A traffic management system based on Graphhopper and OpenStreetMap
Funded by the Federal Ministry for Economic Affairs and Energy and the German Aerospace Center (DLR)

Goal: Mobility service platform
- Based on Open Data / Crowdsourcing
- Open web service APIs
- Apps / Products

Target groups:
- SMEs
- Start ups / Developers
Technology choices

- Road Network
- Routing
- Map Matching
- Travelling Salesman
- Geocoding
- Prediction
Technology choices

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PostGIS

OSRM
Graphhopper
Itinero
OptaPlanner
OpenTripPlanner
jsprit
Technology choices

- Road Network
- Routing
- Map Matching
- Travelling Salesman
- Geocoding
- Prediction

Tools:
- OSRM
- OpenRouteService
- GraphHopper
- Itinero
- OptaPlanner
- OpenTripPlanner
- jsprit
- PostGIS
Technology choices

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PostGIS

Nominatim

photon
search as you type with OpenStreetMap

Pelias
Technology choices

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PostGIS

DL4J
TensorFlow
pySTARMA
- Written in Java. Apache 2 License
- Use as library, server or SaaS (Unix, Win, Mac)
- Offline routing via Android and iOS
- Routing:
  - Contraction Hierarchies, Dijkstra / A* / hybrid
  - Turn costs, alternative routes, instructions, height data
  - Profiles for car, truck, bus, moto, bike profiles
  - Other data sources possible (e.g. TomTom)
- More sub projects:
  - Isochrones, Map Matching, Geocoding, jsprit (TSP)
  - Matrix Optimization (closed)
Easy to setup on your own machine
Very fast and reliable
APIs are well documented (see https://graphhopper.com/api/1/examples/)
Active discussion board: https://discuss.graphhopper.com/
OS Spirit: Gh teams attends FOSS conferences and OSM meetings
Graphhopper Showroom

http://roadstorome.moovellab.com/

https://twitter.com/tjukanov/status/871329474125672448
WHAT KIND OF DATA IS NEEDED TO CREATE A TRAFFIC MANAGEMENT SYSTEM?
Sensor Data

https://youtu.be/z1Cvn3_4yGo
Travel Times (more red = higher)

Avg. speed (more blue = faster)

Level of Service (A-F)

URL: excell-mobilty.de/developer
- 12 Web-Services with 46 Endpoints
- One central API Gateway
- 3 Client application
- > 20,000 Lines of Code
- Unique combination of free street data with real-time traffic data
- URL: excell-mobilty.de/developer
- Hosting continues also after project end
- Integration of more data sources (MDM, MCloud)
- Create partnerships with more cities (Wolfsburg, Darmstadt etc.)
- Dynamic referencing of travel times in a changing graph (e.g. OpenLR)
Conclusion

- Traffic management requires more area-wide open telemetry data from public sector

- Crowdsourced tracking data by companies

- Don’t feed the dictator: https://www.cbc.ca/news/technology/google-movements-tracking-1.4782895
Thank you for your attention!

Questions?

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