



SIEMENS

Urban Infrastructure Digitalization

Ingredients for Liveable, Efficient and Resilient Cities

City Intelligence Platform

Intelligent use of data to meet global challenges

Urbanization



Climate Change



Air Pollution



Digitalization



City Intelligence Platform (CIP)

Create value out of urban infrastructure data to:

- analyze and increase efficiency of city infrastructure and urban transport
- propagate sustainable modes of transportation (improve air quality)
- quantify and enhance resilience
- continuously validate and improve algorithms and services

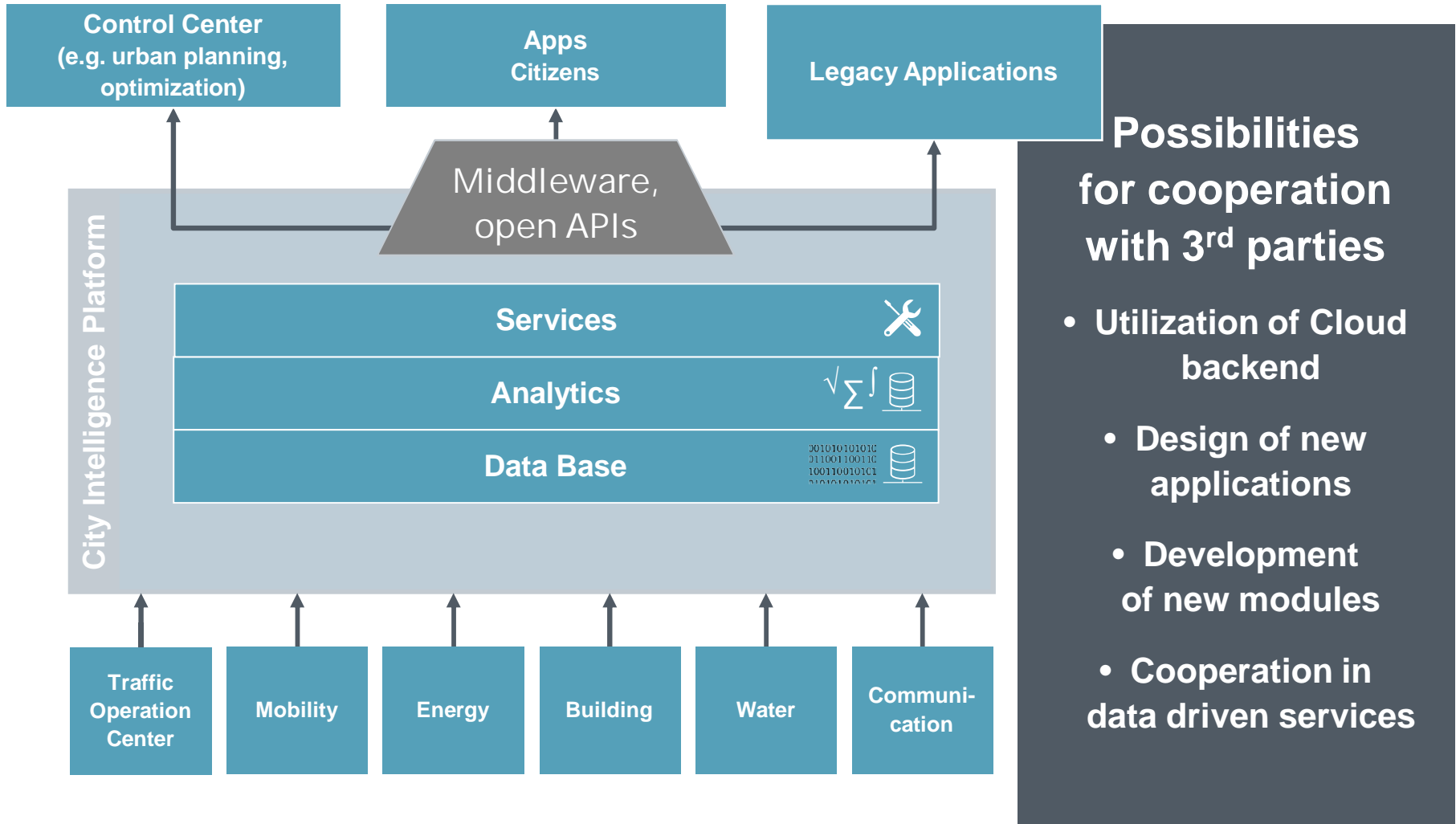
Urban Infrastructure Digitalization

Cross-domain integration and analytics



Open Platform

Basis to jointly build an urban IT ecosystem

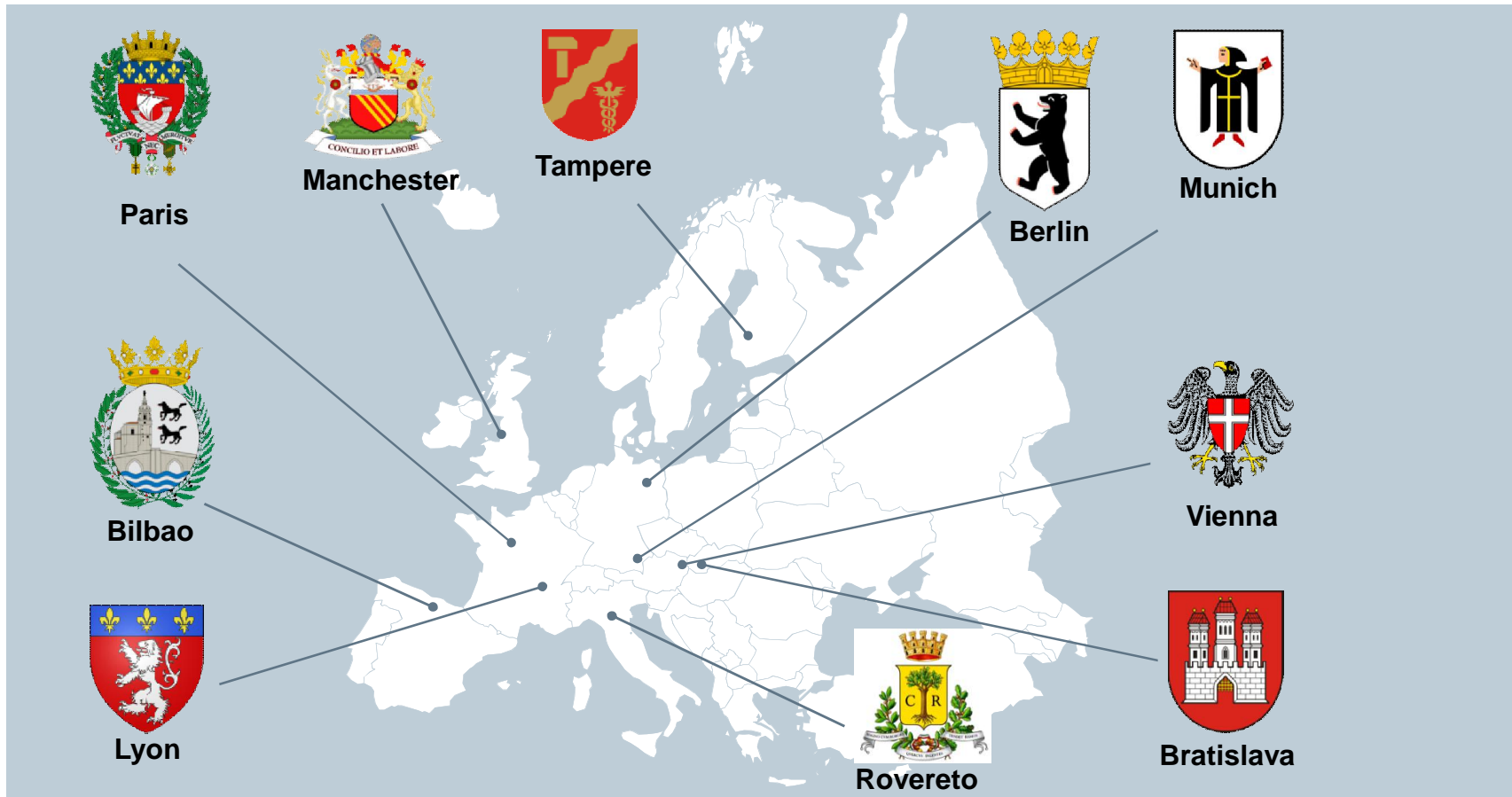


Possibilities for cooperation with 3rd parties

- Utilization of Cloud backend
- Design of new applications
- Development of new modules
- Cooperation in data driven services

Projects in several European cities

Focus on openness, modularity and extensibility

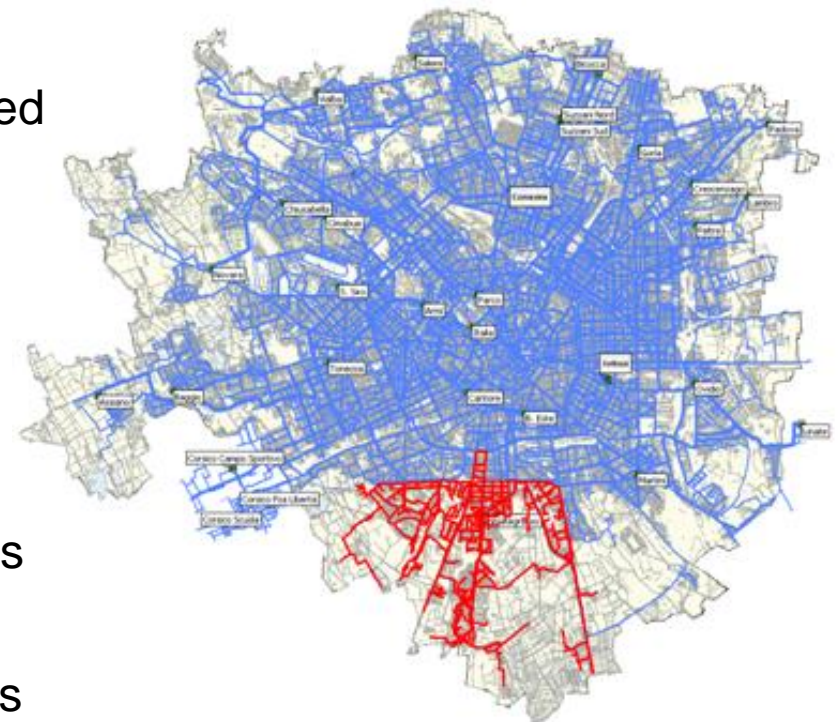


Smart Water

Water & energy

Demonstrator for Water & Energy

- Water supply system in Milano, Italy
- Pilot zone (marked in red) from EU-funded research project „ICeWater“
- Data available for Use Case validation:
 - 1362 pipes with total length of 116.27 km
 - 1628 customers
 - Average water demand of ~367 liters per second
 - Fed from 20 local ground water wells

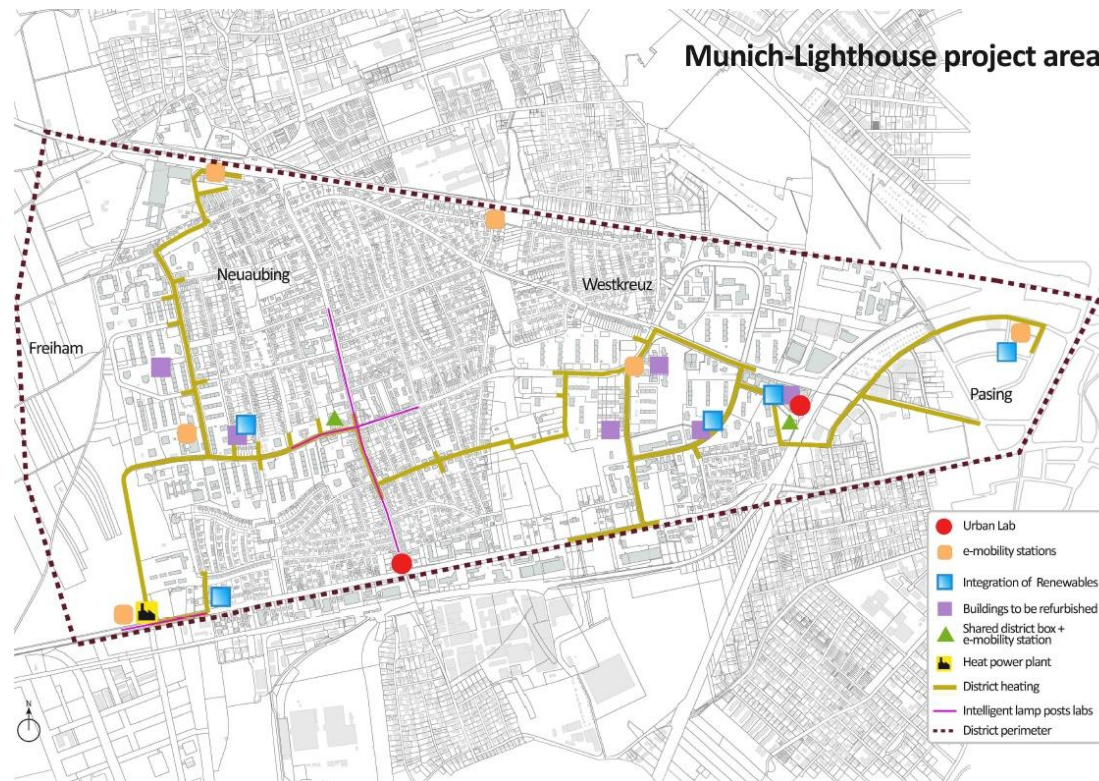


Milan water supply network (blue) with pilot zone (red)

Smarter Together

Objectives and pilot area in Munich

1. Living labs for citizen engagement
2. District heating and renewable energies for low energy districts
3. Holistic refurbishment for low energy districts addressing public and private housing
4. Smart Data management platform and smart services for integrated infrastructures
5. E-mobility solutions for sustainable mobility



Climate Resilient Cities and Infrastructures

Project „RESIN“ (www.resin-cities.eu)

Climate change, expecting to cause an increase in frequencies and intensities of extreme weather events, stands out as one of the major challenges cities and EU face. Increasing resilience of cities and their infrastructures demands mainstreaming of adaptation measures and developing a coherent and socially equitable approach to disaster risk management policies.

Results:

- *urban typology* that will characterise cities based on different variables. Will enhance effectiveness of adaptation and disaster resilience responses by enabling strategies and measures to be targeted to urban characteristics.
- *standardised methods for assessing climate change impacts, vulnerabilities, and risks*. Will allow for comparing cities and neighbourhoods. Important to stimulate a mutual learning process between cities and to identify priority areas for investment.
- *inventory of potential adaptation measures, develop standardised methods for assessing the performance of adaptation measures* in terms of costs, benefits and effectiveness.

City Partners: Paris, Bilbao, Manchester, Bratislava

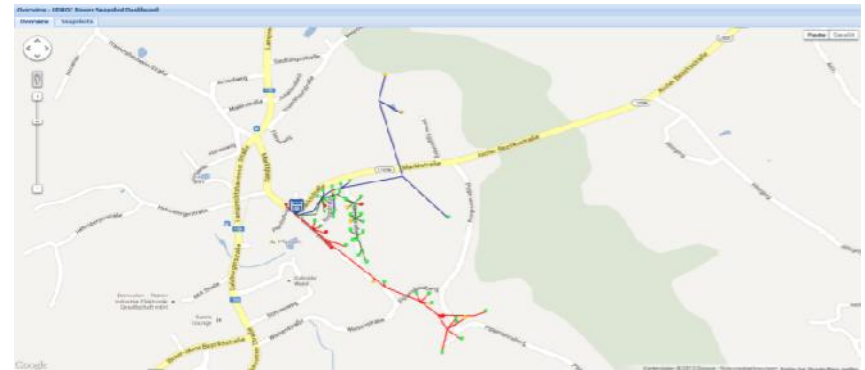


Smart Energy

Power snapshot analysis

Functionality

PowerSnapShot Analysis gives the energy grid provider the ability to check the power grid for anomalies of electrical parameters.



Miscellaneous

Using the insights from Power Snapshot Analysis, it is easier for the power grid to handle significant amounts of renewable energy generation. Especially wind power and photovoltaic with its fluctuating behavior.



Data Analytics & Predictions

Shared vehicle availability

Data Analysis

Select time

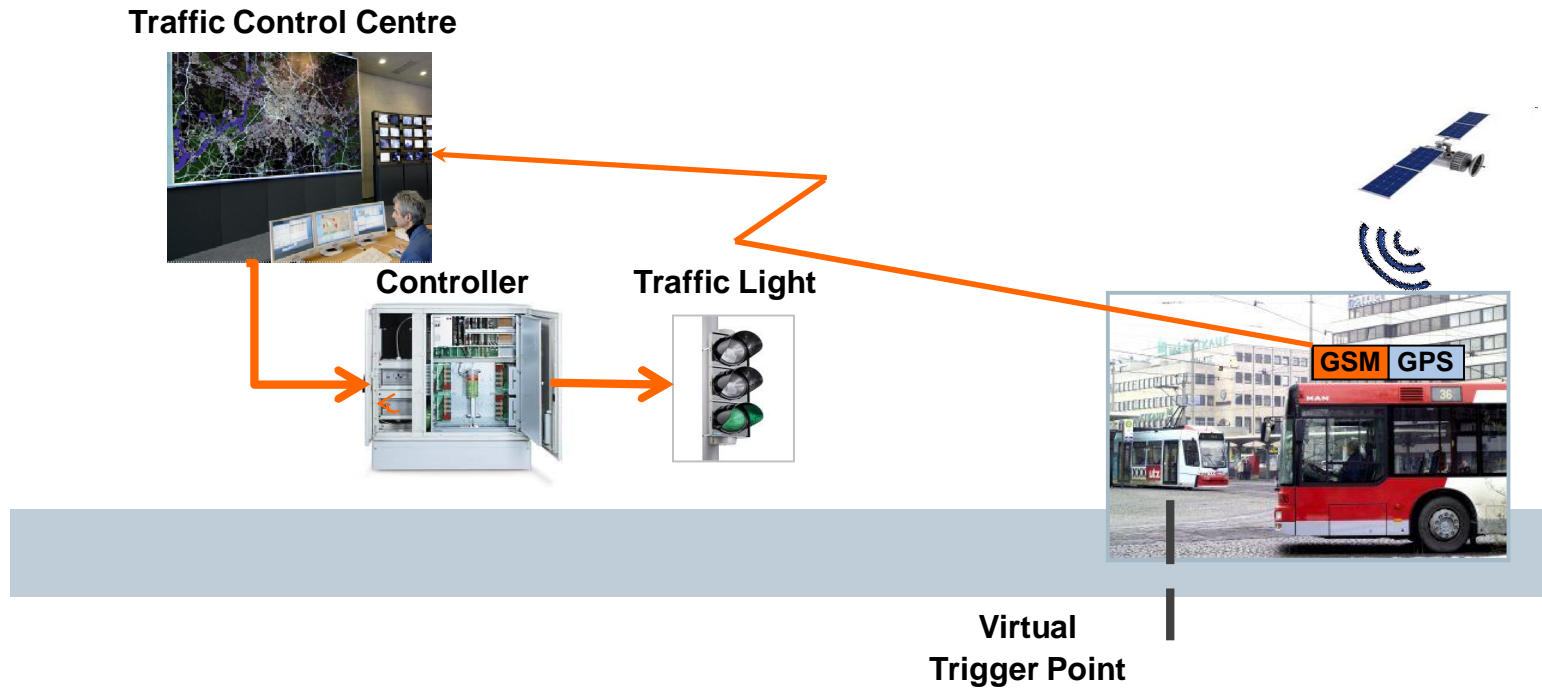
Choose time spot Date: Time (12:00 - 13:00):



- Electricity
- Security
- Water
- Public Transport
- Mobility
- E-Supply Planning
- Weather
- Hazards
- Urban S. Comm.

STREAM

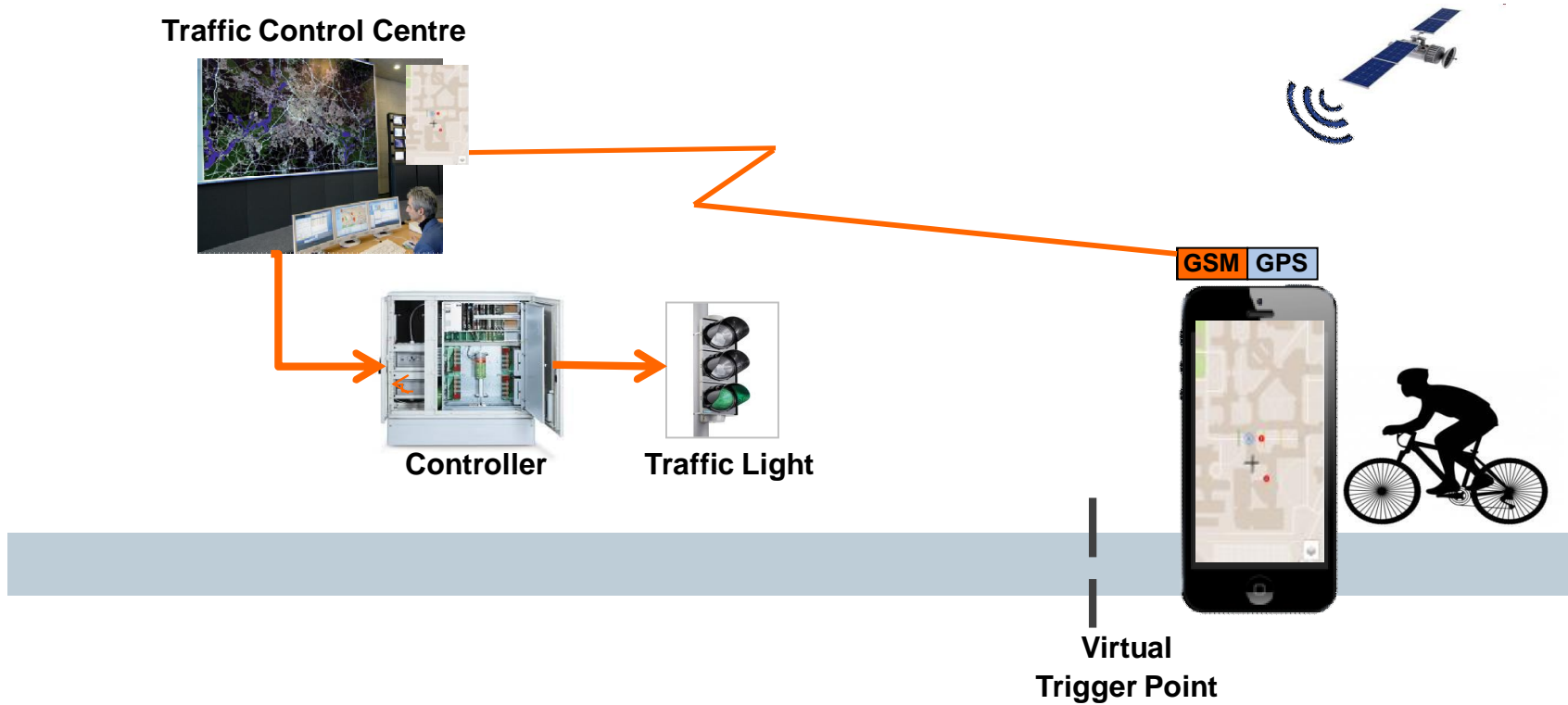
Public transport prioritization



- Giving priority to public transport at urban intersections enhances its attractiveness and acceptance
- STREAM uses GPS , mobile communication and virtual trigger points to request green at traffic lights
- Online Monitoring shows current positions of busses in the traffic control centre
- CIP provides an additional tool to analyze the system performance

SiBike

Priority to bicyclists



- Giving priority to cyclists at urban intersections with a dedicated App for mobiles and smart watches

STREAM

CIP as a tool to prove system performance

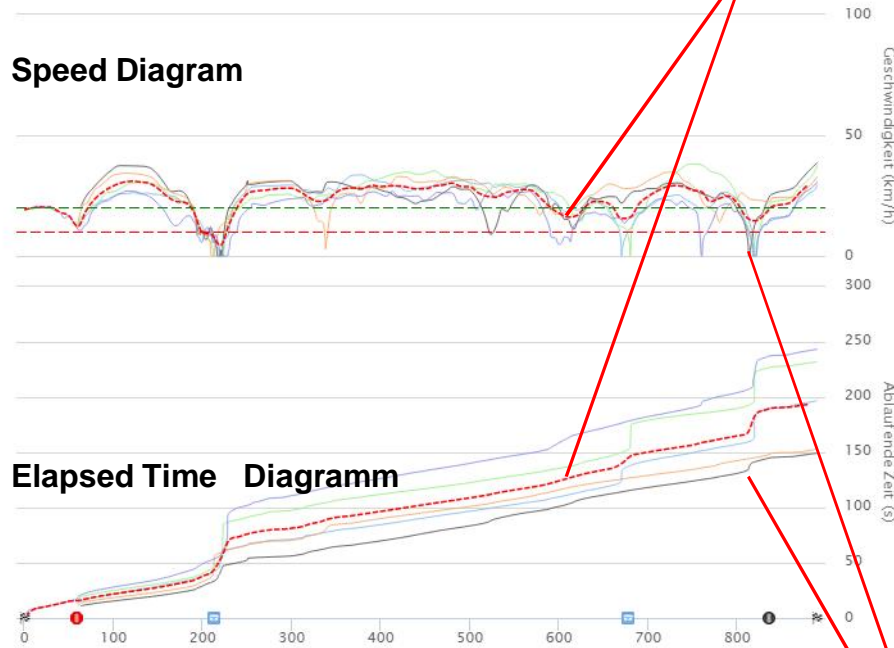
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Mean curve calculation

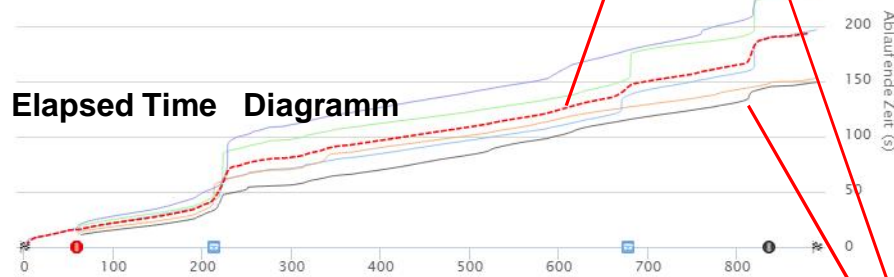
Wähle Fahrt

- 2
- 4
- 6
- 8
- 37
- - - avg

Speed Diagram



Elapsed Time Diagramm



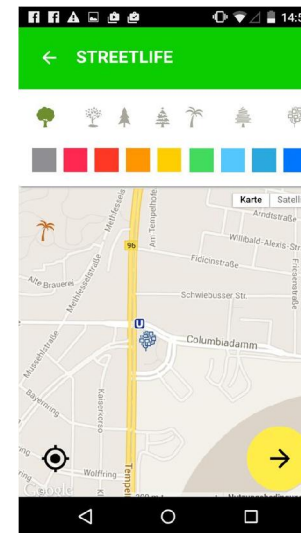
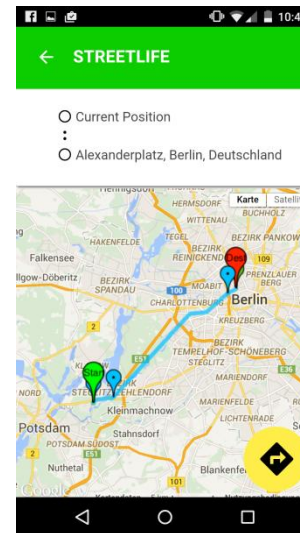
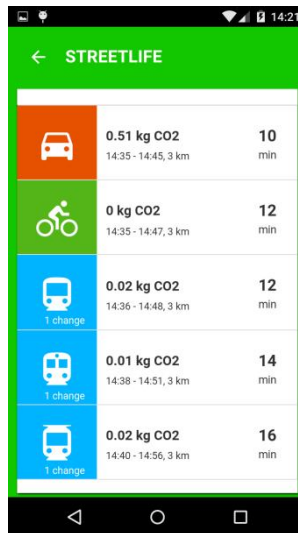
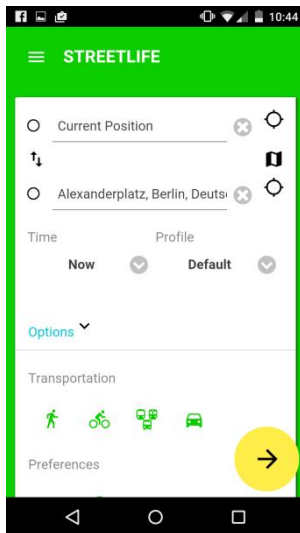
Bus Stations, Traffic Lights



Identification of locations with frequent delays

„BikeRider“ App in Berlin

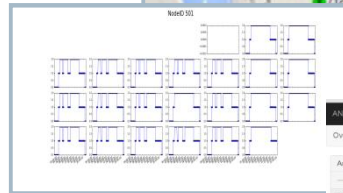
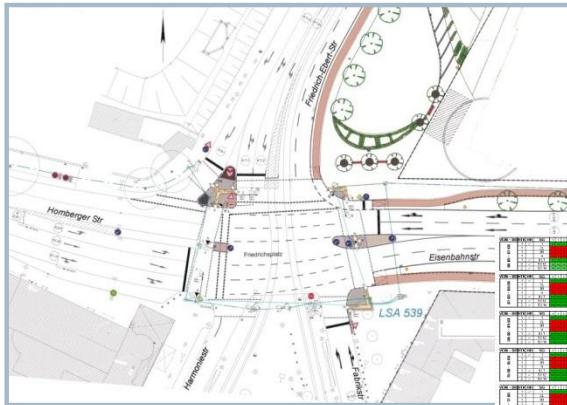
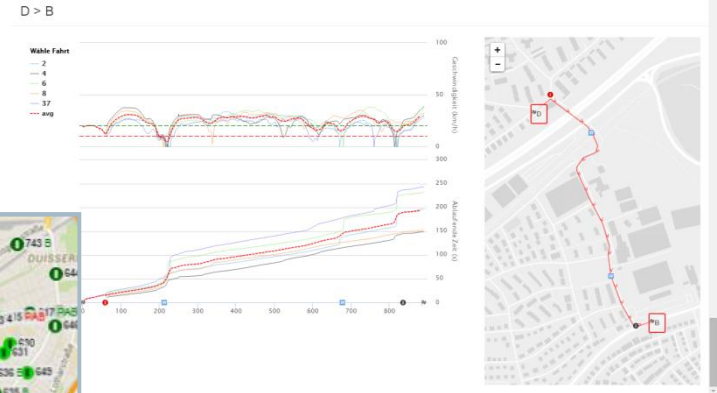
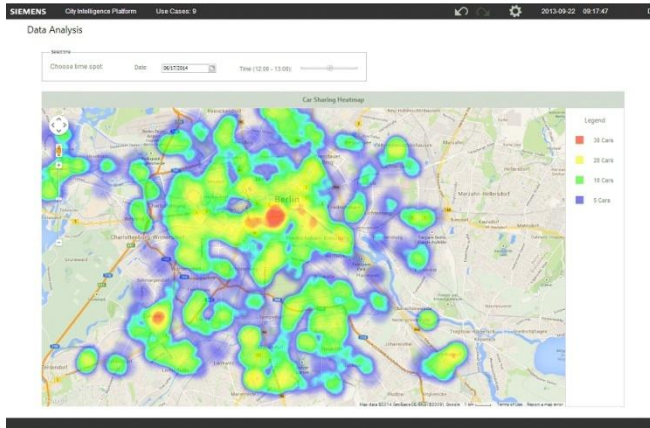
3rd party applications based on CIP



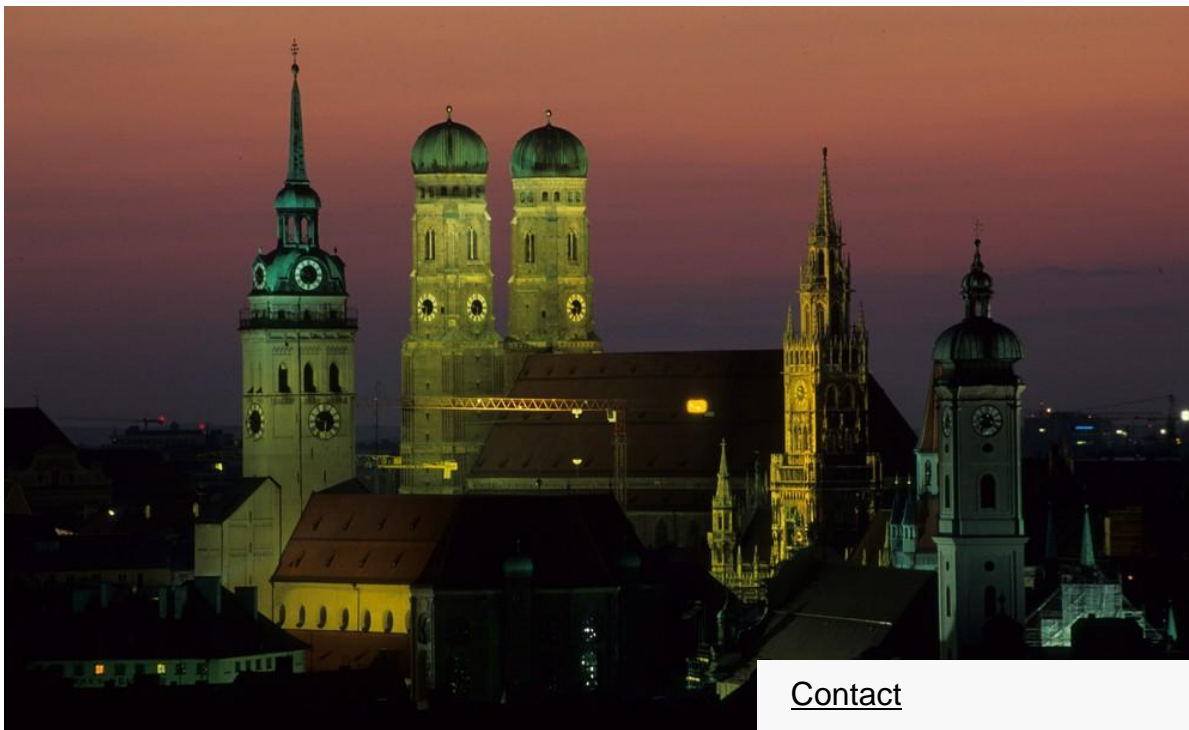
- Promotion of cycling as green mode of transportation
- Integration of safety aspects into multimodal routing
- Development and integration of gamification elements (competition, community, virtual and real incentives) to promote biking
- Development and integration of mode validation
- Mobile App developed by DFKI (Deutsches Zentrum für Künstliche Intelligenz)
- Concept and backend services by CIP

Steadily growing library

Building blocks for new applications



Thank you for your attention!



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