



# **OPC UA: 20-year standardization Status & Update**

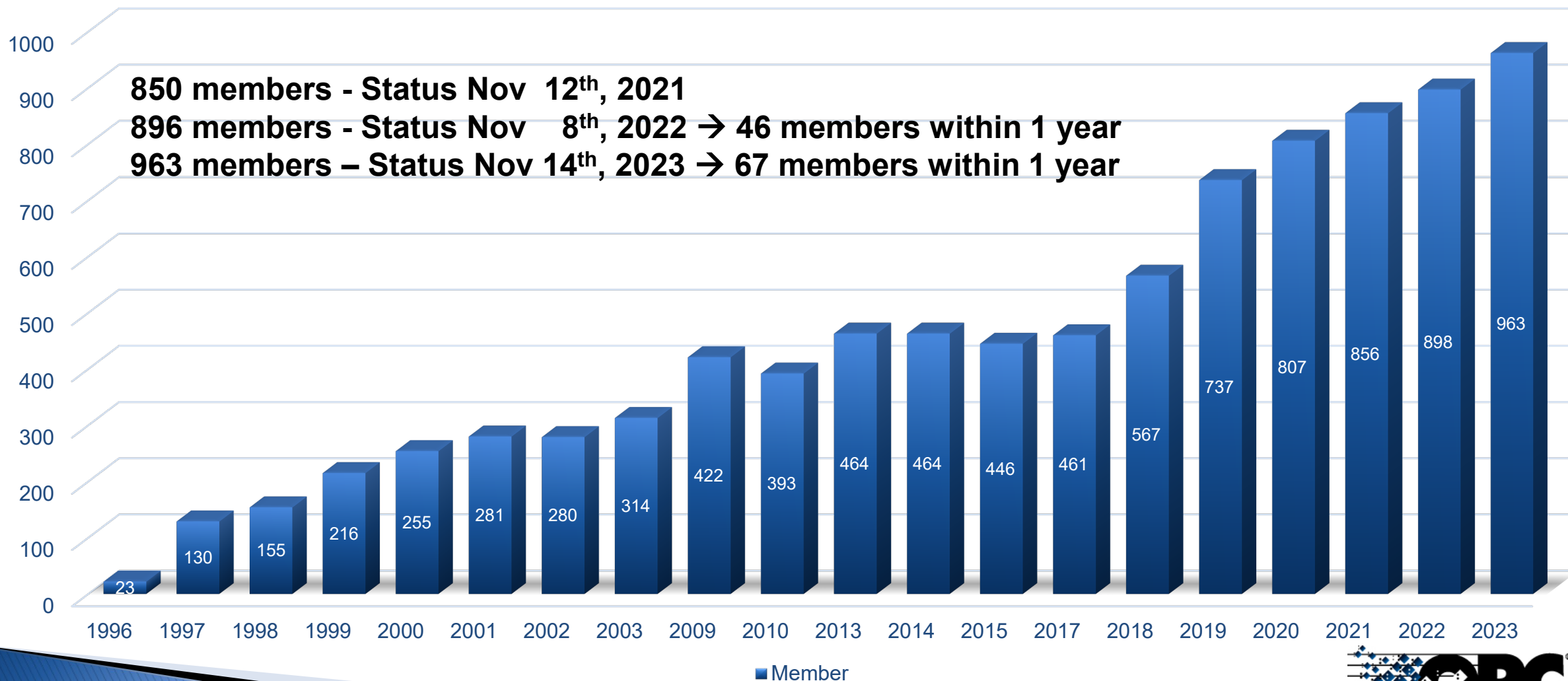
**OPC Day Japan 2023 – Virtual Event – December 8th/9th, 2023**

**Stefan Hoppe**  
**President & Executive Director OPC Foundation**  
[stefan.hoppe@opcfoundation.org](mailto:stefan.hoppe@opcfoundation.org)

# Agenda

- ▶ **News Organization: Members / Board Election / Retirement Secretary**
- ▶ **OPC UA: 20th anniversary of standardization!**
- ▶ **Collaboration: Overview Companion Specifications**
- ▶ **Interoperability: OPC UA growing into cloud scenarios**
  - **OPC UA: Interoperability on Field & Edge**
  - **OPC UA: Interoperability from Edge to Cloud**
  - **OPC UA: Interoperability for IT & Cloud**
- ▶ **News**
  - **Certification updates**
  - **OPC UAcademics**
  - **OPC UA get adopted in cloud apps**
  - **Call for action**

# OPC Foundation Membership Development



# Organization – Election for 2024/2025 Board of Director seats

- ▶ 5 open seats for 2024/2025
- ▶ Candidates: Nomination period ended Sept 22<sup>nd</sup> - 7 candidates, including 2 Chinese candidates (first time!)  
See candidate profiles here: [OPCF-BoD-2024-Candidate-profiles.pdf \(opcfoundation.org\)](https://opcfoundation.org/OPCF-BoD-2024-Candidate-profiles.pdf)
- ▶ Election period: November
- ▶ Public announcement during OPCF General Assembly Meeting Dec 6<sup>th</sup>, 2023



SIEMENS

Honeywell

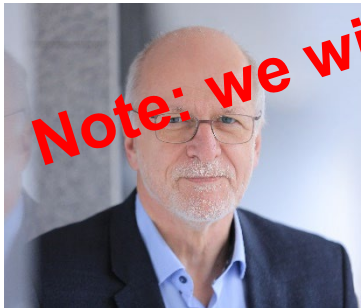
Microsoft

INOVANCE

YOKOGAWA



Andreas Faath



Thomas Hahn



Ziad Kaakani



Holger Kenn



Ridley Lee



Shinji Oda



Wei Xiong

Note: we will delete 2 pictures here after Dec 6th



# Retirement of Mike Bryant as Secretary OPC Foundation



**OPC Foundation Secretary  
for 22(!) years (2001 – 2023)**

**Lynne Fröhlich will continue  
to be „the face to members“ for  
accounting and member management**



**Official announcement during OPCF General Assembly  
Meeting on Wed Dec 6th, 2023**

**Welcome the new OPC Foundation Secretary:  
Alexander Allmendinger**

# Agenda

- ▶ **News Organization: Members / Board Election / Retirement Secretary**

- ▶ **OPC UA: 20th anniversary of standardization!**

- ▶ **Collaboration: Overview Companion Specifications**
- ▶ **Interoperability: OPC UA growing into cloud scenarios**
  - **OPC UA: Interoperability on Field & Edge**
  - **OPC UA: Interoperability from Edge to Cloud**
  - **OPC UA: Interoperability for IT & Cloud**
- ▶ **News**
  - **Certification updates**
  - **OPC UAcademics**
  - **OPC UA get adopted in cloud apps**
  - **Call for action**

# History



**Call for action: Please contact me and add Japanese OPC UA history!**





# standardization of



## 2003

Classic OPC Complex Data, Classic OPC Data eXchange and Classic OPC XML-DA specifications are released.

### Start of OPC UA



OPC Unified Architecture (OPC UA), comprising of 13 separate parts, is created by the OPC Foundation.

The first OPC UA working group meeting was held on November 3-7, 2003.

The original OPC specification is now referred to as "Classic OPC" or "OPC Classic".





# Agenda

- ▶ **News Organization: Members / Board Election / Retirement Secretary**
- ▶ **OPC UA: 20th anniversary of standardization!**
- ▶ **Collaboration: Overview Companion Specifications**
- ▶ **Interoperability: OPC UA growing into cloud scenarios**
  - **OPC UA: Interoperability on Field & Edge**
  - **OPC UA: Interoperability from Edge to Cloud**
  - **OPC UA: Interoperability for IT & Cloud**
- ▶ **News**
  - **Certification updates**
  - **OPC UAcademics**
  - **OPC UA get adopted in cloud apps**
  - **Call for action**

# SEMANTIC Interoperability: The key for the digitalization

## Generic Device Models: Controller, Field Device, Process Device

- OPC 10000-100 – UA for Devices
- OPC 10020 – UA for Analyzer Devices
- OPC 30000 – UA for PLCs based on IEC 61131-3
- OPC 30001 – UA for IEC 61131-3 Function Blocks
- OPC 30010 – UA for AutoID Devices
- OPC 30081 – UA for Process Automation Devices (PA-DIM)
- OPC 30400 – UA for Cloud Library
- OPC 30500 – UA for Laboratory & Analytical Device Standard (LADS)\*
- OPC UA for Analytical System Integration (CAISI)\*
- OPC UA for Cloud Federation\*
- OPC UA for Global Positioning\*
- OPC UA for Non-destructive Evaluation
- OPC UA for Power Consumption Management\*
- OPC UA for Secure Elements

## Energy

- OPC 10040 – UA for IEC 61850 – Electrical Substation Automation (Release Candidate)
- OPC 30020 – UA for MDIS
- OPC UA for Wind Power Plants (IEC61400-25)\*
- Power Consumption\*
- OPC UA for Carbon Capture, Storage and Reporting\*
- OPC UA for Solar PV Operations and Maintenance (SPOM)\*

## Building

- OPC 30030 – UA for BACNET (Release Candidate)

## Miscellaneous

- OPC 30060 – UA for Tobacco Machines
- OPC 30200 – UA for Commercial Kitchen Equipment

## Manufacturing Devices: Robots, Machines, Machine Tools

- OPC 30070-1 – UA for MTConnect, Part 1: Device Model
- OPC 40001-1 – UA for Machinery – Basic Building Blocks
- OPC 40001-2 – UA for Machinery – Process Values
- OPC 40001-3 – UA for Machinery – Job Management
- OPC 40001-100 – UA for Machinery – Result Transfer
- OPC 40010 – UA for Robotics
- OPC 40020 – UA for Cranes & Hoists
- OPC 40083 – UA for Plastics Rubber – General Types
- OPC 40077 – UA for Plastics Rubber – Injection Moulding Machines to MES
- OPC 40079 – UA for Plastics Rubber – Injection Moulding Machines to Robot
- OPC 40082-1...n – UA for Plastics Rubber – <device>
- OPC 40084-1...n – UA for Plastics Rubber – Extrusion
- OPC 40100 – UA for Machine Vision
- OPC 40200 – UA for Weighing Technology
- OPC 40210 – UA for Geometrical measuring Systems
- OPC 40223 – UA for Pumps and Vacuum Pumps
- OPC 40250 – UA for Compressed Air Systems
- OPC 40301 – UA for Flat Glass Processing
- OPC 40400 – UA for Powertrain\*
- OPC 40444 – UA for Textile Testing Devices\*
- OPC 40450 – UA for Joining Systems Base
- OPC 40451 – UA for Tightening Systems
- OPC 40501 – UA for Machine Tools
- OPC 40502 – UA for Computerized Numerical Control (CNC) Systems
- OPC 40530 – UA for Laser Systems
- OPC 40550 – UA for Woodworking Machinery
- OPC 40560 – OPC 40569 – UA for Mining
- OPC 40740 – UA for Process Air Extraction and Filtration Systems (PAEFS)\*
- OPC UA for Cable Harness Manufacturing
- OPC UA for High Pressure Die Casting\*
- OPC UA for Intralogistics Communication\*
- OPC UA for Surface Technology\*

## Enterprise, Asset Mgmt, Packaging

- OPC 10030 – UA for ISA-S95
- OPC 10031-4 – UA for ISA-95 Job Control
- OPC 30050 – UA for PackML (OMAC)
- OPC 30260 – UA for OpenSCS Serialization Model
- OPC 30261 – UA for OPEN SCS – Job Order Profiles
- OPC 40600 – UA for Weihenstephan Standards
- OPC UA for Asset Administration Shell – AAS\*
- OPC UA for Mimosa CCOM\*

## Engineering

- OPC 30040 – UA for AutomationML
- OPC 30250 – UA for DEXPI

## Field Device Integration

- OPC 30080 – UA for Field Device Integration (FDI)
- OPC 30090 – UA for Field Device Tool (FDT)

## Field Communication

- OPC 30100 – UA for SERCOS Devices
- OPC 30110 – UA for POWERLINK
- OPC 30120 – UA for IO-Link Devices and IO-Link Masters
- OPC 30130 – UA for Control & Communication System Profile (for Machine) CSP + (CCLink)
- OPC 30140 – UA for PROFINET
- OPC 30141 – UA for PROFIenergy
- OPC 30142 – UA for PROFINET Remote IO
- OPC 30143 – UA for PROFI-Encoder
- OPC 30144 – UA for PROFINET-GSD
- OPC UA for CIP Devices\*

▶ **151+ groups with domain experts have defined the semantics for their verticals**

▶ **Largest eco-system for information models for the automation world**

▶ **Landing page with complete overview here:**


**[www.opcfoundation.org](http://www.opcfoundation.org) ->  
[About -> Working Groups->  
List of Working Groups](#)**

▶ **Available free of charge**



# Collaborations: News 2023

<https://opcfoundation.org/news/technology-news>



FOUNDA T I O N  
The Industrial Interoperability Standard™

Login • Create Account • Contact Us   

Search ▼

About ▼

Membership ▼

Products ▼

Certification ▼

Markets & Collaboration

Resources ▼

News & Events ▼

## OPC Technology News

Technology News informs about publications, documents in review, and working groups in initialization.

Publications

Call for Review

Call for Participation



DOCUMENT	DATE	
OPC 30144-1 PROFINET GSD - V 1.00	2023-09-25	▼
OPC 40740 Process Air Extraction and Filtration Systems - V 1.00	2023-08-10	▼
OPC 40020-1 Cranes&Hoists - MotionDevicesSystemBase - V 1.00	2023-07-21	▼
OPC 30020 MDIS OPC UA Companion Specification - V 1.3	2023-07-07	▼
OPC 40001-1 Machinery Basic Building Blocks - V 1.03.0	2023-06-08	▼
OPC 30030 BACnet - V 2.00.1	2023-06-02	▼
OPC 40210 Geometric Measuring Systems - V 1.00	2023-05-24	▼

Jan 1st, 2023 through Nov 14th, 2023

- 25 Publications (release)
- 17 Call for review
- 9 Kick-Offs
- 1 Call for participation





# Agenda

- ▶ **News Organization: Members / Board Election / Retirement Secretary**
- ▶ **OPC UA: 20th anniversary of standardization!**
- ▶ **Collaboration: Overview Companion Specifications**
- ▶ **Interoperability: OPC UA growing into cloud scenarios**
  - **OPC UA: Interoperability on Field & Edge**
  - **OPC UA: Interoperability from Edge to Cloud**
  - **OPC UA: Interoperability for IT & Cloud**
- ▶ **News**
  - **Certification updates**
  - **OPC UAcademics**
  - **OPC UA get adopted in cloud apps**
  - **Call for action**

# OPC UA: Industrial Interoperability

One harmonized solution for OT and IT  
Including:

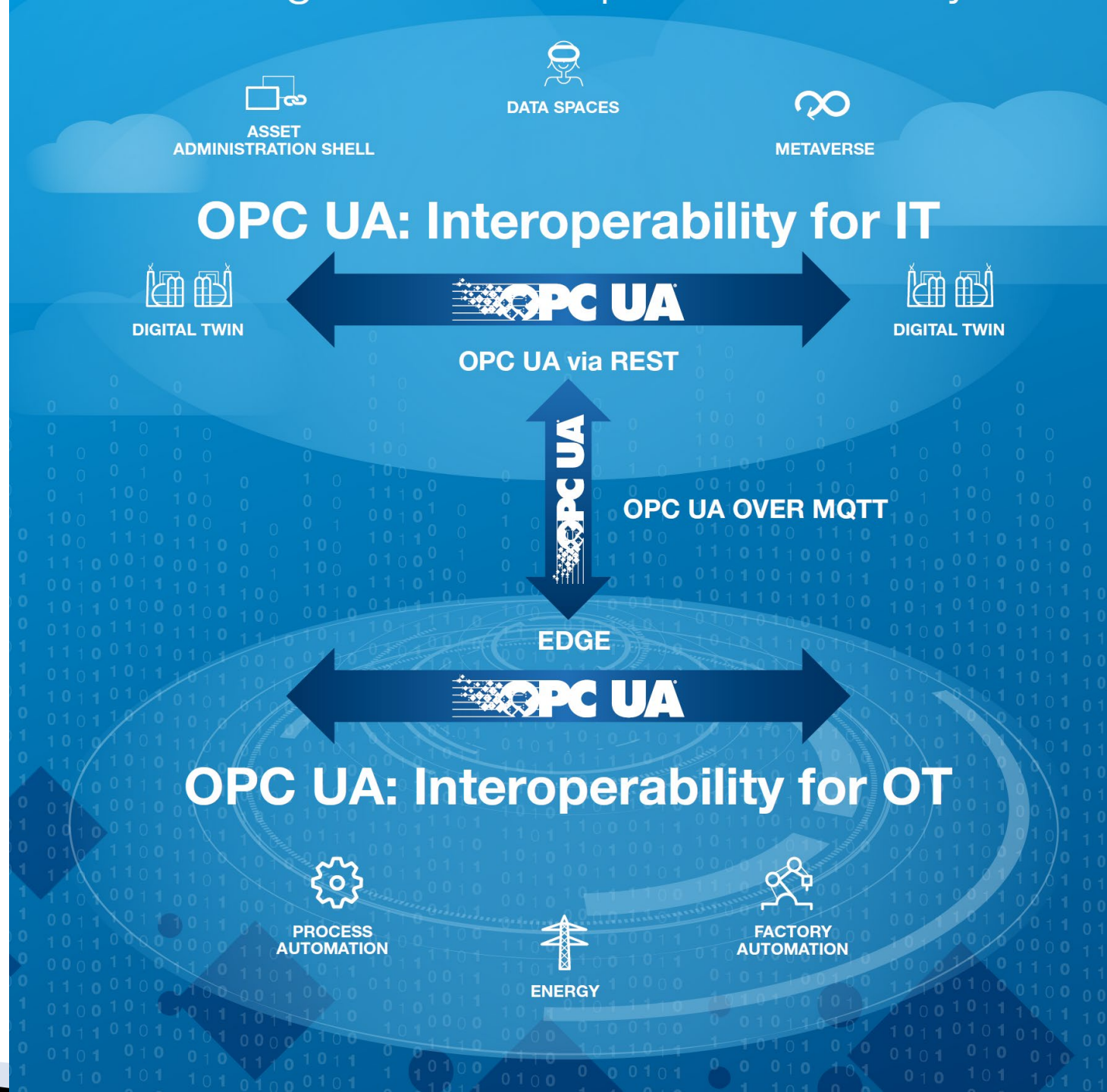
... rich modeling language

... flexible transport

... security

Do not forget the eco-system with:

- Openness (Specs, Sample-code, Lab)
- 151+ standardized domain models
- Commercial tool chain
- 2013: File transfer & Directory Services
- 2016: REST Interface



# OPC UA feature set is scalable!

- Perception: OPC UA is too big and too powerful!

Question: Do all OPC UA functions always have to be provided in the OPC UA Server?

Answer: No!



Examples:

- PLC controllers may not need a REST-Interface
- Edge devices may not require Ethernet-APL or TSN functionality
- Data Spaces, Digital Twin ... may not required TCP, UDP but REST , „OPC UA over MQTT“ and file transfer
- ....



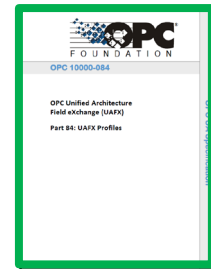
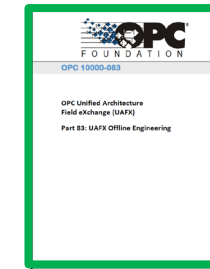
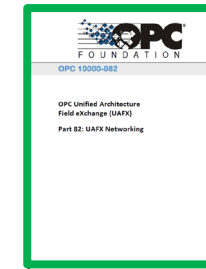
# Agenda

- ▶ **News Organization: Members / Board Election / Retirement Secretary**
- ▶ **OPC UA: 20th anniversary of standardization!**
- ▶ **Collaboration: Overview Companion Specifications**
- ▶ **Interoperability: OPC UA growing into cloud scenarios**
  - **OPC UA: Interoperability on Field & Edge**
  - **OPC UA: Interoperability from Edge to Cloud**
  - **OPC UA: Interoperability for IT & Cloud**
- ▶ **News**
  - **Certification updates**
  - **OPC UAcademics**
  - **OPC UA get adopted in cloud apps**
  - **Call for action**

# OPC FLC Initiative: C2C News

## 1. Phase 1: Controller-to-Controller (C2C)

- OPC UA FX Specification Series Part 80-84 released
- Certification efforts finalized
- First products expected 2024



## UA FX Multi-Vendor Demos

- Controller-to-Controller (C2C)
- OPC UA Safety
- OPC UA over 5G Demo

More than 20 participating companies incl. all major automation suppliers

# Ethernet-APL: Enabler for OPC UA in the field

Live Demo at  
OPCF booth @SPS 2023

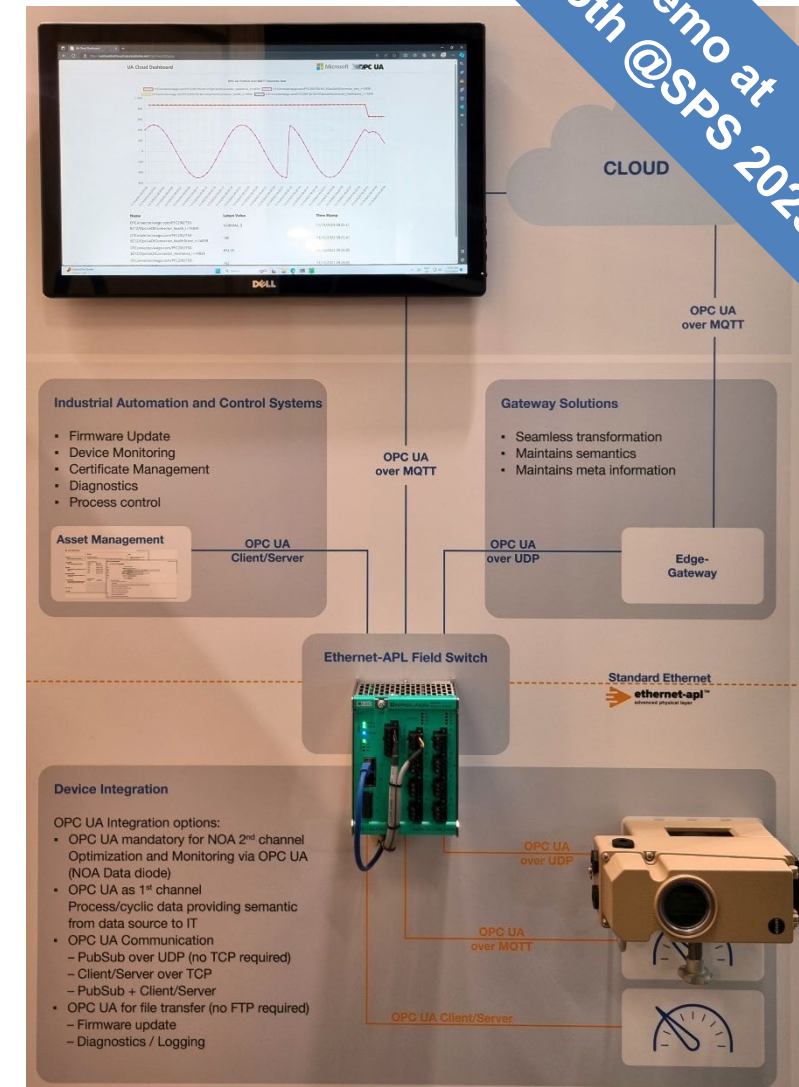
- ▶ OPC UA is the chosen Industrial Interoperability solution by NOA, OPAF, MTP and MDIS
- ▶ Direct cloud connectivity or utilization of gateways based on well-defined semantics

## OPC UA Integration options:

- ▶ OPC UA as „second channel“ for monitoring & optimization (NOA = Namur Open Architecture)
- ▶ OPC UA as „first channel“ for exchange of cyclic process data

## Communication options:

- OPC UA over MQTT
- OPC UA Client/Server over TCP/IP
- OPC UA PubSub over UDP/IP or Layer 2 Ethernet





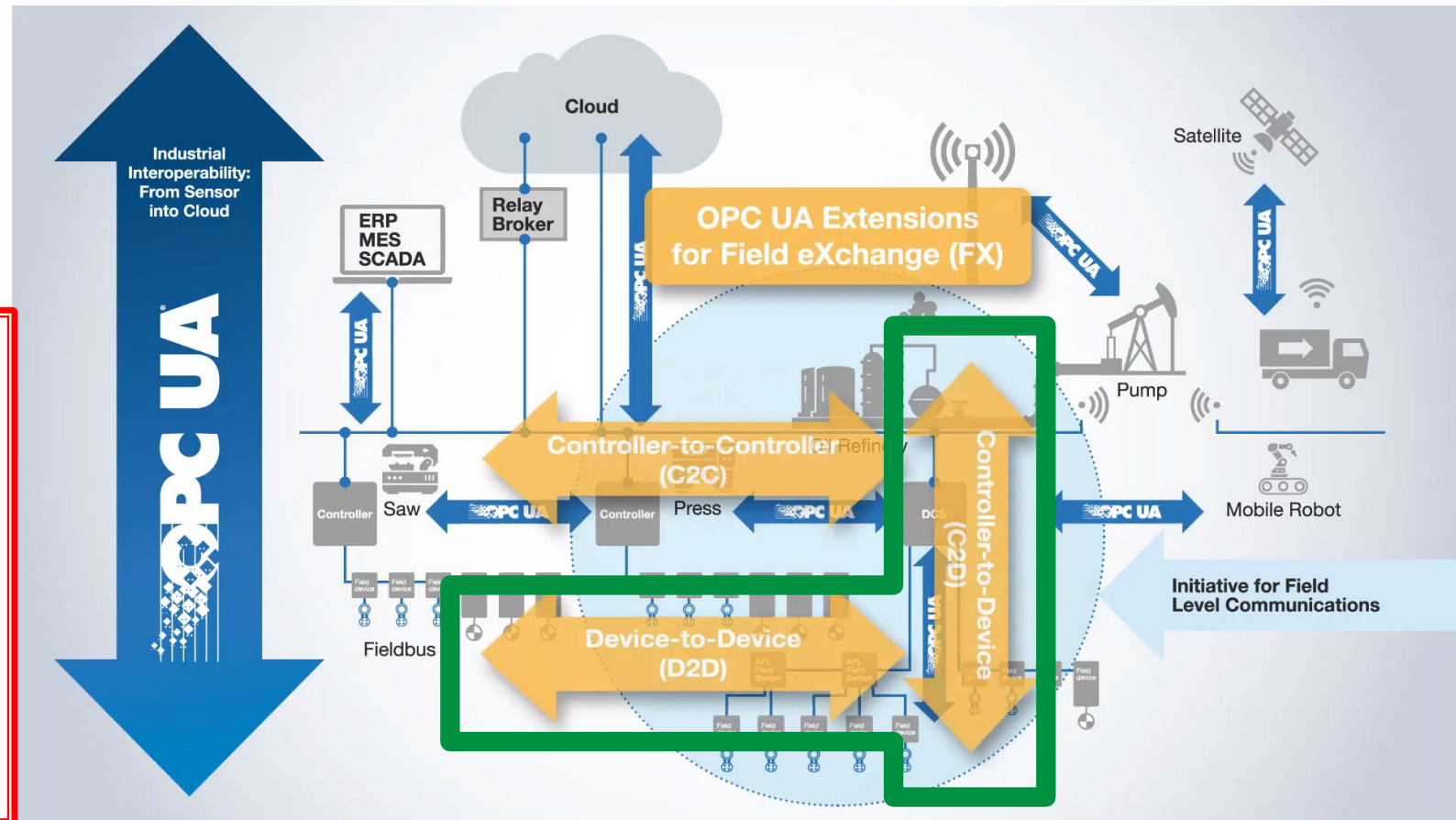
# OPC FLC Initiative: Launch of Phase 2 (2024 – 2027)

► FLC Phase 1 (2019 – 2023):

- Focus on C2C Use Case
- UAFX Base Concepts for Controllers (and Field Devices)
- Online & Offline scenarios

► **OPC Foundation now launches Phase 2 (2024 – 2027)**

- Focus on C2D and D2D
- Extend existing UAFX base concepts (e.g. Parametrization, Diagnosis and Networking)
- Develop application profiles for motion control, I/O and instrumentation



- **Technical working groups & FLC Steering Committee open to all OPC Foundation members**
- **FLC Steering Committee members provide extra support (financial contributions & man-power)**

# Agenda

- ▶ **News Organization: Members / Board Election / Retirement Secretary**
- ▶ **OPC UA: 20th anniversary of standardization!**
- ▶ **Collaboration: Overview Companion Specifications**
- ▶ **Interoperability: OPC UA growing into cloud scenarios**
  - **OPC UA: Interoperability on Field & Edge**
  - **OPC UA: Interoperability from Edge to Cloud**
  - **OPC UA: Interoperability for IT & Cloud**
- ▶ **News**
  - **Certification updates**
  - **OPC UAcademics**
  - **OPC UA get adopted in cloud apps**
  - **Call for action**

# OPC UA: One IEC standard for multi vendor cloud solutions



## CLOUD-RELATED ACTIVITIES:

### 1. Cloud Library

- Repository for OPC UA based information models (IMs)
- Upload, store, search, download IMs

### 2. Cloud Federation

- Standardized communication
  - Cloud to Cloud

### 3. Asset / Edge / Cloud

- Standardized communication
  - Field to Cloud
  - Cloud to Field

#### Challenge

- MQTT is a "payload agnostic" protocol
- No definition of the message payload
- Results in multiple company or consortia mapping definitions

#### Solution

- OPC UA Pub/Sub (over UDP and MQTT) published in Feb 2018
- Different bindings (JSON/BINARY) for different use-cases
- OPC UA is IEC62541 Standard
- Supported by 6 major cloud vendors
- Plugfest with 25+ major OT companies

### 4. Education IIOT Starter Kit



<https://github.com/OPCFoundation/UA-IIoT-StarterKit>



### 5. Cloud success stories



<https://opcfoundation.org/resources/case-studies/>

## SPS 2021

- 2 OT companies  
BECKHOFF / Siemens
- 1 IT company  
Microsoft

## SPS 2022

- 18 OT companies
- 2 IT companies

## SPS 2023

- 53 OT companies
- 2 IT companies

## SPS 2024

- ??



# Agenda

- ▶ **News Organization: Members / Board Election / Retirement Secretary**
- ▶ **OPC UA: 20th anniversary of standardization!**
- ▶ **Collaboration: Overview Companion Specifications**
- ▶ **Interoperability: OPC UA growing into cloud scenarios**
  - **OPC UA: Interoperability on Field & Edge**
  - **OPC UA: Interoperability from Edge to Cloud**
  - **OPC UA: Interoperability for IT & Cloud**
- ▶ **News**
  - **Certification updates**
  - **OPC UAcademics**
  - **OPC UA get adopted in cloud apps**
  - **Call for action**

# OPC UA for Metaverse: Finalized

- Collaboration between OPC Foundation and Digital Twin Consortium – including all OPCF BoD companies
- Immersive Condition Monitoring Use Case.
- Leveraging OPC UA as industrial digital twin



## News Release

### OPC UA connects the industry to the Metaverse

Metaverse concept and real world examples for Digital Twins in industrial automation have been published

Scottsdale, AZ - November 14<sup>th</sup>, 2023 - The OPC Foundation is pleased to announce the completion and publication of its Metaverse work. After needs for a standardized Metaverse solution being raised by Dr. Holger Kenn, Microsoft, in October 2022 the Board of Directors of the OPC Foundation decided to establish a Working Group to ensure OPC UA is well suited for the Metaverse use-cases.

In less than one year the group, chaired by Erich Barnstedt, Microsoft, finished its work and published the results. The groups quick success was enabled by OPC UA already providing standardized solutions to the important requirements like information modelling, information exchange, cloud connectivity and asset identification.

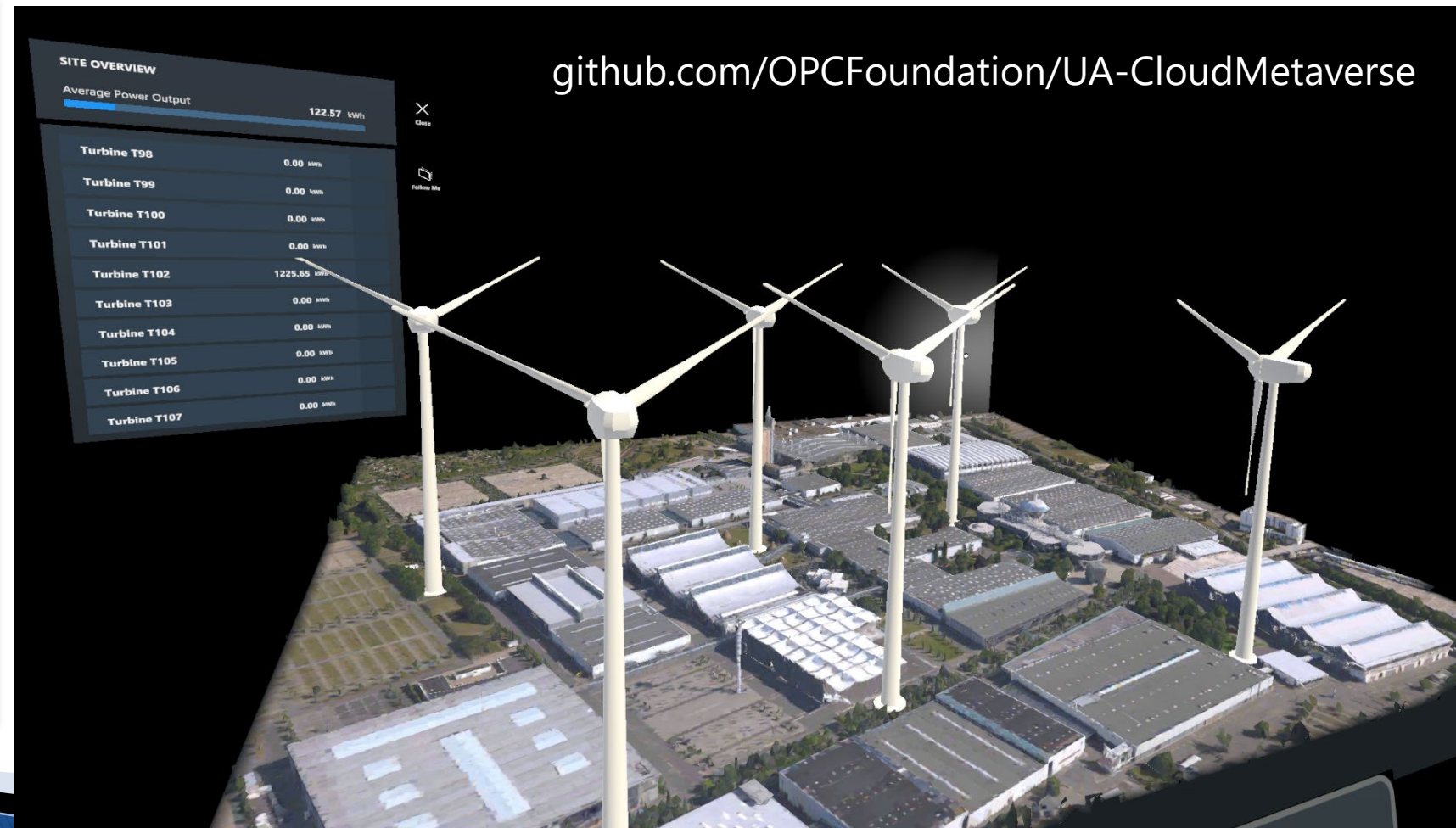
With this base being available to the working group the main task became bringing the necessary pieces together to provide solutions for the use cases:

- Remote or on-premises condition monitoring using augmented and virtual reality technology
- Remote assisted maintenance of machinery carried out by local workers with the assistance of remote experts.
- Production processes training in safe, simulated environments for real-world tasks in hazardous environments
- Manufacturing logistics planning and execution using head-up display technology for drivers of transport systems.

The code for those solutions has been open-sourced and published on the OPC Foundation GitHub repositories for the industry to get a quick success when establishing their Metaverse concepts and products:

- Condition monitoring sample application built on Unity  
<https://github.com/OPCFoundation/UA-CloudMetaverse>
- OPC Foundation UA Sample Client application capable of running on HoloLens for remote assisted maintenance  
<https://github.com/OPCFoundation/UA-.NETStandard-Samples/blob/master/UAUniversalWindows.sln>

The YouTube channel of the OPC Foundation also provides an instructive recording detailing the standardized solutions for public access.



# European administration

**European Union (EU) is preparing couple of administrative rules**

**Have to be fulfilled, if a machine is operating inside EU (produced inside EU or imported to EU)**

- **DPP (Digital Product Passport)**
- **PCF (Product Carbon Footprint)**
- **CRA (Cyber Resilian Act)**

**Good news:**

- **DPP and PCF ...**  
**... is „just“ a very small OPC UA companion spec which can easy integrated into any OPC UA server running in the field, in edge, in the cloud...**
- **CRA ...**  
**OPCF started working group „UA for smart elements“ already**  
**Security summit planned for 2024 (status today: June)**

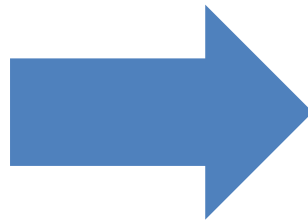
**Summary:**

**OPCF takes care and offers easy to implement solutions based on OPC UA**



# Combining Ecosystems

## OPC UA for modelling EU Digital Product Passport



1. OPC UA used for information modelling (including Companion Specs)
2. Office Open XML used for packaging (AASX file format)
3. HTTP REST used for interface (both AAS and OPC UA REST supported)

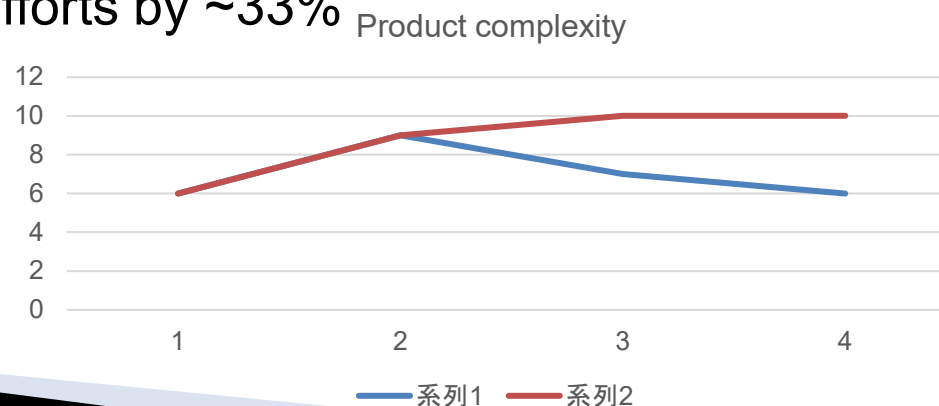
# Agenda

- ▶ **News Organization: Members / Board Election / Retirement Secretary**
  - ▶ **OPC UA: 20th anniversary of standardization!**
  - ▶ **Collaboration: Overview Companion Specifications**
  - ▶ **Interoperability: OPC UA growing into cloud scenarios**
    - **OPC UA: Interoperability on Field & Edge**
    - **OPC UA: Interoperability from Edge to Cloud**
    - **OPC UA: Interoperability for IT & Cloud**
- ▶ **News**
    - **Certification updates**
    - **OPC UAcademics**
    - **OPC UA get adopted in cloud apps**
    - **Call for action**

# OPC Certification Updates

- ▶ New OPC UA Certified Logo
- ▶ Product certification
  - ~20% increase in testing products in 2023
  - New product types like robot controllers (Seiko Epson)
- ▶ 3 CTT Releases this year
  - Introducing OPC UA PubSub UDP Testing
  - Introducing first set of UAFX Tests
  - Usability enhancements
  - Bug fixes

- ▶ Reduced testing efforts by ~33%











Future Logo:



Current versions:



 <p><b>VT Series</b></p> <p>VT Series All-in-One 6-Axis robots feature great performance at an ultra low price, offering many of the same features as Epson high-end robots. VT Series robots include a built-in controller and simplified cabling, allowing fast, easy integration. S...</p> <p><a href="#">Show details</a></p>	 <p><b>N Series with RC700-A</b></p> <p>The N Series lineup features a revolutionary compact folding-arm design that maximizes motion efficiency for faster cycle times. Packed with unique technology, the N Series significantly reduces workspace requirements when compared to typical 6-Axis ...</p> <p><a href="#">Show details</a></p>
 <p><b>C Series with RC700-A</b></p> <p>C Series 6-Axis robots provide great cycle times and a unique Slim-Line design, backed by remarkable precision and motion range. These compact robots offer exceptional performance for even the most demanding and complex applications. Specifica...</p> <p><a href="#">Show details</a></p>	 <p><b>RS Series with RC700-A</b></p> <p>RS Series robots are some of the most unique and flexible SCARA robots available in the market today. With the ability to cross back under, as well as reach behind themselves, RS Series robots are able to utilize the entire workspace underneath the a...</p> <p><a href="#">Show details</a></p>
 <p><b>T Series</b></p> <p>T Series All-in-One SCARA robots are the perfect alternative to complex slide-based solutions. These space-saving robots install in minutes. And, they include the same intuitive software and powerful features found in Epson's high-end robots. ...</p> <p><a href="#">Show details</a></p>	 <p><b>LS Series with RC90-B</b></p> <p>LS Series SCARA robots offer the high performance and great reliability that users have come to expect from Epson, but at a lower cost. LS Series SCARAs were created for factories looking for maximum value without giving up performance. Specif...</p> <p><a href="#">Show details</a></p>
 <p><b>G Series with RC700-A</b></p> <p>G Series SCARA robots feature a high-rigidity arm design that delivers high speed, high precision, and low vibration. G Series SCARA robots offer a wide variety of sizes from 175 to 1,000mm in reach, with up to 20 kg payloads. Specifications M...</p> <p><a href="#">Show details</a></p>	 <p><b>OPC UA Server for RC700/90 Series</b></p> <p>This OPC UA Server is installed on Epson Controller RC700/90 series. A release of firmware containing the certified OPC UA Sever will be announced later. Links for Epson Controller with Robot C Series with RC700-A G Series with RC700-ALS Ser...</p> <p><a href="#">Show details</a></p>





# OPC UAcademic: Content

- ▶ Introduction to OPC UA
- ▶ The History of OPC and OPC UA
- ▶ The Specifications
- ▶ OPC UA Communication
- ▶ Security in OPC UA
- ▶ OPC UA Address Space Model
- ▶ OPC UA Services
- ▶ OPC UA Information Models
- ▶ OPC FLC Initiative
- ▶ OPC UA Service mappings
- ▶ OPC UA Profiles
- ▶ OPC UA Aggregation & Discovery
- ▶ OPC UA Pub/Sub
- ▶ Companion Specifications
- ▶ Implementation of OPC UA
- ▶ Tools and frameworks
- ▶ Use cases
- ▶ Architectures
- ▶ Introduction to practical exercises

## OPC UA Security Cryptography Models

Public Key infrastructures

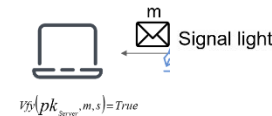
$pk_{Server}$   $pk_{Client}$



## OPC UA Information model

### Industrial Example

- ▶ Real states can be assigned by the representation and thus can be retrieved and changed



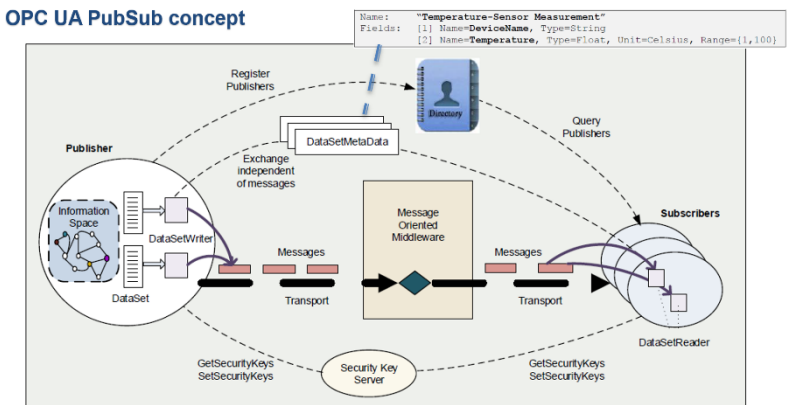
Signal light

Conveyor belt

OPC UAcademics  
Copyright OPC Foundation 2021

## OPC UA Publish-Subscribe

### OPC UA PubSub concept



OPC UAcademics  
Copyright OPC Foundation 2021



# OPC UAcademic: Registrations

- ▶ Austria
- ▶ Brazil
- ▶ Cameroon
- ▶ Canada
- ▶ Czech
- ▶ England
- ▶ Finland
- ▶ France
- ▶ Germany
- ▶ India
- ▶ Norway
- ▶ Pakistan
- ▶ Poland
- ▶ Portugal
- ▶ Spain
- ▶ South Korea
- ▶ Switzerland
- ▶ Tunisia
- ▶ USA
- ▶ Vietnam

Total: 20+  
Countries

Total: 125+  
Professors/Teachers

## Registration

- ▶ Registration form on OPC Foundation Website:  
<https://opcfoundation.org/resources/opcuacademic/>

# Looking into the future – OPC UA get adopted in cloud apps

- **OPC UA is De-facto standard ...**
    - OPC UA Client/Server ... is the de-facto standard for PLC/SCADA/MES/ERP interaction
    - OPC UA PubSub ... over MQTT is the de-facto standard for interaction between edge and cloud  
... and also interaction between digital twins
    - OPC UA REST .... is the de-facto standard for easy access from IT/cloud to  
standardized field information
  - **IT relevant groups realize more and more**
    - OPC UA's rich semantic data models and standardized interfaces
    - Stability over 17 years without any compatibility break
    - Eco-system with rich commercial offerings but also open source, education etc
    - World largest pool of standardized domain models
    - Legal protection umbrella
- OPC Foundation offer OPC UA as “interoperability for cloud applications” like digital twins
- OPC UA will grow into Cloud



# Call for action

- **OPC UA success stories**
  - Lot of countries provided success stories from end-users
    - What about Japanese success story?  
Either from End-user in Japan or international with Japanese products
- **OPC UA podcast**
  - what about Japanese podcast edition?
- **OPC UAcademic**
  - Finalize Japanese translation
  - Advertise for Japanese Professors and Universities
- **Companion specs: Japanese OPC UA products including companion specs**
  - Significant trend from end-users to request support of companion specs (like Automotive Industry)
- **OPC UA get adopted in cloud applications**
  - who is the Japanese collaboration partner to educate and make cloud community aware?

# OPC Foundation: The United Nations for Industrial Automation

Thank you! - Questions?

Stefan Hoppe

President & Executive Director OPC Foundation

[Stefan.hoppe@opcfoundation.org](mailto:Stefan.hoppe@opcfoundation.org)



Looking for more information?

<https://opcfoundation.org/>

