

Interreg



Kofinanziert von
der Europäischen Union
Współfinansowany przez
Unię Europejską

Brandenburg – Polska



SmartRiver2

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2nd AIOTI Annual Workshop on Semantic Interoperability for Digital Twins

24.03.2026, Frankfurt (Oder)

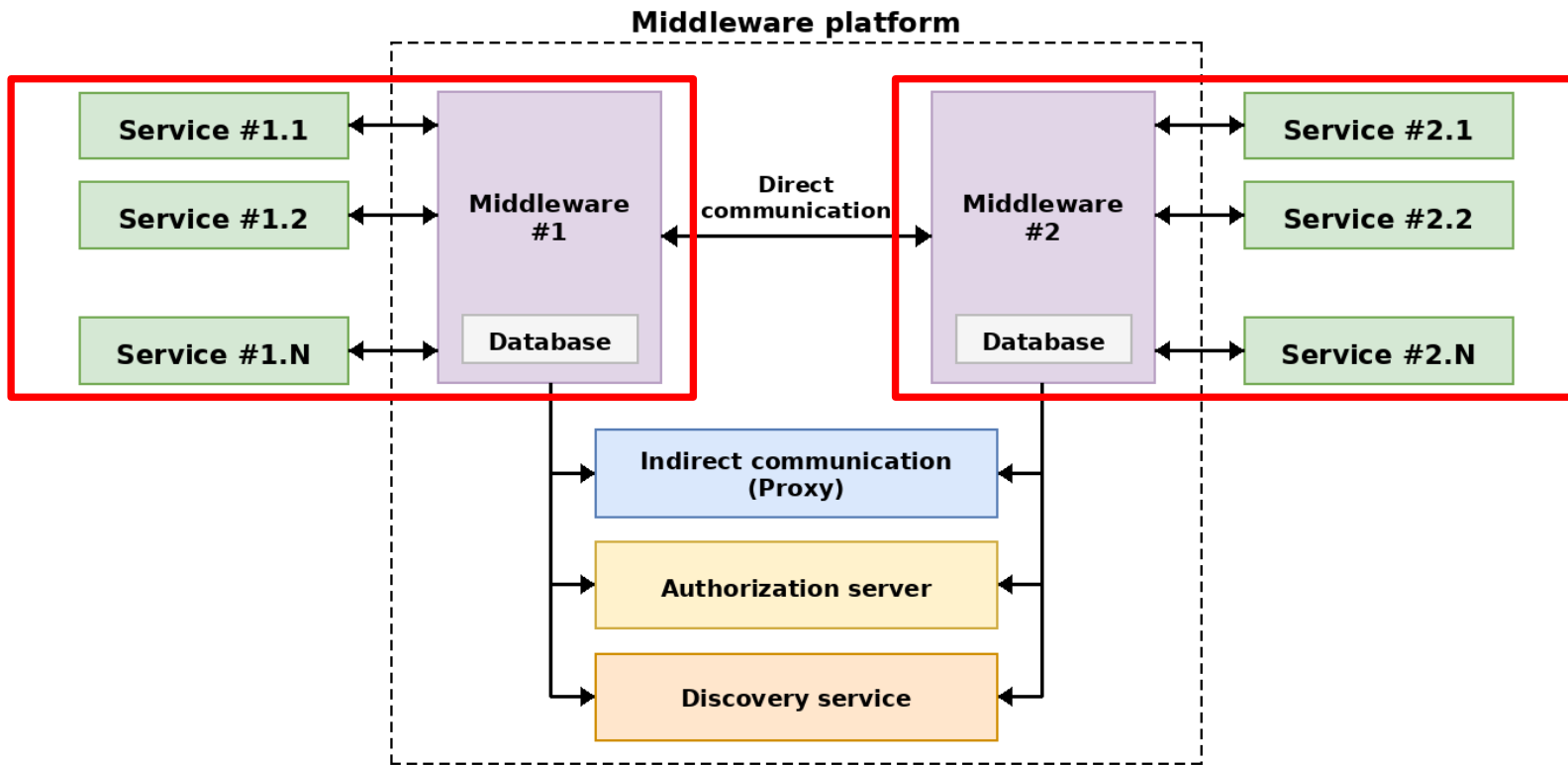




The data sharing concept

- Based on variables, e.g. Temperature
- Variables are created and described (semantics)
- Instances of variables are store in tuples -> combined define time-series
- Each tuple belongs to its creator that defines the allowed usage
- The tuples are inserted into global knowledge (middleware platform)
- The tuple allows addressing the data [VarID, timestamp, ownerID, *value*]
- The middleware connects users and implements the access control

The middleware platform

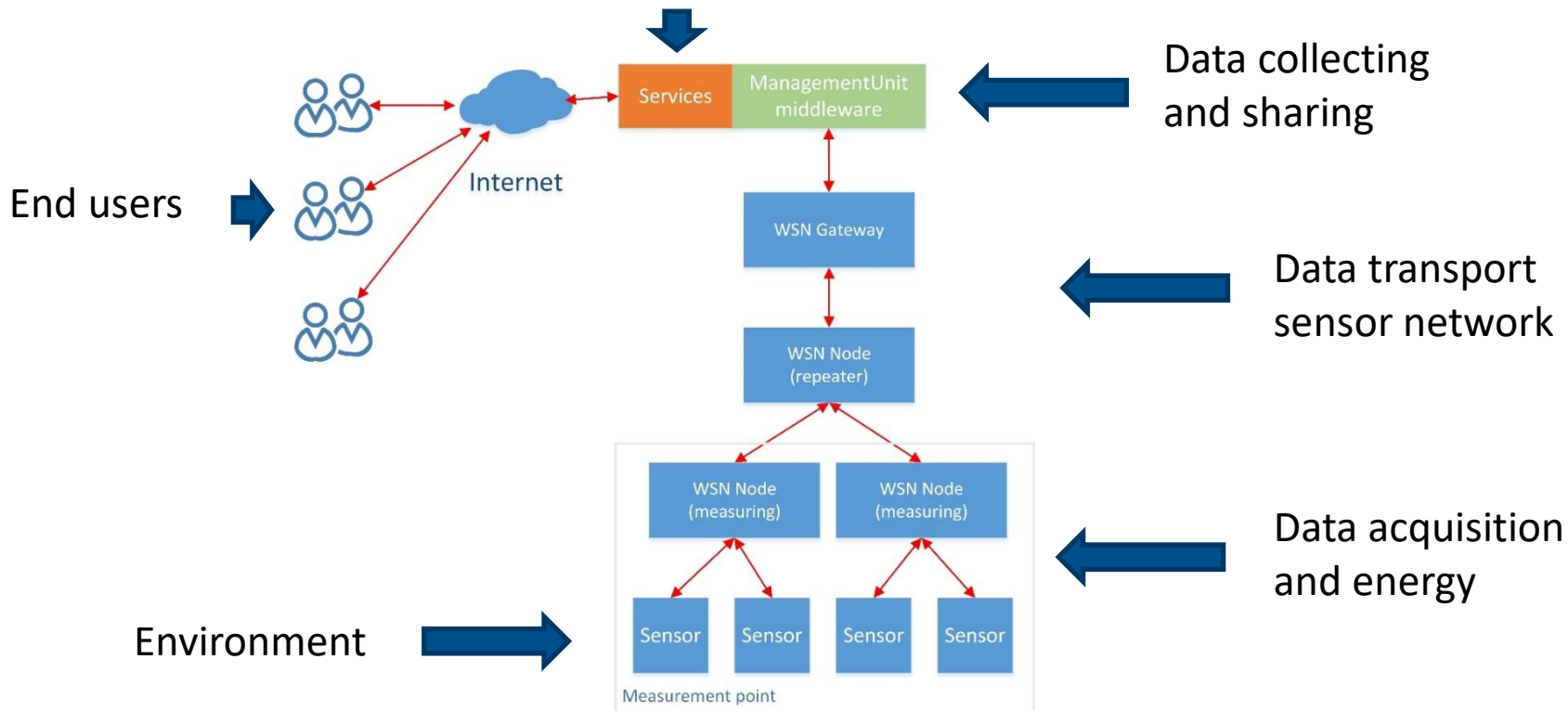




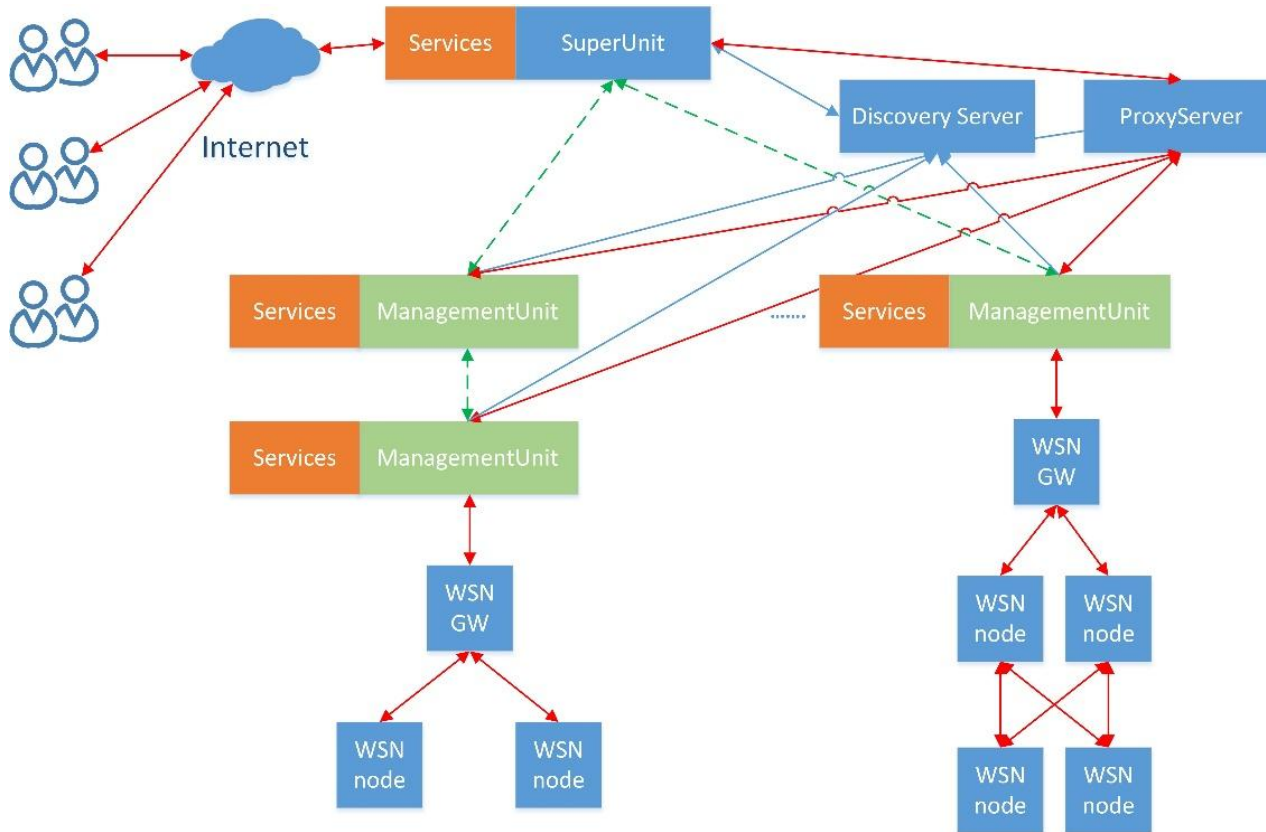
The goals of the SmartRiver2 project

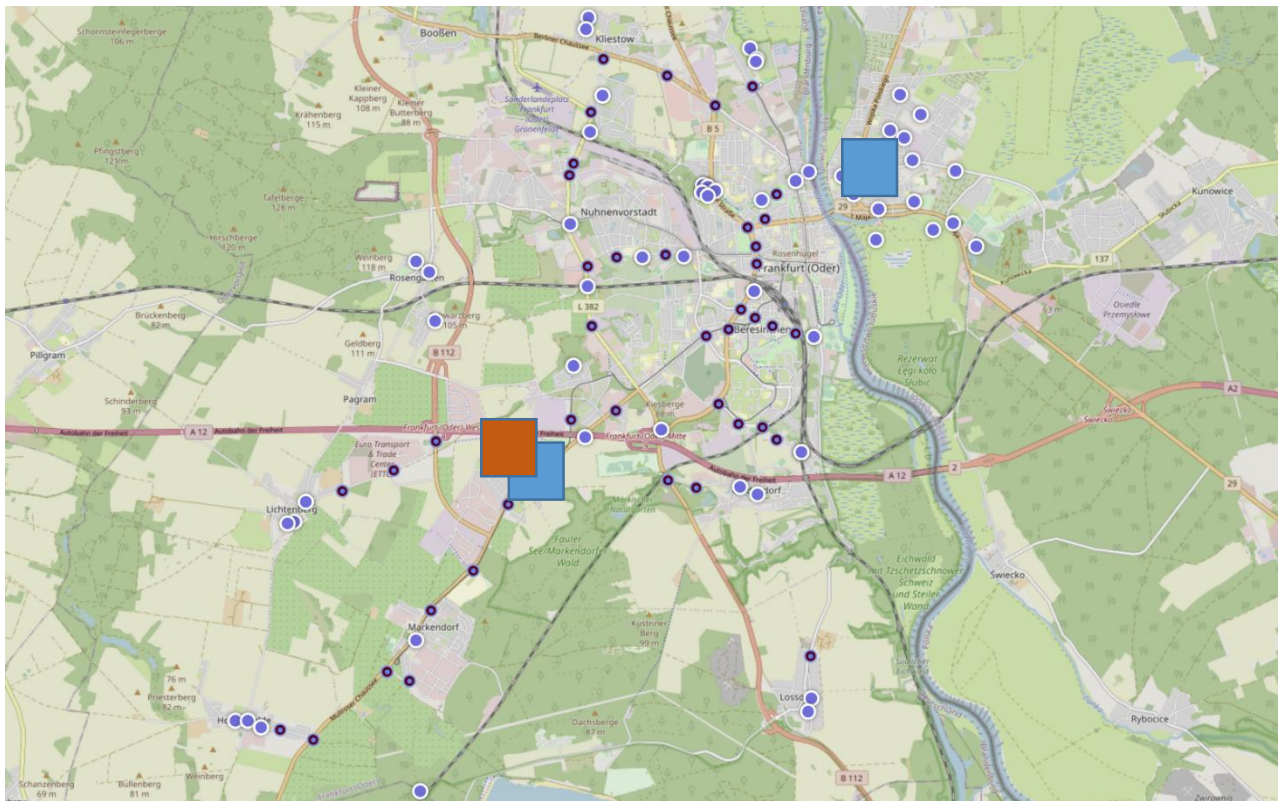
- Enabling the authorities of the twin city to jointly monitor key environmental parameters and providing tools for their analysis and presentation for different stakeholders
- Further implementation of an expandable pilot system in the twin city
- Combining regional, cross-border and multidisciplinary expertise for future actions aimed at monitoring and preventing climate change
- Implementation of modules enabling data collection, analysis and presentation

Data analysis and result presentation



Detailed system instantiation





- Management Unit
- Super Unit



End user dashboard

Smart River Dashboard

Baza wiedzy | Język: Polski

Frankfurt (Oder) 14:00
6°
Deszcz

Wilgotn. 60% | Deszcz 0.7 mm | Wiatr 18 km/h

3 ostrzeżenia
Strong wind, storm, flood
Strong wind
Wind speed can reach up to 35 km/h
Storm
Storm warning
Flood
Elevated water level in the river

Zanieczyszczenia
Jakość powietrza bardzo zła

PM _{2.5} 15 µg/m ³	140	PM ₁₀ 21 µg/m ³	180
NO ₂ 40 µg/m ³	250	SO ₂ 13 µg/m ³	30
CO 2 µg/m ³	10	HCL 22 µg/m ³	100

Map features: Punkty pomiarowe, Woda, Poziom, Przepływ, Temperatura, pH, Natlenienie, Przewodn. elektr., Gleba, Ciśnienie porowe, Poziom wody, Temperatura, Wilgotność, Powietrze, Wiatr, Zanieczyszczenia.



The generalization

- Investigate the requirements of diverse smart city scenarios
 - Scenario -> data, users, sharing and processing, information, presentation
 - Synergies between scenarios
- Implement the modular blocks for the extensible and interoperable pilot
 - Hydrology, air quality, traffic, water quality, buildings, wild animals, satellite data

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Thank you for your attention!
Vielen Dank für Ihre Aufmerksamkeit!
Dziękuję za uwagę!

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Bez granic. Ohne Grenzen.

