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Tomi Lahti

@lahti_tomi

Father of three, husband of one, outdoor and science minded, reads and renovates. Working with #sustainability #renewable #SW #AI #ML #IIoT @napconsoftware

Oulu, Finland

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SPEAKER

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PRODUCT MANAGER, NAPCON UNDERSTAND

Product professional with holistic vision of business and customer needs. Excessive competence on product, processes and software development.

Building awesome products with deep insight in the fields of Artificial Intelligence / AI, Machine Learning / ML, IoT/ IIoT and Big Data / Data / #Prescriptive Analytics, software products and quality for tomorrows solutions.

Skills: Leadership and human skills, Product and Project management, Lean and Agile Development, Machine Learning / Artificial Intelligence, Solution definition, Quality Management. Process Industry solutions, Integrated/native- , web- and mobile sw development.

Education

Tampere University of Technology

Master of Science (M.Sc.), Learning and Intelligent Systems, Automation and control technology, Good

1997 – 2003

Main subject: Automation and Control Engineering
Subsidiary subject: Measurement and Information Technology
Degree thesis: Soft-sensor based viscosity control of rubber mixing process (http://ae.ase.tut.fi/research/AIN/Publications/tomi_lahti_dtyo.pdf)
Other: Object oriented programming, information network technologies, energy technology

NAPCON

Neste Engineering Solutions

World-class know-how in industrial investment projects

Deep cooperation with strategic customers

NAPCON

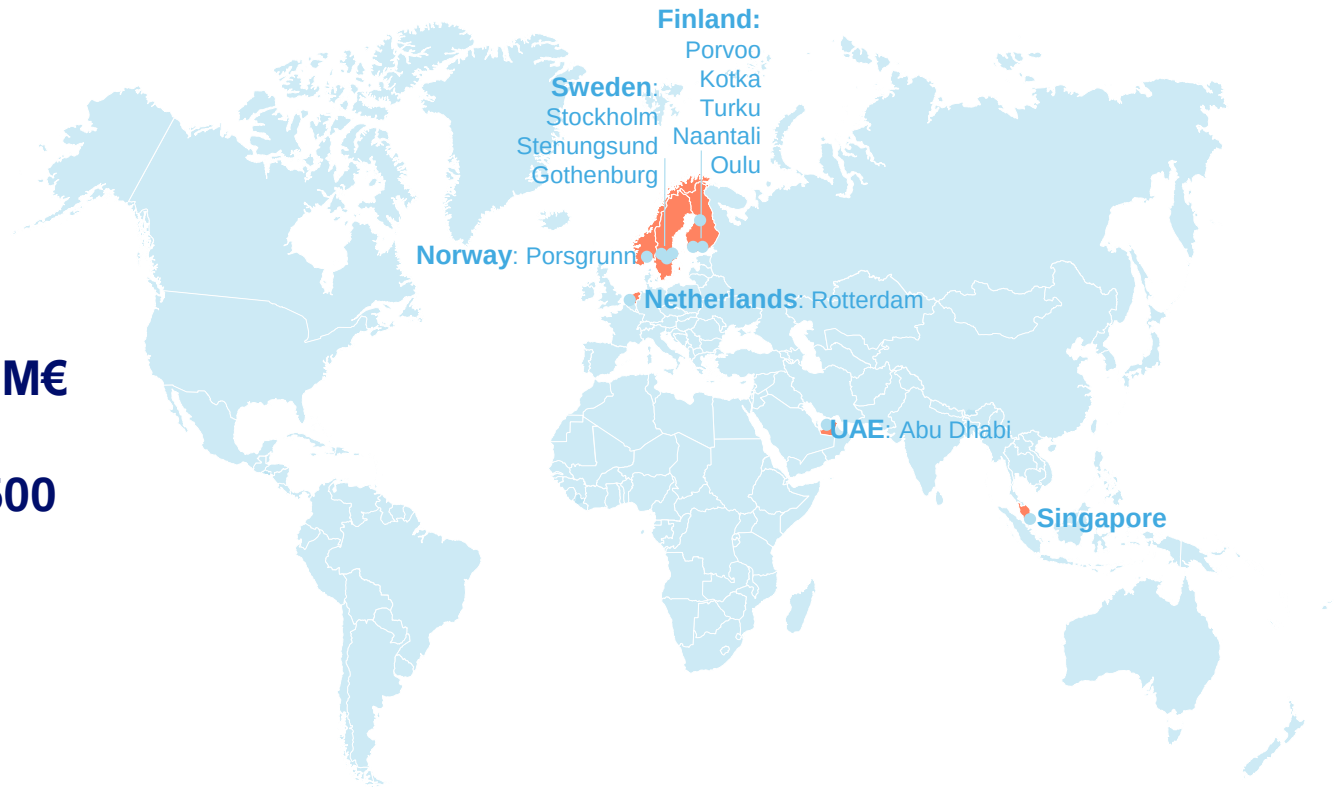
1500 PROFESSIONALS REPRESENTING 40 NATIONALITIES

NES 2017:

NET SALES 183M€

PROFIT 8,9%

PERSONNEL 1500



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TO ERR IS HUMAN,
TO IMPROVE
IS NAPCON.
NAPCON

WHAT IS NAPCON?

- NAPCON is a business unit of Neste Engineering Solutions that improves production, quality, energy and safety for process industries.
- 70 professionals
- More than 170 applications delivered to 11 countries since 1986
- Our tools are independent of automation and ICT platforms

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NAPCON WAS BORN FROM THE NEEDS OF AN INTEGRATED PLANT IN PORVOO, FINLAND

NAPCON - TYPICAL CUSTOMER INDUSTRIES

Petrochemicals

Gas

Natural Gas – Biogas - LNG

Industrial Infrastructure

Petroleum Refining

Biorefining

Food Industry

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OUR SUCCESS STORIES

BOREALIS

$ 100M
MORE PROFIT

NESTE

50% REDUCTION IN C6 PRODUCT QUALITY VARIANCE CONTENT

10% OF THE TOTAL BENEFIT CAME FROM ENERGY SAVINGS

NESTE

78 % LESS WORKING HOURS SPENT

Valio

+8% MORE
MILK POWDER PRODUCTION

forchem

17% INCREASE IN TALL OIL PRODUCTION

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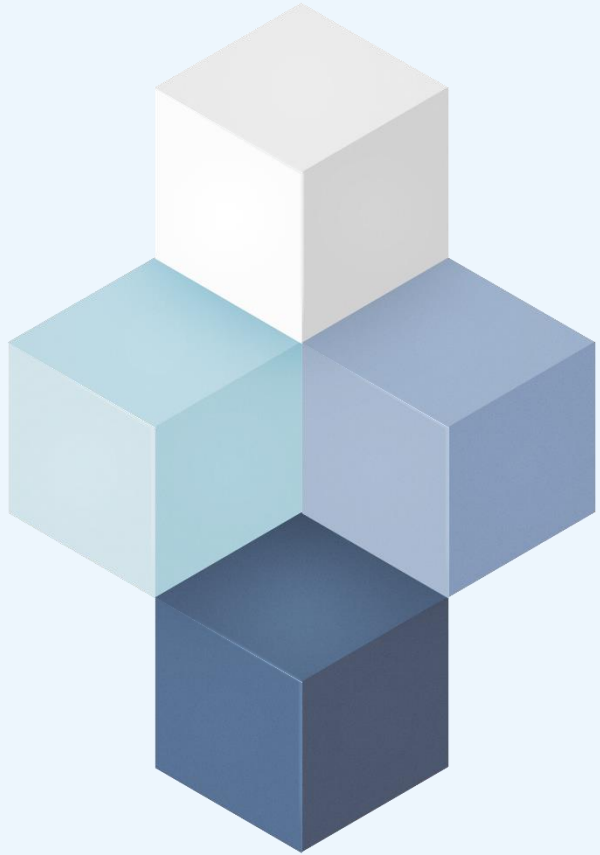
IOT & EDGE IN PROCESS INDUSTRY



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HOW TO COMMUNICATE – THERE IS A PLETHORA OF WAYS TO DO IT

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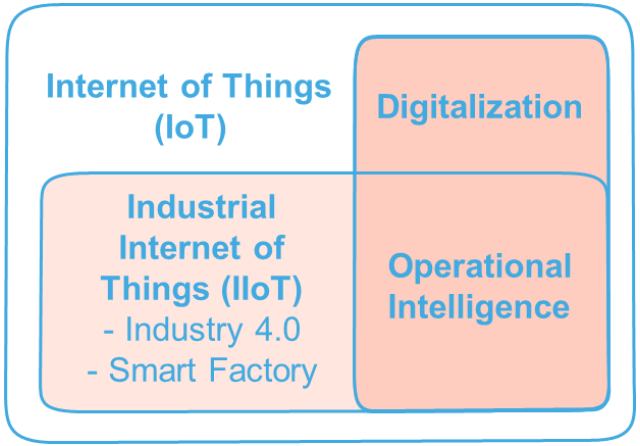
IIOT – DATA ANALYTICS TO CLOUD AND BACK TO EDGE

- **Cloud** connected sensor data to central database where is also calculation capability and intelligence
- Due to massive increase in amounts in raw data, lately trend has been moving decision support and analytics capabilities near equipments/to **Edge**: back to near sensors and actuators
  - Move only refined information to cloud (bandwith)
  - Enable fast decision making (need for low latency)
  - Enable Edge Analytics & Edge Intelligence



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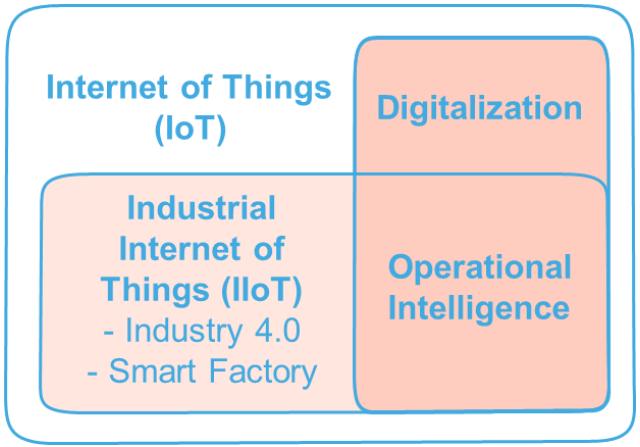
A DIGITAL REFINERY – HOW?

IIoT enables digitizing of physical objects (information related to those)

- **Digital supply chain**: Enables data collection and for example optimization of whole supply chain
- **Real time operational information** and estimations of interesting business KPI's of production enable operational visibility and predictions
- That is **Operational Intelligence**: real time full visibility and steering for optimal production.



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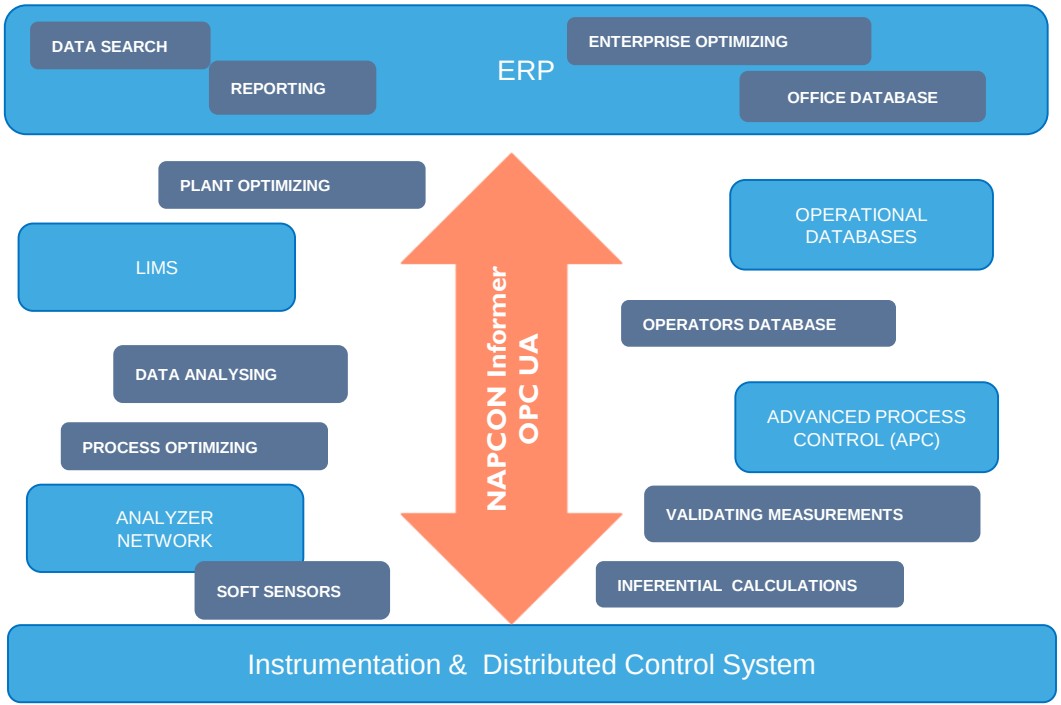
STEPS TOWARDS YOUR DIGITAL REFINERY – SELECT COMMUNICATION PROTOCOL FOR YOUR COMMON INFORMATION HIGHWAY



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A DIGITAL REFINERY – WHAT WOULD BE THE ULTIMATE GOAL?

Key features of a modern digitalized plant – to achieve **Operational Intelligence**

- Current state of plant is **transparent** and **visible** to every stakeholder
- Information gathered is transformed to **wisdom** and served up to different stakeholders at easy to use format, e.g:
  - AI co-operator for production operators
  - Intelligent dashboards and automated decision support for management
- Operations are **Cyber Secure** in every aspect
- Production is **Optimized** on every level of the Enterprise and Plant

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OPC UA IN IIOT AND EDGE

- OPC UA have several benefits for IIoT and Edge:
  - Service oriented architecture
  - Context awareness and data models fastens application development
  - Future interoperability secures today's investments
  - Secure information transport
  - Supplier independence
- Security plays essential role
  - Especially at Edge, transferred information has high business value
  - Device system management (authentication, authorization, scalability and upgadability/maintainability) needs remarkable attention

IIoT-enabled edge devices embedded with OPC UA can help organizations maximize their return on assets (ROA) by helping ensure that their automation investments are scalable, future-proof, adhere to open standards, and integrate with existing assets.

(Sources: ARC View, January 10, 2018)

"OPC technology has become a de facto global standard for moving data from industrial controls to visualization up to MES/ERP and IT cloud levels."

➢ Craig Resnick, Vice President of ARC Advisory Group

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ONBOARDING IIOT IN

PROCESS INDUSTRY

HOW TO DO IT THEN

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STEPS TOWARDS YOUR DIGITAL PLANT – KNOW WHERE YOU ARE

Take at least an in depth look at the following ones:

- Level of Instrumentation
- Maturity of Automation
- Cyber Security and systems integration
- Analyzers, analyzer validation systems and the analyzer network
- Laboratory System
- Level of advanced automation, maturity for optimization

Conduct a Maturity Assessment based on the future need, reflecting the situation of today.

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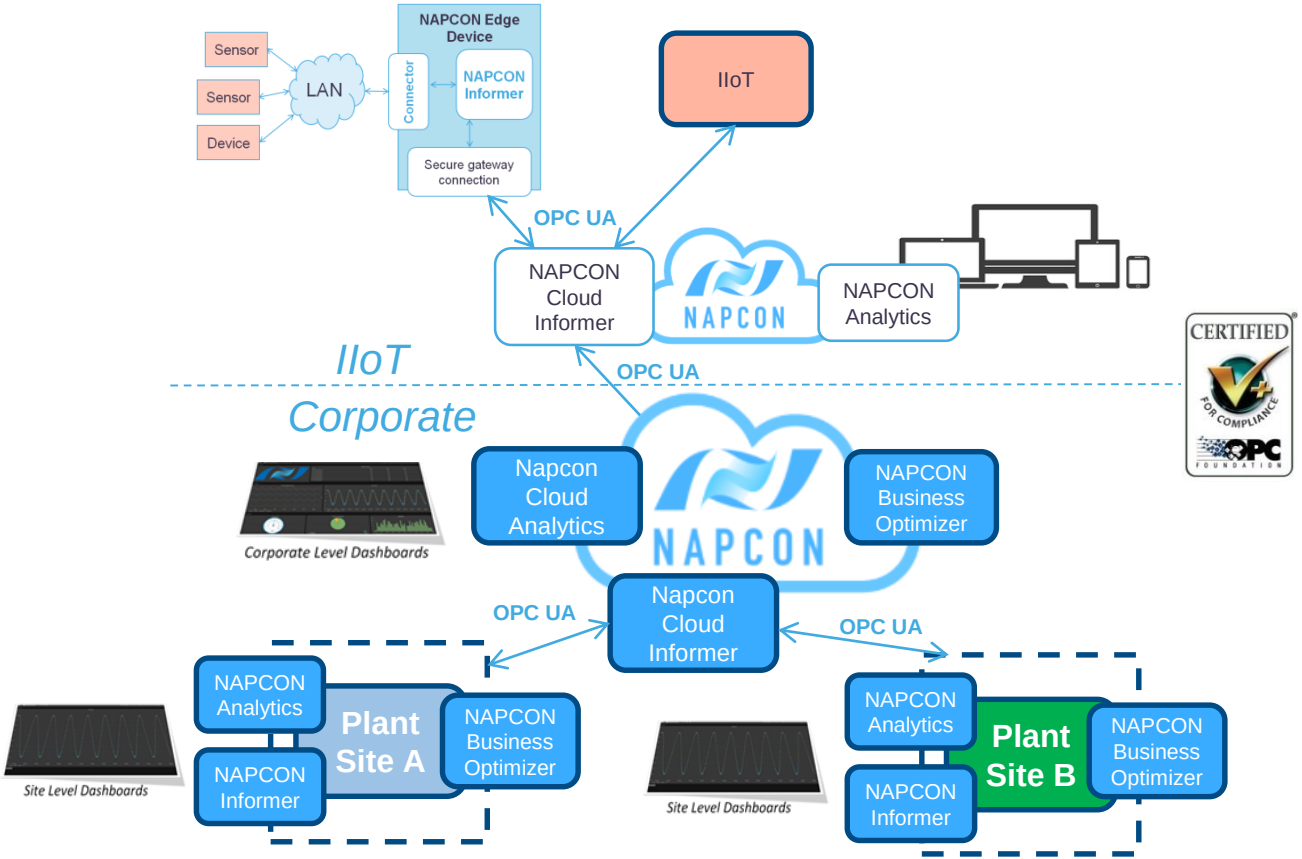
EXAMPLE SETUP



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STEPS TOWARDS YOUR DIGITAL PLANT – LAY THE FOUNDATION

1. Work Instructions and Design Specifications
2. Enable way of working with a holistic view, not decisions project per project.
3. Create alternative solutions for plants to pick from

These are really important, otherwise one will not succeed!

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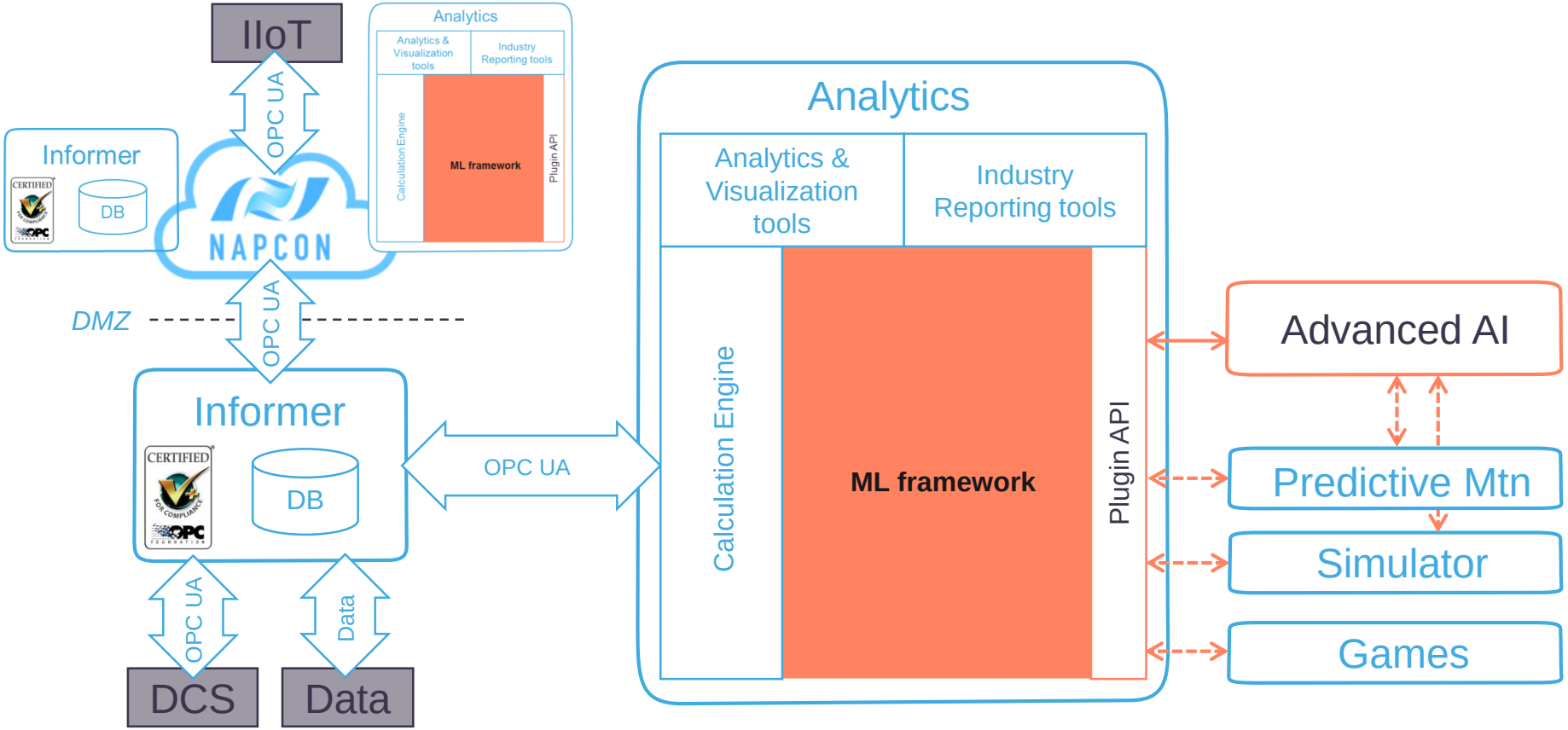
IIoT
OPC UA
Analytics
Analytics & Visualization tools
Industry Reporting tools
Calculation Engine
ML framework
Plugin API
Informer
CERTIFIED
DB
NAPCON
OPC UA
DMZ
OPC UA
Informer
CERTIFIED
DB
OPC UA
Data
DCS
Data
OPC UA
Analytics
Analytics & Visualization tools
Industry Reporting tools
Calculation Engine
ML framework
Plugin API
Advanced AI
Predictive Mtn
Simulator
Games

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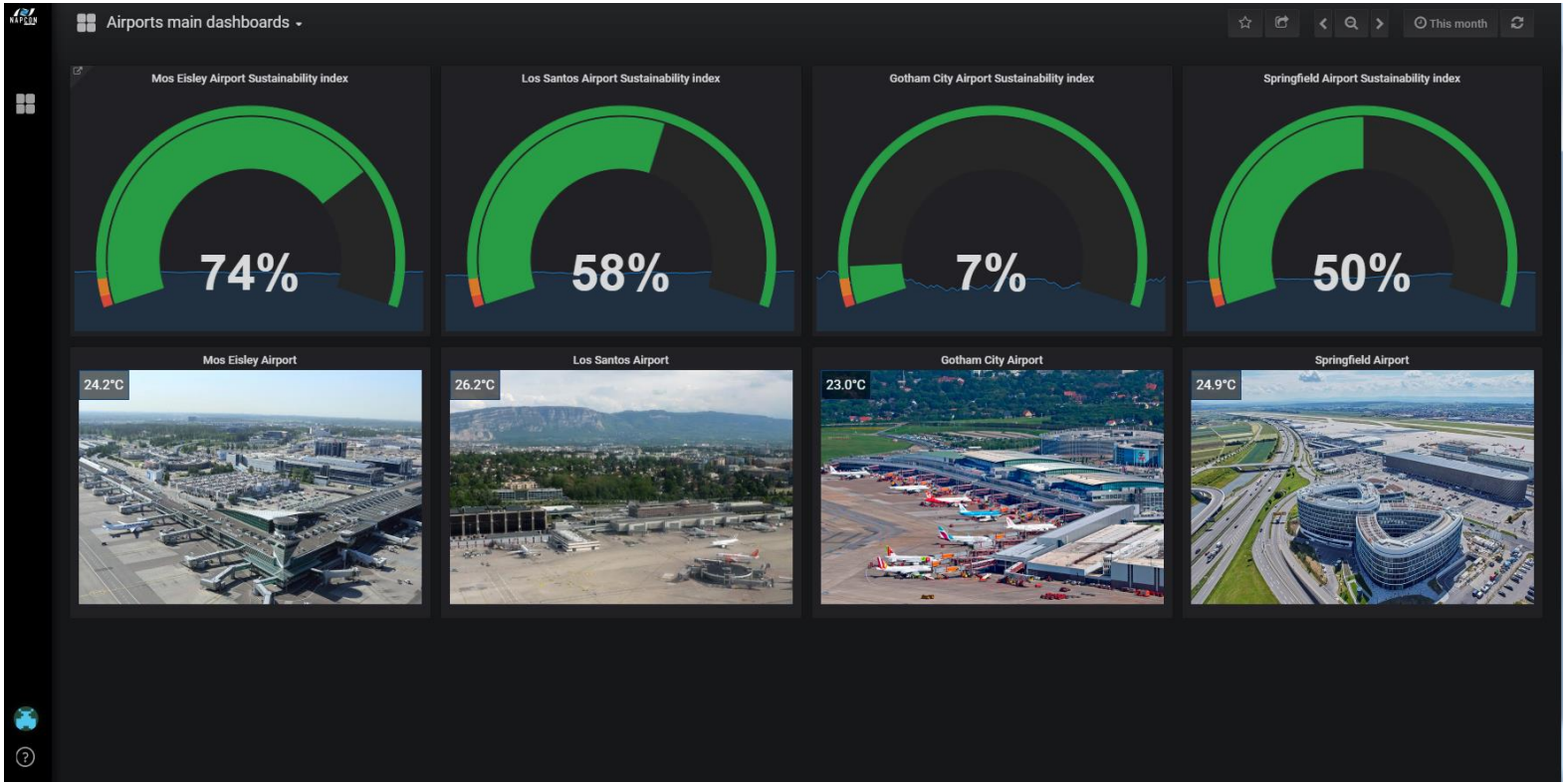
EXAMPLE: NAPCON IIOT DEMO – SUSTAINABLE AIRPORT



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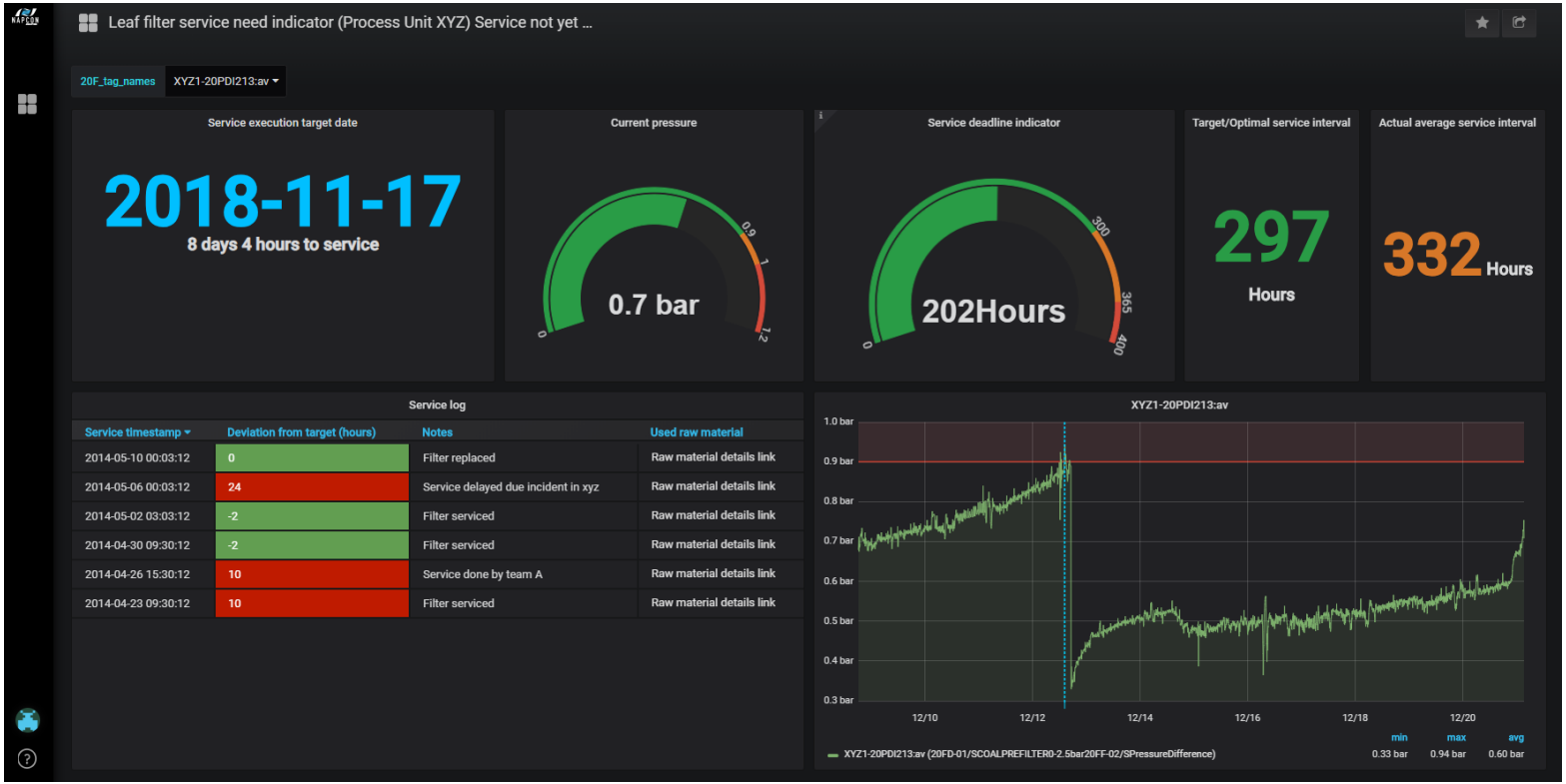
EXAMPLE: NAPCON IIOT DEMO – PREDICTIVE MAINTENANCE



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