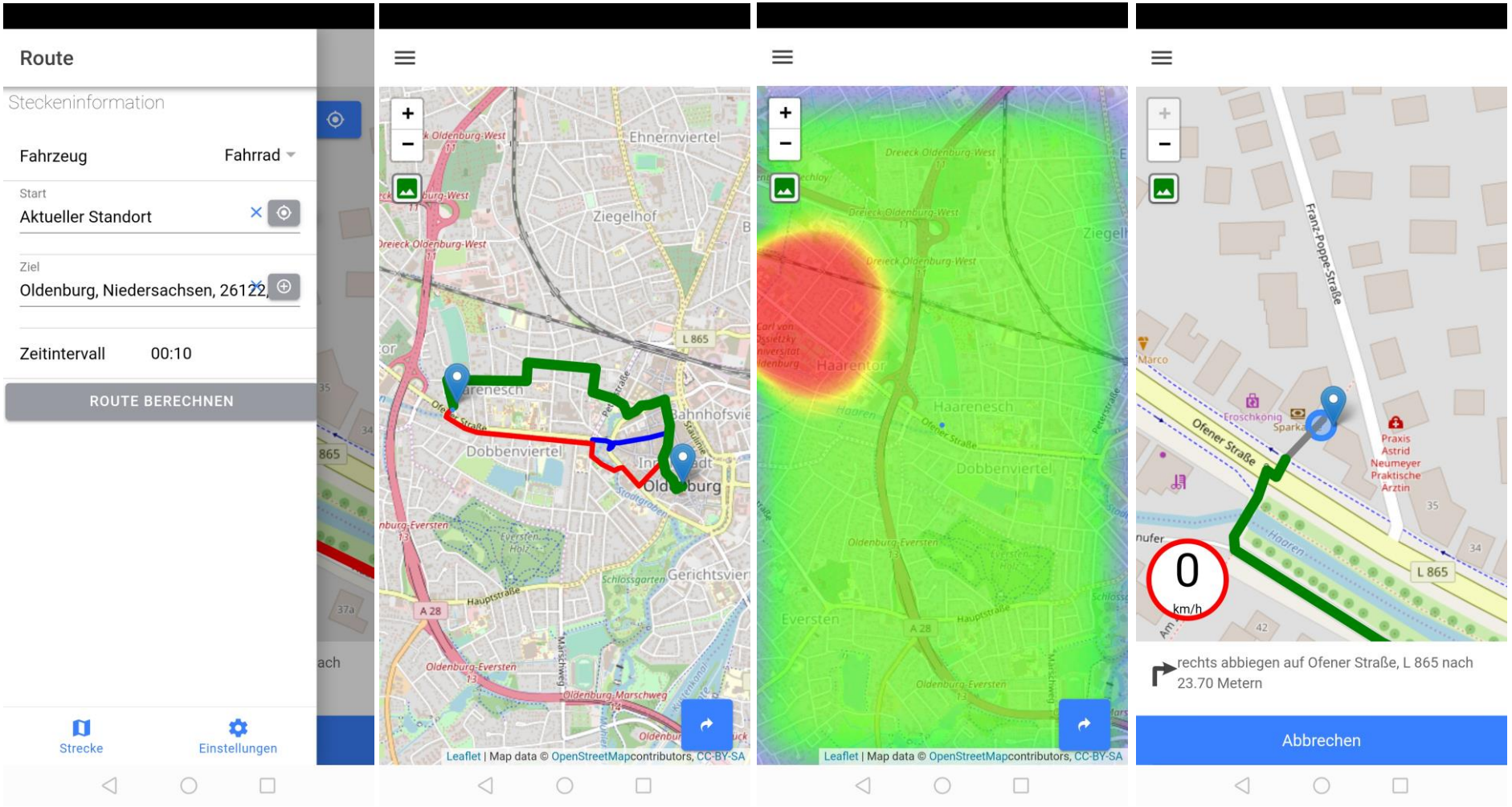
RiO Website: Fine Dust Pollution

Low Pollution
(Minimal Value: 0)



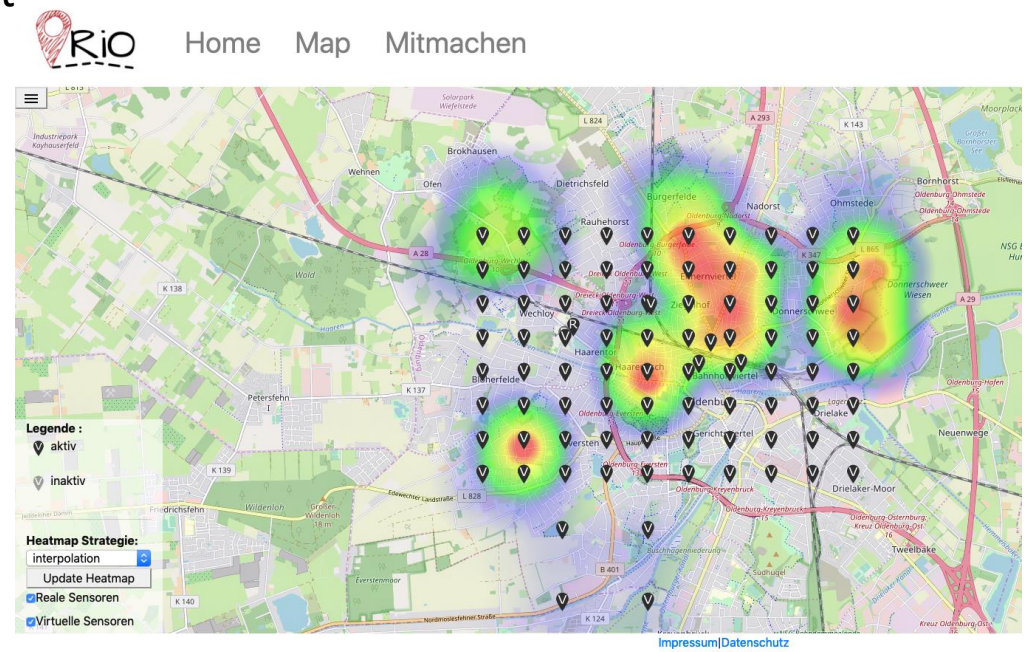
High Pollution
(Maximal Value: 40)

Navigation App



Extendable Architecture for Smart Cities

- 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



Contact

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