

FIIF EVENT: OPC UA

3.11.2022



CREATING A SMARTER
FUTURE **TODAY**

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Wapice, the IoT and AI company from Finland



- › Transforming **Industrial Companies** through digitalization since 1999
- › **Private ownership**
- › Continuous **organic** and **profitable** growth
- › Employing **>350 IIoT** and **AI** experts
- › 10 office locations in Finland
- › ISO 9001, ISO 14001 and ISO 27001 certified



National
Entrepreneur
Award **2016**



AAA[®]
Highest Creditworthiness
for more than 3 years
*Bisnode 2018



MANAGEMENT SYSTEM CERTIFICATION
DNV-GL
ISO 9001 | ISO 14001



**FINNISH
SERVICE**



THE STRONGEST
IN FINLAND
PLATINUM
2007-2017

Microsoft Partner
GOLD Application Development

ENABLER OF
EnergyWeek
2018



**Microsoft
Partner**

2019 Partner of the Year Winner
Application Innovation Award



Technology & Digitalization Services

What we do @Wapice



**Analytics, AI
and Big Data**



Cloud Services



Consulting



Cyber Security



DevOps



**Electronics Design and
Embedded Systems**



**Internet of Things
Services**



Design Services



**Technology and
Digitalization Solutions**



**Web and Mobile
Solutions**



**OPC and OPC UA
Solutions**





HELEN

WORLD'S BEST CITY ENERGY

- Founded in 1909, HELEN is Finland's largest utility
- Produces and sells electricity, district heating and district cooling
- More than half a million customers
- Target is to be carbon neutral by 2030

Need for digitalization of Helen energy services

- › Increase of renewable energy sources means moving from bigger production units to smaller decentralized production units
- › More production sites → Information becomes scattered
- › More challenging to manage and optimize energy grid operations
- › Transparency and predictability needed in controlling the energy flows
- › Fast reactivity and personalized services needed in energy market.

→ **Digitalization, automation and analytics plays a key role in this transition**



Challenges to overcome

- › The information systems in different energy production units are owned and administered by several different suppliers
- › Expensive, vulnerable and error prone to connect everything with vendor specific systems
- › Need for a secure, simple, and scalable connection from production units to central data collection platform
- › Communication method must have long-term support and roadmap



Cost savings with OPC UA architecture

- ✓ Industry 4.0 compatible solution
 - Vendor independent, Scalable, Inbuilt Security, Long-term roadmap
- ✓ The Scada systems and information architectures in different production units can be customized freely
 - As long as they talk OPC UA towards other systems
- ✓ Clear responsibilities inside the Helen between different operators, systems and interfaces
- ✓ Simple architecture
 - Easier to scale up and integrate with 3rd party systems
 - Easier to maintain and solve problems





IoT-TICKET®



CREATE APPS, FAST

Arrive at solutions

– start now, deliver tomorrow

We provide free multi-platform apps and APIs to provide you the means to start acquiring data and start creating functional applications right now.

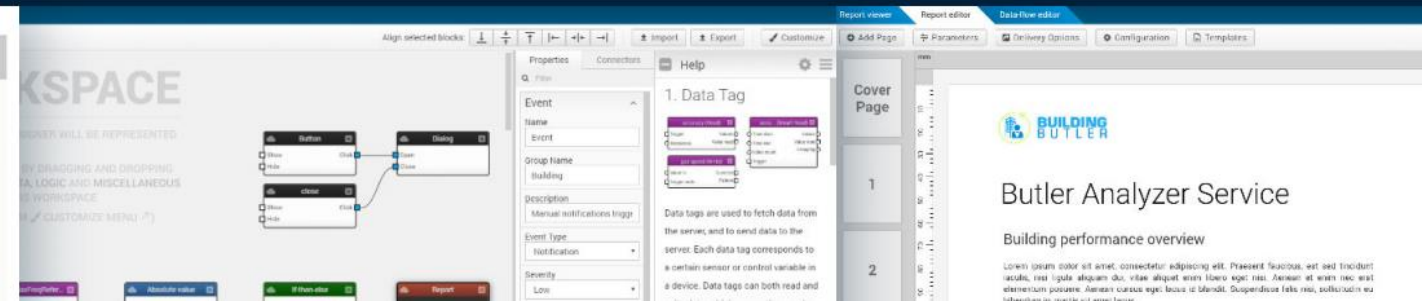


THE IoT PRODUCTIVITY STUDIO

Cut down the costly software development
– empower anyone to build apps

IoT-TICKET® includes web-based drag & drop tools for application building: create Dashboards with over 30 customizable widgets and add the logic *visually* by connecting data blocks.

CLOUD ENABLED MESH NETWORKS



IoT-TICKET® addresses challenges

Current challenges adapting IoT more in the industry based on IoT Signals Ed. 2

37%

Time to Market

33%

Lack of Experts

31%

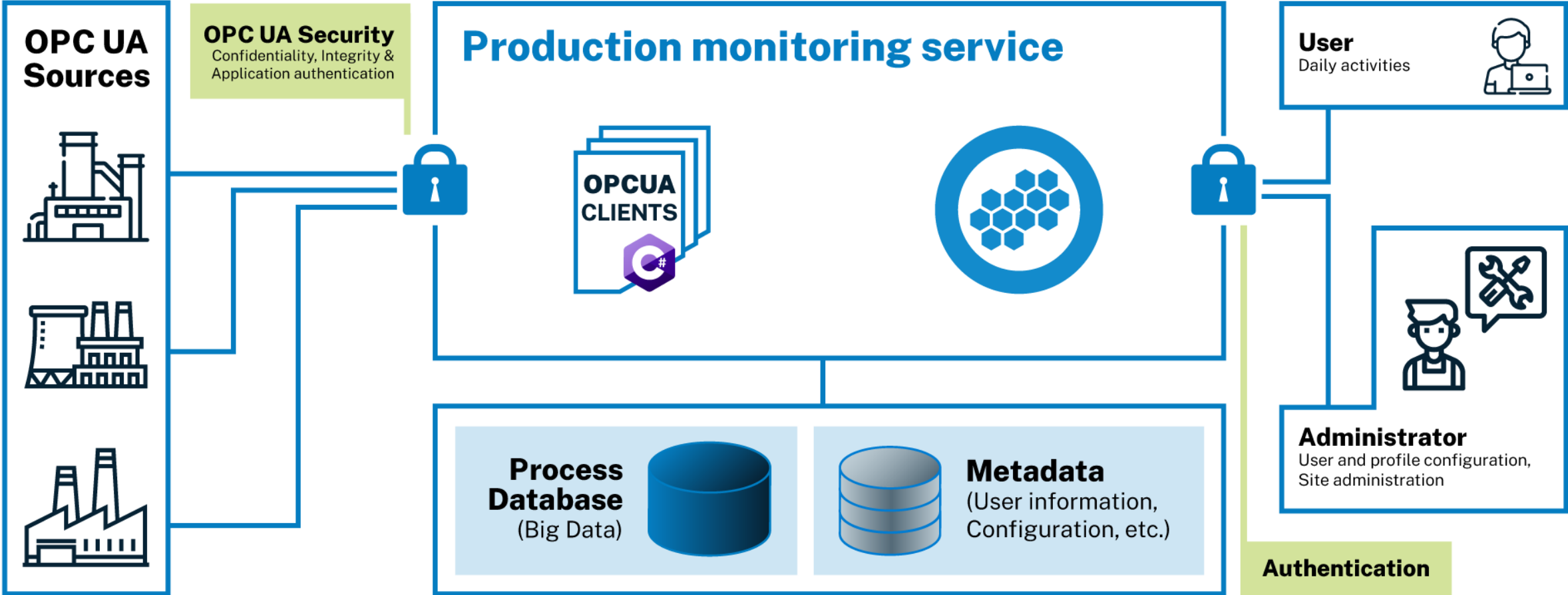
Lack of Knowledge

25%

Technical complexity



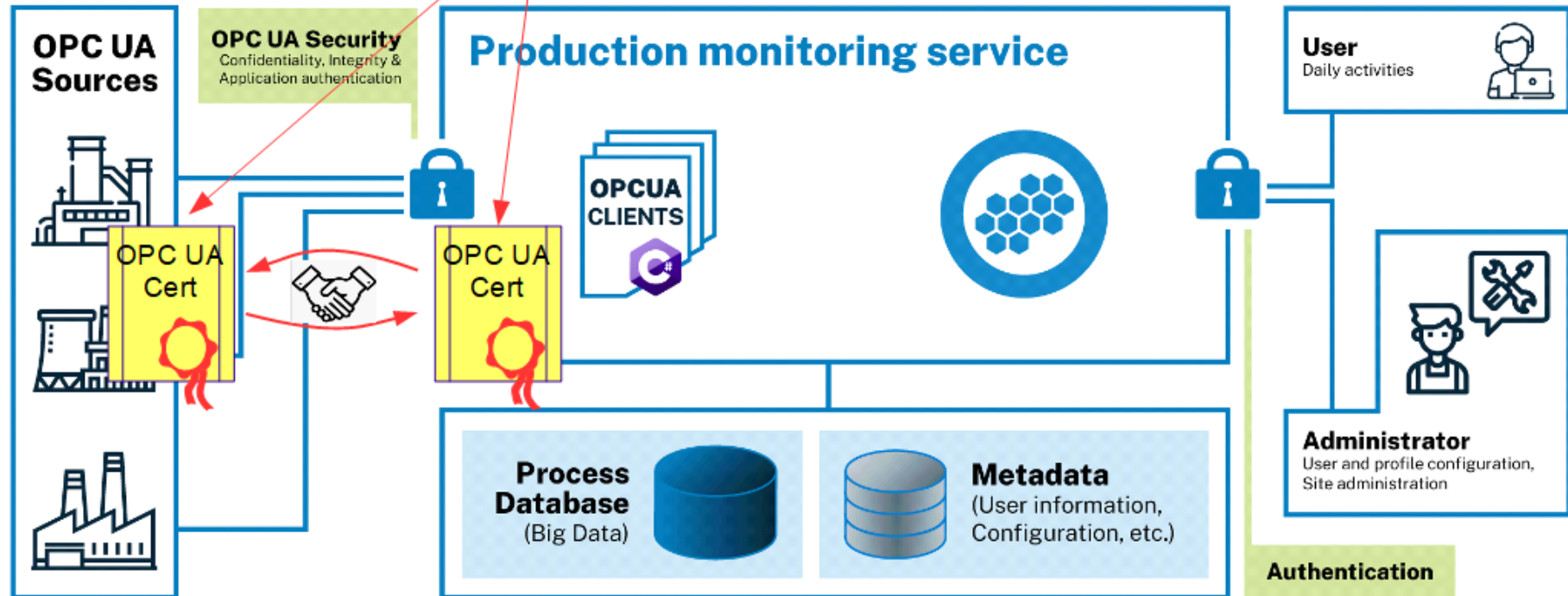
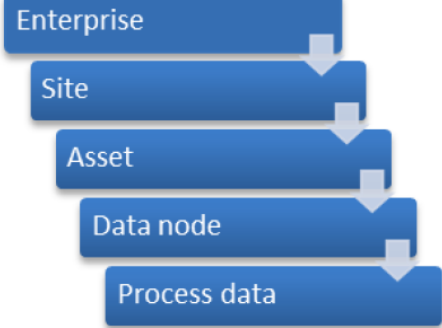
Solution architecture: Production site connections



Secure OPC UA Client connections

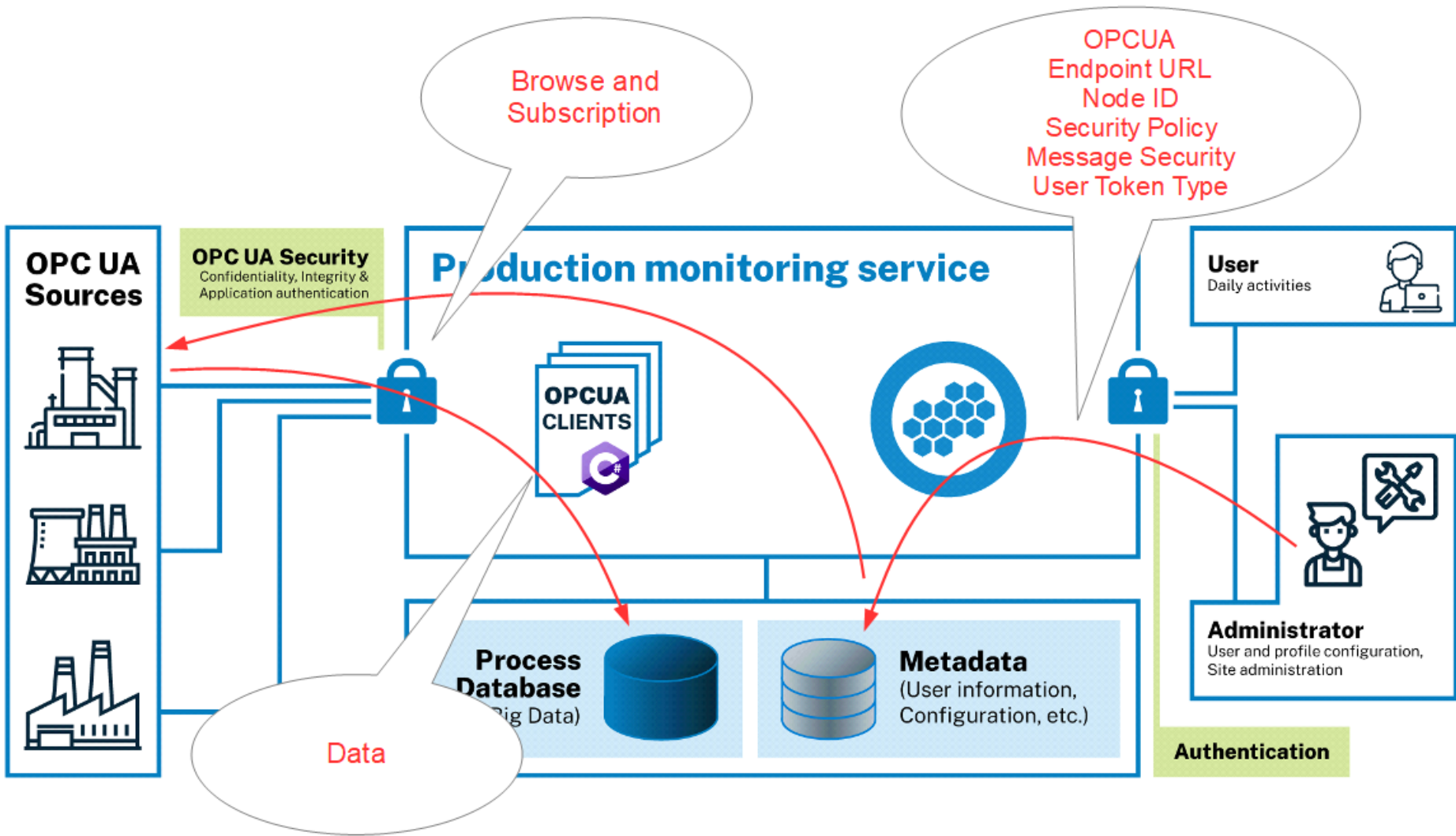
OPC UA Certificate

- Public/Private key pair
- Public key distributed with the certificate
- Verify trust relation, check signature of messages, encrypt messages

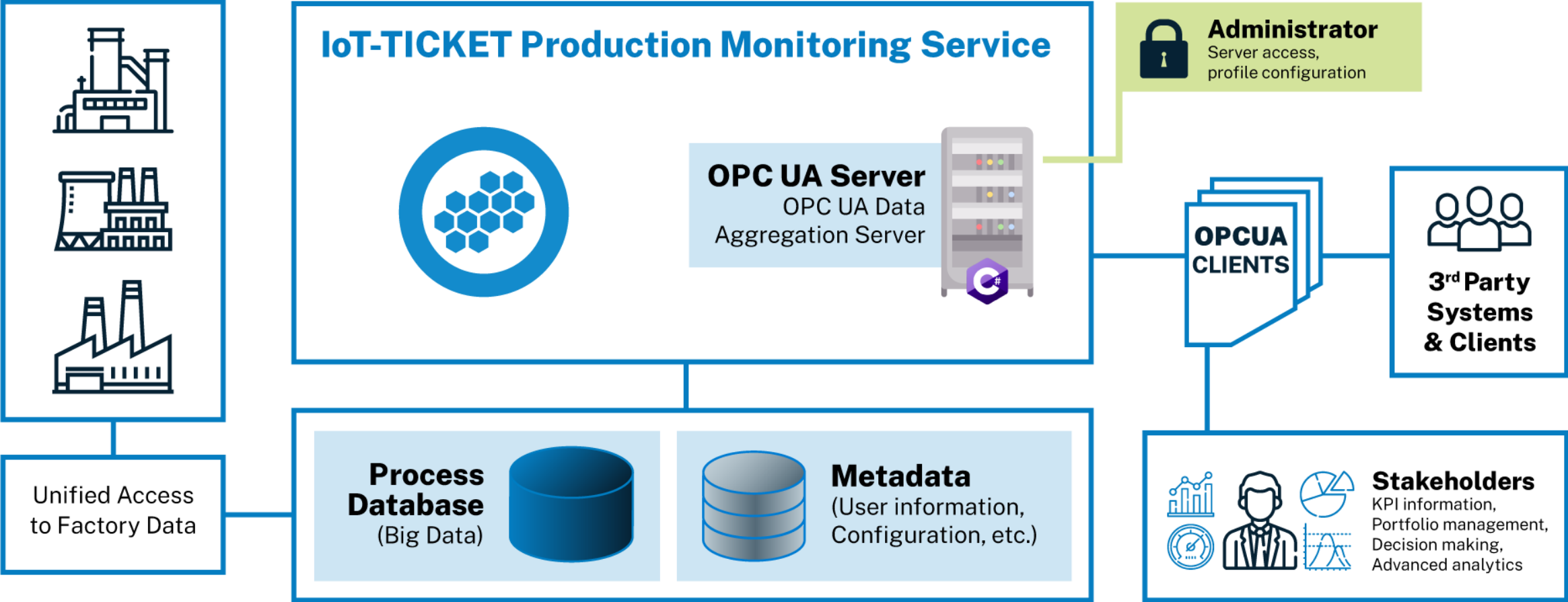


Secure OPC UA Client connections

- Enterprise
- Site
- Asset
- Data node
- Process data



Solution architecture: OPC UA Data Aggregation



OPC UA Data and Services

- › Quality and status information
 - › Immediate feedback about source system
 - › Is data valid?
- › Source and server timestamps
 - › System delays can be monitored and tracked
- › Events
 - › For example, when admin adds or removes measurement points event notifies external OPC UA clients
 - › Automatic address space updates

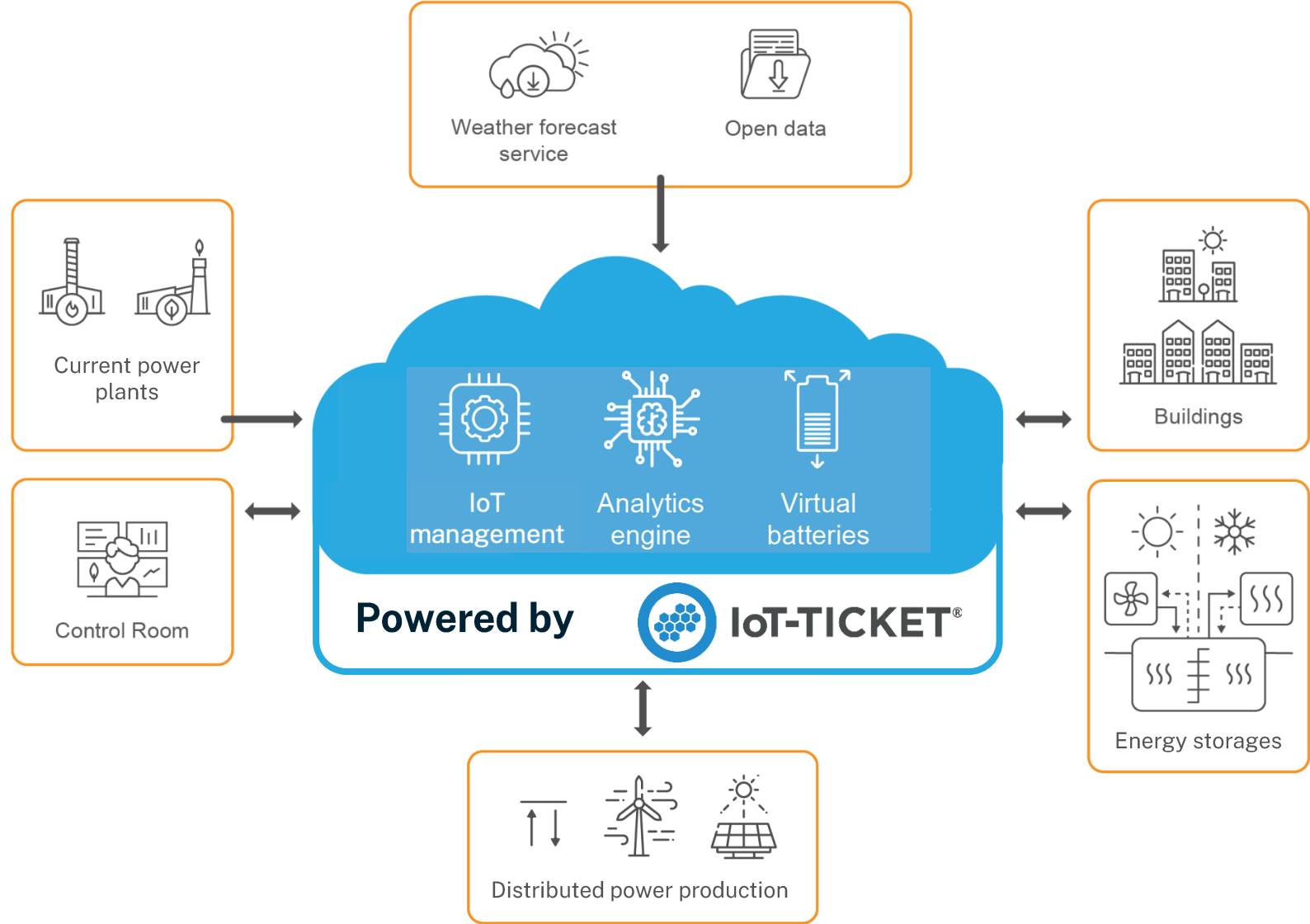
Performance monitoring

- › 24/7 monitoring of system and network performance
Constantly monitors
- › OPC UA Endpoint communication
- › Data storage performance (disk space, DB commits, ...)
- › Application performance (cpu load, memory, ...)
- › Alarms generated to IT
 - › Problems identified and made known immediately
 - › Alarm message already contains the initial indication of the problem source

High availability by design

- › The fault tolerance is achieved through multiple levels of redundancy
 - › OPC UA redundancy
 - › Application redundancy
 - › Database redundancy
 - › (Network redundancy)
- › No single point of failure
 - › One component (application, machine, network) crash does not paralyze the whole system
 - › Updating software, problem solving, etc becomes easier
- › OPC UA makes this easier by providing redundancy in protocol level

The platform of the energy services



Summary

- › With OPC UA Helen has achieved a simple, reliable and future proof architecture
- › OPCUA and IoT-Ticket platform support each other in best ways
- › Streamlined processes → clear responsibilities
- › Allows Helen to focus on core business and value creation





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