



MPWiK Wrocław

The road to the IT-OT Convergence

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Agenda



- About MPWiK Wrocław
- Business Challenges
- The Solution
- Solving the Business Challenges
- Road forward

Municipal Water and Sewage Company Inc. in Wroclaw (MPWiK)



is one of the biggest municipal water and sewage utilities in Poland.

Its steady operations have continued since 1871 when the water treatment plant “Na Grobli” was first commissioned.



Basic facts about our company

- MPWiK operates two water treatment plants “Na Grobli” and “Mokry Dwor”

MPWiK operates and maintains

- > 2,000 km of water network
 - > 1,500 km of sewage network
 - approx. 60 000 water meters
- MPWiK treatment facilities include a wastewater treatment plant and 60 wastewater pumping stations
- The utility serves over 630,000 residents of Wrocław and neighbouring municipalities

MPWiK – focus on ecological education

An example of such an activity is creating the ‘**Hydropolis**’, a center containing the knowledge about water. It is located in a historical 19th century structure which served as a drinking water reservoir in the past.



Red Carpet Incubation Program

The Red Carpet Incubation Program (RCIP) from Microsoft and OSIsoft helped MPWiK to connect production and customer data, we operate with Azure Machine Learning in:

- Forecast water demands for future scheduling (next 24 hours)
- Provides data relations allowing for the creation of predictive analytic models
- Better pump scheduling and production planning



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- Common platform for all the real-time data for analysis and generation of KPI's
- Visualize the data from many systems on one dashboard
- Build the base for business services i.e. Smartflow system for detecting hidden leakage
- Predictive analytics to allow the operator to adjust water flow and pressure

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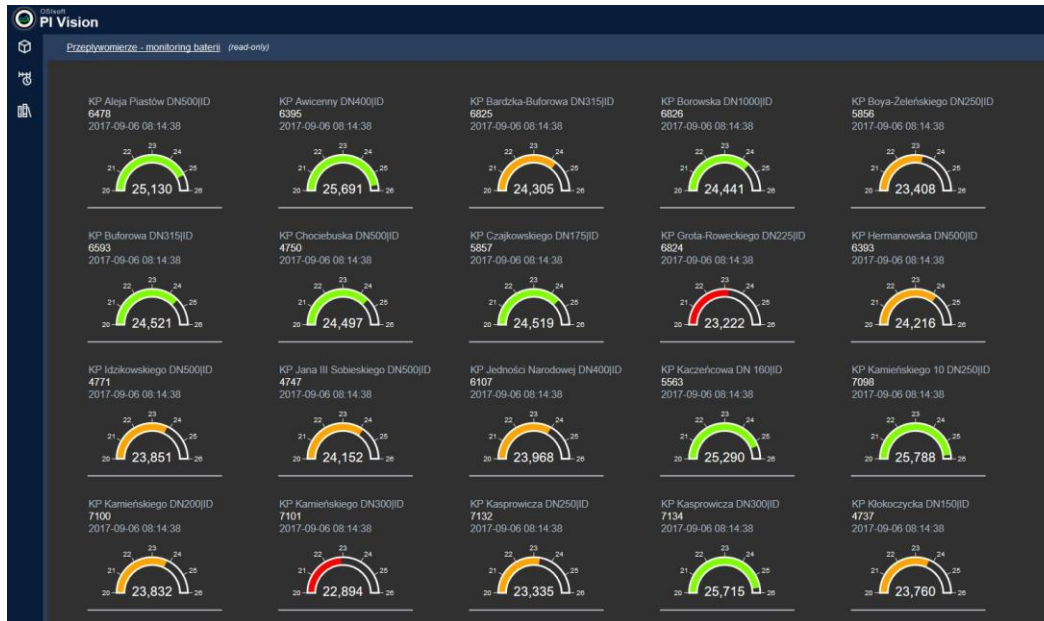
PI System to connect all real-time data sources

- Water Production
- Water Network – 60.000 Flow Meters
- Pressure Meters
- Noise loggers
- Weather Station
- Sewage well level sensors
- Piezometers

Together 200.000 variables



PI System Visualization





PI Notifications

Notify when crossing setpoints for:

- flow metres
- pressure gauges
- piezometers
- **other gauges**

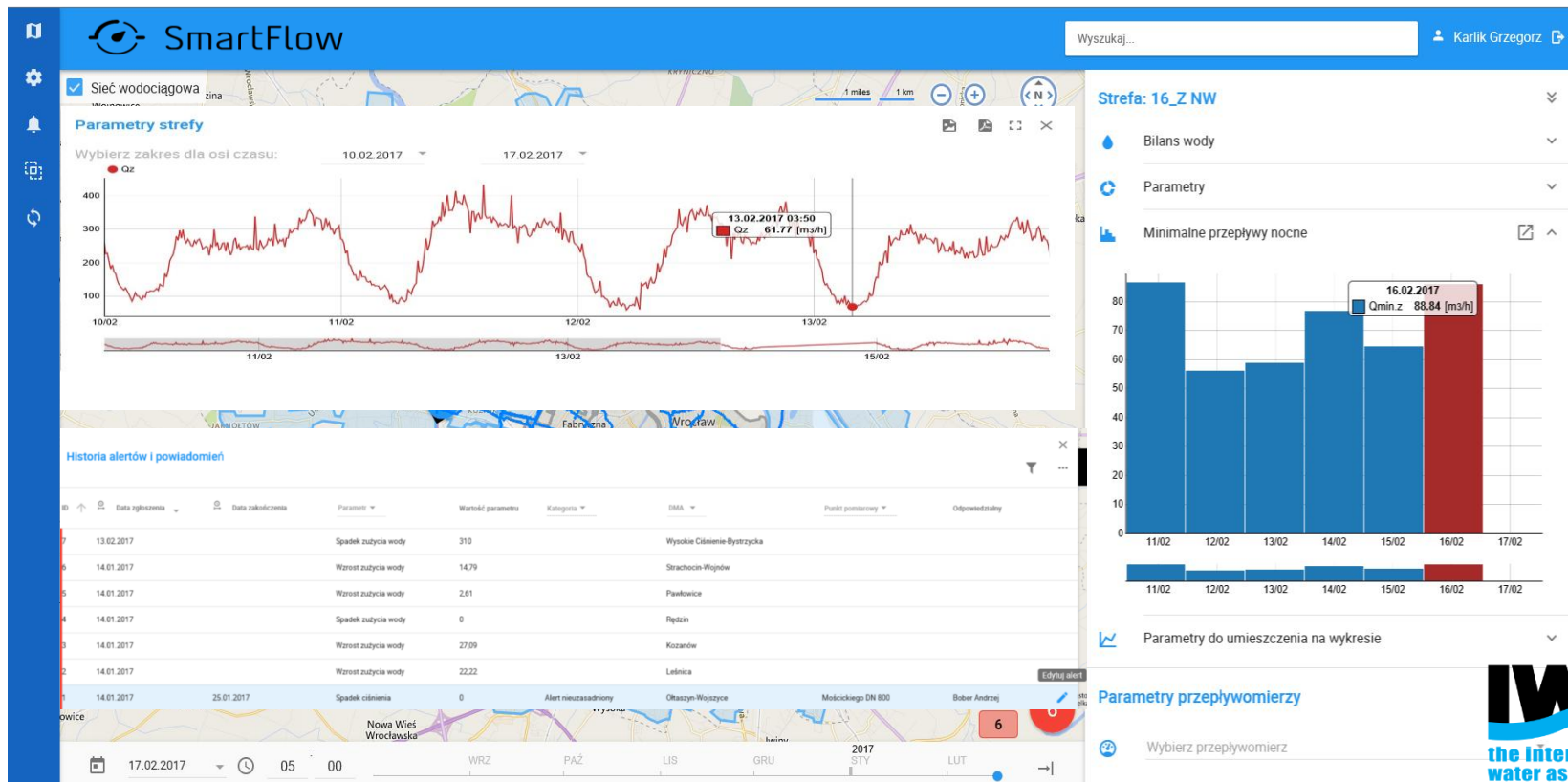


PI System connection to business intelligence visualization

Data from water production: visualization of water production data is made in the Tableau System. As part of the CDR implementation, existing reports are reconstructed based on CDR through Data Warehousing. CDR shares aggregated data sets to the Data Warehouse or directly to the Tableau tools.



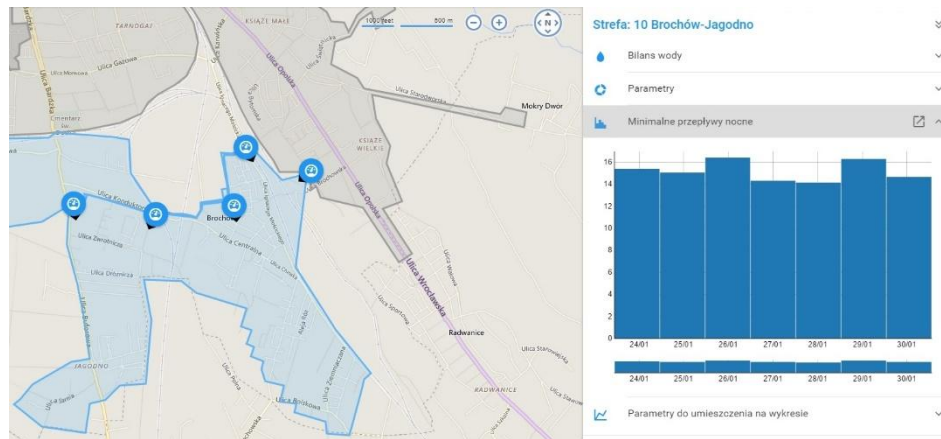
PI System base for SmartFlow system



PI System base for SmartFlow system

PI System is a part of big data service infrastructure for delivering information about water leaks

- Transfere data for Service
- Notification about data transfer status
- Maintain quality for DB connection



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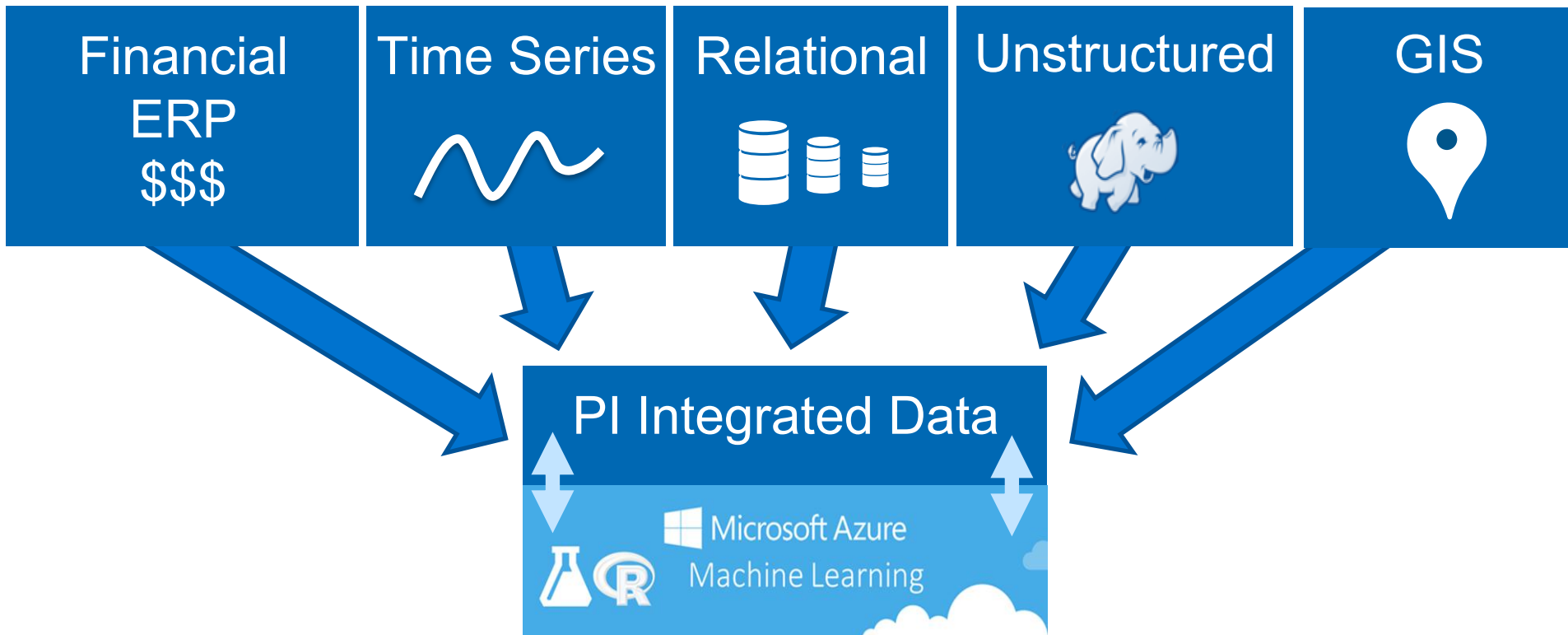
The Benefits of solving the Business Challenges

- The platform improves the stability of the network leak diagnostics
- Reducing fault detection time and down-time
- Cost savings by reducing faults on the network
- Employees don't need to login to many systems
- Joined the Red Carpet Incubation Program and implemented the Azure Machine Learning system

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MPWiK strategy for the future: Big Data Analytics Repository



Wroclaw Water and Sewage Authority's (MPWiK's) OT - IT convergence

COMPANY and GOAL

MPWiK is one of the biggest municipal water utilities in Poland. Its uninterrupted operations have continued **since 1871** when the water treatment plant “Na Grobli” was first commissioned.



CHALLENGE

Build the base for business services e.g. Smartflow system for detecting hidden leakage

- Common platform for all the real-time data for analysis and generation of KPI's
- Predictive analytics to allow the operator to adjust water flow and pressure

SOLUTION

Connection of all the production data, weather data and metering data in the PI System and using Azure Machine Learning

- Single truth in PI Server for all real-time parameters
- Analytics to derive KPI's
- Azure ML to enable Predictive Analytics

RESULTS

One platform for all the real time data and ability to work for Smartflow service which can save 500,000 litres of water in 6 months

- Change the company's complex infrastructure for 7 sources of real time data to single truth
- Make it possible to build predictive analyses

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Questions

Please wait for the **microphone** before asking your questions

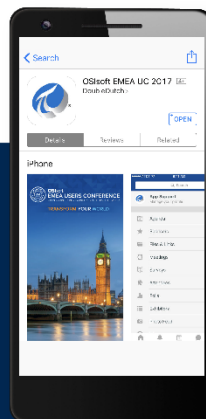


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감사합니다

Danke

谢谢

Merci

Gracias

Thank You

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Dziękuję

Obrigado