

Building the Comprehensive Ecosystem of Production Data

Piotr Słomianny, Michał Ślósarz



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Agenda

- **MPWiK Introduction**
- The Road to Building a Production Data Ecosystem
- Challenges and Innovations
- Plans for the Future
- Conclusion



Established in 1871



750 employees



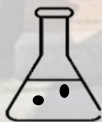
Turnover: 100 M €



2 water treatment plants



1 wastewater treatment plant



**New Technologies Center
and 2 research stations**



Hydropolis Institute



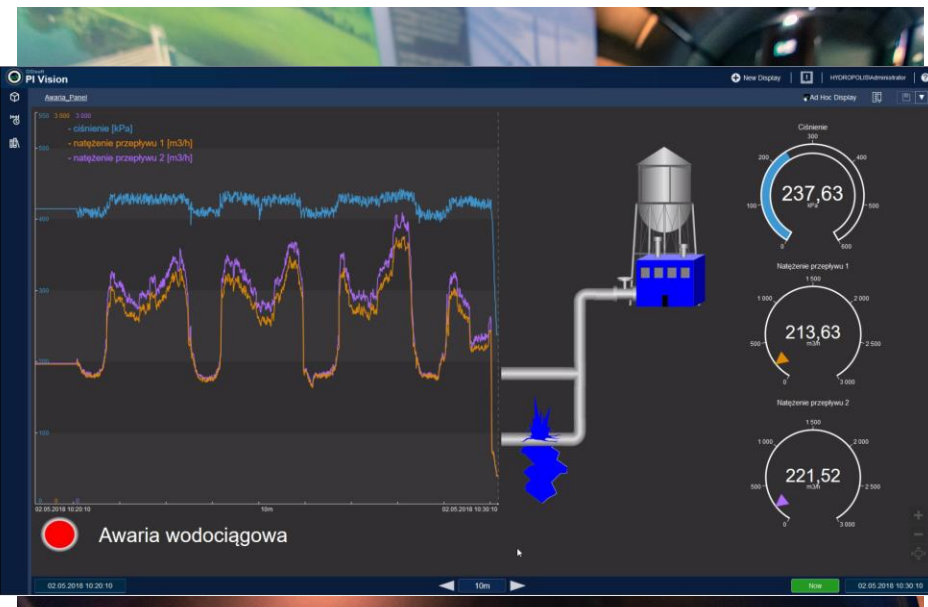
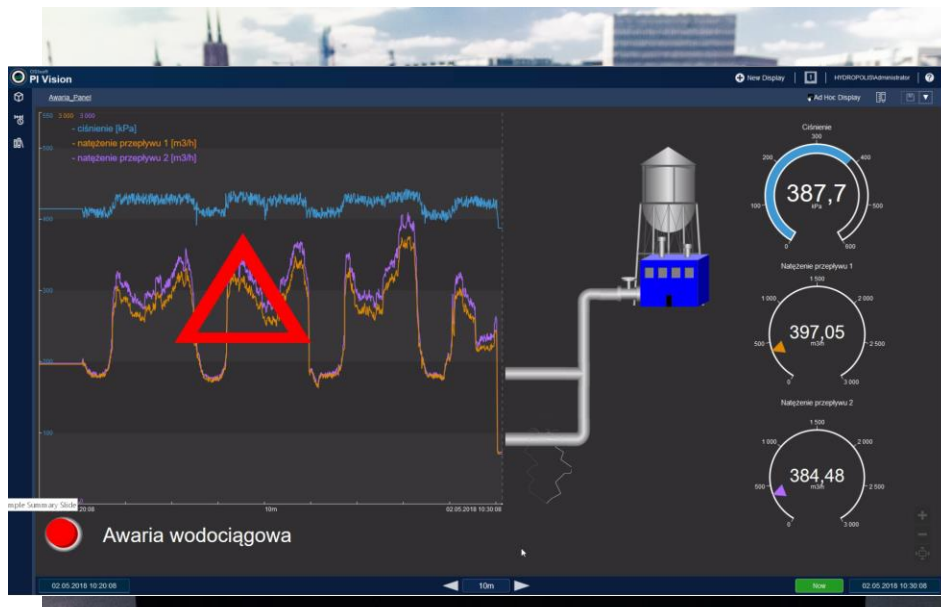
Hydropolis Institute – Focus on Ecological Education

The Hydropolis is MPWiK's water knowledge Institute. It is located in a historical 19th century building which served as a drinking water reservoir in the past. **The mission of the Hydropolis is to educate people about how important water is and what we do.**



#hydropolis.pl

The Solution: PI System Based Demostration Station Showing Real Case Events as Viewed and Resolved by MPWiK Operators

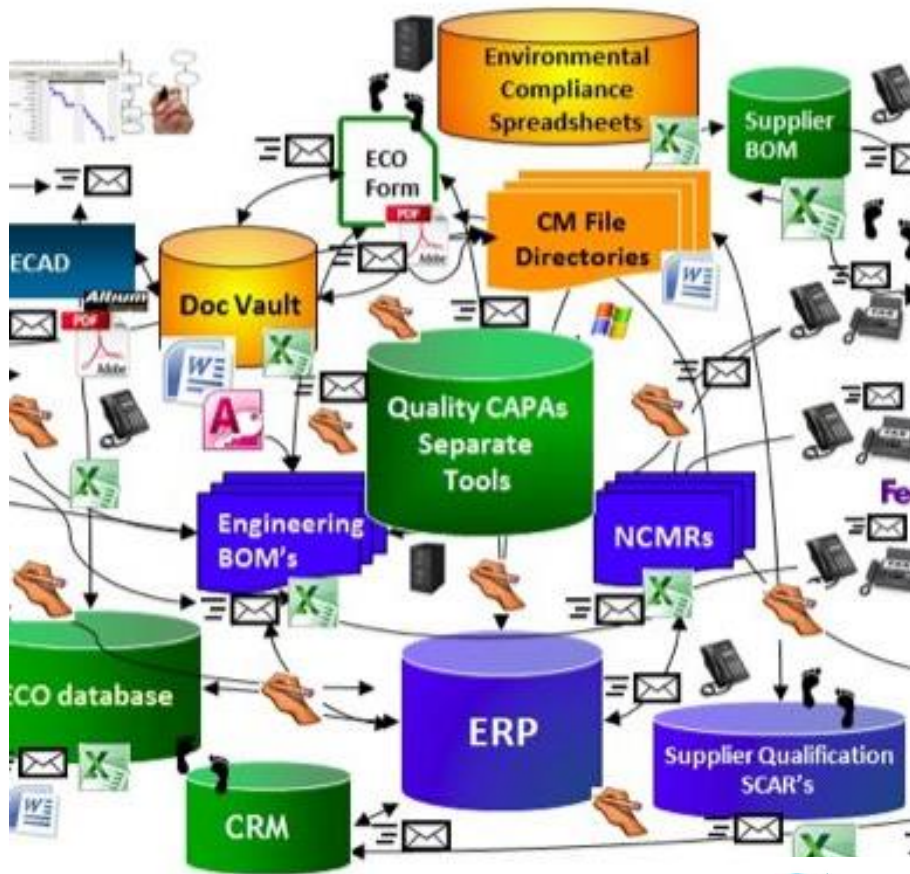




Type	Foundation	Foundation	Association
Goal	Improvement of water and wastewater sector services	Business Excellence	Sustainable water management
Joined	2013	2014	2015
HQ	The Hague, Holland	Belgium, Brussels	London, UK
Reach	The World	The World	The World
Members	Water and wastewater companies	All types of organizations and sectors	Water and wastewater companies

Agenda

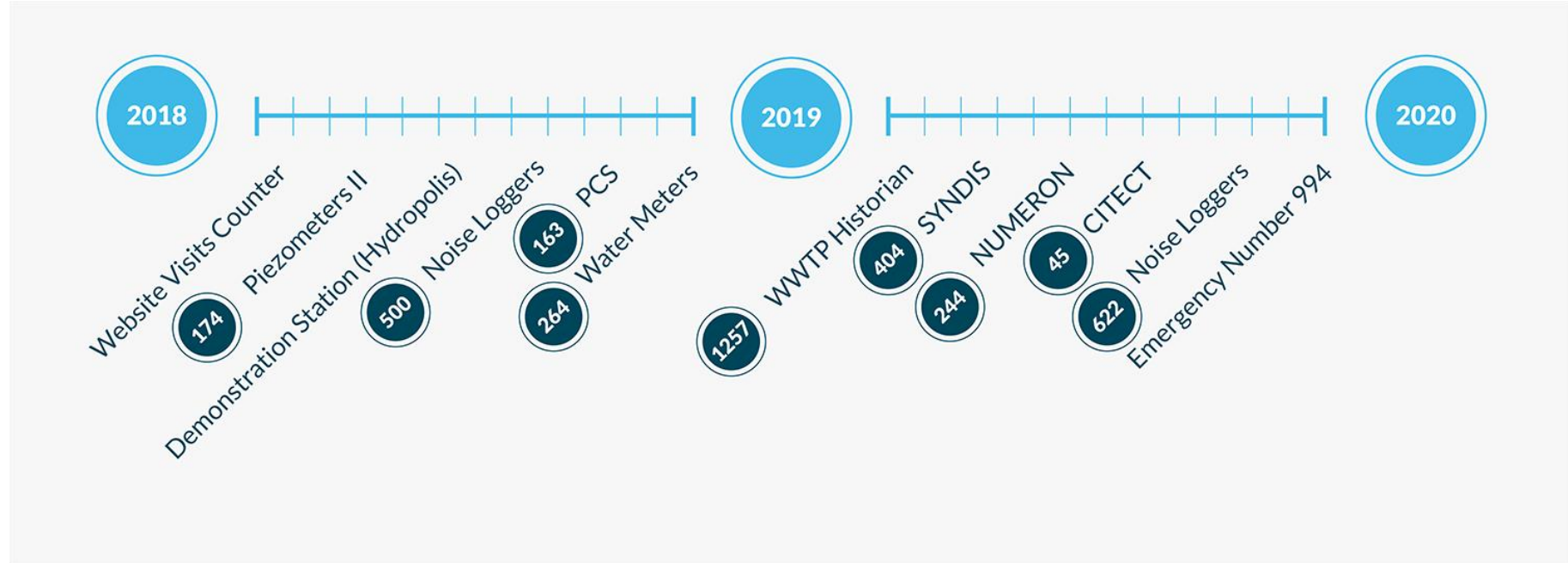
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PI System – Data Sources



PI System – Data Sources

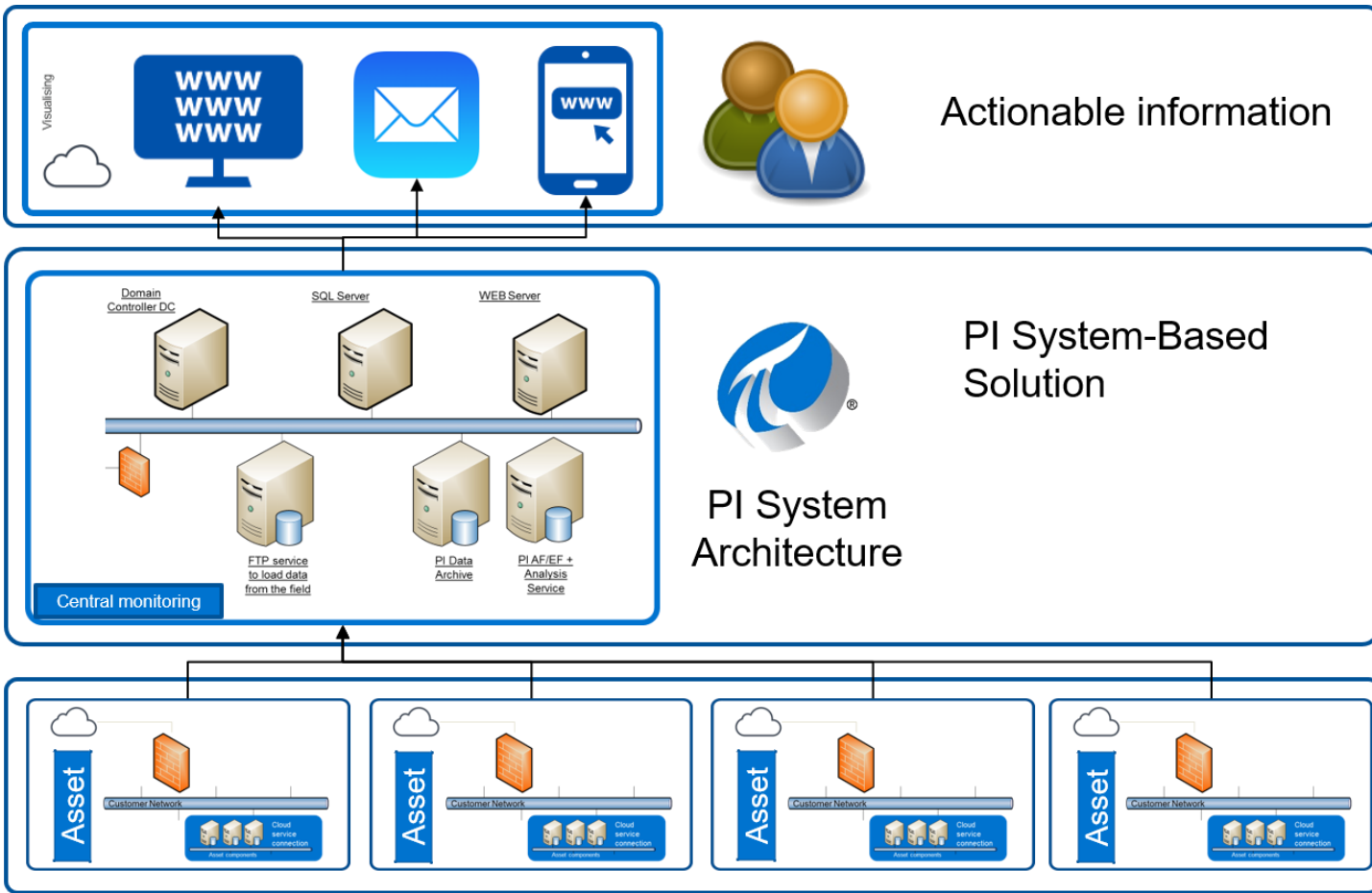


PI System Interfaces

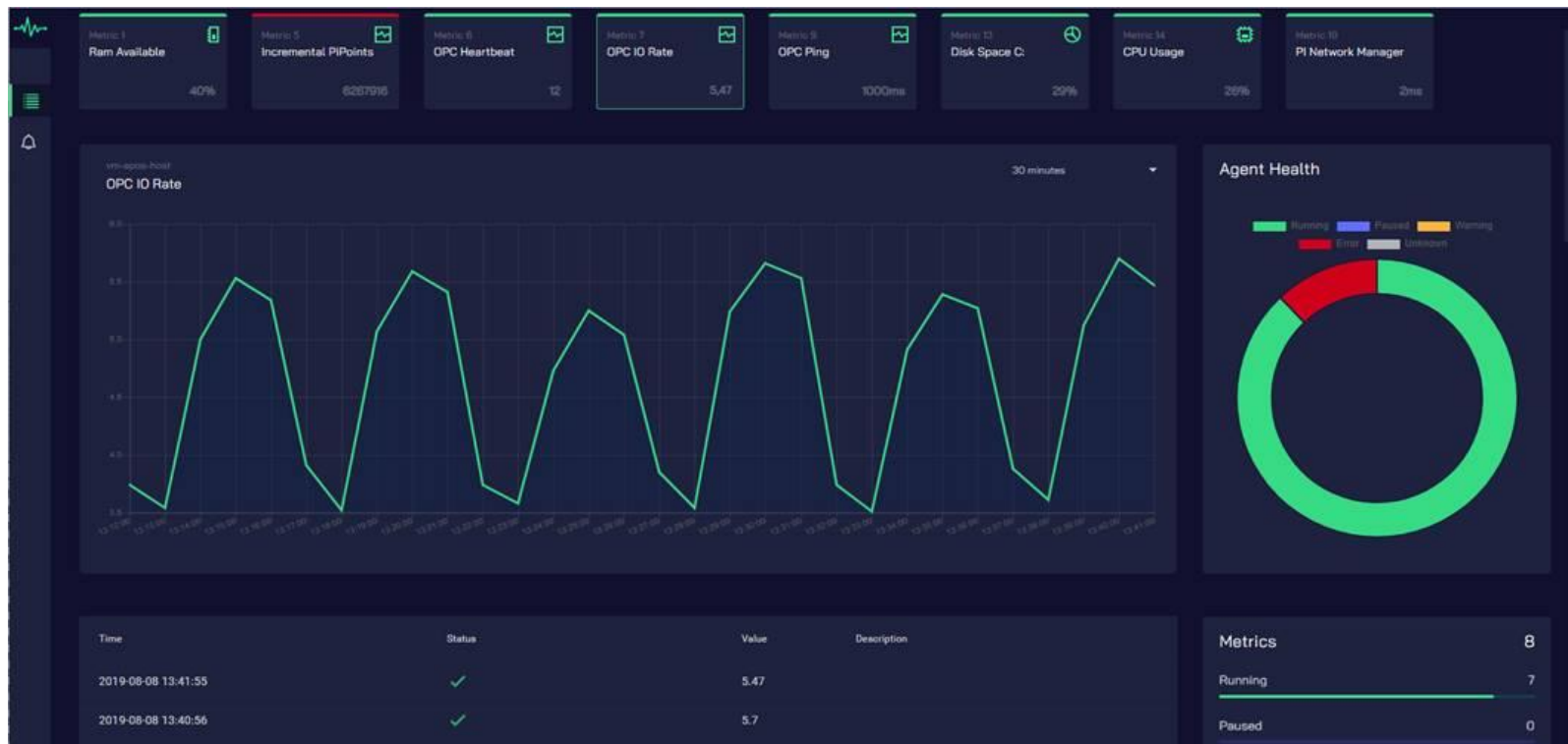
1. OPCHDA	-> PCS7
2. RDBMS	-> HNET -> WOSHISTORIAN -> WIZCON -> AZURE
3. UFL	-> CIS <ul style="list-style-type: none">• DSC• LGS• OZE• PZM• PZM_MIS
4. PI WEB API	-> Emergency Number <ul style="list-style-type: none">• Website Visits Counter
5. SDK	<ul style="list-style-type: none">• NUMERON• CITECT
6. PI Connector Relay	-> Demostration Station (Hydropolis)



Total: 200 000 variables



Safire Health Monitor - SafireHM



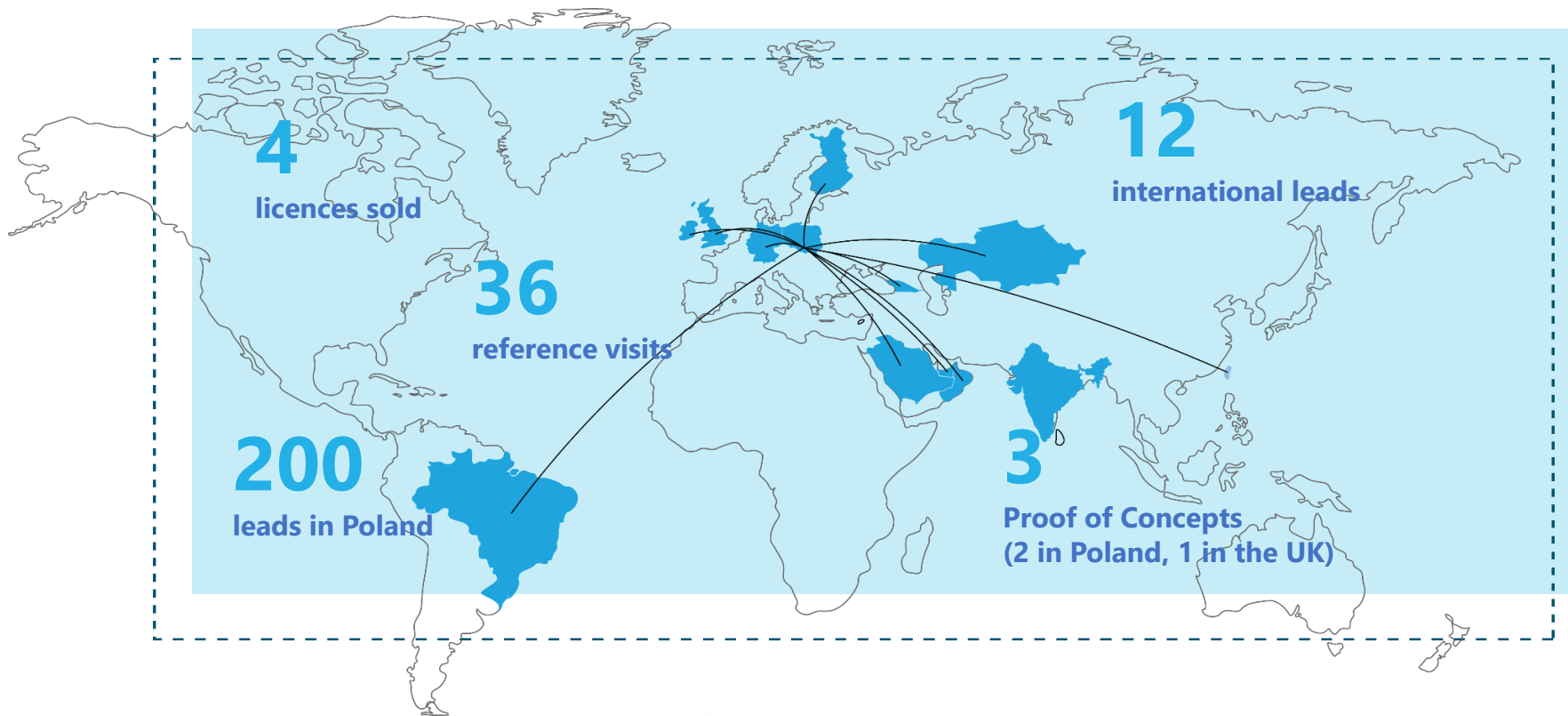
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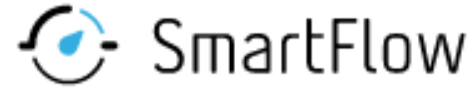
Challenges

- Connecting new data sources from our production and distribution processes
- Maintaining a quick-response time in demanding situations in the water network
- Following data quality management practises
- Building data lake architecture
- Commercialising solutions in Poland and on the global market

Smartflow – Effective Data Flow



Smartflow – Effective Data Flow



COLLECTION OF DATA
FROM SENSORS



PROCESSING
AND ANALYSIS



DIAGNOSIS
AND VISUALISATION



ALERT

Connecting new data sources from our production and distribution processes

Predictive Maintenance in 2020

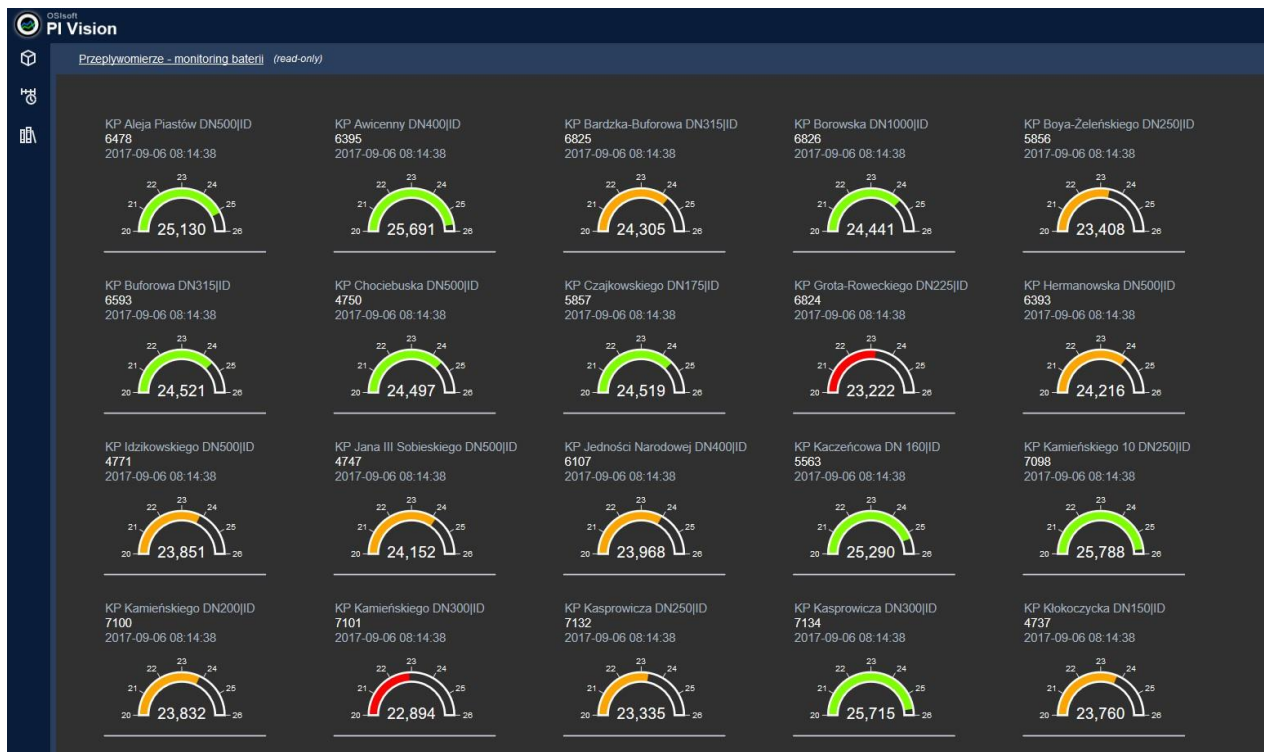
Energy of pumps consumption



**Reliability
Solutions.**
The Art of Prediction

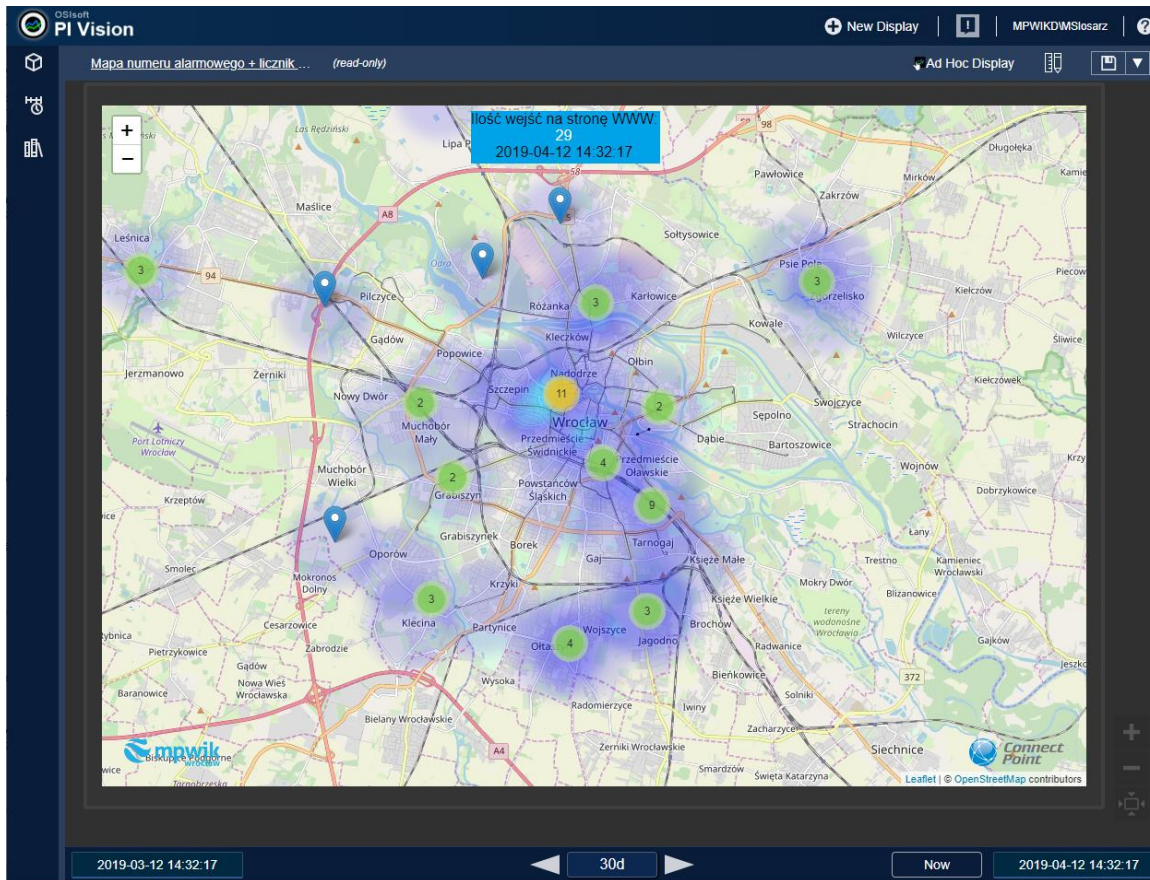
<https://reliasol.pl/en>

Battery monitoring in PI Vision



Use Case: Creating Innovative Service for the Geolocation of Calls to the Emergency Number

- Enabling an immediate estimation of the scale of the failure and its approximate location in order to provide an optimized response from the technical services
- Optimization of dealing with emergencies in a timely manner



1) The PI System information service is as follows:

- Connection to API telco service provider
- Use PI Web API
- Verification of phone calls on the MPWiK emergency line
- Alert MPWiK support
- Quick response to breakdowns



2) The PI System information service is as follows:

- Connection to Google Analytics platform
- Verification of logged in users on the MPWiK website
- Alert MPWiK support after exceeding 100 sessions
- Quick response to breakdowns

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Plans for the Future



PI Business Service

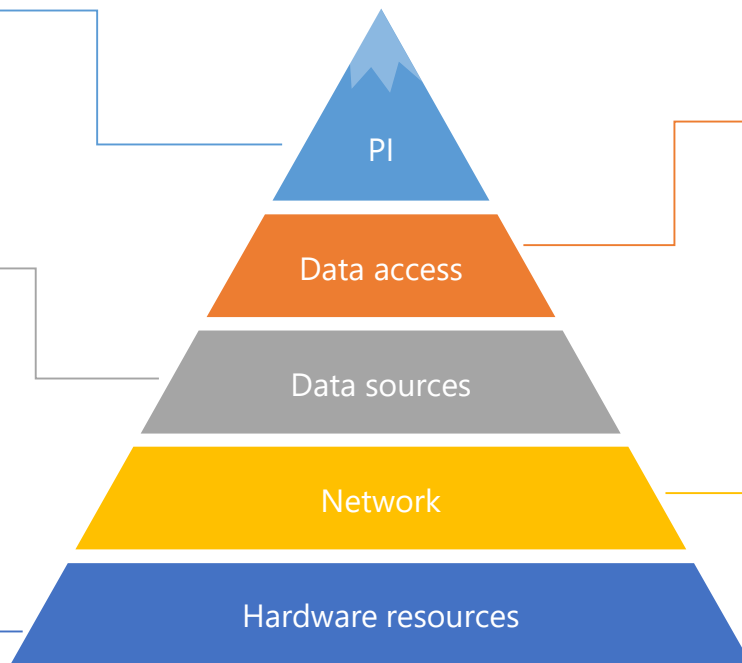
This complex service depends on many factors. The service works only when every component works.

Data Sources

Even if everything in PI works correctly, if the source fails there is no data and the business service is not available.

Hardware

This is the basis of everything. Where will you save your data if there is no more free disk space?



PI Clients and PI Data Access Channels

This is the key part. Client applications and access channels such as the PI Web API are a critical element in providing data to users and systems.

Network

This is a crucial element of IT Systems. The PI System is very dispersed and therefore depends significantly on it.

Plans for the Future



Transfer raw data to Seeq

- Advanced analytics and insights
- Cleaning and validation
- Machine learning methods
- Completion

Transfer valuable data to the PI System

Plans for the Future

Building of predictive models
base on data in the PI System



Use the PI System as a base for cloud business
services and a production data lake

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

Building the Comprehensive Ecosystem of Production Data



CHALLENGE

- Collecting data in various production systems: SCADA, PCS, sensors e.t.c
- IT/OT convergence to use the advanced analytics and improve core processes, for example: reduce water losses, increase energy efficiency
- A neverending struggle with data quality

SOLUTION

- Implementation of the PI system in many areas of MPWiK S.A.
- Development of dedicated tools in the PI environment which helps the company improve its core business
- Based on the PI System implementation of tools which monitor the quality of our data

RESULTS

- Easy data binding from the OT's/IT's systems
- Quick and easy report creation in PI Vision
- Dedicated tools to improve the work of the company's teams
- Enabling easy integration of the expert system e.g. SmartFlow

Questions?

Please wait for
the **microphone**

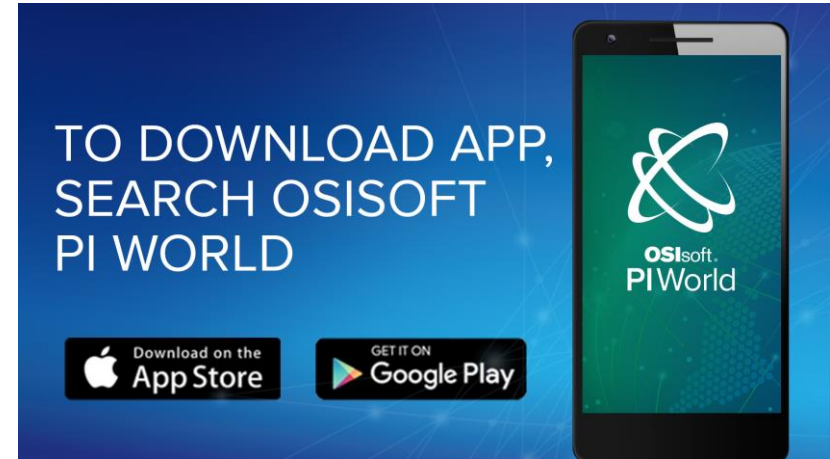
State your
name & company



Please remember to...

Complete Survey!

Navigate to this session in
mobile agenda for survey



Speakers



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