One harmonized interoperability solution for Process & Factory scaling from field to cloud

OPC Day Japan 2021 – Virtual Event – December 9th, 2021

Stefan Hoppe
President & Executive Director OPC Foundation
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Agenda

- Organization
  - Organization / Board of Director
- Technology
  - Field Level Communications Initiative: New Members / Status & Roadmap by Peter Lutz
  - OPC UA and Cloud: Technology and Initiatives
- Collaborations
  - Overview / VDMA / LADS including JAIMA
- Marketing
  - OPC UA IIoT Starter Kit / Academic program / Marketplace
  - Success Stories

OPC Foundation https://opcfoundation.org

- Vision
  - Secure & reliable
  - Vendor, platform, and domain agnostic
  - interoperability from sensor to enterprise and beyond

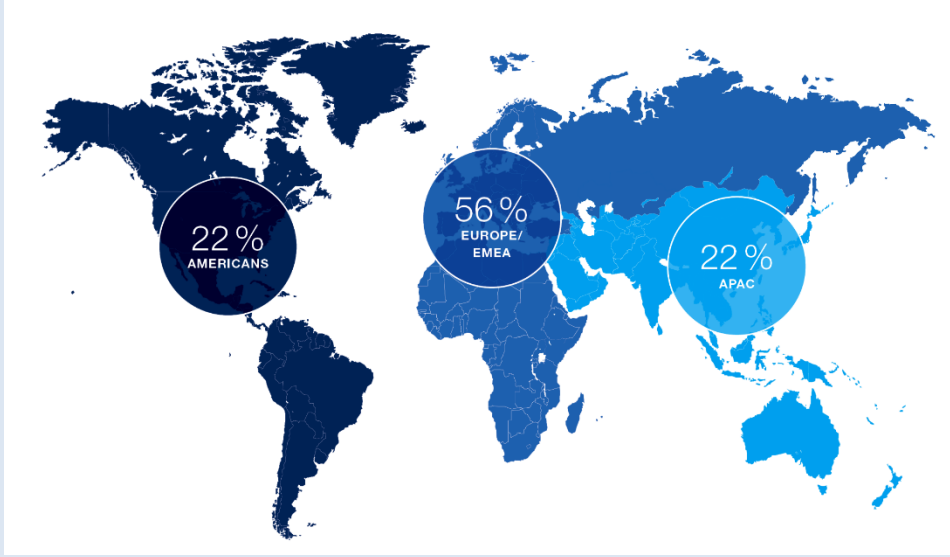
- Global Profile
  - Non-profit organization (founded 1995)
  - Companies from Automation & IT
  - Internationally recognized: OPC UA is IEC62541

- Deliverables
  - Specifications: openly available
  - Tools and code examples: open source for faster, easier adoption (AnsiC/C++, C# .NET Standard, Java)
  - Certification: OPC Labs open to everyone
  - Marketing: Evangelize solution in various markets

- Ecosystem with toolkits and education
- Modern IPR policy

Organizational Overview

Membership: 857 (Status: Dec 4th, 2021)



Board of Directors (elected for 2021/2022)

Microsoft	Honeywell	Rockwell
SAP	Yokogawa	Schneider
Siemens	Mitsubishi	ABB
Beckhoff	Ascolab	Emerson

OPC Foundation Election Results

First time in OPCF history an electronic vote – resulted in higher participation in election

Elected Board is published on OPC Foundation website:

https://opcfoundation.org/about/opc-foundation/organization/

Thanks to all members who voted.

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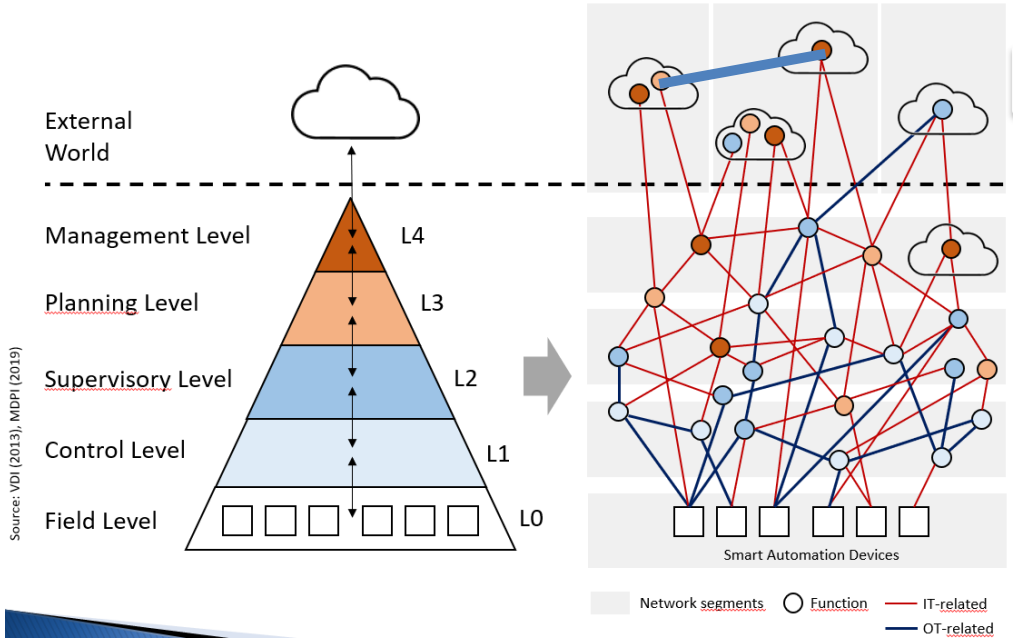
From Automation Pyramid to Information Network



Universal Industrial Network

OPC UA

OPC UA is not a protocol!

Instead it is a collection of technologies to ensure a secure exchange of standardized information from the sensor to the cloud (and back).

OPC UA over …
TCP, UDP, MQTT, … APL, SPE, 5G, TSN, …

- Challenge to transformation from an Automation Pyramid (with proprietary protocols between all layers) to an Information Network (providing standardized information exchanged secured end-to-end and be able to bypass layers)

- OPC UA is an open framework delivering end-to-end secured, standardized information exchange
  Openess is key: Open Specs, Open source (GitHub) and Open Labs for certification (without be paying member)

- OPCF defines with 66+ partners standardized information models for verikals like pumps, motors, robots, coffee machines,
- OPC Foundation is the „Collaboration Organization“

OPC FOUNDATION

OPC Foundation: Promise for OPC UA based, secured Industrial Interoperability

Interoperability Robustness & Security

Vendor, Platform, Market and OS **Independent**

Scalable From Sensor to Cloud

Discoverable Services Oriented Architecture

Independent of transport protocol

Non-Profit (OPC Foundation)

Widely Adopted: >50M install base

Open Source on GitHub

Security Design from Ground up

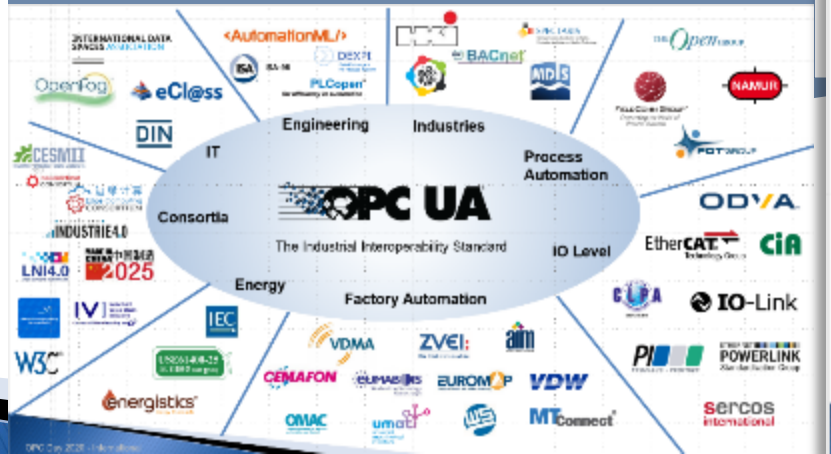
66+ Joint Working Groups Data Modelling/Harmonization

Graph Support, preserves source context

Vendor **extendable** data model via Companion Specifications

Relevant: Enables domain specific information models

- Discrete: Robotics, Machine Vision, …
- Process: FDI, FDT, PA-DIM, MDIS, NOA..
- Energy: IEC61850, ..

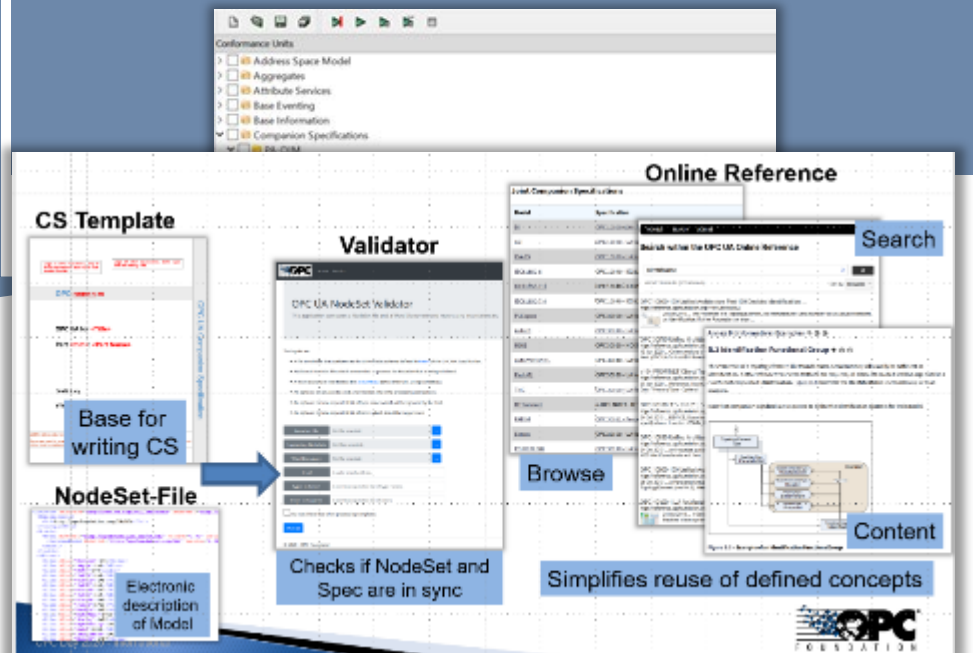


Validating / Certification Online Reference

Validation of Companion Specs

Compliance Test Tool (CTT): Open available 1800 test scripts for the OPC UA core functionality and for the Companion Specifications e.g. for PA-DIM / PLCopen / MDIS / …

Online Reference: Public reference with all models



OPC UA + Companion Specs = Promize for Industrial Interoperability

OPC UA Pub / Sub

OPC UA Security

OPC UA + CS Certification

OPC UA TCP

OPC UA over MQTT

OPC UA over APL / TSN

Modelling

- **OPC UA: Collection of technology bricks**
  - Discovery, Connectivity, different protocols like TCP, UDP, MQTT, ..
  - Security, built-in by design, end-to-end
  - Information modeling capabilities

+

- **Companion Specifications: Collection of bricks for different markets**
  - Information modelling to describe specific market
  - Field devices need TCP, UDP, Safety, Motion, real-time, ...
  - Gateway & Cloud services need UA over MQTT, 5G

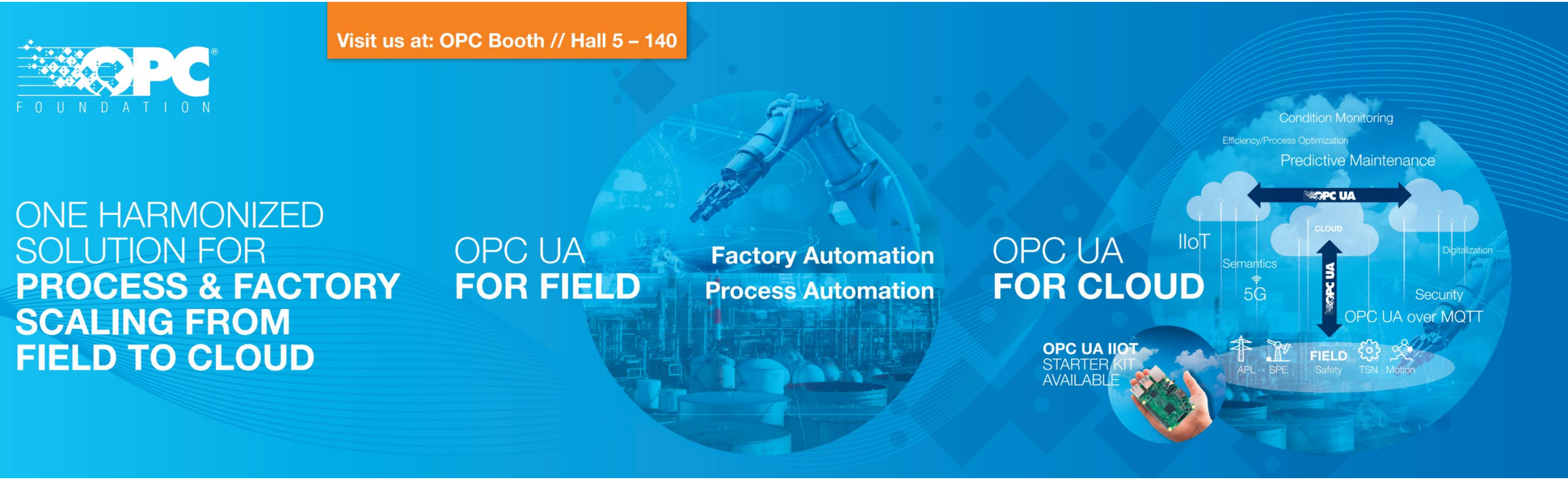
Robotic
Pumps
...

=

- **OPC UA + Companion Spec guarantee 100% Interoperability**
  - Mandatory bricks guarantee interoperability
  - Optional bricks allow flexibility
  - OPCF: Tools and infrastructure for certification

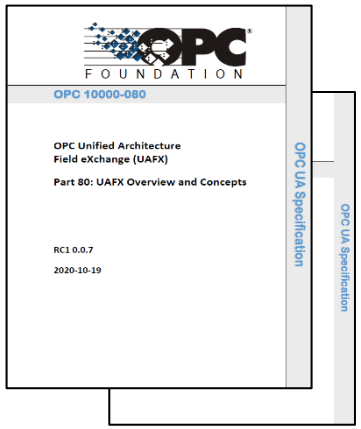
OPC FOUNDATION

OPC UA: One Harmonized Solution



OPC FOUNDATION

OPC UA FX specifications:
Extensions for harmonized process and factory automation



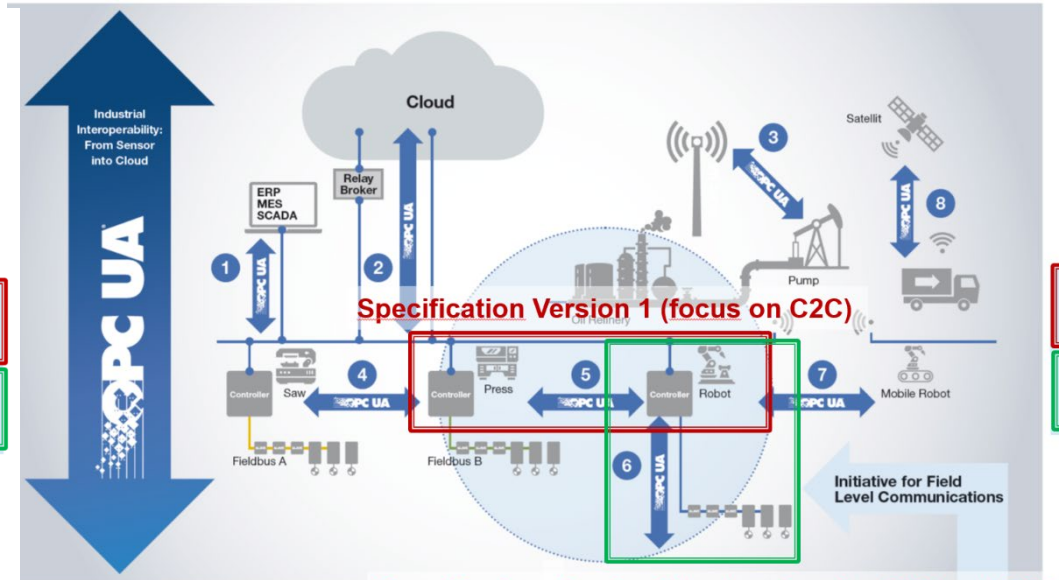
OPCF FLC Initiative (Started Nov 2018)

- Extra support from 27 leading automation companies & technology providers
- Overall, more than 350 technical experts from more than 65 member companies of the OPC Foundation are active in the different Technical Working Groups.

OPC UA FX Specification extensions:

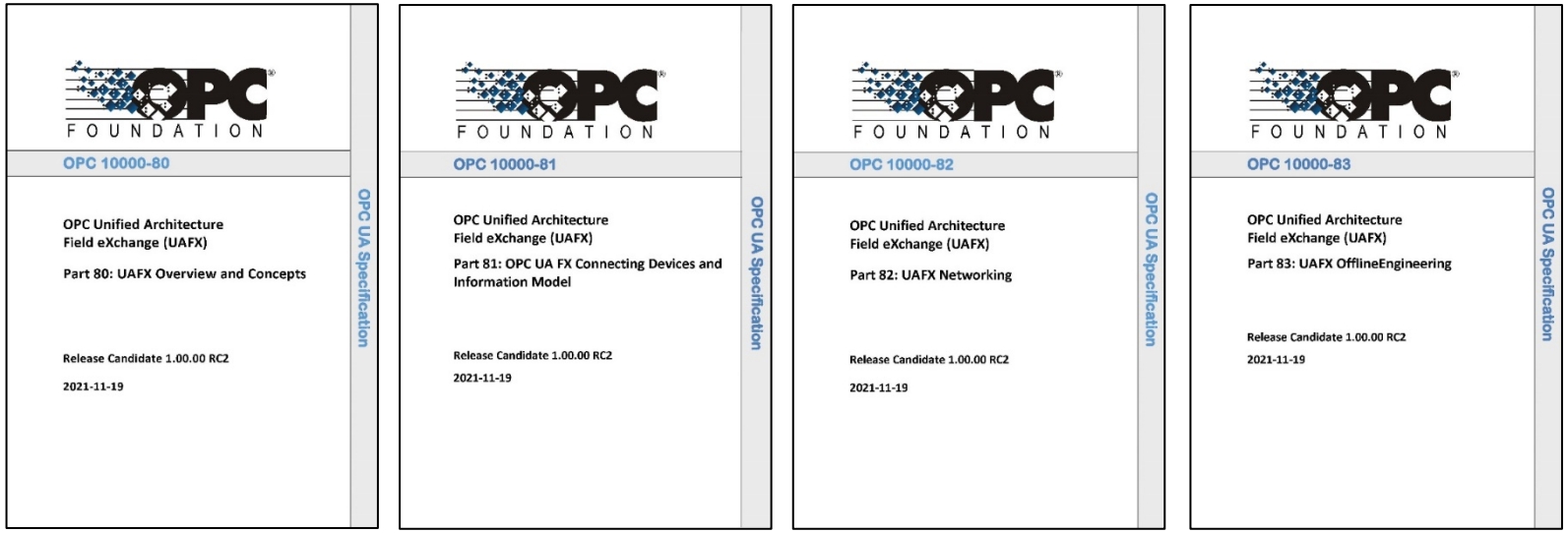
- Spec numbers „OPC 10000-080“ -81, -82, ...
- Extending OPC UA down to field level
- Extending Deterministic, Safety, Motion
- Including additional IT infrastructure like TSN and APL
- Offline / Online configuration
- Information models for interactions
  - Controller to Controller
  - Controller to Device
  - Device to Device
- and much more

1. IT / OT Communication
2. Cloud Integration
3. Secure Remote Access
4. Local OT Communication
5. Controller to Controller
6. Controller to Field Device
7. Wireless Integration (5G)
8. Future Ready



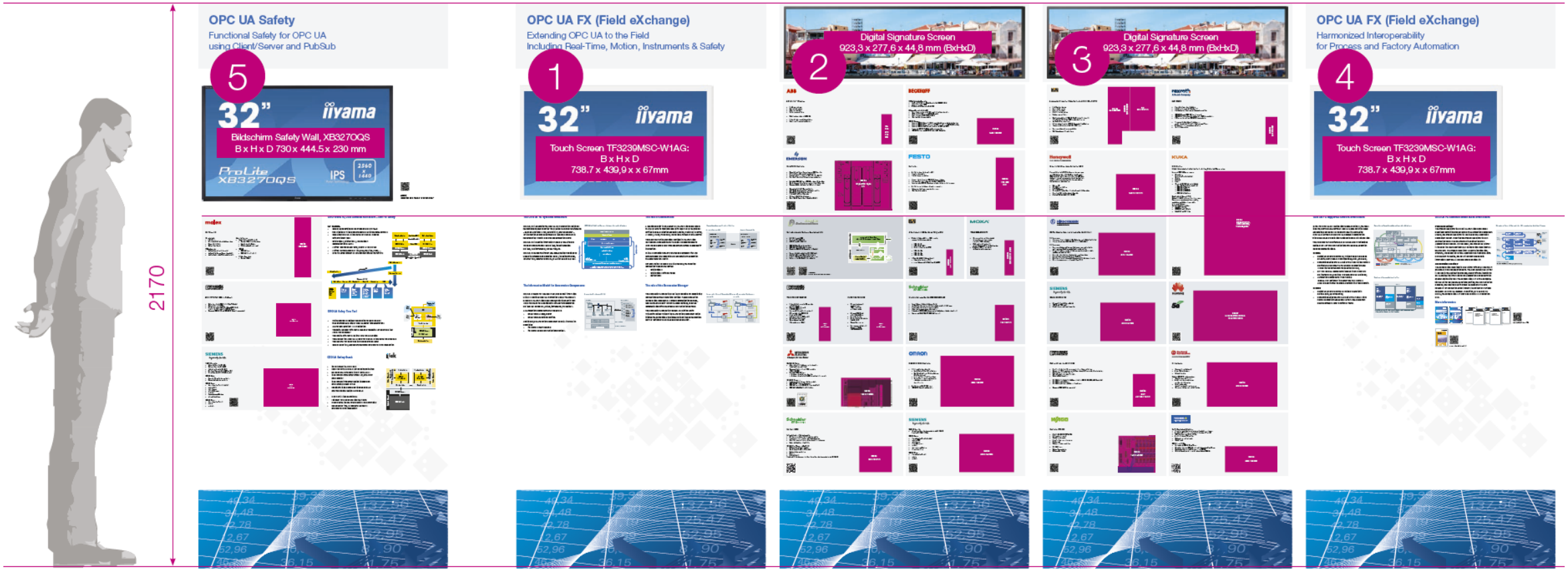
Status Update UAFX Specifications

- UAFX Parts 80-83 Release Candidate RC2 completed
- UAFX Part 84 (UAFX Controller Profile) in work



Looking for more information? Brochures, Recordings, Slides, …
https://opcfoundation.org/
https://opcfoundation.org/flc
https://opcfoundation.org/apl

UAFX C2C and UA Safety Demo Wall (1)



UAFX C2C and UA Safety Demo Wall (2)

SPS 2021: OPC UA Cloud Solutions

OPC UA Cloud Solutions

OPC UA IIoT Starter Kit

Learn vertical cloud communication via
OPC UA over MQTT in less than 1 hour

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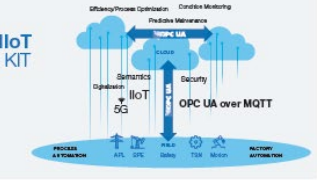

Educational purpose: OPC UA IIoT Starter Kit

- OPC UA over MQTT: A strong combination for cloud connectivity
- Open source sample code available on GitHub https://github.com/OPCFoundation

Efforts

Time in total	less than 1 hour
Publishing data	3 Steps
Subscribing data	3 Steps
Cost savings from lessons learned	Unlimited

3 Steps to publish Data

1. Running the MQTT Agent
2. Chose the information model
3. Publishing data

3 Steps to subscribe Data

1. Discover publishers
2. Subscribing to data
3. Subscribing to MetaData

These steps educate on the key features of OPC UA PubSub technology including the standard configuration Information Model and the use of metadata messages to allow subscribers to handle changes to the published data stream on the fly.
Perfect for self-education to learn the benefits and different aspects of the OPC UA technology.

OPC UA Success Stories

Process & Factory
OPC UA to GoogleCloud and Microsoft Azure

52 x 32 cm

equinor Microsoft Azure

Process Automation

OPC UA implemented and proven in use at scale at Johan Sverdrup

- Started production October 2019.
- This field alone will produce 30% of Norway's total production.
- OPC UA: a central part of the digitalization strategy since 2015.
- 19 OPC UA servers on the plant floor aggregated into one central OPC UA Gateway using OPC UA Aggregation architecture pattern.
- 180.000 datapoints connected via OPC UA to Microsoft Azure. Will be extended to 1.000.000 now

Why?

- data in context (information)
- relations between objects to understand how things are connected

RENAULT Google Cloud

Factory Automation

- Plan 2017: Equip 38 production locations with OPC UA
- Status 2021:
  - 17 locations with 3300 OPC UA enabled devices
  - 300.000.000 OPC UA messages since 2017
  - 10.000 messages per second

Why?

- 2017: as part of digital transformation decision has been made to standardize data.
- Renault OT & IT decided to use OPC UA
- Industrial data is contextualized at reference level
- Data form the basis for the creation of a digital avatar of the actual process flows
- At the data operation level, all required use cases are developed
- Goal: to open existing data silos in production and logistics
- Increase performance of the production network

One harmonized solution for

Process & Factory
scaling from field to cloud

OPC UA Cloud Solutions

OPC UA over MQTT

OPC UA cloud applications
One solution scaling from field to cloud

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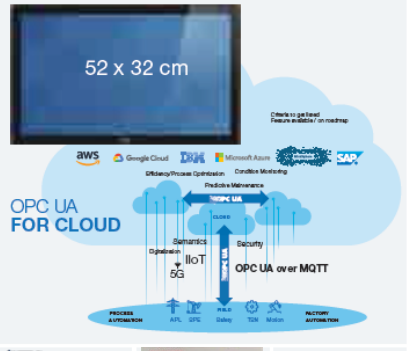


Toolkits supporting OPC UA over MQTT

kalycito Matrikon OPC Labs softing

Your device here!

OPC UA Cloud Library

Internet-hosted database containing
OPC UA information models

Joint Working Group CESMII OPC Foundation

52 x 32 cm

Enable Interoperability

Purpose

The JWG will develop a specification for an internet-hosted database containing OPC UA information models.
The database can be made publicly accessible through a RESTful interface. This cloud library can be made available to manufacturers who are looking to leverage industrial assets containing non-standardized information models for their SCADA or analytics systems. Non-standardized information models are meant to describe information models that are not defined through an OPC UA companion specification.

Scope

The output of the working group will be a specification which will, at a minimum, define the RESTful interface of the information model database. The query language to return results from the database will also be defined. Optionally, should this have merit, the way information models are stored in the database will additionally be defined.

- Collaboration to develop a repository of re-usable OPC UA information models
- Provides a library for "types" and "subTypes" – not a server for instance information (SM Profiles & Extensions)
- Affirms the concept of standardized data structures, drawing on input from industry leaders.
- Builds equity in an open and standardized implementation of a SM Profile Marketplace
- Will be implemented in the SM Platform, used as input for Industrie 4.0 efforts

Use cases

1. **Configure the application behind the OPC UA client which consumes the data from the machine**
   Maintain a library of information models for a given machine that can be used prior to commissioning to configure applications independent of a deployed machine server, or serve as a reference for machines that are not physically present (eg: support scenarios)
2. **Specification compliance verification for new machines**
   Use as a point of reference for validating machines (or processes) against a specification, supporting both manual review and programmatic comparison.
3. **Downloading a UA Addressspace from the UA Cloud Library into a "blank" UA Server instance**
   Accelerate information projects – reduce "starting from scratch" by providing a repository of existing information models that can be acquired and used for new projects.
4. **Retrofit OPC UA to existing machines**
   Provide overlays that can be used to establish information models atop brown-field machines and operations that facilitate common interfaces for data access – regardless of transport protocol…

Working Group Members

ABB Kuka aws Beckhoff Bosch rexroth Coperion Endress+Hauser equinor Google Cloud Heidenhain IBM Idaho Inray Microsoft Prediktor SAP SIEMENS softing VDW

Industrial Cloud Federation

Enabling data-driven services
in industrial environments

Joint Working Group DIN OPC Foundation

52 x 32 cm

Objectives

- **The challenge:** More and more services for improving machines and production are offered on heterogeneous cloud platforms in different administrative IT domains. To use these services successfully, information based on different data models must be exchanged between field devices and different clouds via various non-auditable, difficult-to-maintain communication channels.
- **The idea:** The architecture of an Industrial Cloud Federation according to DIN SPEC 92222 would overcome the challenges described above. Therefore, a standardized solution based on OPC UA serves as a catalyst to facilitate data exchange between field devices and services hosted in different clouds (in different administrative IT areas), and by that, industrial data spaces.
- **The procedure:** Requirements are derived from a huge set of industrial use cases, existing OPC UA specifications are analyzed in a practical manner, and necessary extensions to the OPC UA standard system are defined in order to implement Industrial Cloud Federations.

Features

- **Enabling data-driven services:** Solving the sensor data problem in a multi-cloud environment and providing access to cloud services to components and machines.
- **Open and standardized:** No vendor lock-in risk with we are connecting service platforms, too. The semantic is intro contact as it is.
- **Practically applicable, SME-ready:** Standardized solution build with and upon OPC UA, which is auditable, maintainable, and secure.
- **Strong industrial community** of companies ranging from industrial component vendors, machine builders to service and cloud providers (global leaders as well as SMEs)
- **Collaborative:** All initiatives and interested parties are invited to join and contribute to enabling an open, interoperable, and standardized Industrial Cloud Federation solution.

Data-Driven Business – Remote Service Framework

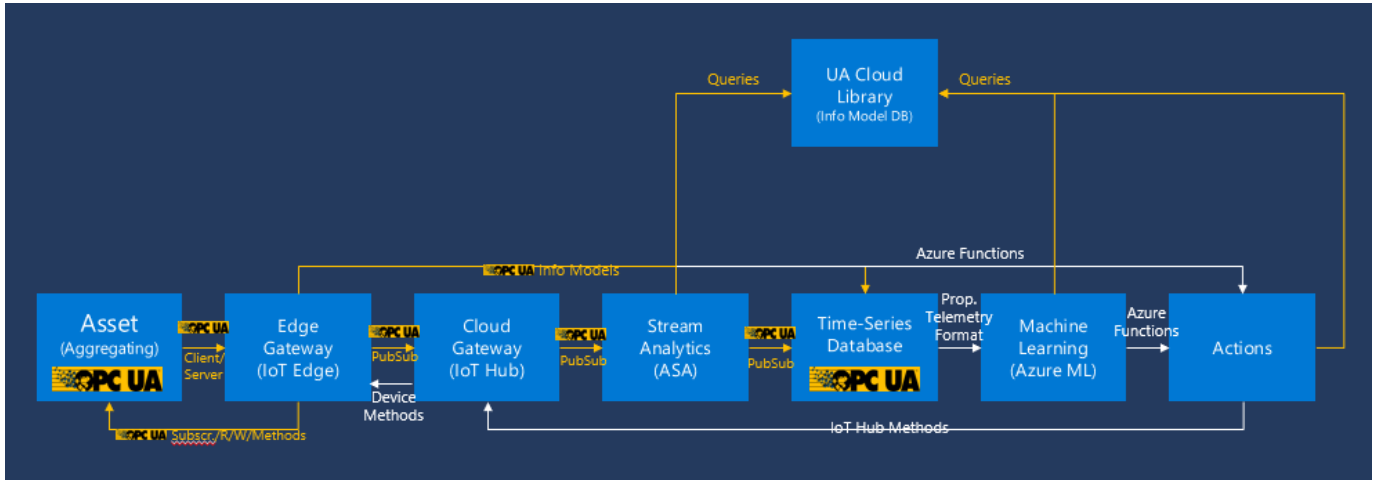
Working Group Members

aws bachmann Bosch Chevron DIN (expleo) FUJITSU HEKUMA HITACHI IBM idaho inray METTLER TOLEDO Microsoft ptc rockwell SAP VDMA Weidmüller YOKOGAWA

OPC Foundation: News on Collaborations

Released & Online !

UA Cloud Library: a cloud-based, scalable OPC UA information model library with standardized, open interface



UA Cloud Library: the missing piece

1. Configure the application behind the OPC UA client which consumes the data from the machine

2. Specification compliance verification for new machines

3. Downloading a UA AddressSpace from the UA Cloud Library into a "blank" UA Server Instance

4. Retrofit OPC UA to existing machines

OPC Foundation: News on Collaborations

- **June 2021: Collaboration between OPCF & DIN**

DIN & OPCF new Joint Working Group (JWG): “OPC UA for Industrial Cloud Federation”

OPC UA for Industrial Cloud Federation
Working Group Charter

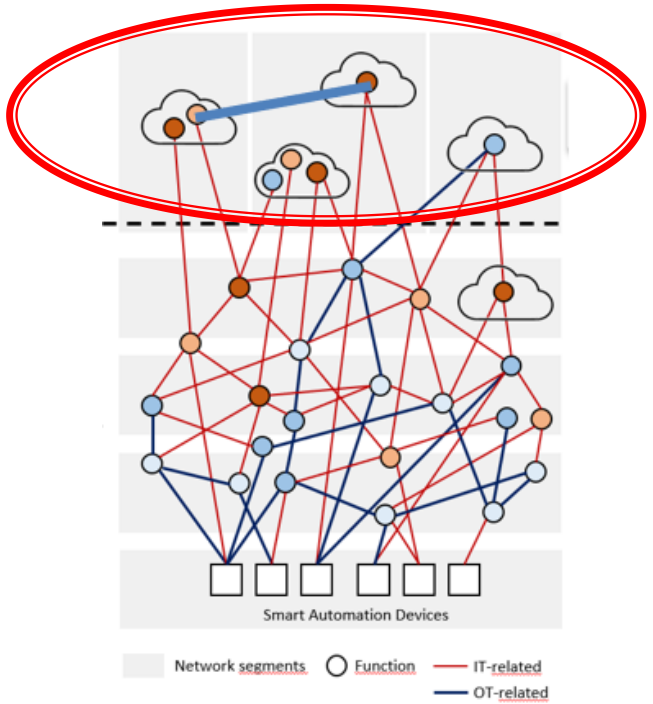
1. Purpose

The joint DIN (the German Institute for Standardization) and OPC Foundation OPC UA Working Group will develop a specification for Industrial Cloud Federation (ICF) based on and realized with OPC UA technology.

In previous work, the DIN SPEC 92222 describes an approach for Industrial Cloud Federation in a technical neutral way. It describes communication between endpoints of cloud services and endpoints of devices physically located in a production environment. The communication crosses one or more administrative company borders and cloud systems. ICF considers both the communication of edge components to cloud components as well as cross-company communication with other cloud systems.

While the DIN SPEC 92222 kept its specifications and descriptions technology-neutral, the purpose of the OPC UA ICF WG is to define technically detailed specifications to guarantee interoperability for an ICF based on OPC UA.

In general, it is preferred to reduce and (if possible) minimize the number of standards and technologies to be used to facilitate interoperability and reduce implementation and maintenance costs. To achieve this goal, existing established standards should be used and/or integrated where applicable. By that, all initiatives, consortia, standardization organizations and their committee members, standard developing organizations and their committee members, and any other relevant and interested technical committees and their members are invited to join and contribute to enable and achieve open, interoperable, practically applicable and standardized industrial cloud federation.



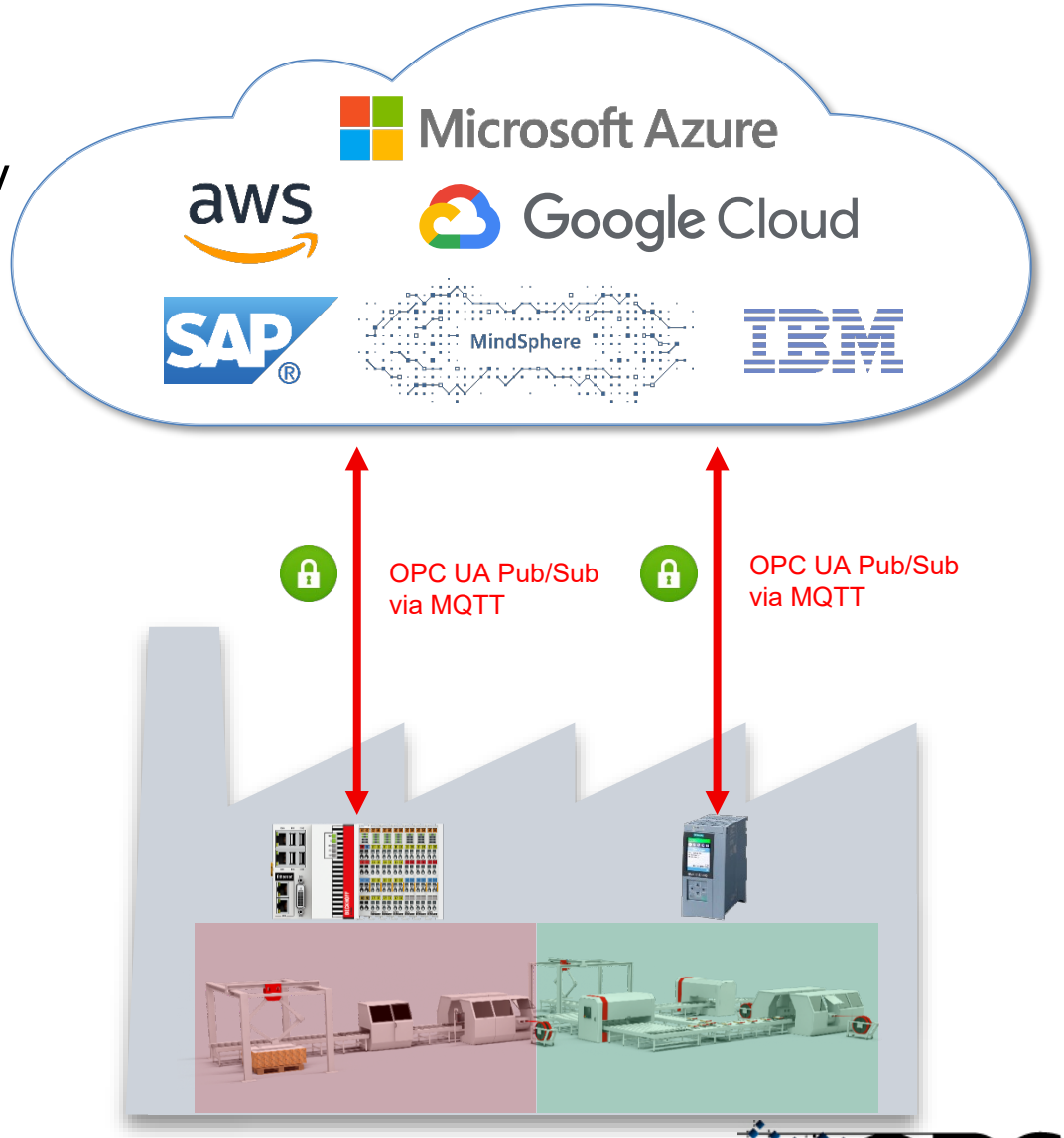
OPC UA over MQTT: One solution – supported by multiple clouds

- End customer to connect industrial assets to the Cloud (data analytics, asset management, ...)
- Assets/gateways might support MQTT connectivity
  But: MQTT is a "payload agnostic" protocol, which means: no definition of the message payload

```
{
  "Sensor1": 42,
  "Sensor2": 11.12,
  "Switch": "on"
}
```

```
{
  "Sensor1": 42,
  "Temperature":
  {
    "Value": 11.12,
    "Unit": "Celsius"
  }
  "Switch": "true"
}
```

- High engineering and organizational effort:
  - End customer has to design a common data format, which has to be used by suppliers
  - Suppliers need to implement data format
  - OR: every supplier sends own format and the cloud application has to interpret it



→ Solution: OPC UA Pub/Sub !!

OPC UA over MQTT

OPC UA is not a protocol – instead enables end-to-end secured standardized information exchange via different protocols

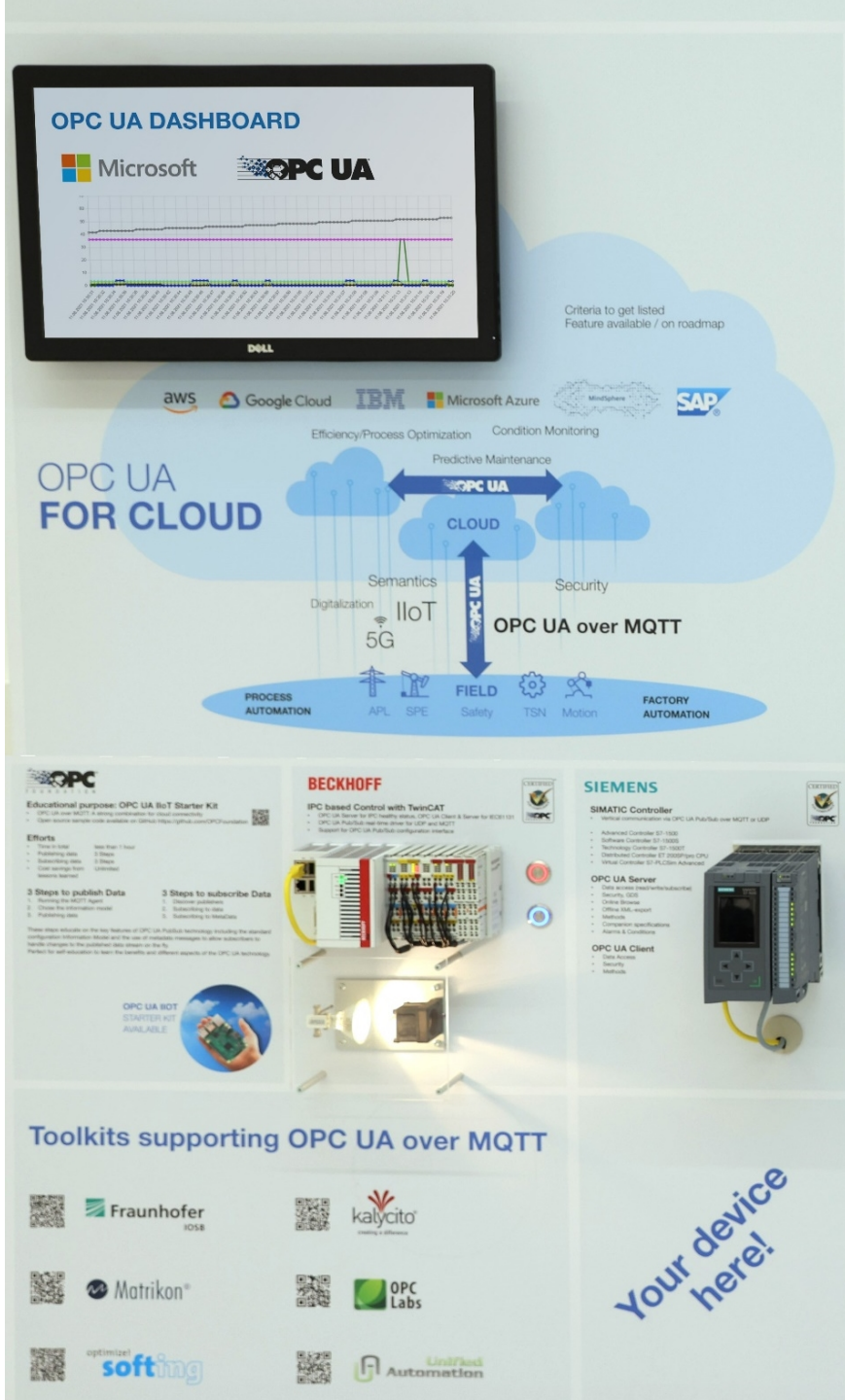
Nov 2021 Live demo: OPC UA PubSub over MQTT
Including BECKHOFF, Siemens, Microsoft Azure

1. **Comittment of Cloud vendors**
   All major providers support OPC UA over MQTT

   aws Google Cloud IBM Microsoft Azure MindSphere SAP

2. **Comittment of OT vendors**
   All major suppliers support OPC UA PubSub over UDP/MQTT

3. **Eco-System for OPC UA over MQTT**
   All major toolkit vendors support OPC UA over MQTT



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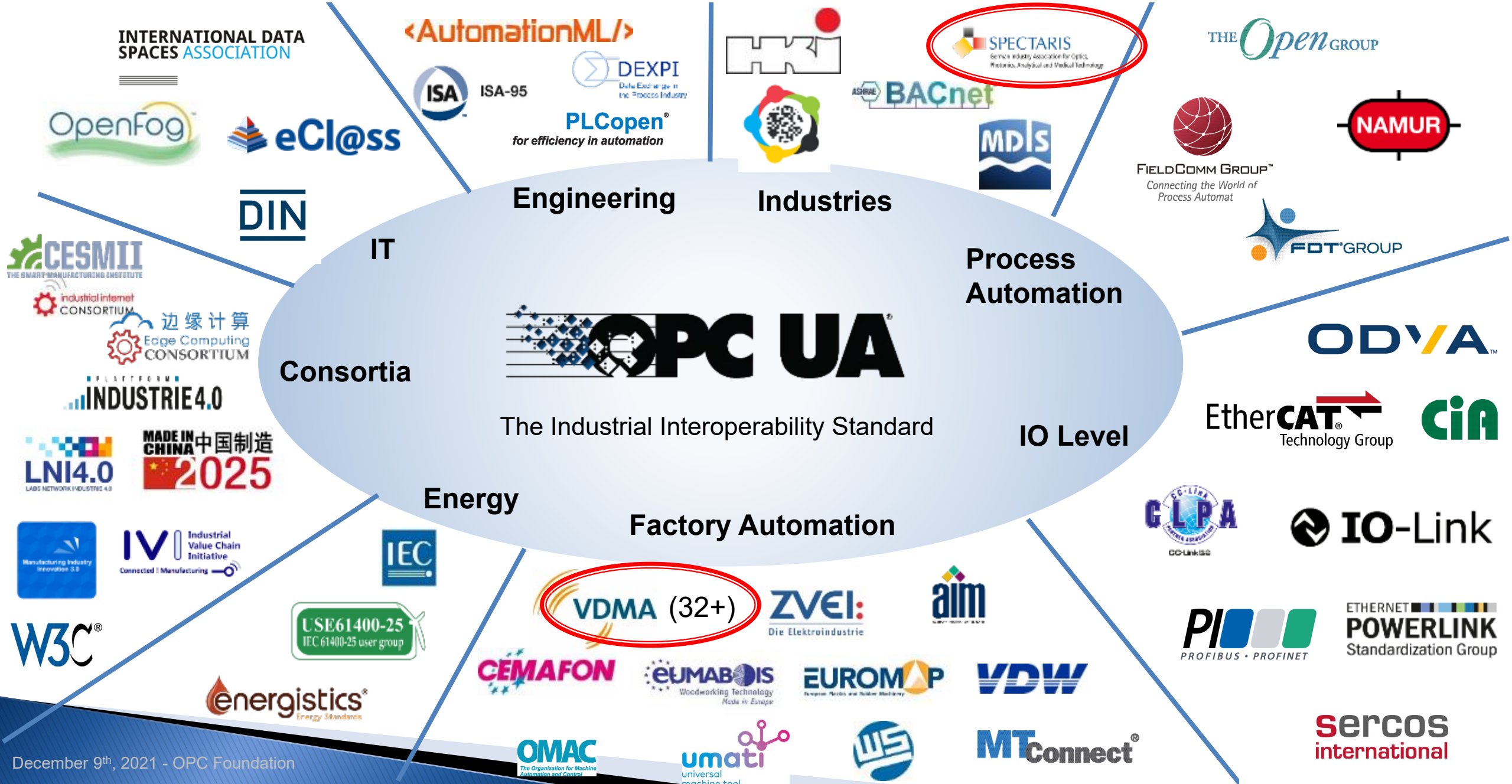
Overview and details : https://opcfoundation.org/markets-collaboration/



OPC UA as a solution

Requirements for mechanical engineering are met:

- Open source
- Security
- Various protocols
- Semantic machine description
- Scalable

OPC UA is the preferred standard (IEC 62541)

» **O**pen **P**latform **C**ommunication **U**nified **A**rchitecture

Status of Companion Specifications

Σ52!

Setup

13

- Additive Manufacturing
- Lasers and Laser Systems
- Machine Tending NEW
- Melting Furnace
- **OPC UA for Machinery**
  - Energy Management NEW
- Plastics and Rubber Machinery
  - Particle Foam Machines NEW
- Printing and Paper Technology
  - Dryer
  - Printing Machines NEW
  - Winding Machines
- Surface Technology
  - Plasma-Surface Technology NEW
  - Shot-Blasting Technology NEW
- Textile Dying and Finishing
- Wire Processing - Crimping NEW

Development*

21

- Cranes and Hoists
- Drive Technology
- Gripper
- High Pressure Die Casting
- Geometrical Measurement Systems
- M2X Intralogistics Communication
- Machine Tools II + CNC Systems
- Machine Vision II
- Mining
- **OPC UA for Machinery**
  - Engineering Units
  - Job Management NEW
  - Machine State
  - Result Transfer NEW
  - Temperature Control
- Plastics and Rubber Machinery
  - Injection Moulding/Robots
  - Material Supply
- Process Air and Filtration Systems
- Robotics II
- Surface Technology
  - Material Supply Systems
- Textile Testing Devices
- Woodworking Machinery II

Release**

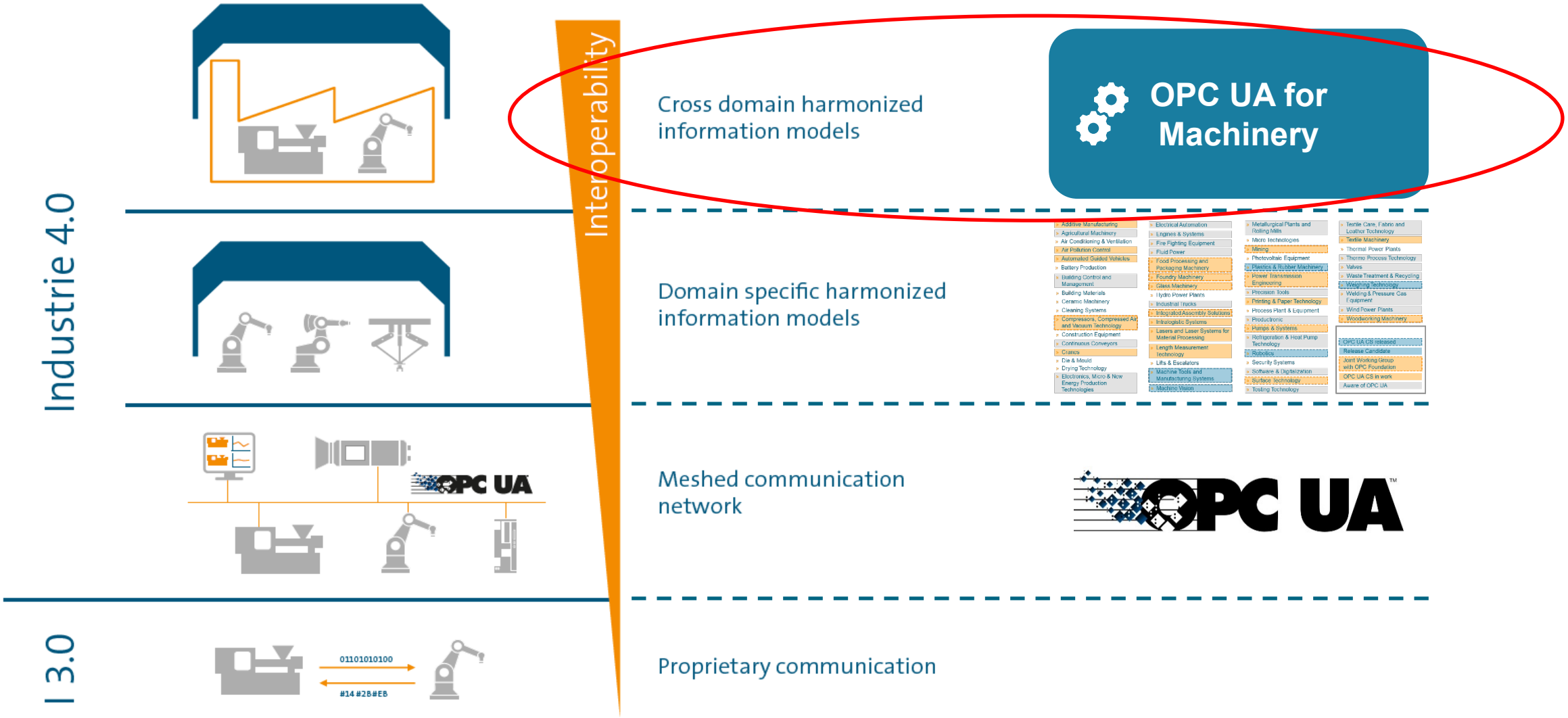
18

- Compressed Air Systems
- Glass Industries Initiative
- Industrial Joining Technologies
- Machine Tools
- Machine Vision
- **OPC UA for Machinery**
  - Identification
  - Listing of Machinery Items
- Plastics and Rubber Machinery
  - General Types
  - Extrusion
  - LSR Dosing
  - Hot runner
  - Injection Moulding /MES
  - Temperature Control
- Pumps and Vacuum pumps
- Robotics
- Weihenstephaner Standards
- Weighing Technology
- Woodworking Machinery

* Development = Working Group is registered at OPC Foundation as Joint Working Group.
** All these groups are continuing to work on the OPC UA standards.

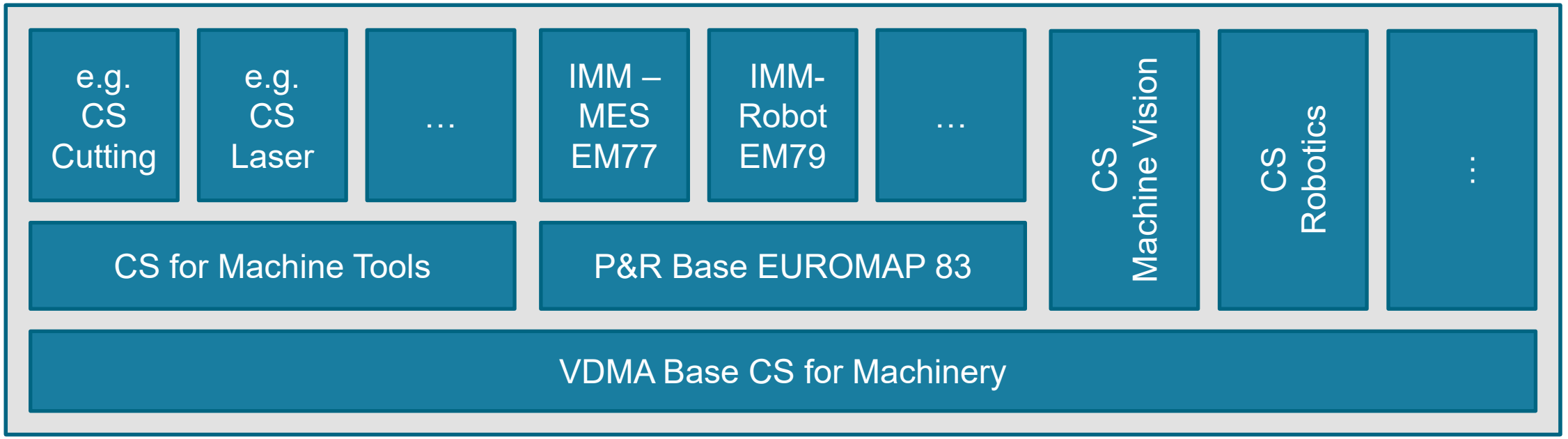
NEW = Start in 2021

Levels of Interoperability



Harmonisation - OPC UA for Machinery

- **OPC UA for Machinery defines building blocks for cross machinery Use-Cases**
  - e.g., Identification, Machine Status, Job Management
  - Branchspecific Companion Specifications use required building blocks



LADS
Laboratory Agnostic
Device Standard

LADS OPC-UA Joint Workgroup

Exchange
with foundations in the Lab & Analytical domain encourages alignment on data-formats, ontologies, ..

Allotrope Foundation
BioPhorum

The LADS OPC-UA Companion Specification will be jointly developed by SPECTARIS, VDMA, OPC Foundation, JAIMA, GAMBICA, Labmas and FHI

ANALYSEN-, BIO- & LABORTECHNIK im Deutschen Industrieverband SPECTARIS

VDMA

OPC FOUNDATION

JAIMA Japan Analytical Instruments Manufacturers' Association

GAMBICA

LAB MAS SPAIN+

FHI FEDERATIE VAN TECHNOLOGIEBRANCHES

Harmonization
with related workgroups in the OPC Foundation avoids redundancy and fosters synergies, compatibility & reuse

2mag, Agilent, analytikjena, BRAND, DÜPERTHAL, elementar, GERSTEL, heidolph, Hettich, HIRSCHMANN, HNPM, INFORS HT, infoteam, InProcess Instruments, Julabo, KNAUER, labotect, KRÜSS, LAUDA, memmert, Miele, NETZSCH, SARTORIUS, SCHMIDT HAENSCH, SHP Steriltechnik AG, SIGMA, SLABS, TECHNISCHE UNIVERSITÄT DRESDEN, Systec, vacuubrand, essentim, LAB FORWARD

Be the next!

The LADSurc
(user review committee)
provides valuable feedback with regards to requirements, prioritization, applications, use-cases, ..

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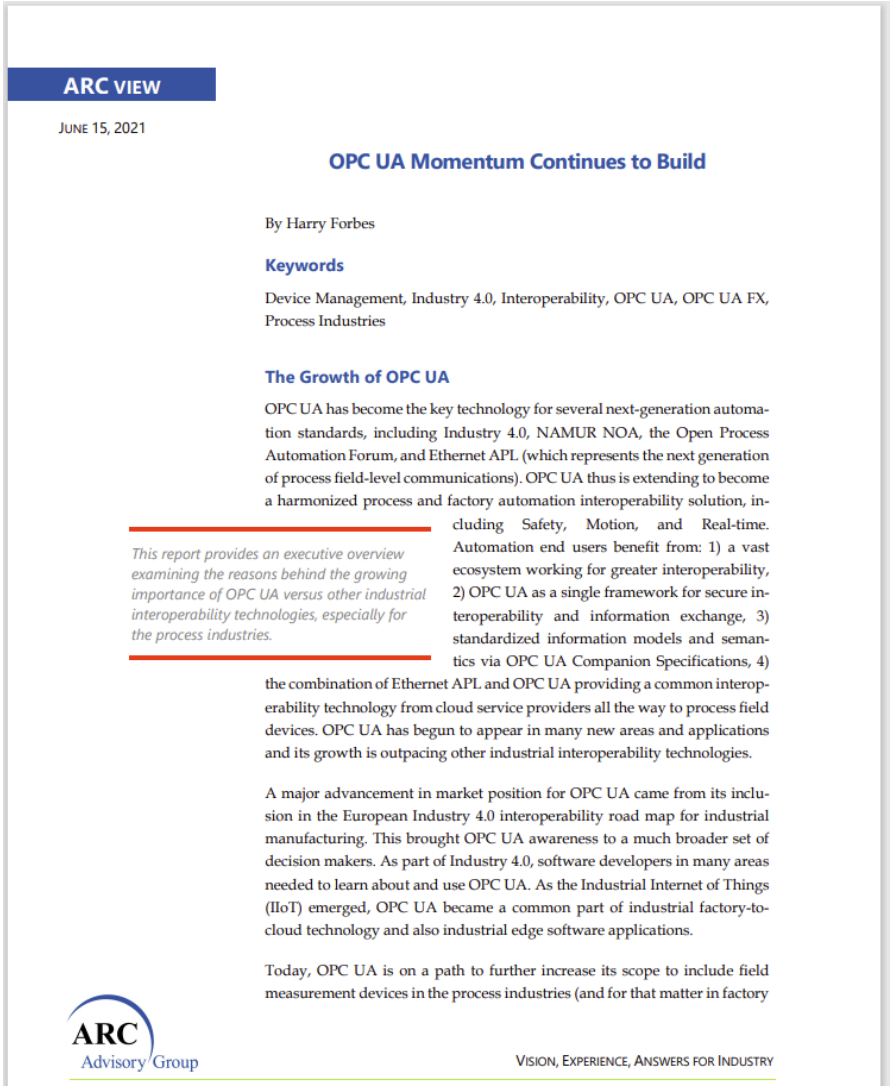
- Technology
  - Field Level Communications Initiative: New Members / Status & Roadmap by Peter Lutz
  - OPC UA and Cloud: Technology and Initiatives
- Collaborations
  - Overview / VDMA / LADS including JAIMA
- Marketing
  - OPC UA IIoT Starter Kit / Academic program / Marketplace
  - Success Stories

ARC Report 2021: OPC UA most important interoperablity enabler



ARC VIEW

JUNE 15, 2021

OPC UA Momentum Continues to Build

By Harry Forbes

Keywords

Device Management, Industry 4.0, Interoperability, OPC UA, OPC UA FX, Process Industries

The Growth of OPC UA

OPC UA has become the key technology for several next-generation automation standards, including Industry 4.0, NAMUR NOA, the Open Process Automation Forum, and Ethernet APL (which represents the next generation of process field-level communications). OPC UA thus is extending to become a harmonized process and factory automation interoperability solution, including Safety, Motion, and Real-time. Automation end users benefit from: 1) a vast ecosystem working for greater interoperability, 2) OPC UA as a single framework for secure interoperability and information exchange, 3) standardized information models and semantics via OPC UA Companion Specifications, 4) the combination of Ethernet APL and OPC UA providing a common interoperability technology from cloud service providers all the way to process field devices. OPC UA has begun to appear in many new areas and applications and its growth is outpacing other industrial interoperability technologies.

This report provides an executive overview examining the reasons behind the growing importance of OPC UA versus other industrial interoperability technologies, especially for the process industries.

A major advancement in market position for OPC UA came from its inclusion in the European Industry 4.0 interoperability road map for industrial manufacturing. This brought OPC UA awareness to a much broader set of decision makers. As part of Industry 4.0, software developers in many areas needed to learn about and use OPC UA. As the Industrial Internet of Things (IIoT) emerged, OPC UA became a common part of industrial factory-to-cloud technology and also industrial edge software applications.

Today, OPC UA is on a path to further increase its scope to include field measurement devices in the process industries (and for that matter in factory

ARC Advisory Group

VISION, EXPERIENCE, ANSWERS FOR INDUSTRY

ARC report: OPC UA Momentum Continues to Build

"[…] OPC UA has become the most important interoperability technology in today's industrial landscape, and it appears poised to extend this lead even further [..]"

Reasons for the Recent Growth of OPC UA

- **Vendor Independence**
- **Standardization, Security, Scale**
- **Openness and Accessibility**
- **Extensibility**
- **Collaboration**

OPC FOUNDATION

OPC UA IIoT Starter Kit: Available

Educational purpose: OPC UA IIoT Starter Kit

- OPC UA over MQTT: A strong combination for cloud connectivity
- Open source sample code available on GitHub
  https://github.com/OPCFoundation

Efforts

▪ Time in total	less than 1 hour
▪ Publishing data	3 Steps
▪ Subscribing data	3 Steps
▪ Cost savings from lessons learned	Unlimited

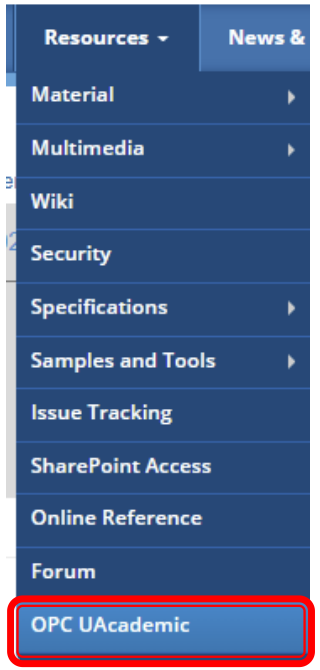
3 Steps to publish Data

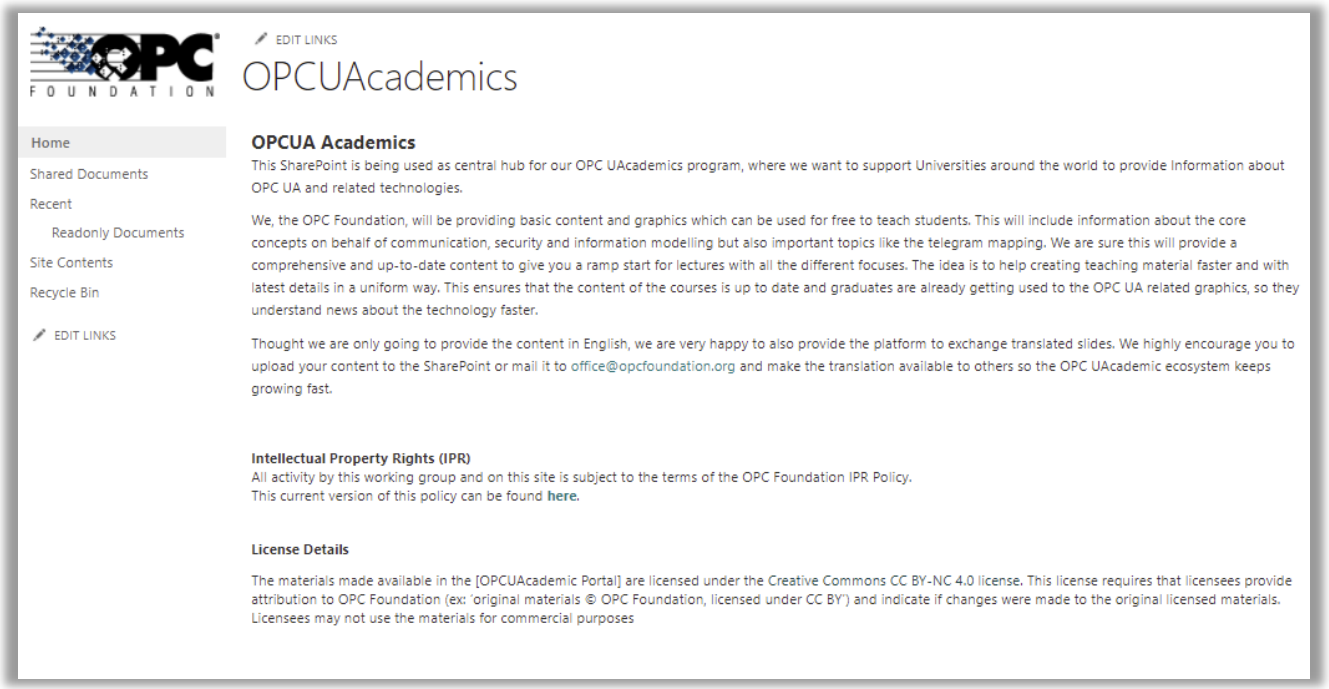
1. Running the MQTT Agent
2. Chose the information model
3. Publishing data

3 Steps to subscribe Data

1. Discover publishers
2. Subscribing to data
3. Subscribing to MetaData

OPC UAcademics : Available

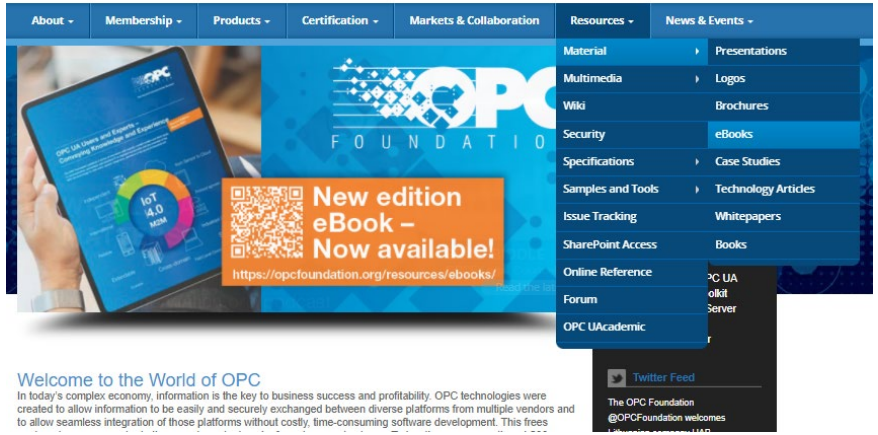




The aim of the OPC Foundation's "OPC UAcademics" program is to support Universities around the world by providing Information about OPC UA and related technologies.
The OPC Foundation provide basic content and graphics, which can be used free of charge to teach students (the materials may not be used for commercial purposes).
The curriculum includes information about the core concepts of communication, security, and information modelling, but also important topics like telegram mapping.

eBook – 4th edition published

- eBook https://opcfoundation.org/resources/ebooks/



- Concept
  - Re-use podcasts as series of articles
  - eBook – reuse of articles in compact PDF distributed via Automation.com / AutomationWorld / CFE Media
  - eBook – Edition 1 published Nov 2020
  - eBook – Edition 2 published March 2021
  - eBook – Edition 3 published Sept 2021
  - eBook – Edition 4 published Nov 2021

Re-use

OPC EXPERTS PODCAST

OPC Experts Interview:The Technology Behind OPC UA

by Michael Clark | Feature

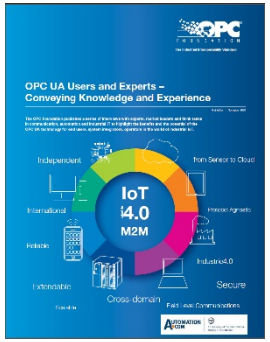
Learn from an interview with Darek Kominek of Matrikon about the concepts of built-in security, the IT-OT gap, protecting against hacker/malware attacks, and many other features that have made OPC UA the secure data-exchange standard it is today. his is the third in the series of OPC Experts Interviews.

OPC Experts Interview:The Technology Behind OPC UA

by Michael Clark | Feature

Learn how the science of the open platform communication standard, OPC UA, is applied across the industrial automation sector from an interview with Uwe Steinkrauss, CEO of Unified Automation. This is the second in the series of OPC Experts Interviews.

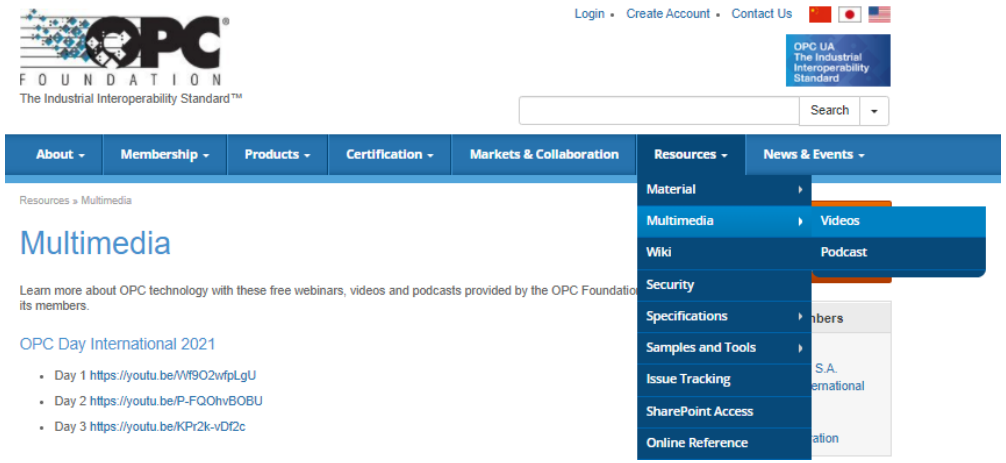
Re-use



- Next: Articles are available for OPCF Hubs - re-publish authorized content in local channels

Activities 2021 – OPC Day International 2021

Real world: OPC UA sucess stories for end users: Experience shared by and for vendors and end-users



OPC Day International - Day 3: Adaption & Solutions (Target Group: End-Users)

BASF BMW GROUP equinor Miele RENAULT

FOUNDATION

Success stories

Call for action:

Contact OPC Foundation and provide your success story!

equinor

Microsoft Azure

Process Automation

OPC UA implemented and proven in use at scale at Johan Sverdrup

- Started production October 2019.
- This field alone will produce 30% of Norway's total production.
- OPC UA a central part of the digitalization strategy since 2015.
- 19 OPC UA servers on the plant floor aggregated into one central OT/IT Gateway using OPC UA Aggregation architecture pattern.
- 180.000 datapoints connected via OPC UA to Microsoft Azure. Will be extended to 1.000.000 now

RENAULT

Google Cloud

Factory Automation

- Plan 2017: Equip 38 production locations with OPC UA
- Status 2021:
  - 17 locations with 3300 OPC UA enabled devices
  - 300.000.000 OPC UA messages since 2017
  - 10.000 messages per second

OPC FOUNDATION

OPC Foundation: The United Nations for Industrial Automation

Thank you! - Questions? Please contact us!

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