OPC Foundation and the Trends in Digitalization

OPC Day Helsinki - Dec, 10th, 2025

Stefan Hoppe
President & Executive Director OPC Foundation
stefan.hoppe@opcfoundation.org

OPC Foundation: Numbers at a Glance

1019 Members

60% Europe
20% Americas
20% APAC

Budget 2025:

4.300.000 USD

In 2025 additional
1.400.000 USD for FLC

4 Regions
North America, Europe, China, Japan

4 Hubs
France, Singapore, India, Korea

150+ Working Groups

427+ Models free of charge in OPCF Cloud Library (Domain specific, Catena-X, …)

350+ Specifications

15 Board Members

0 Employees

11 Contractors

1100+ Volunteers

OPC UA is IEC62541 Standard
China standard GB/T 33863.x)
Local standard in Singapore, Korea, Russia …

17 Open Source Projects by OPCF
1900 Open Source Projects in total

10.365 Followers on LinkedIn

OPC Foundation Membership Development

850 members - Status Nov 12th, 2021
896 members - Status Nov 8th, 2022 → 46 members within 1 year
963 members - Status Nov 14th, 2023 → 67 members within 1 year
1010 members - Status Nov 13th, 2024 → 47 members within 1 year
1019 members - Status Nov 12th, 2025 → 9 members within 1 year

OPC Foundation Members – OT, IT, End-users & Enabler

The OPC Foundation is the place where OT and IT meet, talk together and make the (automation) world a better place!

OPC FOUNDATION

OPC Foundation Board of Directors: Election procedure

19th of August	• E-Mail to all Designated Representatives requesting nominations for seven (7) open board seats to be received by September 19th, 2025.
19th of September	• The OPC Foundation received eight (8) nominations (for 7 open seats)
3rd of November	• Ballot was sent electronically to all Designated Representatives via Big Pulse
17th of November	• Reminder was sent via Big Pulse to all Designated Representatives who have not voted yet
24th of November	• Reminder was sent via Big Pulse to all Designated Representatives who have not voted yet
01st of December	• Election closed at 5 p.m. MST

OPC Foundation Board of Directors: Election for 2026/2027

Board of Directors 2025

- Microsoft
- Amazon Web Services
- VDMA
- Siemens
- Honeywell
- Yokogawa
- Google Cloud

- SAP
- Beckhoff
- Huawei
- Mitsubishi
- Ascolab
- Rockwell Schneider ABB

2026/2027 election
8 candidates for 7 open seats

CHRISTOPH BERLIN, MICROSOFT .....
STEVE BLACKWELL, AMAZON WEB SERVICES .....
ANDREAS FAATH, VDMA .....
THOMAS HAHN, SIEMENS AG .....
ZIAD KAAKANI, HONEYWELL .....
SHINJI ODA, YOKOGAWA .....
PRAVEEN RAO, GOOGLE CLOUD .....
SHERET ROSS, SEQENT .....

Board of Directors 2026

- Microsoft
- Amazon Web Services
- VDMA
- Siemens
- Honeywell
- Yokogawa
- Google Cloud

- SAP
- Beckhoff
- Huawei
- Mitsubishi
- Ascolab
- Rockwell Schneider ABB

OPC FOUNDATION

OPC Foundation Board of Directors: Elected for 2026

Christoph Berlin
- Microsoft

Dr. Jan Bezdicek
- Rockwell Automation

Steve Blackwell
- Amazon Web Services

Matthias Damm
- Unified Automation

Dr. Bernhard Eschermann
- ABB

Andreas Faath
- VDMA

Thomas Hahn
- Officer: Vice President
- Siemens

Stefan Hoppe
- Officer: President
- BECKHOFF

Dr. Jingyi Hu
- Huawei

Ziad Kaakani
- Officer: Treasurer
- Honeywell Process Solutions

Praveen Rao
- Google Cloud

Aurelien Le Sant
- Schneider Electric

Takashi Shibata
- Mitsubishi Electric

Shinji Oda
- Officer: Chairperson of the Board
- Yokogawa

OPC UA
The foundation for secure, semantic interoperability

Vision of Secure, Industrial, Semantic Interoperability

Wish: One harmonized solution for OT and IT

- **Secure & reliable information exchange** – for static and dynamic data, files, alarms, events, and historical information
- **Vendor, platform & domain independent** – ensuring true interoperability across systems
- **Scalable architecture** – from sensor to enterprise and beyond, independent of lifecycle or system size
- **Internationally recognized standard** – adopted by ISO and IEC, trusted worldwide
- **Vibrant ecosystem** – supported by open-source projects and commercial tools alike
- **Modern IPR policy** – enabling adoption, implementation, and execution without legal risk

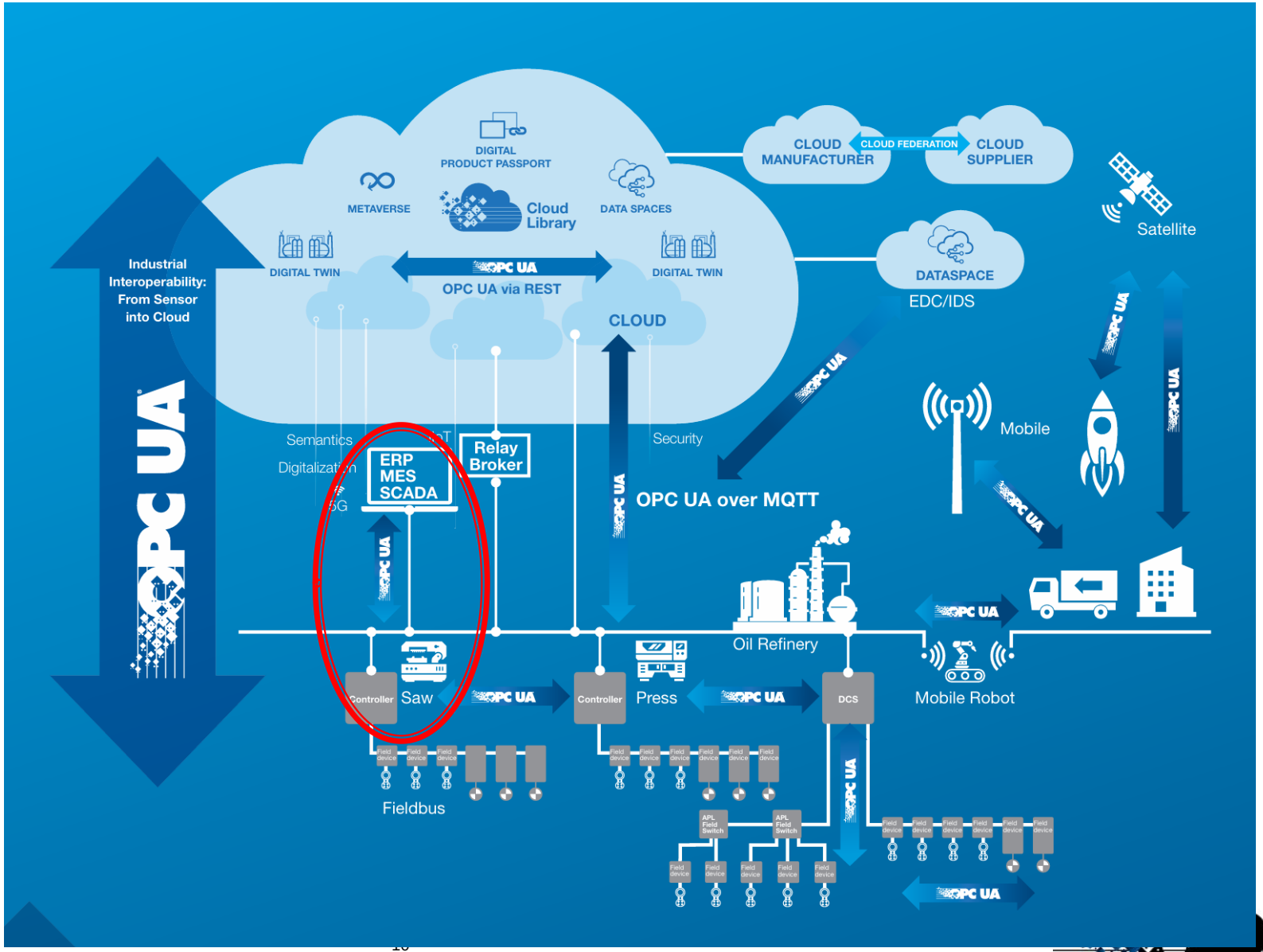
Solution:

OPC FOUNDATION

OPC UA Use Cases: One Solution for field, edge and cloud

I know and I use OPC UA !

… but are you using OPC UA
- as a protocol ?
- as modelling language?



OPC UA:
Industrial Interoperability

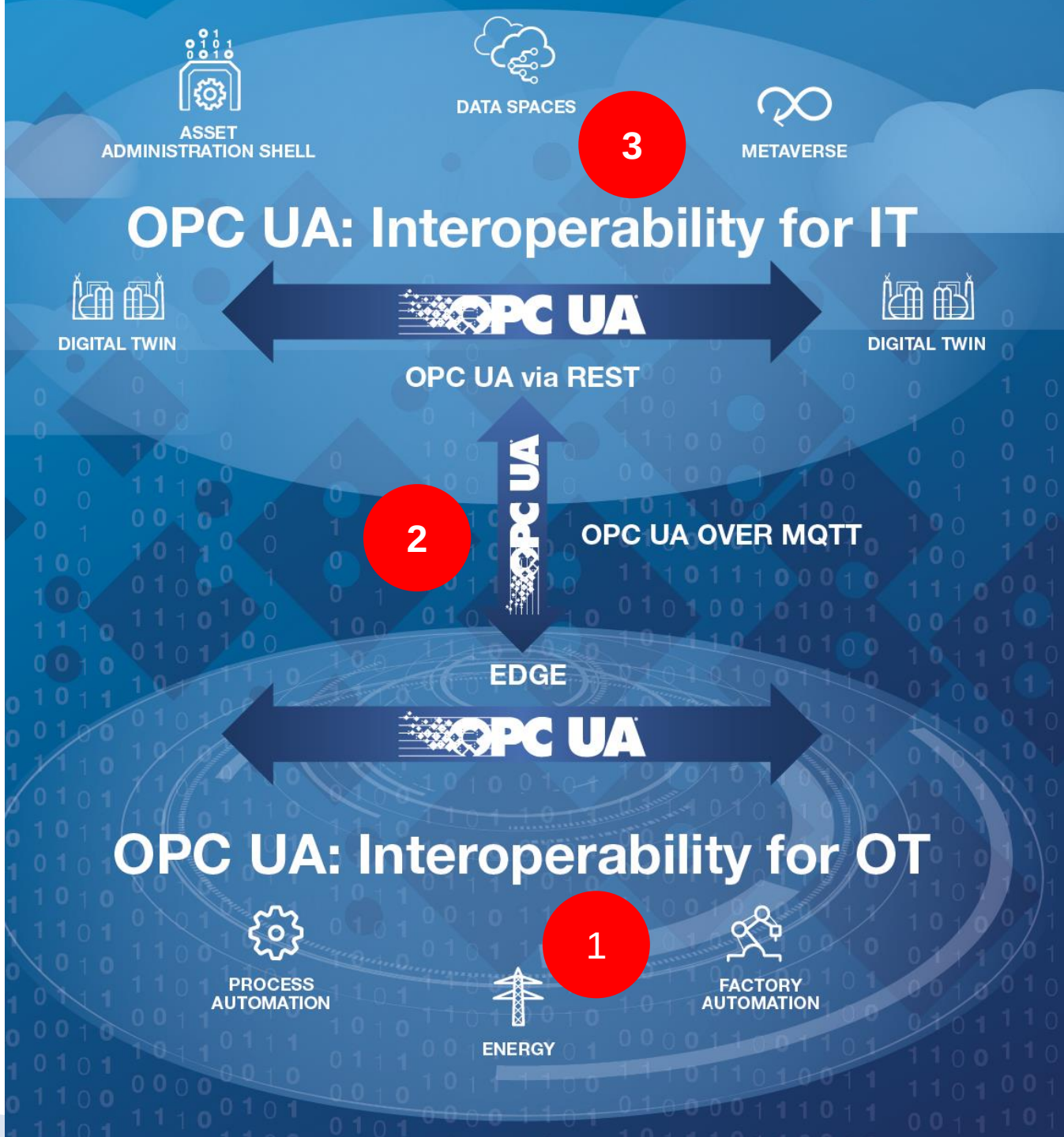
One harmonized solution for OT and IT

Including:

… rich modeling language
- complex data
- inheritance

… flexible transport
- TCP/IP, UDP, MQTT
- File Transfer (since 2013)
- REST interface (since 2016)

… security
- for accessing information
- for transport of information
- onboarding
- infrastructure certificate management



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!

It‘s you choice

It‘s your choice

Be aware:

- Just a tool is „rich“ does not mean you need to make use of all tools
  With a rich tool you also can create simple solutions – simple informatioin modells e.g. like 10 strings
- ... But in case you need more power, you can extend without loosing backward compatibility

Extending OPC UA to the field level

OPC UA FX™ Testing & Certification

Release Status

Certification of OPC UA FX controllers (and devices) is mandatory

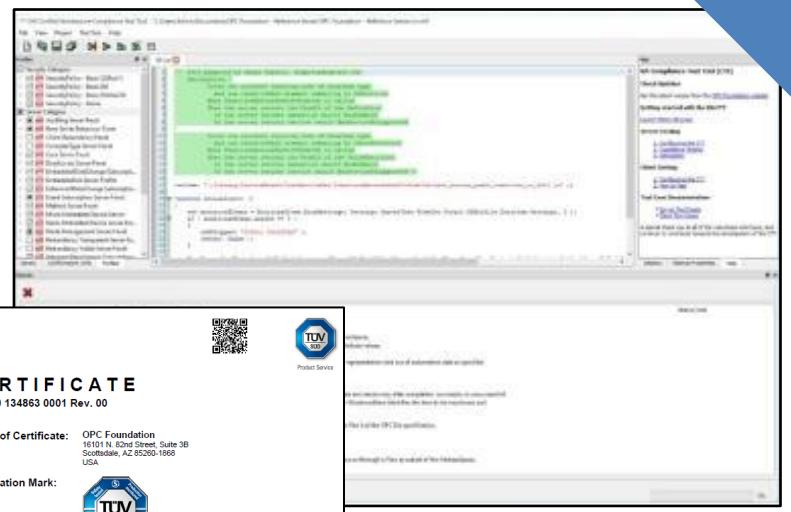
- Scripts for the **OPC UA Compliance Test Tool (CTT)** to test OPC UA FX™ controller functionality released
- **Certification Program** for OPC UA FX™ Controllers launched
- OPCF's Test Lab is prepared for testing of products supporting **Ethernet-APL** (Advanced Physical Layer)

ethernet-apl™
advanced physical layer

- **OPC UA Safety Compliance Test Tool (UASCTT)** certified by TÜV as notified body in November 2025

- OPC UA FX™ controller prototypes of several vendors have already proven a high level of interoperability in UAFX plugfests and OPC IOPs, so **first certified OPC UA FX™ controllers** can be expected in 2026.

OPC UA CERTIFIED



CERTIFICATE
No. Z10 134863 0001 Rev. 00

Holder of Certificate: OPC Foundation
16101 N. 82nd Street, Suite 3B
Scottsdale, AZ 85260-1868
USA

Certification Mark:

Product: Software Tool for Safety Related Development

Model(s): OPC UA Safety Compliance Test Tool

Parameters: The certified tool is classified as T2 offline support tool according to IEC 61508. It is suitably qualified to be used in safety related software development according to IEC 61508. The report OS105746C is a mandatory part of this certificate.

Tested according to: IEC 61508-3:2010

The product was tested on a voluntary basis and complies with the essential requirements. The certification mark shown above can be affixed on the product. It is not permitted to alter the certification mark in any way. In addition the certification holder must not transfer the certificate to third parties. This certificate is valid until the listed date, unless it is cancelled earlier. All applicable requirements of the Testing, Certification, Validation and Verification Regulations of TÜV SÜD Group have to be complied. For details see: www.tuvsud.com/ps-cert

Test report no.: OS105746C

Valid until: 2030-11-25

Date, 2025-11-26

(Christian Dirmeier)

Page 1 of 1
TÜV SÜD Product Service GmbH • Certification Body • Ridlerstraße 65 • 80339 Munich • Germany

ZERTIFIKAT ◆ CERTIFICATE ◆ СЕРТИФИКАТ ◆ CERTIFICADO ◆ CERTIFICAT

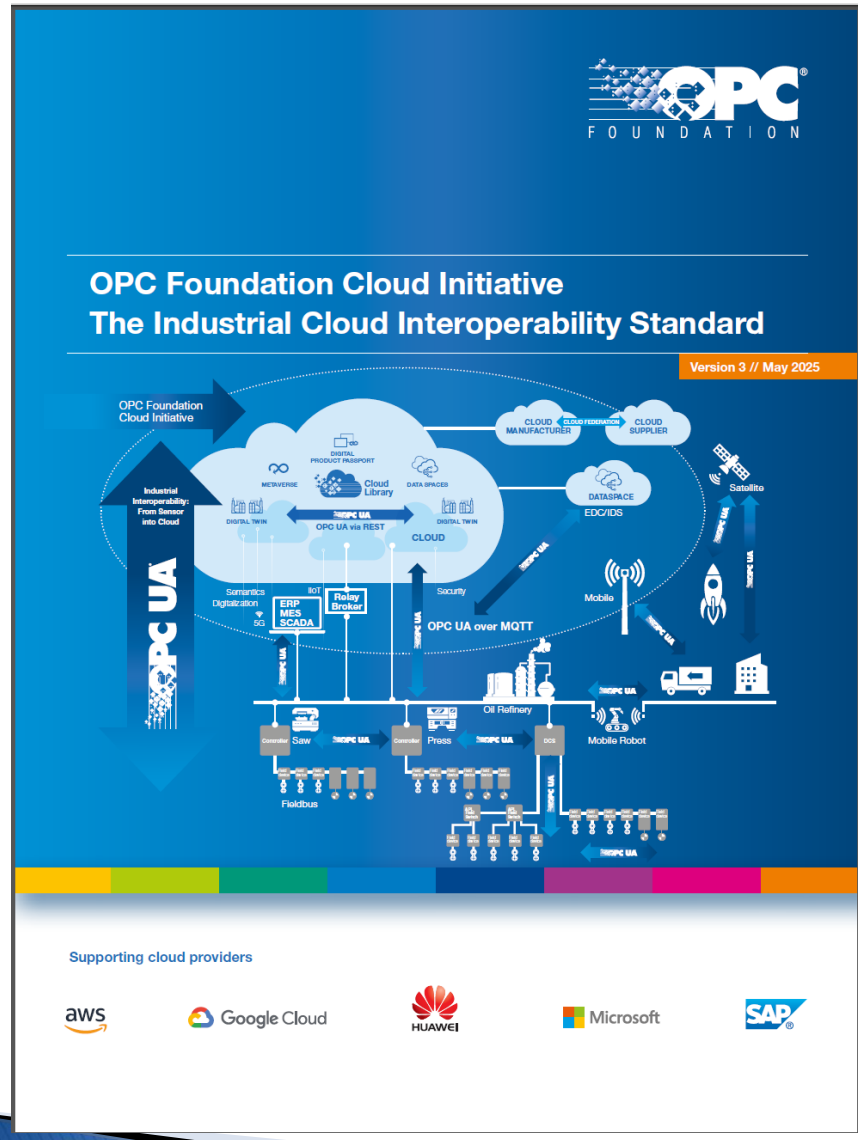
OPC FOUNDATION

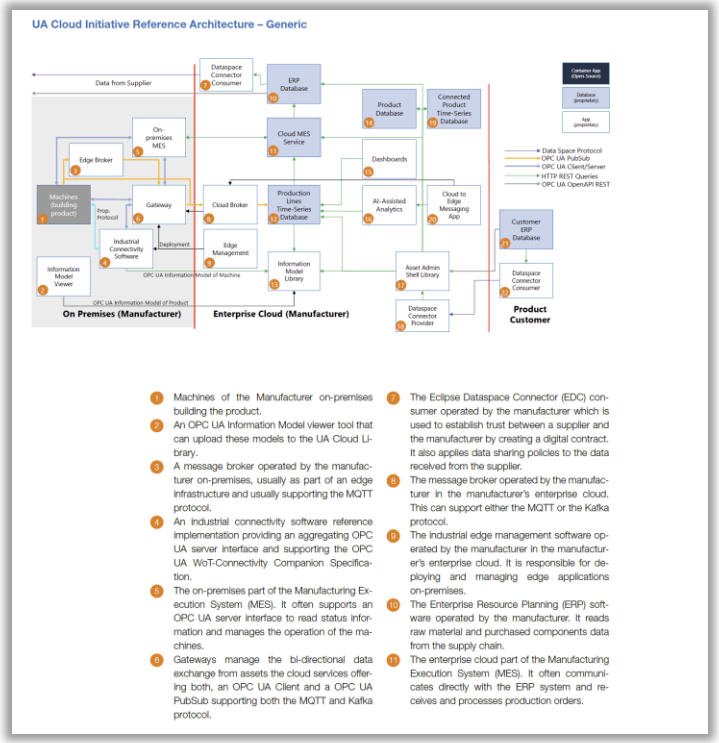
Extending OPC UA to the IT/cloud level

OPC Foundation Cloud Initiative: Milestones

1. Bring the world's leading cloud providers, automation providers and manufacturers together under one roof – **Done!**
2. Provide information to End-users and align goals of initiative with real-world industry driven requirements – **Done!**
3. Develop a reference architecture and map it to each provider's product portfolio – **Done!**
4. Develop marketing material (a cloud landing page and brochure) and spread the word – **Done!**
5. Develop open-source reference implementations for edge and cloud applications – **Done!**
6. Develop a reference solution for the Digital Product Passport – **Done!**
7. Develop a reference solution for data sharing along manufacturing supply chains – **Done!**
8. Develop a list of interoperability tests providers can run against their product to be "OPC UA CX" compliant – **In progress!**
9. Peace on earth and good will towards men – **Needs Improvement!**

OPC Foundation Cloud Initiative - Brochure





Download brochure here
[OPCF-Cloud-Initiative-Brochure.pdf]

Contains:

- The vision of the initiative
- The reference architecture
- Commercial offerings from

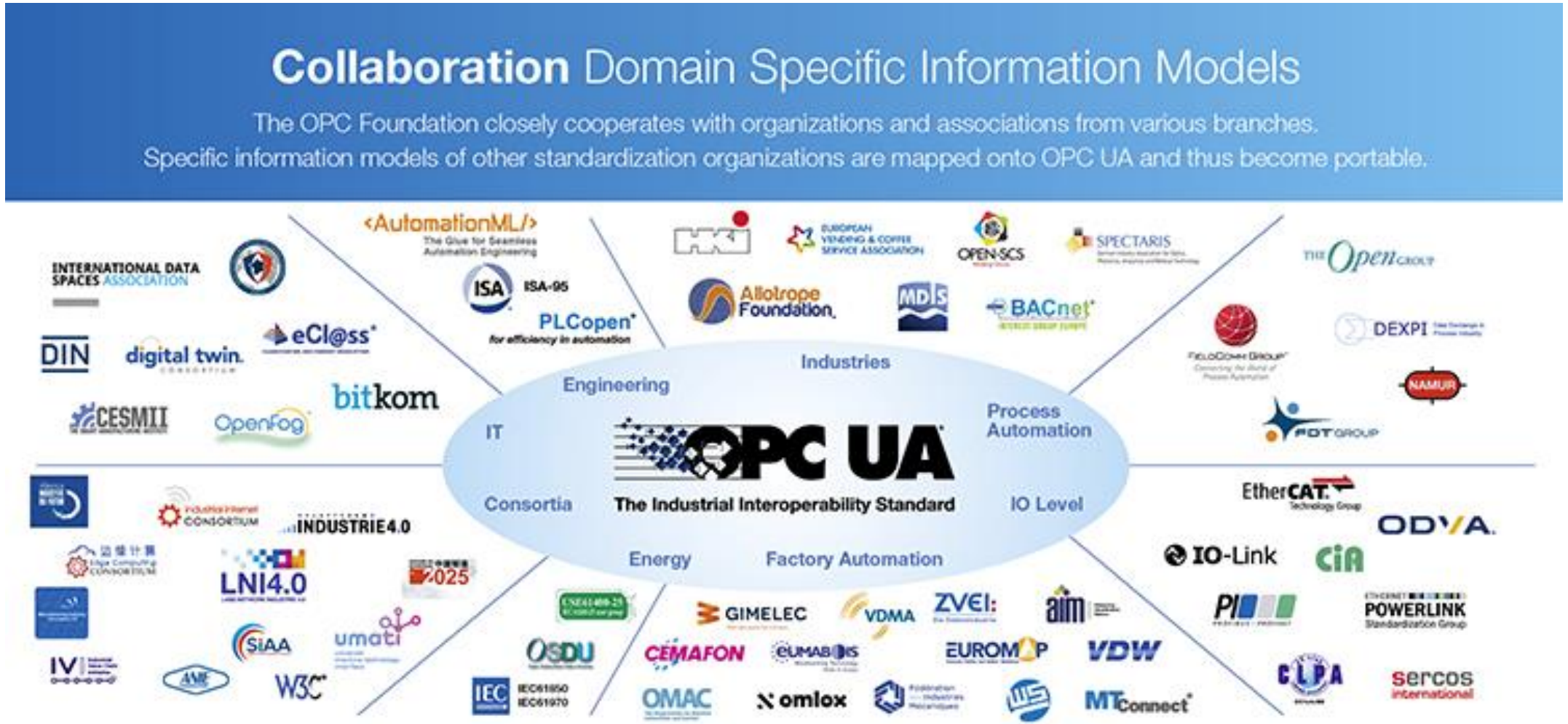
  Cloud suppliers like aws, Google, Huawei, Microsoft, SAP

  OT suppliers like ABB, Beckhoff, Honeywell, Mitsubishi, Rockwell, Schneider, Siemens, Yokogawa

Defining the semantic Collaborations with partners

OPC Foundation Collaborations - Overview

- https://opcfoundation.org/markets-collaboration/



Collaborations – Overview "Publications"

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

- 28 **Publications** in 2025 (Jan 1st till Oct 1st, 2025)
  Compare: 24 Publications in 2024 (Jan 1st till Oct 1st, 2024)

- 13 Call for **reviews** in 2025 (Jan 1st till Oct 1st, 2025)
  Compare: 12 Call for reviews in 2024 (Jan 1st till Oct 1st, 2024)

- 3 Call for **participations** in 2025 (Jan 1st till Oct 1st, 2025)
  Compare: 5 Calls for participation in 2024)

Information Models Released - 2025

DOC-NUMBER	TITLE	LATEST RELEASE /RELEASE CANDIDATE
1000-100	Devices	V 1.05.0, 2025-11-24
10000-200	Industrial Automation - Basics	V 1.01.4, 2025-06-24
10000-211	Global Positioning	V 1.0.0, 2025-10-09
10100-1	WOT Connectivity - API Definition	V 1.01, 2025-07-01
30080	FDI Specification - All Parts	V 1.4, 2025-09-17
40001-1	Machinery Basic Building Blocks	V 1.04.0, 2025-05-08V 1.04.1 RC
40001-4	Machinery Energy Mgmt	V 1.00, 2025-09-23
40001-101	Machinery Result Transfer	V 1.01, 2025-05-08
40010-1	Robotics - Vertical Integration	V 1.02, 2025-09-09
40200	Weighing Technology	V 2.00.0, 2025-04-26
40210	Geometric Measuring Systems	V 1.00.1, 2025-02-18V 1.00.2 RC
40444	Textile Testing Devices	V 1.0.0, 2025-02-11
40450-1	Joining Systems Base	V 1.01, 2025-10-04
40451-1	Tightening Systems General	V 2.00.1, 2025-10-04
40505	Wireless Machine Tool Peripherals	V 1.0.0, 2025-09-16
40550-1	Woodworking Machinery - Vertical Interface	V 1.02, 2025-11-28
40560	Mining - General	V 1.01, 2025-07-31
40570	Wire Harness Manufacturing	V 1.00, 2025-02-24
40719	Surface Technology - Plasma Treatment Machinery	V 1.00, 2025-11-01
40740	Process Air Extraction and Filtration Systems	V 1.0.1, 2025-03-05

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 -> About -> Working Groups-> List of Working Groups]**
- **Available free of charge**

OPC FOUNDATION

NEW

OPC UA for Battery Solutions — Working Group Initiative

- **Why It Matters:**
  - From 2027, the **EU Battery Passport** becomes mandatory.
  - Requires **traceable, standardized data** across lifecycle: materials → production → usage → recycling.
  - OPC UA bridges **IT & OT systems**, ensuring interoperability of diverse solutions.

- **Key Deliverables:**
  - Alignment of existing OPC UA Companion Specification for Battery Cell up to Battery Passport parameters
  - Extension of UA Cloud Reference Architecture with open-source reference implementation for battery passport

- **Reference architecture & open-source implementation** (UA Cloud + Catena-X mapping).
  - Alignment with **BatteryPass EU** and **BatteryPass-Ready** initiatives.

- **Team**
  - Initiated an lead **by Fraunhofer FFB Münster**
    supported by associations Catena-X, IDSA, IDTA, OPC Foundation, VDA, VDMA and companies Huawei & Microsoft

- **Outcome:**
  - A unified, trusted interoperability layer connecting data, systems, and standards — powering the **digital and sustainable battery ecosystem** of the future.

OPC FOUNDATION

OPCF Energy Initiative Update

- Intended to standardize and simplify connectivity of energy-related systems, services, and devices for:
  - **Energy-Production**
    - (i.e Solar, Wind, Hydro, Nuclear, Oil/Gas/Coal)
  - **Energy-Transformation**
    - (i.e. Conversion of Energy to Hydrogen, Heat, and other Energy Forms)
  - **Energy-Distribution**
    - (i.e. Transport of Energy via Pipelines, Trucks, Powerlines)
  - **Energy-Storage**
    - (i.e. Batteries, Hydrogen, Heat)
  - **Energy-Consumption**
    - (i.e. SmartMeters, Appliances, Machines, Production Lines, Facilities and Buildings)

Catena-X – powered by OPC UA

Core areas of collaboration:

- **Semantic Integration:** Combine the OPC UA information modelling and Catena-X semantic templates – results in automated DPP generation from production data.
- **Open-Source Reference Implementations:** Jointly develop and provide open-source reference implementations for key dataspace and interoperability components, enabling straightforward integration of OPC UA-based systems into the Catena-X data ecosystem.
- **Reference Architecture Alignment:** Align the OPC Foundation's Cloud Initiative reference architecture with Catena-X's dataspace architecture to enable streamlined deployment from the shopfloor to the supply chain.
- **Industrial Ecosystem Enablement:** Empower companies to leverage their existing OPC UA tools and infrastructure to meet emerging regulatory requirements, particularly the DPP, while reducing integration costs and accelerating time-to-compliance.

Catena-X and OPC Foundation Join Forces to Enable Seamless Industrial Data Exchange for the Digital Product Passport

The Partnership aligns OPC UA Standardization and Cross-Industry Data Interoperability to Comply with Regional Regulations like the EU Digital Product Passport

Scottsdale (AZ), USA / Berlin, Germany, August 19th, 2025 – The Catena-X Automotive Network e. V.

Link PR including whitepaper and joint webinar on Oct 15th, 2025

Data Spaces – powered by OPC UA

INTERNATIONAL DATA SPACES ASSOCIATION

- A **data space** is a trusted digital environment where multiple organizations share and exchange data securely.
- It ensures participants **keep control over their data (sovereignty)** while enabling interoperability.
- Common standards and governance rules define how data is accessed and used.
- Data spaces are key enablers for building collaborative ecosystems across industries.

INTERNATIONAL DATA SPACES ASSOCIATION

OPC FOUNDATION

OPC UA connects assets to International Data Spaces

OPC Foundation and International Data Spaces Association are collaborating to connect the largest ecosystem for industrial interoperability to international data spaces

Scottsdale, AZ – March 26th, 2025 - The OPC Foundation, a global organization committed to advancing the development and adoption of industrial communication standards, is pleased to announce an expanded collaboration with the International Data Space Association (IDSA) aiming to enhance interoperability and data governance in the automation industry. The OPC Foundation connects the largest ecosystem for semantic interoperability in the automation world through OPC UA including over 150 semantic domain standards. This extensive framework ensures seamless communication and integration across various automation systems, fostering a more connected and efficient industrial

OPC FOUNDATION

AI for OPC UA / OPC UA for AI

Key use cases:

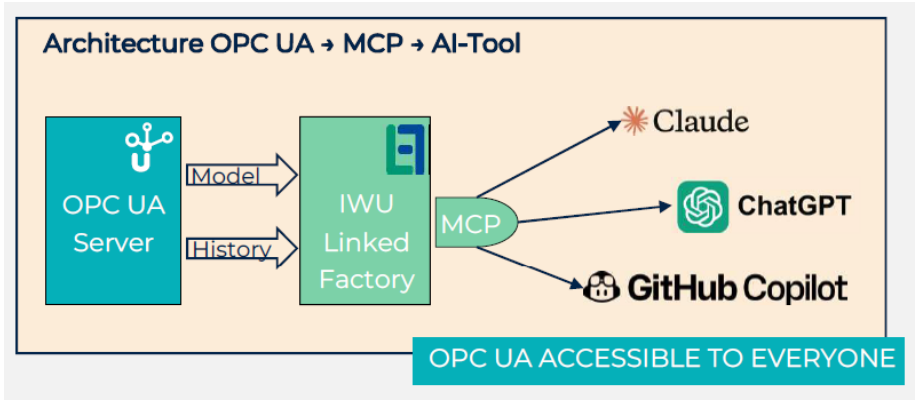
- Data analysis
- Next-generation User Interfaces
- Code generation and documentation

https://youtu.be/F4kUZGIEOaQ

Success Story from domain Tobacco Industry
Philip Morris International (PMI)

- **End-user driven**
- **Joint activity with suppliers**
- **Tobacco Companion Spec**
- **Mandatory standard**

- **PMI is describing**
  - **challenges of integration**
  - **Success factors**
  - **OPC UA as base for AI**



Join the OPC Foundation "OPC UA for AI" group!

OPC FOUNDATION

Collaborations – Completely new Landing pages

Update of the OPCF Web [Markets & Collaboration - OPC Foundation]

List of partners

List of working groups

Organizations - OPC Foundation

NAME	ABSTRACT	LOGO
AIM – Association for Automatic Data Capture	AIM-D e.V. (AIM for short), is the leading industry association for automatic identification (AutoID), data capture and mobile IT systems. The association promotes the use and standardization of AutoID technologies and procedures. Technologies such a...	
AutomationML e.V.	AutomationML e.V. promotes and further developes AutomationML to standardise data exchange in the engineering process of production systems. Therefore, AutomationML e.V. develops and maintains an open, neutral, XML based, and free industry data repre...	
BACnet Interest Group Europe e.v. (BIG-EU)	The main focus of BIG-EU is to promote BACnet in the European markets. BIG-EU consists of two working groups, WG-M (Marketing) and WG-T (Technique). Some members of BIG-EU are members of the SSPC-135 as well (Standing Standard Project Committee) with...	
Catena-X	Catena-X is the first end-to-end, muti-tier collaborative and open data ecosystem for the automotive industry, connecting all players along the value chain. The Catena-X association acts as a neutral governance to enable standardized, interoperable, ...	
CC-Link Partner Association - CLPA	CC-Link IE supports Industry 4.0 applications with unmatched bandwidth for real time "big data" manufacturing. It offers full gigabit operation from field devices to IT systems, and allows control, safety, motion and production data all on the sa...	
CEMAFON - European Foundry Equipment Suppliers Association	CEMAFON, The European Foundry Equipment Suppliers Association, is the respected voice and lobby organization of the European manufacturers of foundry machinery and plants, furnaces and products for the foundry industry. It incorporates about all rele...	
CESMII - Collaborative Ecosystems for Smart Manufacturing Innovation Institute	CESMII – the Smart Manufacturing Institute – has a total current investment commitment of $201M from Department of Energy funding and public/private partnership contributions, with a mandate to create a more competitive manufacturing environment ...	

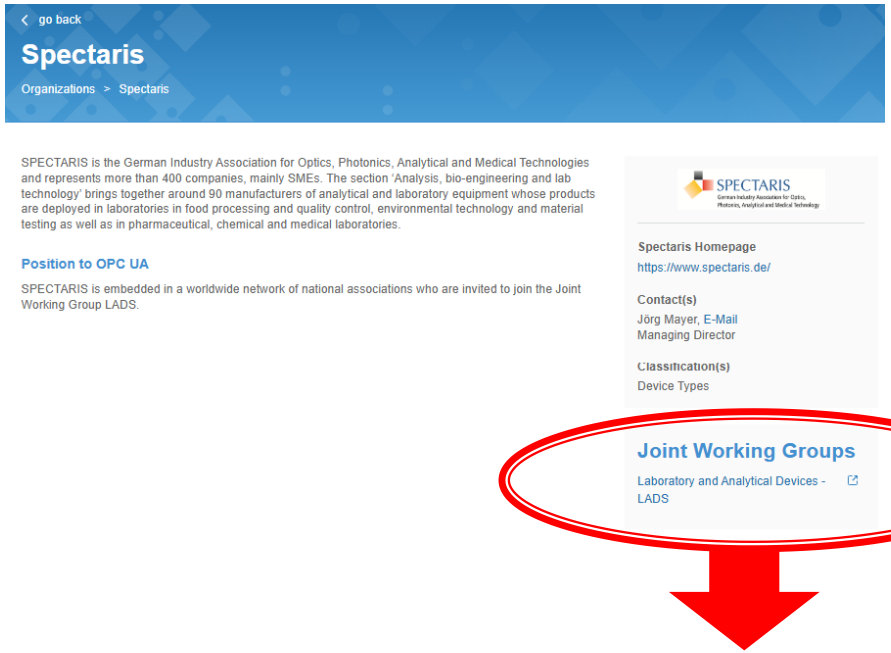
Working Groups - OPC Foundation

NAME	ABSTRACT	PARTNER ORG	CHAIR
AAS Subgroup for SMT - OPC UA Server Datasheet	Scope / Goals This is a subgroup of the Joint Working Group for Asset Administration Shell between IDTA and OPC Foundation. It will discuss the use cases for the corresponding purpose. This includes the content, format and extent of the to be provide...	IDTA - Industrial Digital Twin Association e.V.	
Additive Manufacturing	Scope / Goals The working group develops OPC UA Information Models for the industrial process chain of additive manufacturing ("AM") so that AM systems and other systems directly involved in the additive manufacturing process can be easily connec...	VDMA - Mechanical Engineering Industry Association	Martin Gehringer
Analyzer Devices - ADI	Scope / Goals Develop specifications for analyzers irrespective of the underlying device protocols. Analyzer devices are comprised of one or more analyzer channels with a single address space which has its own configuration, status and control. Examp...		Claude Lafond
Application Hierarchies	Scope / Goals The aim of the sub-group of the Harmonization Working Group is to create and maintain a living document (whitepaper) on OPC UA application hierarchies. OPC UA allows a variety of system architectures, including different options where O...	OPC Foundation	Wolfgang Mahnke
Artificial Intelligence	Scope / Goals Generative AI models such as language models based on the transformer architecture have shown the capability to generate text, specifications and source code. Using techniques such as prompt engineering and retrieval-augmented generatio...		Holger Kenn
Automatic Identification Devices - AutoID	Scope / Goals Develop specifications for identificaton devices executing a scan, read or write process. Comprises barcode, OCR, 2D code, RFID, NFC, RTLS, sensors and mobile computing. Within the last ten years OPC Foundation and AIM-D e.V. created th...	AIM – Association for Automatic Data Capture	Bernd Wieseler
AutomationML model	Scope / Goals Develop an OPC UA specification for AutomationML and an XML schema to describe OPC UA Servers and their communication parameters in an AutomationML file and to integrate UANodeSet address space XML files into AutomationML. Overview Prod...	AutomationML e.V.	Miriam Schleipen

Collaborations – New Landing pages

Example: Spectaris - https://opcfoundation.org/about/organizations/view/5

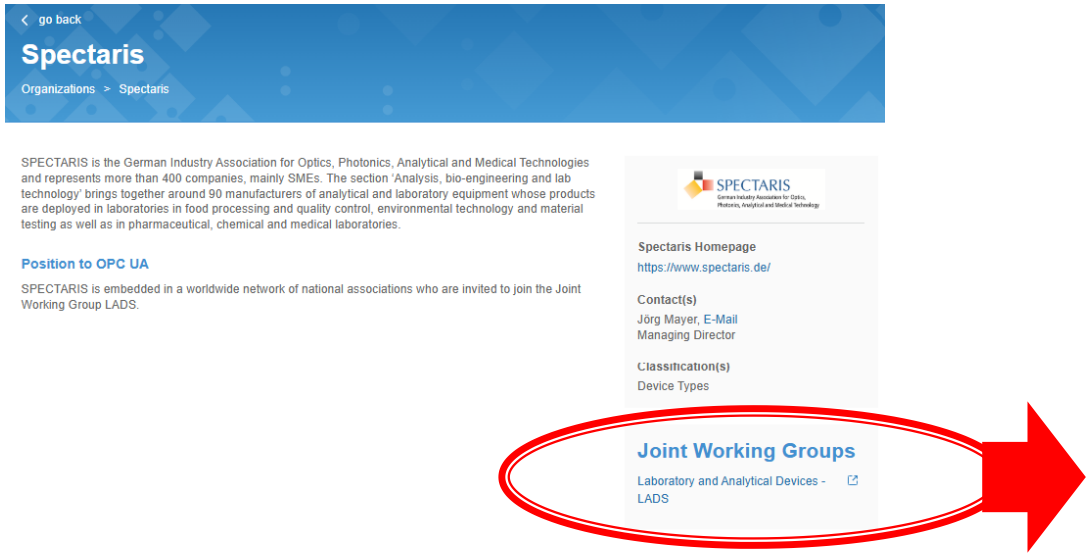
PROFINET Standardization Group (PNO)	The PROFIBUS and PROFINET user organization (PNO: Profibus Nutzerorganisation e. V.) was founded in 1989 and is the largest automation community in the world and responsible for PROFIBUS and PROFINET, the two most important enabling technologies in a...	
SERCOS - Serial Real-time Communication System	Sercos is one of the world's leading digital interfaces for communication between controls, drives, I/Os and other decentralized peripheral devices, such as encoders, safety devices and vision systems. Since its first release	
Spectaris	SPECTARIS is the German Industry Association for Optics, Photonics, Analytical and Medical Technologies and represents more than 400 companies, mainly SMEs. The section 'Analysis, bio-engineering and lab technology' brings together around...	
The Open Group	business objectives through technology standards and open-source initiatives by fostering a culture of collaboration, inclusivity, and mutual respect among our diverse group of 900...	
TMC - Tobacco Machine Communication	In most tobacco factories the secondary machine communication landscape is highly fragmented, both for machine-to-machine and machine-to-higher systems data streams. The fragmentation is evident on many levels: physical media, protocols, data formats...	
USE61400-25 User Group	The purpose of the user group is to motivate and support a global use of the IEC 61400-25 standard series within wind power. The purpose shall be supported by global promotion, advertising and marketing activities in order to expose the standard seri...	
VDA - German Association of the Automotive Industry	The German Association of the Automotive Industry (VDA) consolidates more than 650 manufacturers and suppliers under one roof. The members develop and produce cars and trucks, software, trailers, superstructures, buses, parts and accessories as well ...	
VDMA - Mechanical Engineering Industry Association	The VDMA is an advisor, lobbyist, network platform, sparring partner and voice of the mechanical and plant engineering industry – and has been for more than 130 years.It represents over 3,600 mainly small and medium size member companies in the...	
VDW - German Machine Tool Builders' Association	VDW, the German machine tool builders' association, represents the German machine tool industry. It represents its members to the public, policy makers, business associates and the academic community, both nationally and internationally. It serves ...	
WCI - ISA100 Wireless Compliance Institute	The ISA100 Wireless Compliance Institute (WCI) is an organization that functions as an operational group within The Automation Standards Compliance Institute (ASCI), to establish specifications and processes used in the testing and certification of w...	
Weihenstephan Standards Working Group	The WS Industrial User Group is made up of the market leaders in the food and packaging industry and comprises more than 100 companies, associations, and research institutes. The group is made up of partners from the fields of engineering, IT & ...	

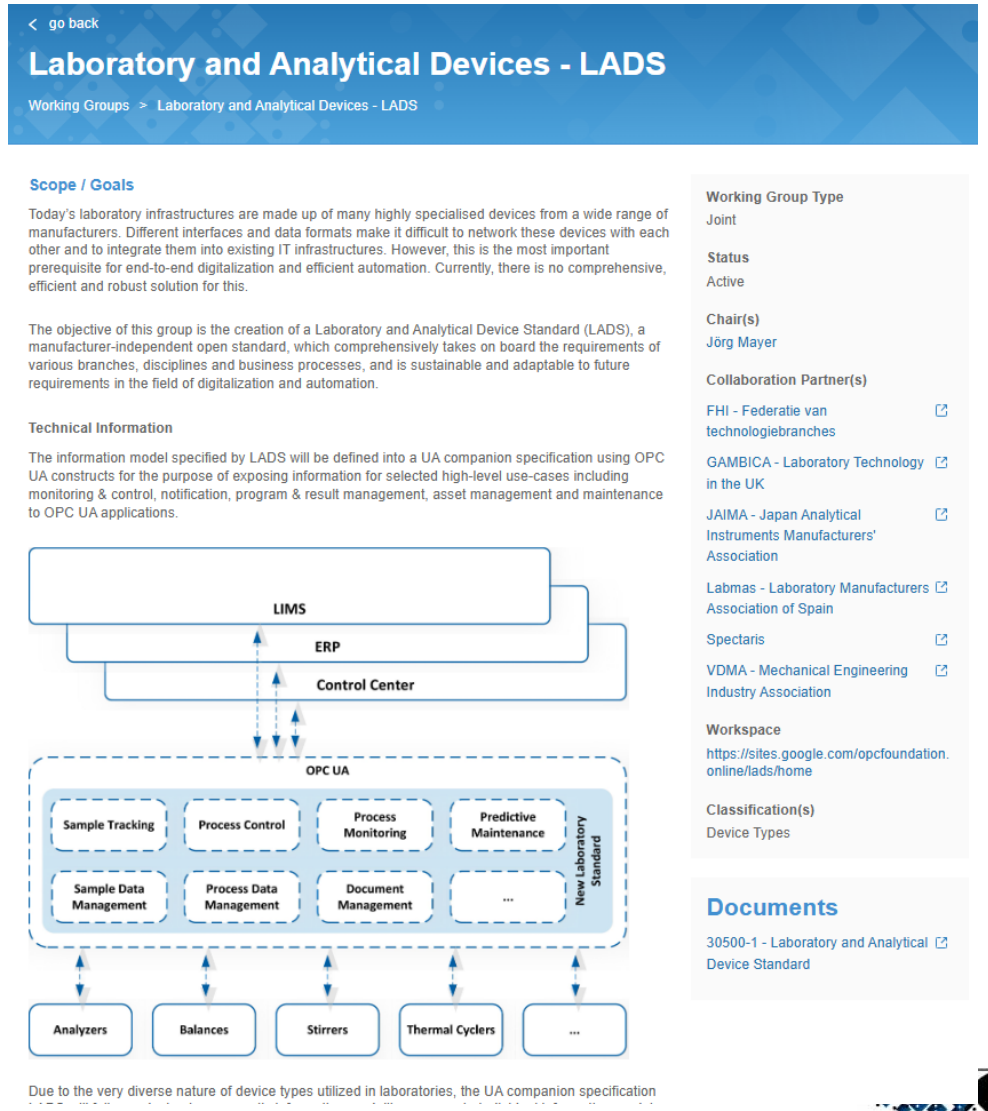


List of all
- activities
- working groups
- contact persons,
- results,
- Marketing...

Collaborations – New Landing pages

Example: Spectaris - https://opcfoundation.org/about/organizations/view/5





List of
- Status of the group
- Chairperson
- Collaboration partners
- Link to Workspace
- Link to documents
- Marketing..

Offerings & Information

History of the OPC Success Journey

Updated!

Call for action: Please contact us and add your important milestones of OPC UA history!
Link https://opcfoundation.org/about/opc-foundation/history/

History – News for 2025

2025

The OPC Foundation supports over 1019 members worldwide.

For the first time, 5 representatives of IT companies (AWS, Google, Huawei, Microsoft and SAP) are represented the board of the OPC Foundation

New Board of Director Members:
– Steve Blackwell – Amazon Web Services
– Matthias Hollenders – SAP
– Dr. Jingyi Hu – Huawei
– Praveen Roa, Google Cloud

OPC Foundation Certification program
– Launched OPC UA FX(TM) Certification Program for OPC UA FX(TM) Controllers
– OPC UA Safety Compliance Test Tool (UASCTT) for Client/Server certified by TÜV Süd
– Launched Ethernet-APL Certification

2025

OPC UA v1.05.05 released
This specification version includes:
– New Part 25 for Object Serialization
– New Part 26 for LogObject Model
– Added file-based ServerConfiguration

OPC UA v.105.06 released
This specification version includes:
– Added IEC CDD mapping
– Added Kafka transport mapping
– Updated JSON encoding
– Updated security use cases and examples
– Enhancing Auditing events
– Updated JWT Issued User Identity Tokens

2025

– **Procter & Gamble, Microsoft**
OPC UA delivers data for 115 brands of your daily life

Learn more!

– **Kunying Digital Technology**
OPC UA enhanced production efficiency, product quality, and adaptability – driving digital transformation in China's machining industry.

Learn more!

– **ASFINAG, evon**
OPC UA offers a highly scalable solution for tunnel monitoring systems in Austria including millions of data points connected and centrally managed with OPC UA

Learn more!

2025

Releases:
– OPC 40082-3 PlasticsRubber – Peripheral devices
– LSR Dosing Systems – V 1.02
– OPC 40444 Textile Testing Devices
– OPC 40210 Geometric Measuring Systems – V 1.00.1
– OPC 40570 Wire Harness Manufacturing
– OPC 40740 Process Air Extraction and Filtration Systems – V 1.0.1
– OPC 40200 Weighing Technology – V 2.00.0
– OPC 40001-1 Machinery Basic Building Blocks – V 1.04.0
– OPC 40001-101 Machinery Result Transfer – V 1.01
– OPC 21011 Quality Process and Life Cycle Management of Testing Tools
– OPC 10100-1 WOT Connectivity – API Definition – V 1.01
– OPC 40560 Mining – General – V 1.01
– OPC 40010-1 Robotics – Vertical Integration – V 1.02
– OPC 40505 Wireless Machine Tool Peripherals
– OPC 30080 FDI Specification – All Parts – V 1.4
– OPC 40001-4 Machinery Energy Mgmt
– OPC 40450-1 Joining Systems Base – V 1.01
– OPC 40451-1 Tightening Systems General – V 2.00.1
– OPC 10000-211 Global Positioning

New Working Groups:
– Battery Solution

Call for action: Please contact us and add your important milestones of OPC UA history!
Link https://opcfoundation.org/about/opc-foundation/history/

Success Stories 2025

- Call for action: Who delivers the next success story?

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

2025

– **Procter & Gamble, Microsoft**
OPC UA delivers data for 115 brands of your daily life

Learn more!

– **Kunying Digital Technology**
OPC UA enhanced production efficiency, product quality, and adaptability – driving digital transformation in China's machining industry.

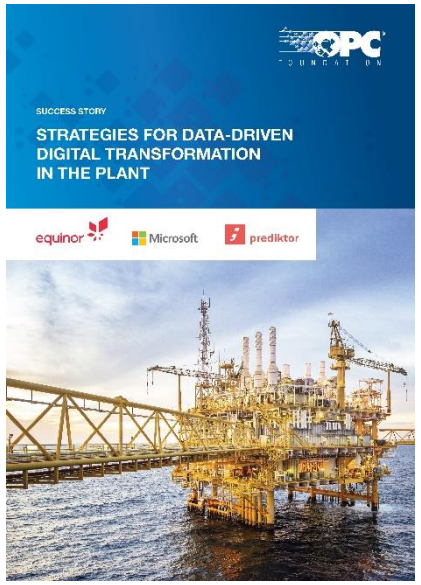
Learn more!

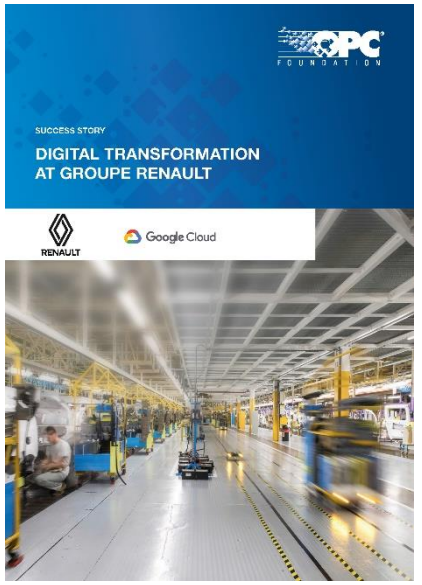
– **ASFINAG, evon**
OPC UA offers a highly scalable solution for tunnel monitoring systems in Austria including millions of data points connected and centrally managed with OPC UA

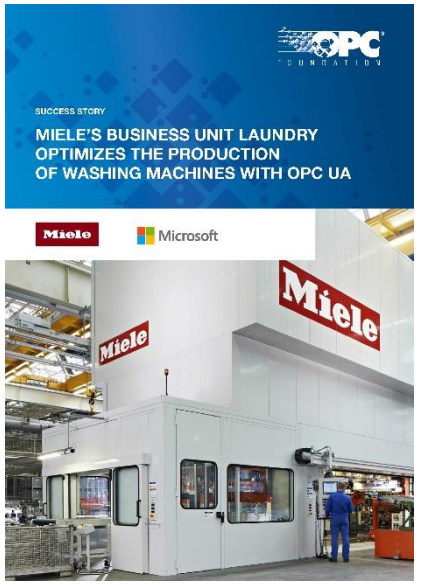
Learn more!

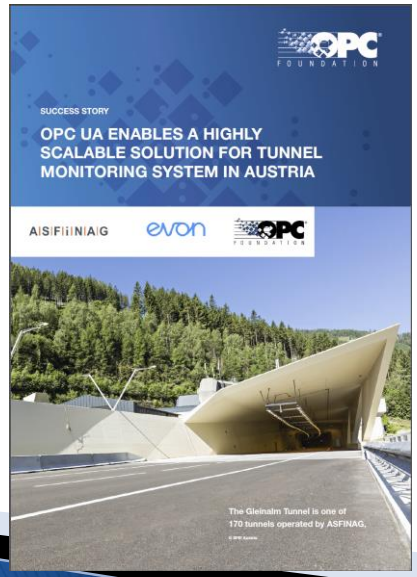
OPC UA success stories

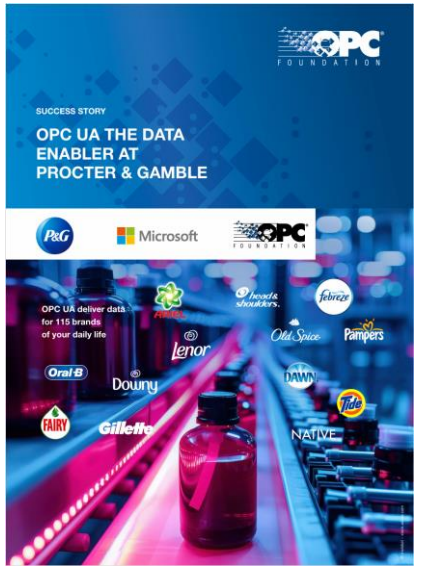
- https://opcfoundation.org/resources/case-studies/

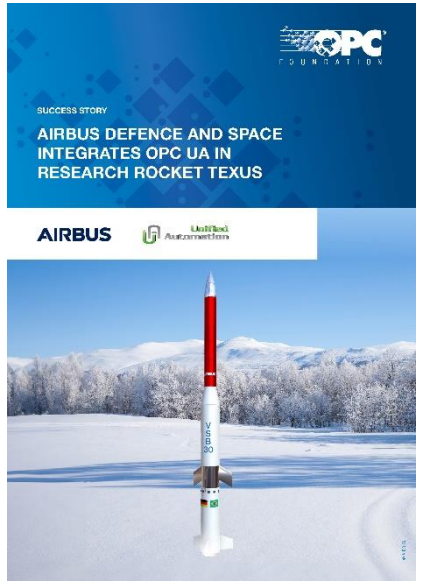












Information: Update brochure “OPC UA”

Find more information https://opcfoundation.org/resources/brochures/

Integrate MxD from USA, reflect BoD changes, higher focus on China, and new collaborations

8 OPC UA IN THE WORLD

MANUFACTURING USA INNOVATION INSTITUTES

Under the auspices of The National Institute of Standards and Technology (NIST), manufacturing innovation institutes (MIIs) have been formed and funded by Federal agencies, including the U.S. Department of Energy and U.S. Department of Defense. Both CESMII and MxD, two such innovation institutes, are utilizing OPC UA technologies throughout their services and programming.

CESMII IS LEVERAGING OPC UA

In an effort to identify common data in machines, CESMII is leveraging OPC UA as an industry standard interface. Through repeatable use of OPC information models or, as CESMII calls them, “Smart Manufacturing Profiles,” these semantic models become reliable, scalable interfaces for developers, rather than starting from scratch with individual data extraction. These data profiles will remain an open standard from which the entire industry can benefit, thus, accelerating innovation, research, and development projects supported through the Institute.

CESMII’s program and administrative home is with the University of California Los Angeles (UCLA), in partnership with the U.S. Department of Energy’s Advanced Manufacturing Office.

MXD – AN INCUBATOR FOR OPC UA RESEARCH AND DEMONSTRATION

Positioned in the heartland of US manufacturing, MxD boasts a vast facility in Chicago, Illinois, dedicated to research and innovation through the hosting of various experiments and test-beds in its fully outfitted demonstration center. Industry partners leverage MxD resources for implementations ranging from Proof-of-Concept (PoC) to advanced research and testing of industrial automation applications. MxD is dedicated to solve critical manufacturing challenges by accelerating digital adoption, empowering a skilled workforce, and modernizing supply chains.

MxD, as designated by the U.S. Department of Defense is also the National Center for Cybersecurity in Manufacturing.

DIGITAL TWIN CONSORTIUM (DTC) THE AUTHORITY IN DIGITAL TWIN™

Digital Twin Consortium drives awareness, adoption, interoperability, and development of digital twin technology, through a collaborative partnership with industry, academia, and government expertise. The Consortium is dedicated to the overall development of digital twins and they accelerate this market by propelling innovation and guiding outcomes for technology end users.

DTC IS MAKING OPC UA MODELS MORE ACCESSIBLE

The DTC is maintaining the popular UA Nodeset Web Viewer on their open-source GitHub repository. It allows upload of OPC UA information models to the UA Cloud Library.

https://github.com/digitaltwinconsortium

Source: www.iiconsortium.org

One the major goals of the “Industrial Internet Consortium” (IIC) is the creation of industry use cases and testbeds for real-world applications. The testbeds create recommendations for the reference architecture and frameworks necessary for interoperability. OPC UA is the enabling technology for SoA interoperability and thus part of the IIC Connectivity Framework published in February 2017.

IIC TESTBEDS USING OPC UA

1. Smart manufacturing connectivity for brownfield sensors
2. Time sensitive networking (TSN) testbed
3. Smart factory web testbed

»Manufacturing thrives on scalable connectivity and intelligence to drive automation, flexibility, and productivity on the shop floor. With OPC UA as a key enabler — from sensor-level communication to cloud integration — SAP is committed to supporting the standard and contributing to its continuous evolution.«

Matthias Hollenders, VP Product Management Manufacturing SAP SE, OPCF Board

»The OPC UA standard serves as a cornerstone and enabler of industrial digital transformation. It revolutionizes data exchange in industrial systems by providing a unified, secure, and semantically rich communication framework. We believe that choosing OPC UA-compliant devices and technologies ensures our customers remain compatible with emerging technologies for the long term, thereby protecting their investments.«

Charles Ben, CEO, Beijing Mestime Information Technology Co., Ltd. – OPCF China China Board Member

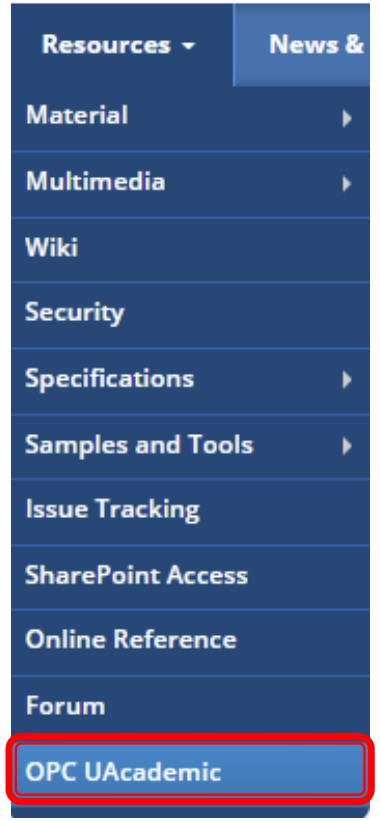
»OPC UA established a robust, standardized foundation for secure interoperability across industrial systems. By adding IDSA’s rules and framework for describing the governance and sovereignty of the exchanged data in cross-company, cross-domain, and cross-border scenarios, companies gain the confidence to exchange and leverage data without boundaries. This collaboration unlocks the potential for new business models, driving innovation and scalability across industries.«

Lars Nagel, SCEO, International Data Spaces Association

»Since the OPC Foundation launched its new OPC UA technology and standards system, industrial digitalization has undergone tremendous change—encompassing early Industry 4.0 innovations like the Industrial Internet of Things (IIoT) and digital twins, as well as more recent trends such as industrial AI and industrial ontologies. Yet no matter what new trends, technologies, or concepts emerge, OPC UA can adapt quickly, thanks to its flexible technical architecture and scalable standards.«

Yan Ding, System Designer and R&D Director, Hollysys Research Institute

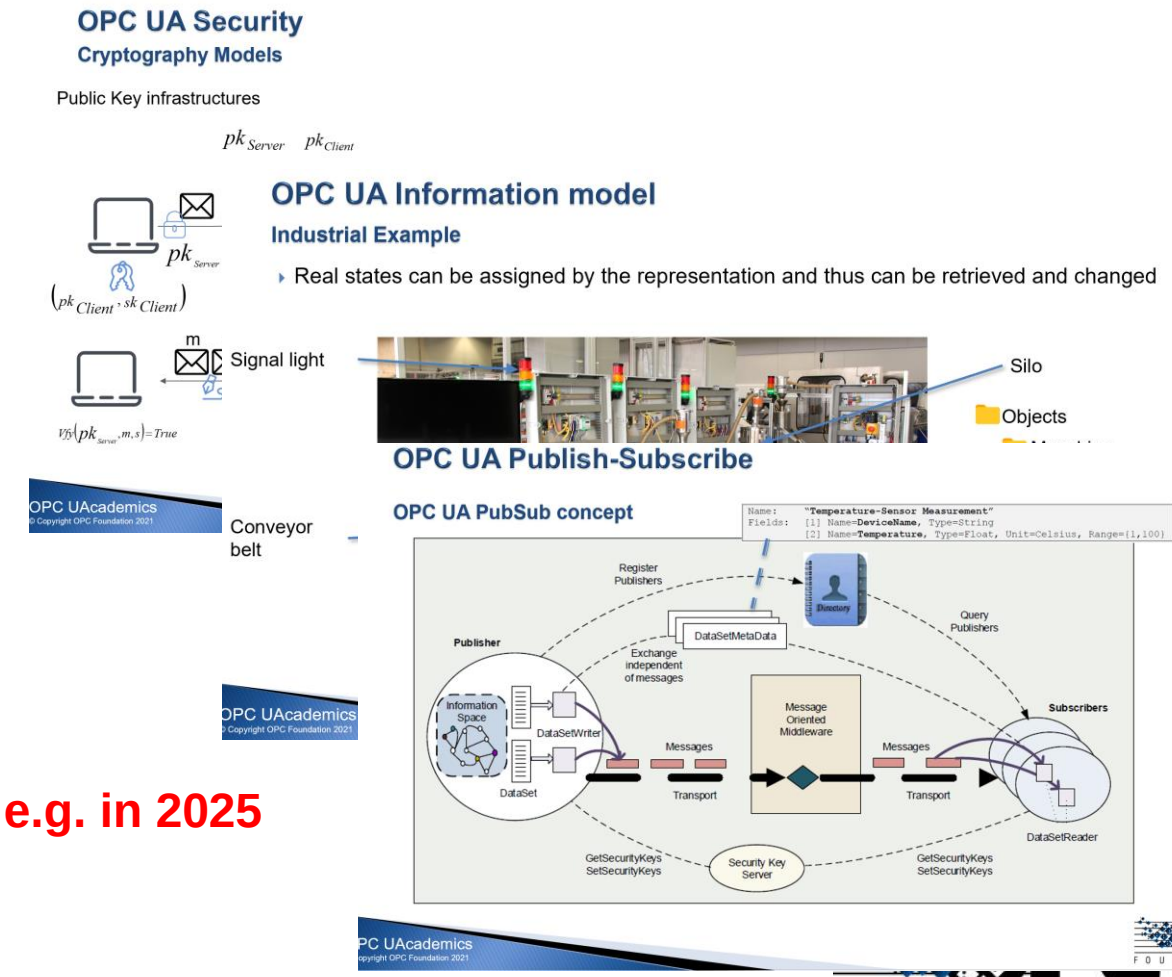
OPC UAcademic: free of charge



Content available in 6 languages:

- 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 exercies

Registration form on OPC Foundation website:
https://opcfoundation.org/resources/opcuacademic/

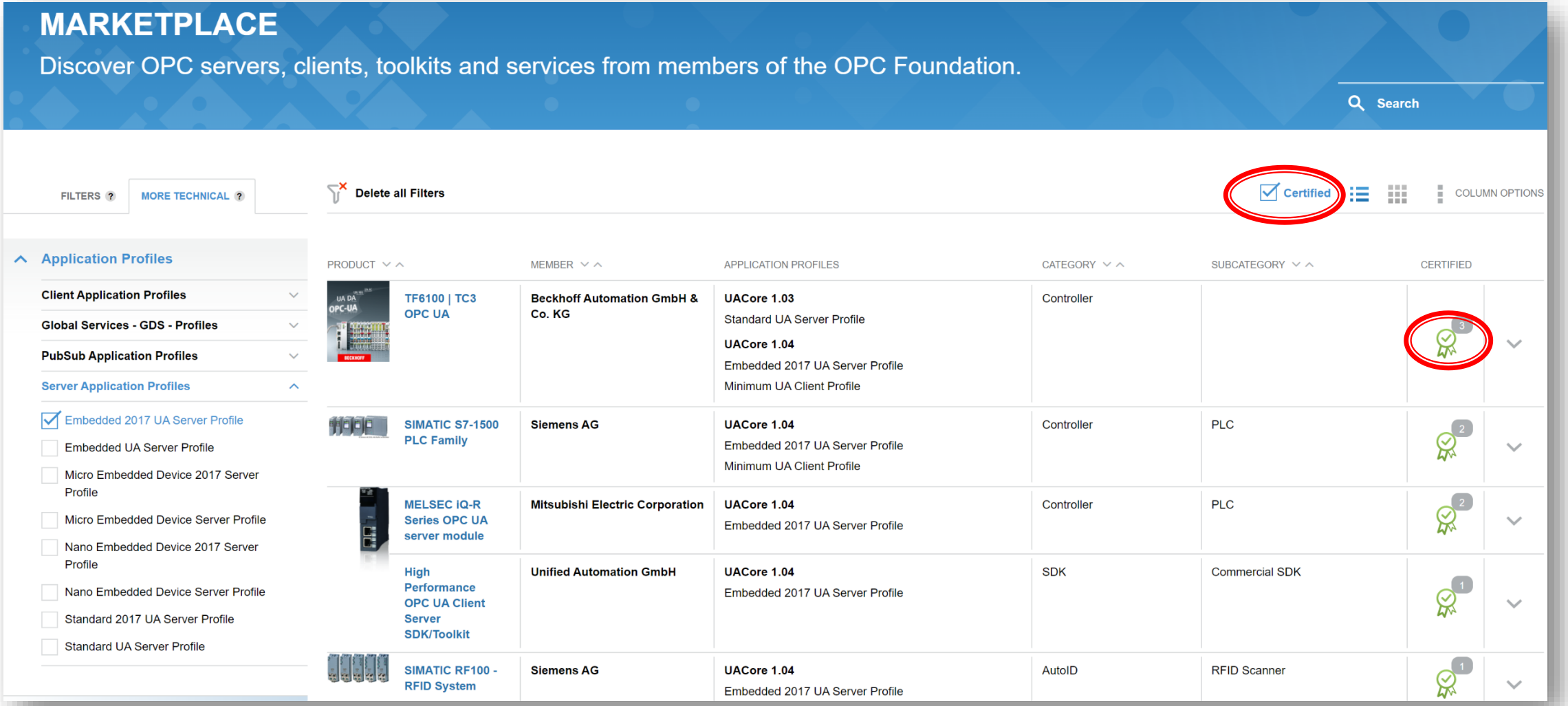


Continously improvement e.g. in 2025

- **Pub Sub over MQTT**
- **File Transfer**

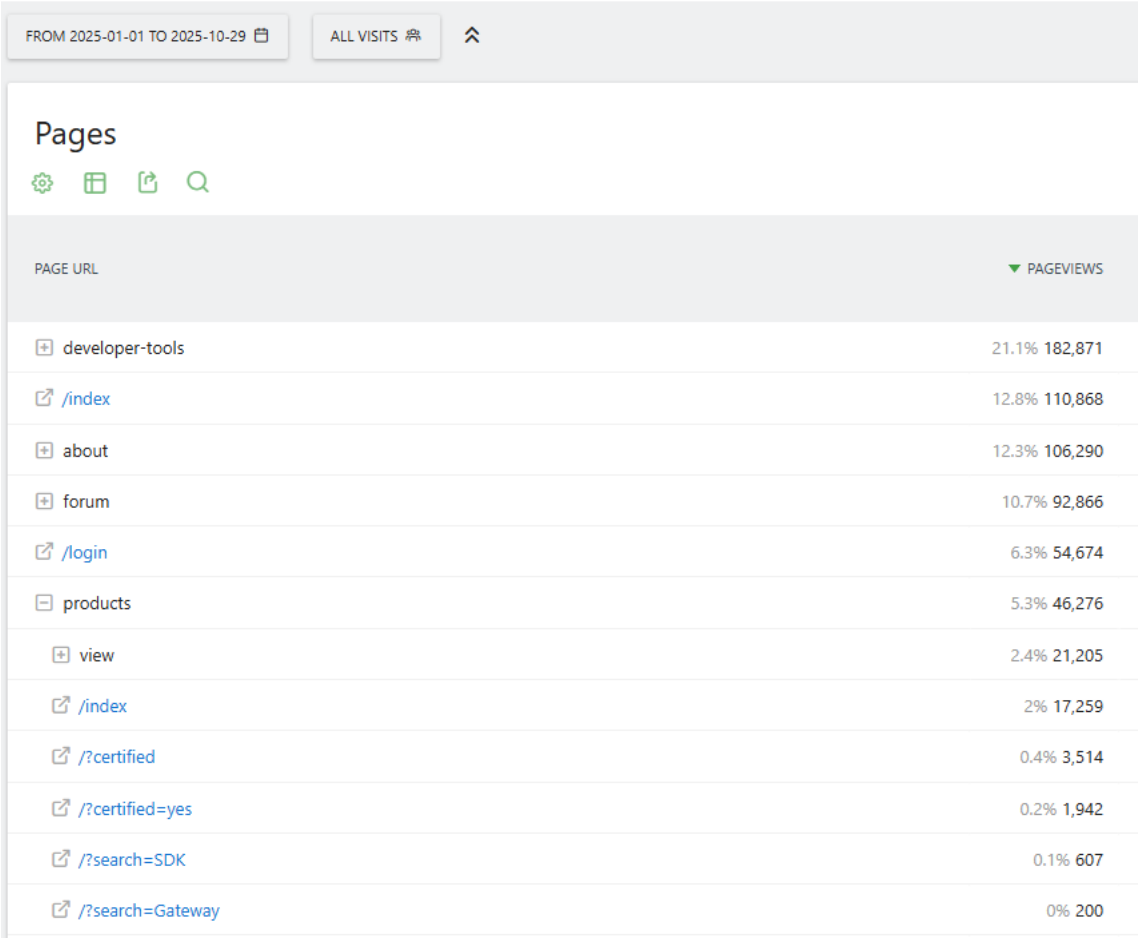
OPC Marketplace

https://opcfoundation.org/products/



Statistics – Traffic (clicks!) OPCF Web (from 01.01 – 29.10.2025)

Results of web tracking



Ranking

(1) Developer tools are most important
→ 21% (182.871)
UACTT, Samples, specifications, ..

(2) About → 12% (106.290)
What is OPC UA?

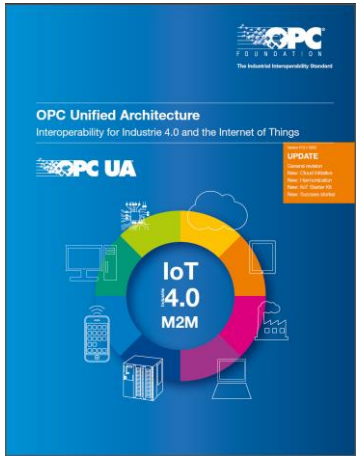
(3) Forum → 11% (92.9866)

(4) Products on Marketplace → 5% (46.276)
→ 4.627 clicks per month !

Most used filters
(1) Certified products 3.514 clicks (!)
(2) SDKs
(3) Gateways

OPC Foundation: (Subset of) Offerings and Information

- Compliance: Self-testing tools (CTT) and official OPC Foundation Test Labs
- Open Source (GitHub) with major sponsors (ABB, Microsoft, SAP)
  https://opcfoundation.org/developer-tools/samples-and-tools-unified-architecture/net-stack-and-sample-applications/
- OPC UA Cloud Library: world largest repository of free of charge information models for the automation world
  https://github.com/OPCFoundation/UA-CloudLibrary
- IIoT Starter Kit: easy quick start for OPC UA over MQTT
  https://github.com/OPCFoundation/UA-IIoT-StarterKit
- OPC UAcademic program: Free of charge lecture for professors
  https://opcfoundation.org/resources/opcuacademic/
- Success stories by end users
  Like equinor, Renault, Miele, Airbus, Procter & Gamble, etc
  https://opcfoundation.org/resources/case-studies/
- Marketplace https://opcfoundation.org/products/
- Podcast with interesting guests https://opcfoundation.org/resources/podcast/



OPC UA brochure

https://opcfoundation.org/resources/brochures/

2026: Celebrate 20 years availability of OPC UA !

2003

Start of OPC UA

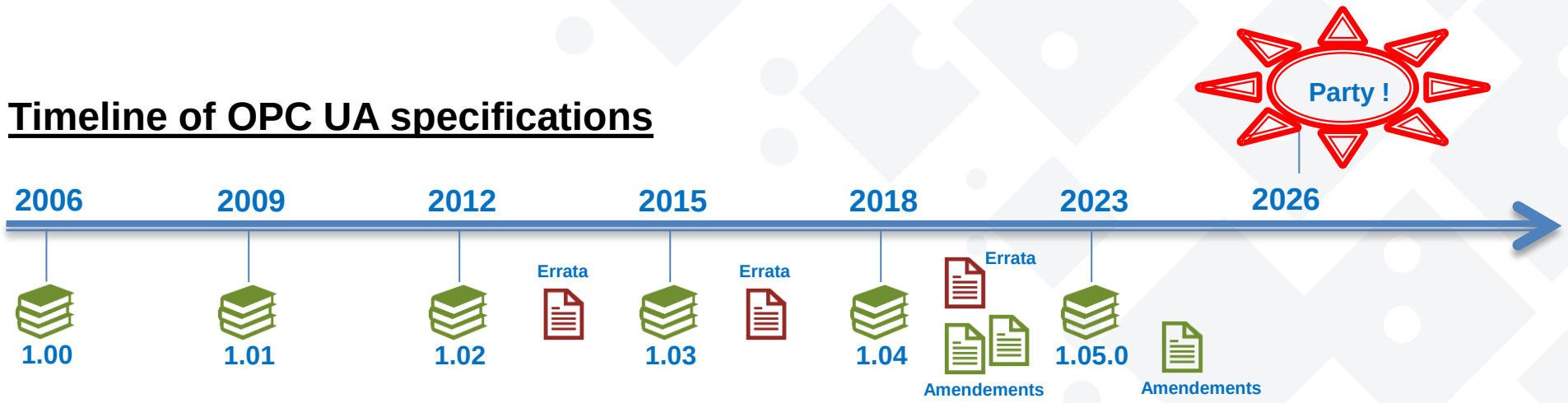
OPC UA

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”.

- 2003 – 2006 OPC UA Core Specifications have been developed within 3 years
- 2006 Release of OPC UA v1.00
- 2023 Release of OPC UA v1.05

→ 2006 – 2026: 20 years of stability and backward compatibility

Timeline of OPC UA specifications



OPC Foundation: The United Nations for Industrial Automation

Thank you! - Questions?

Stefan Hoppe
President & Executive Director OPC Foundation
Stefan.hoppe@opcfoundation.org

Looking for more information?
https://opcfoundation.org/