

Industrial Interoperability from Field to Cloud

OPC Day Japan 2022 – Virtual Event – December 8th/9th, 2022



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Agenda

- ▶ **Organization**
 - **Members / Board of Director**
- ▶ **Technology: Status & roadmap**
 - **Field Initiative**
 - **Cloud Initiative**
- ▶ **Collaborations & Information Models**
- ▶ **News**
 - **.NET User Standard Stack Initiative**
 - **Academic program**
 - **Marketplace**
 - **Success Stories**

OPC Unified Architecture

Largest Ecosystem for Cross-domain Industrial Interoperability

895+ Member Companies



The Industrial Interoperability Standard

Open
Independent
Scalable
Secure
Robust and reliable
International IEC standard
Transport extendable
Modeling

OPC World

Nov 12th, 2021: 850 members

Nov 12th, 2022: 896 members

→ 46 new members within 1 year

OPC Japan membership

2022: 63 members

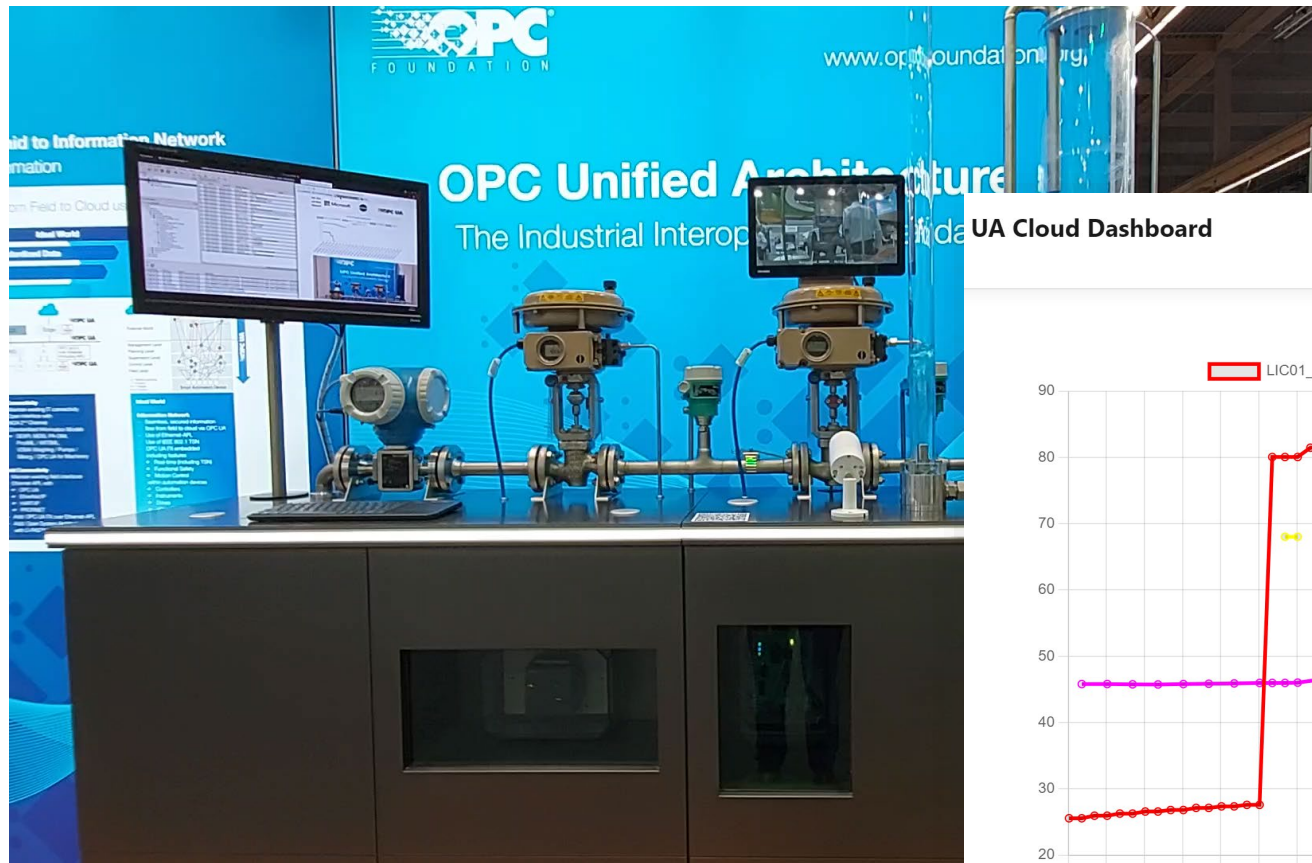
Events 2022: Example Achema 2022

- 324sqm booth ! .. but in vacation time lot of partners canceled
- Partners: Member Siemens – and associations VDMA, FDT, Open Process Automation Forum, COPA
- Huge areas for
 - Technology
 - Field
 - Cloud
 - Collaborations
- 2 hours „OPC Day“

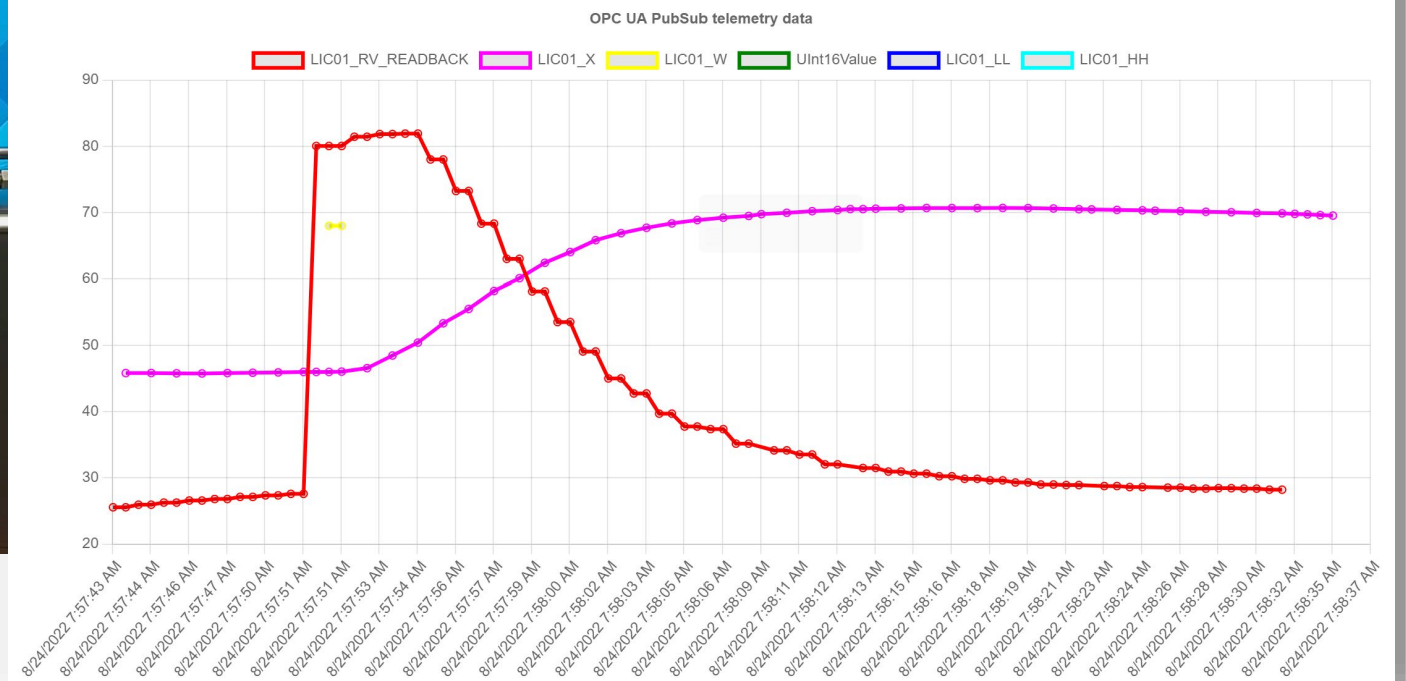


Achema 2022: New Class-A member SAMSON

Demonstrator OPC UA leverages MQTT



UA Cloud Dashboard

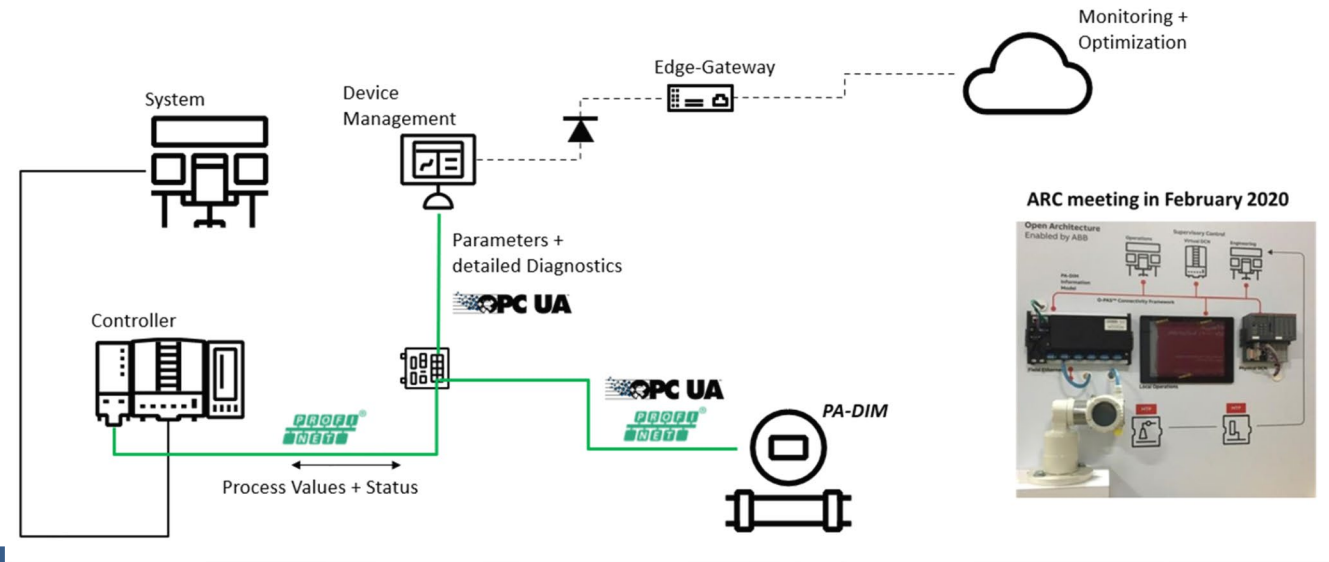
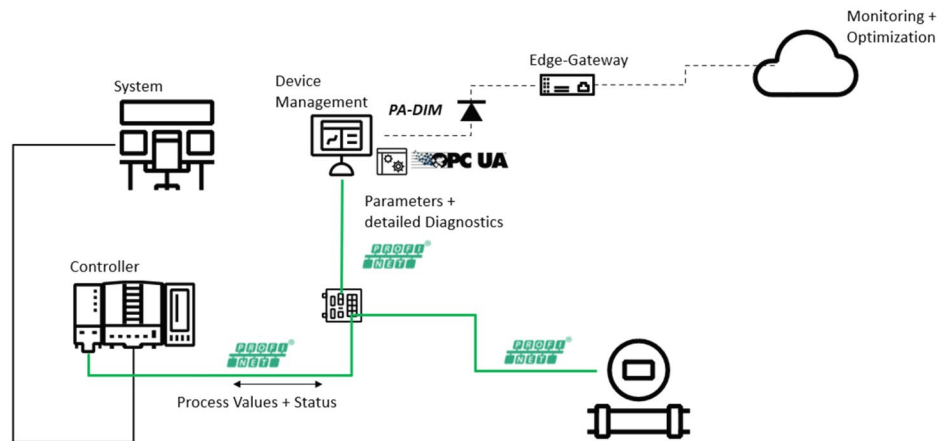


Achema 2022: OPC Press Conference – ABB statement

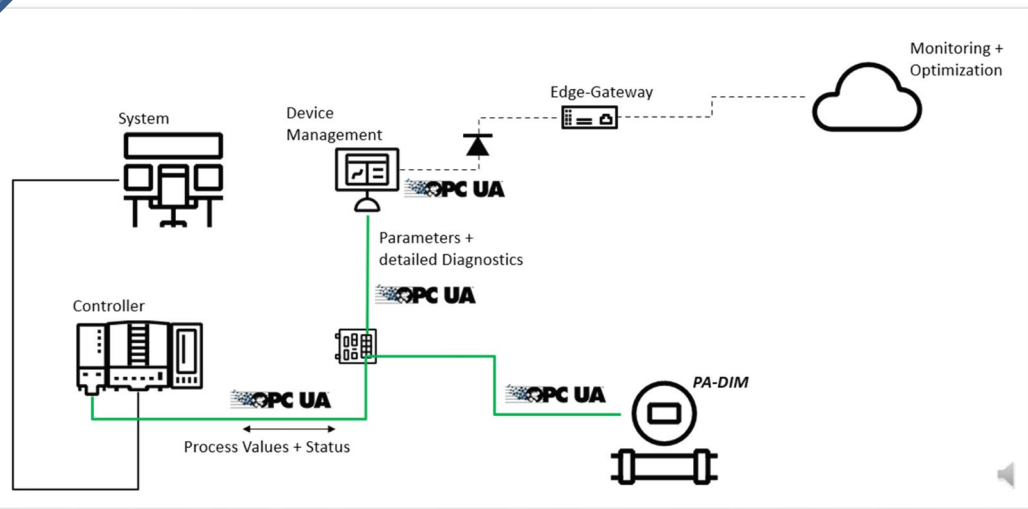
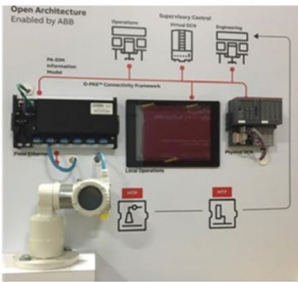
- ABB's Process Automation System Vision: 3 Steps to OPC UA

ABB's Process Automation System Vision

Transitioning from the status quo to OPC-UA and APL based solutions



ARC meeting in February 2020



OPC UA:

Exclusively selected by major process industry initiatives

OPC UA Adaption in Process Industry

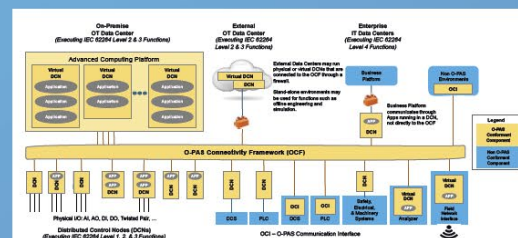
Associations selected OPC UA as their communication framework

Open Process Automation Forum (OPAF)



Mission

- Creating an open standards-based interoperable, portable, secure automation process control architecture



OPAF Vision: Process Control Architecture

Source: OPAF

O-PAS is leveraging OPC UA

Version	Year	Theme	O-PAS™	Subject	Reference Standards
V1	2019	Interoperability	Part 1	Technical architecture	IEC 62594 (ISA-95)
V2	2020	Configurator Portability	Part 2	Security	IEC 62449 (ISA-99)
V2.1	2021	Control Functionality	Part 3	Profiles	N/A
V3	TBD	Application Portability	Part 4	Connectivity framework	IEC 62541 (OPC UA)
		System Orchestration & Physical Platform (Hardware)	Part 5	System management	IEC 62541 (OPC UA)
			Part 6	Information and Exchange Models	IEC 62541 (OPC UA)
			Part 7	Physical platform	TBD
			Part 8	Application Portability	TBD
			Part 9	System Orchestration	TBD

Source: OPAF

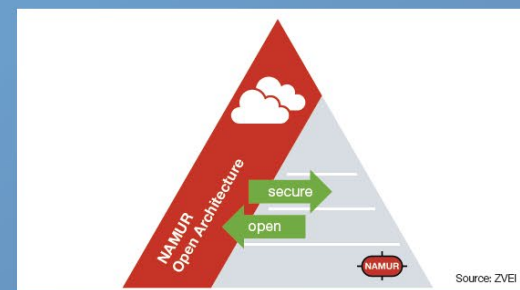
- Open heterogeneous multi-vendor control system
- OPC UA models used for connectivity framework and throughout for alarms, function blocks, information exchange, and execution engines

NAMUR Open Architecture (NOA)



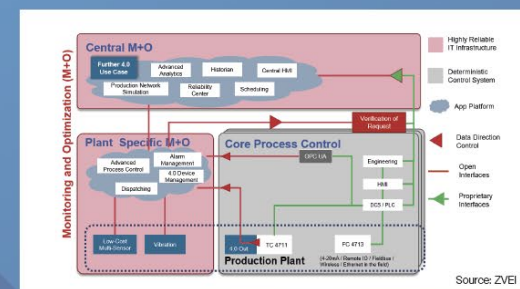
Mission

- Make production data easily and securely usable for plant and asset monitoring as well as optimization



Source: ZVEI

NOA is leveraging OPC UA



Source: ZVEI

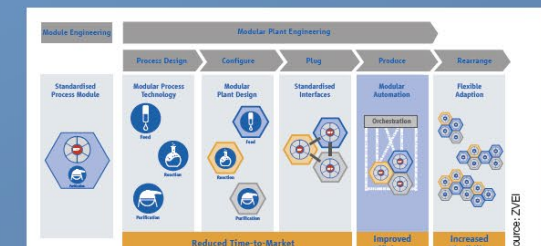
- OPC UA is the desired communication technology in NOA to connect the Core Process Control to Plant Monitoring and Optimization systems

NAMUR, PROCESSNET, ZVEI Module Type Package (MTP)



Mission

- Time reduction of automation engineering and commissioning
- Manufacturer-independent connectivity of equipment modules



Source: ZVEI

Process INDUSTRIE 4.0: The Age of Modular Production

MTP is leveraging OPC UA

Domain Specific Typicals	Chemical Engineering	Automation Engineering
	Data and Services Model for Bio-Pharma Equipment BioPhorum Operation Group	Data and Services Model for XXXX Equipment XXX Group
Methods & Models	Modular Equipment and Plant Engineering VDM/DE 2776 DEXPI P&ID	Module Type Package VDM/DE/NAMUR 2659 IEC 656/663/NP (MWP)
Serialization	Process Data Exchange ISO 15926	CAEX IEC 62424
Communication		OPC UA IEC 62541

Source: ARC Forum

- OPC UA (IEC62541) is today the only communication channel for MTP

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OPC UA: One Harmonized Solution

News about Extending OPC UA to the Field



Visit us at: OPC Booth // Hall 5 – 140

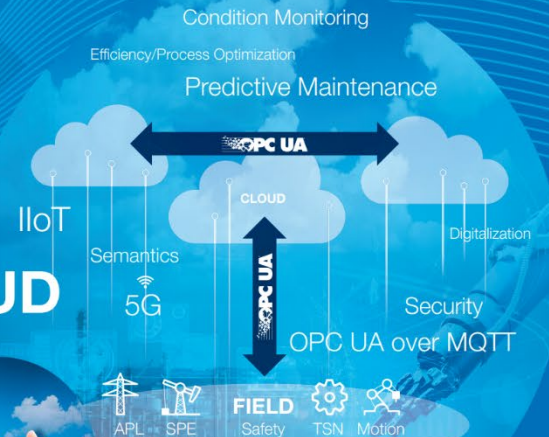
ONE HARMONIZED
SOLUTION FOR
PROCESS & FACTORY
SCALING FROM
FIELD TO CLOUD

OPC UA
FOR FIELD

Factory Automation
Process Automation

OPC UA
FOR CLOUD

OPC UA IIOT
STARTER KIT
AVAILABLE



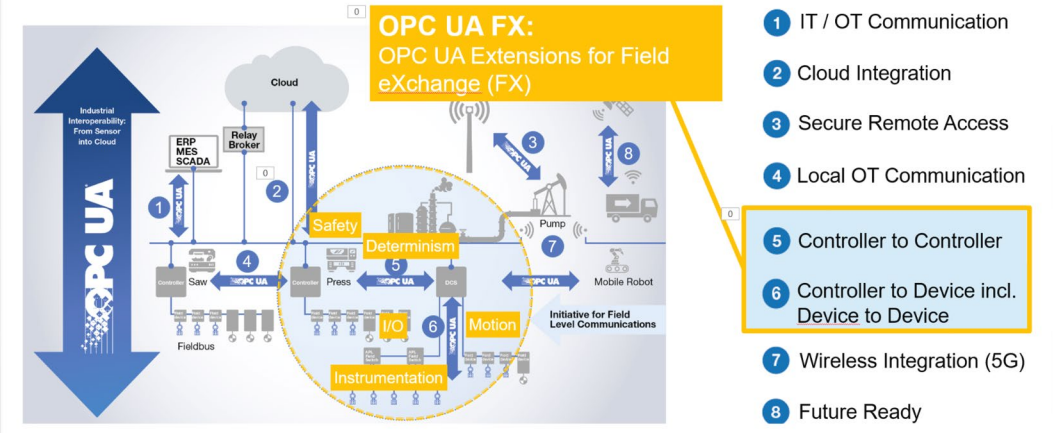
Four Years Field Level Communications (FLC) Initiative (11/2018 - 11/2022)



Press Conference November 2018



FLC Initiative to create OPC UA Field eXchange (FX) specifications:
Extending OPC UA to the field incl. Determinism, Safety & Motion

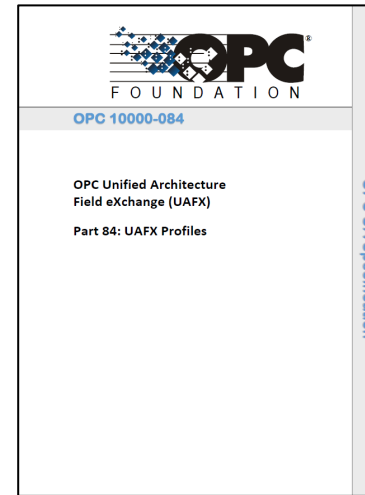
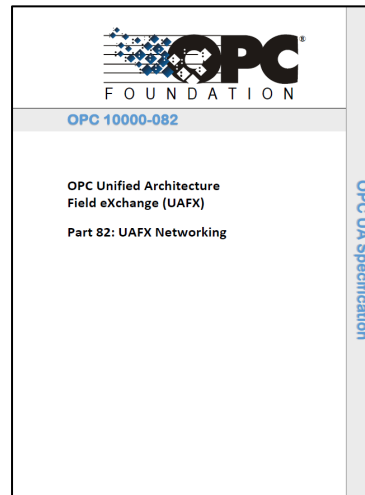
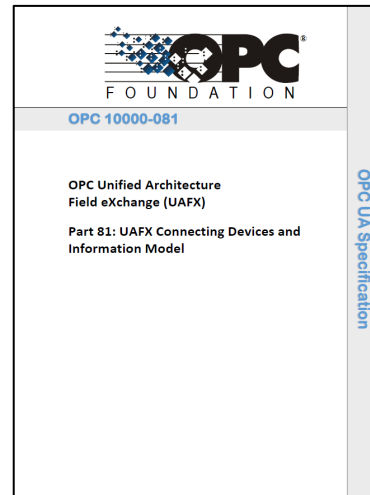
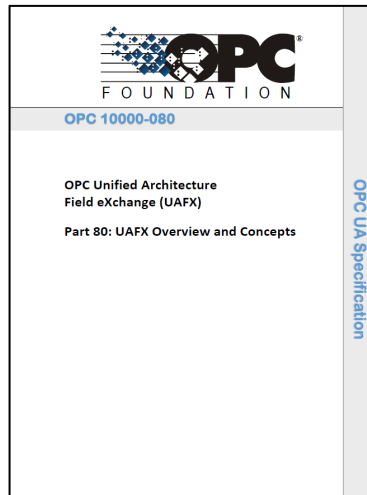


Members of the Field Level Communication (FLC) Initiative's Steering Committee



OPC UA FX Specifications: Parts 80, 81, 82 & 84

First Release



Congrats & Thanks to
more than 320 experts
from more than
65 OPCF member companies!

- ▶ **First Release published** with the focus on Controller-to-Controller (C2C)
 - Consists of 4 Parts (OPC 10000-080, 10000-81, 10000-082, 10000-084)
 - UAFX specifications have passed in-depth OPCF member reviews and extensive prototyping to ensure their implementations maintain cross-vendor interoperability
 - Automation vendors can now start adopting UAFX functionality in their offerings, and end-users can look forward to the advantages UAFX-based field communications offer
- ▶ **Test specifications & Test cases are being developed to provide conformance testing by end of Q2/2023**

OPC UA Safety Specification: Part 15

Upcoming Revision

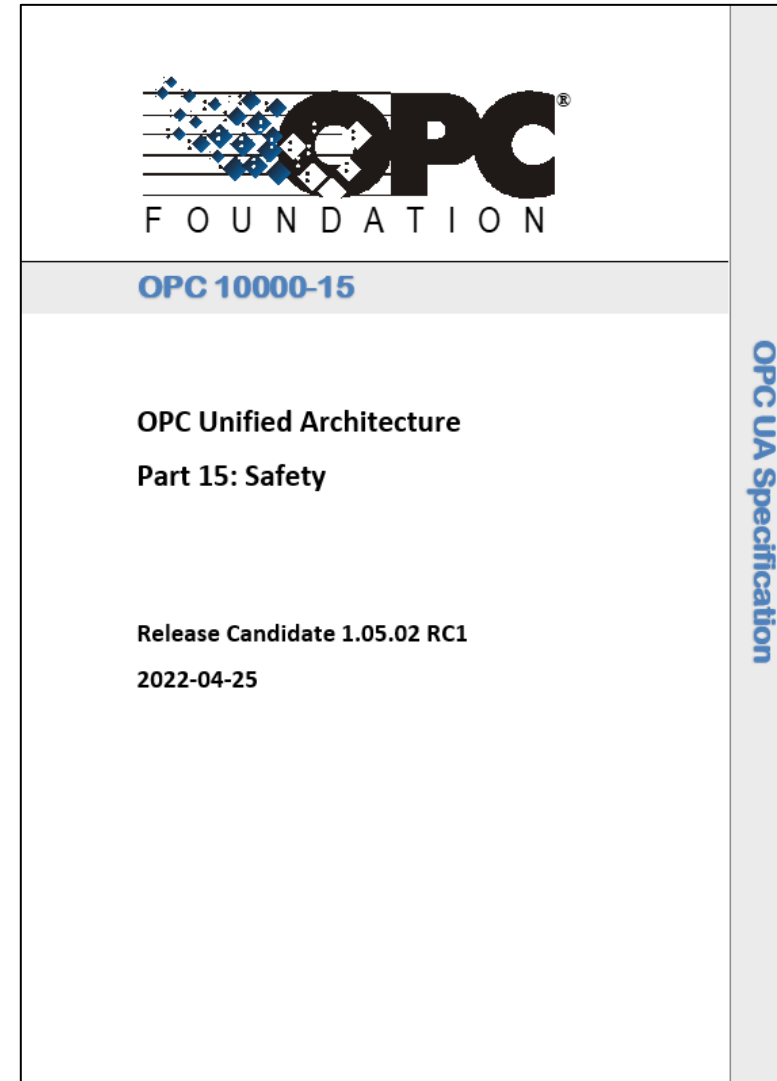
- ▶ OPC UA Safety Specification R 1.05.02 currently under member review, publication planned for Q4/2022

History:

- ▶ Cooperation with PROFIBUS & PROFINET International (PI) started in 02/2018
- ▶ Release 1.04: Client/Server support (10/2019)
- ▶ Release 1.05: PubSub support (11/2021)
- ▶ Release 1.05.02: Revisions

Related Activities:

- ▶ Safety Test Tool (UASCTT) and Safety Stack prototypes available
- ▶ TÜV Assessment & Certification planned for Q1/2023



SPS 2022: UAFX Controller-to-Controller Multi-Vendor Demo

OPC UA Field eXchange (FX): Extending OPC UA to the Field including Determinism, Instrumentation, Motion and Functional Safety

OPC UA for Field eXchange (FX)

Semantic Industrial Interoperability on Field level
Controller and Device: C2C, C2D, D2D



OPC UA for Field eXchange (FX)

Standardized Information flow between
different Vendors, Assets, Markets



OPC UA over 5G

Wireless and Functional Safety
Controller-to-Controller Communication
with OPC UA over 5G and OPC UA Safety



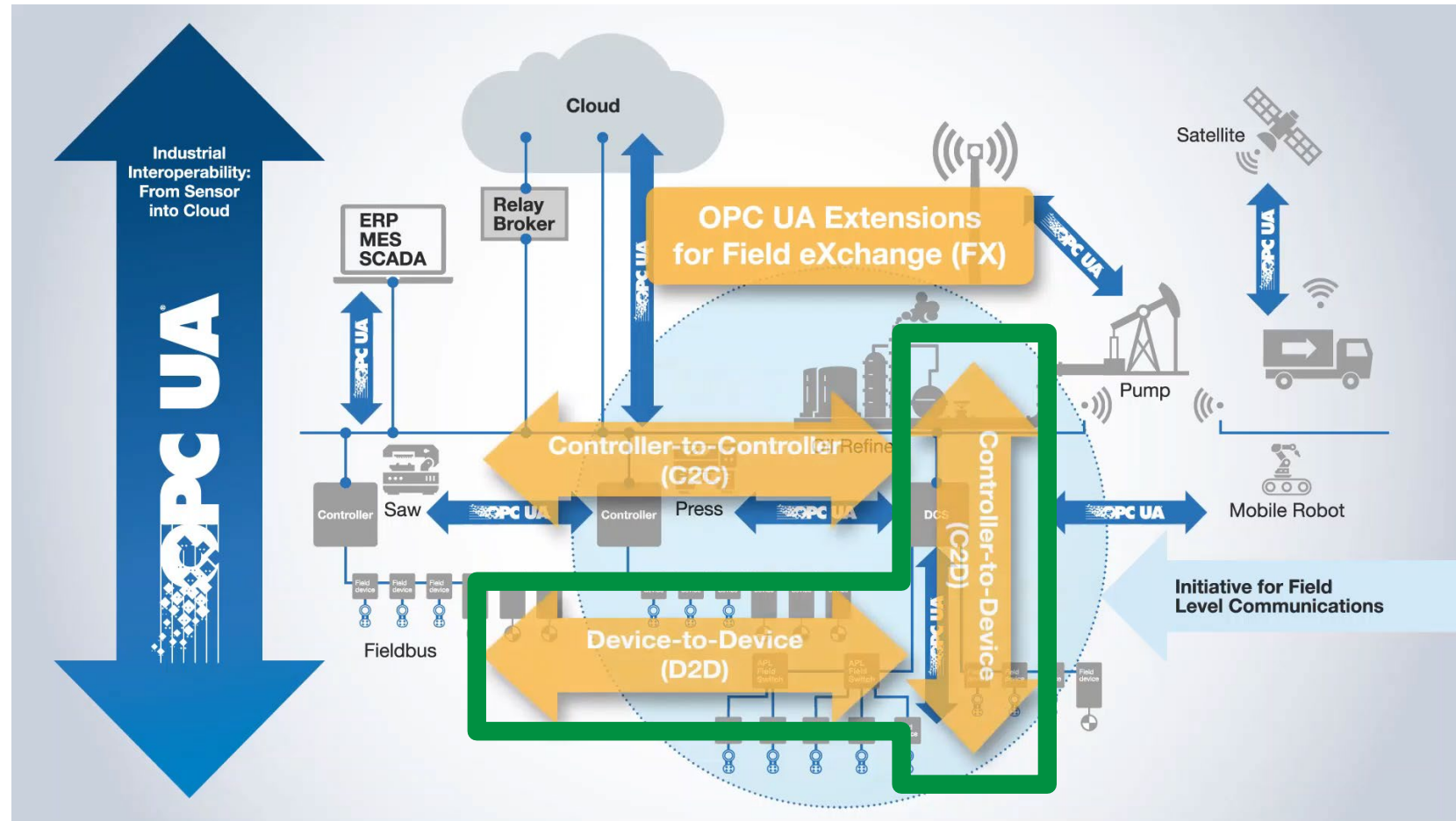
OPC UA Safety

Functional safety communication with OPC UA
using Client/Server and PubSub, supporting UAFX



FLC Initiative: Further Roadmap

- ▶ Kick-off Technical Work on Controller-to-Device (incl. Device-to-Device) held on July 26-28, 2022
- ▶ Handover of Requirements
- ▶ Work Items:
 - Parametrization
 - Networking
 - Diagnosis
 - Motion
 - Instrumentation
 - I/O
- ▶ Working group structure established



OPC UA: One Harmonized Solution

News from Cloud initiative



Visit us at: OPC Booth // Hall 5 – 140

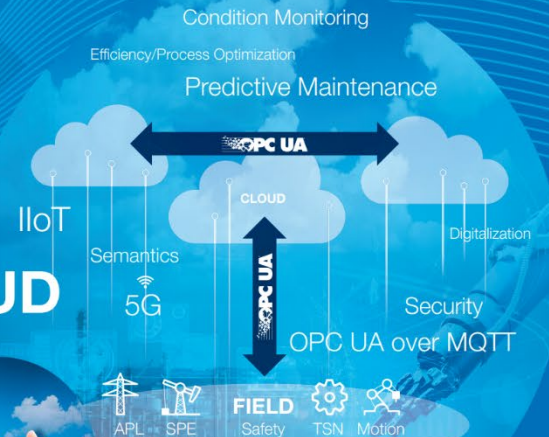
ONE HARMONIZED
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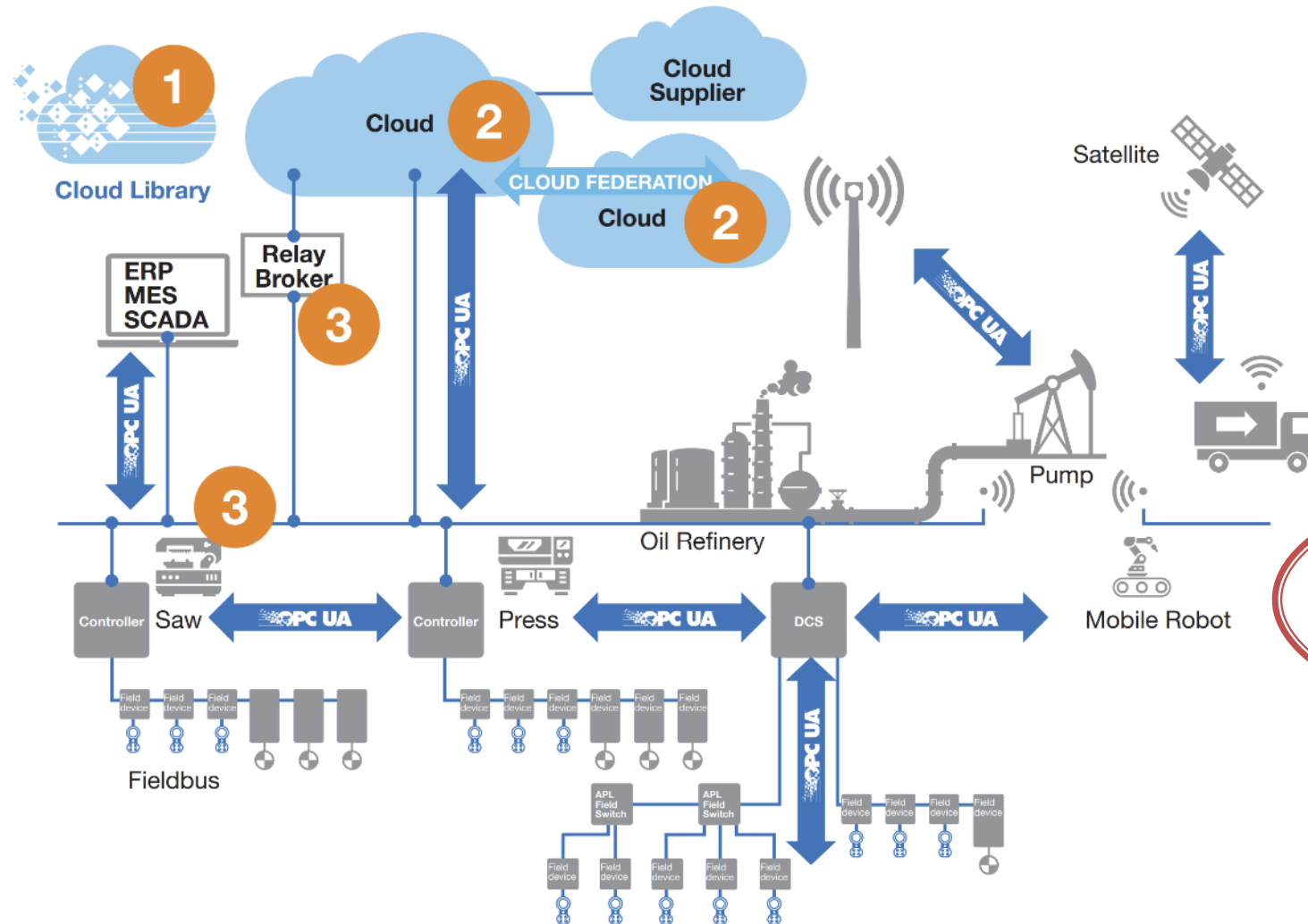
Factory Automation
Process Automation

OPC UA
FOR CLOUD

OPC UA IIOT
STARTER KIT
AVAILABLE



UA Cloud Initiative



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

4 Education, IIOT Starter Kit

- Success stories

2021: Support by 2 OT companies and 1 IT company

Challenge:

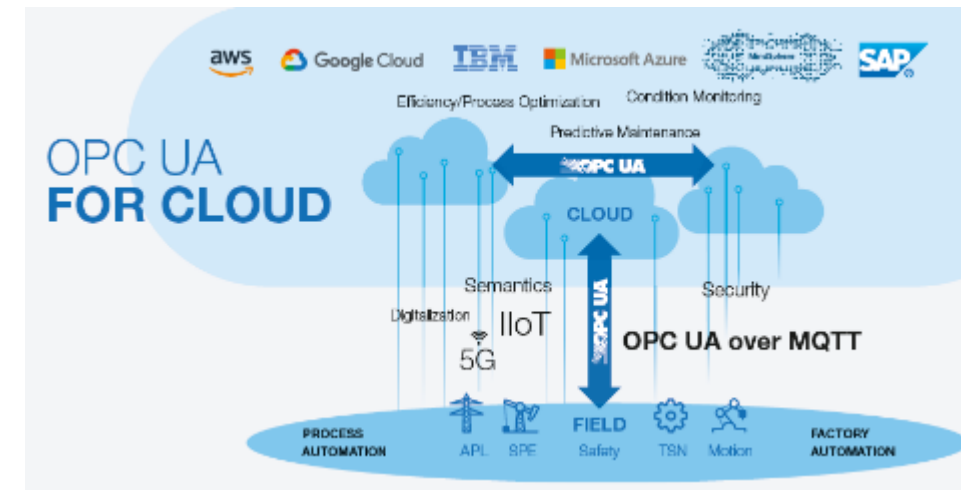
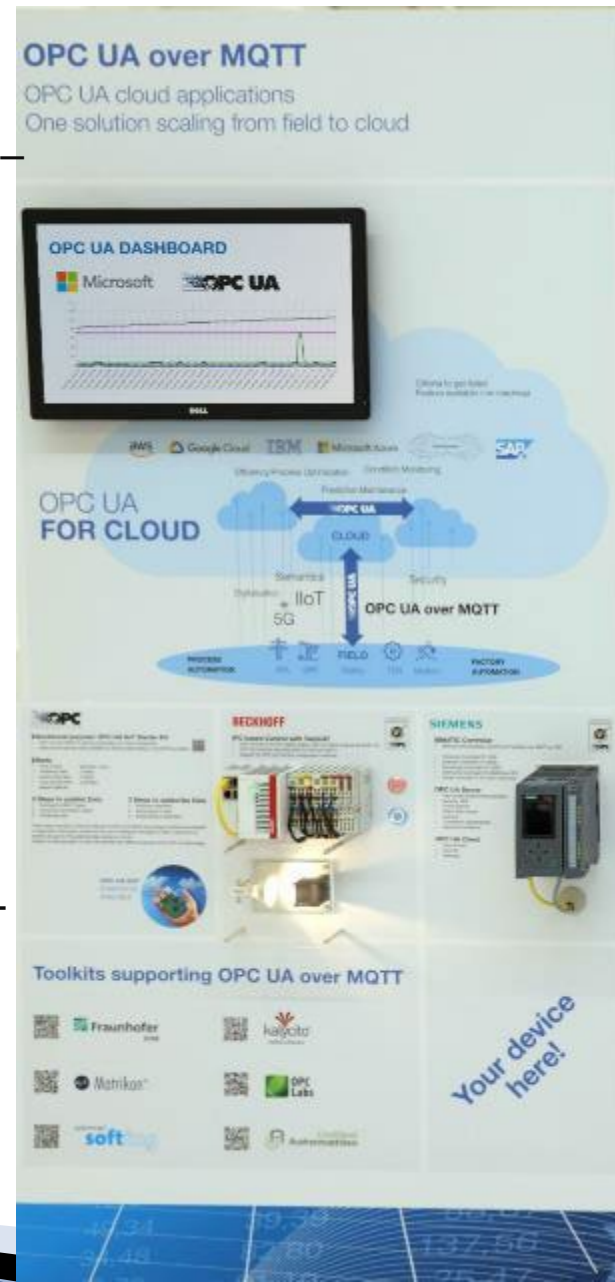
- MQTT is set as transport to cloud
BUT: MQTT does not define payload – results in multiple company or consortia mapping definitions

Solution:

- OPC UA Pub/Sub (over UDP and MQTT) published in Feb 2018
- Different bindings (JSON/BINARY) for different use-cases

Eco-System:

- Major cloud suppliers like aws, GoogleCloud, IBM, MS Azure, MindSphere, SAP confirmed to support „OPC UA over MQTT“
- Implementers of OPC UA over MQTT Beckhoff, Siemens,
- UA IIoT Starterkit / Toolkits available
- Plugfest is established – live!



News Release

Leading IoT Vendors Commit to OPC UA Adoption

Major IoT vendors including AWS, Google Cloud, IBM, Microsoft, SAP and SIEMENS leverage secure, standardized information exchange in edge-to-cloud applications based on OPC UA

Scottsdale, AZ – February 1st, 2022 – Leading Internet-of-Things (IoT) vendors are adopting OPC UA technology for edge-to-cloud applications. The growing list includes Amazon Web Services (AWS), Google Cloud, IBM, Microsoft, SAP and SIEMENS.

Key drivers behind this progression are, first and foremost, the global adoption of OPC UA as the open standard of choice for secure production-system interoperability across OT and IT networks, leveraging standardized data exchange. As such, there are over 850 registered OPC Foundation members supporting a large, rapidly growing eco-system of end-users, standards bodies, and vendors.

Second, OPC UA uses a standardized method of defining, discovering, and using Information Models (IMs) and services associated with the production systems. This standardized approach to semantic information sharing prevents vendor lock-in and costly custom programming needed for non-standard IM ingestion in the cloud. With the launch of the UA Cloud Library, OPC UA IMs are globally available to all cloud applications, making it easy for cloud applications to directly utilize OPC UA-based semantic information as well as live data coming from the edge.

Feb 01st, 2022 OPC Foundation PR:
Leading IoT Vendors Commit to OPC UA Adoption
<https://opcfoundation.org/news/press-releases/>



End 2022: Support by 18 (!) OT companies

OPC UA: One IEC standard for multi vendor cloud solutions

Field to Cloud – Cloud to Cloud – Cloud to Field



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 2022:

Cloud giant AWS supporting OPC UA PubSub over MQTT

OPC UA over MQTT
Directly from the device to the cloud
Interoperability for cloud connectivity

OPC UA: Interoperability for Cloud Connectivity
Semantic, normalized data directly available in cloud services
Open eco-system – international accepted – vendor independent – multi-domains

Available on
aws Microsoft Azure

Challenge
– MQTT is set as transport to cloud BUT:
– MQTT is a "payload agnostic" protocol
– No definition of the message payload
– Results in multiple company or consortia mapping definitions

Solution
– OPC UA PubSub (over UDP and MQTT) published in Feb 2018
– Different mappings (JSON/BINARY) for different use-cases
– Supported by 6 cloud vendors
– Plugfest with 25+ major OT companies

Delivery
– OPC UA is IEC62541 Standard
– Toolkits and open source available
– Free of charge: IoT Starterkit
– Easy ramp start in less than 1h

Criteria to get listed
Feature available / on roadmap

OPC UA FOR CLOUD
Process Optimization
Energy Efficiency
Analytics & AI
Condition Monitoring
Predictive Maintenance

OPC UA IOT STARTER KIT AVAILABLE
Semantics
Digitalization
5G
IIoT
Security
OPC UA over MQTT

ENERGY, FACTORY, PROCESS
aws BECKHOFF KUKA METTLER TOLEDO Microsoft OPC Lab PILZ PROSTIS OPC DENKONICS SIEMENS soft systerel TEMPO Universal Automation VDW WAGO

aws
Monitor Health of Industrial Assets with AWS IoT
• Remotely Control & Monitor Machines from Multiple Sites
• Observe Operational Health Data with Digital Twins
• Preemptive Maintenance through Machine Learning

OPC UA: Interoperability for Cloud
Semantic, normalized data directly available for the cloud
Open eco-system – International IEC 62541 standard

Available on
aws

Challenge
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SEMANTIC Interoperability: The key for the digitalization

Generic Device Models: Cloud, Controller, Field Device, Process Device	Manufacturing Devices: Robots, Machines, Machine Tools	Enterprise, Asset Mgmt, Packaging
<ul style="list-style-type: none"> – OPC 30400 – UA for Cloud Library – OPC UA for Cloud Federation* – OPC 10000-100 – UA for Devices – OPC 10020 – UA for Analyzer Devices – OPC UA for Analytical System Integration (CAISI) (under prep) – 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 UA for Laboratory Devices (LADS)* – OPC 30081 – UA for Process Automation Devices (PA-DIM) – OPC UA for Power Consumption Management* – OPC UA for Global Positioning* 	<ul style="list-style-type: none"> – OPC 40001-1 – UA for Machinery – Basic Building Blocks – OPC 40001-100 – UA for Machinery – Result Transfer – OPC 30070-1 – UA for MTConnect, Part 1: Device Model – OPC 40502 – UA for Computerized Numerical Control (CNC) Systems – OPC 40601 – UA for Machine Tools – 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 40010 – UA for Robotics – OPC 40200 – UA for Weighing Technology – OPC 40451 – UA for Tightening Systems – OPC UA for High Pressure Die Casting* – OPC UA for Powertrain* – OPC UA for Surface Technology* – OPC 40550 – UA for Woodworking Machinery – OPC 40301 – UA for Flat Glass Processing – OPC 40223 – UA for Pumps and Vacuum Pumps – OPC 40250 – UA for Compressed Air Systems – OPC UA for Intralogistics Communication* – OPC UA for Process Air Extraction and Filtration (PAEFS)* – OPC UA for Fibre and Yarn Testing Devices (FYTD)* – OPC 40560 – OPC 40569 – UA for Mining (Release Candidate) – OPC UA for Geometrical Measuring Systems* – OPC UA for Cranes and Hoists* 	<ul style="list-style-type: none"> – OPC 10030 – UA for ISA-S95 – OPC 10031-4 – UA for ISA-95 Job Control – OPC UA for Mimosa CCOM* – OPC 30260 – UA for OpenSCS Serialization Model – OPC 30261 – UA for OPEN SCS – Job Order Profiles – OPC 30050 – UA for PackML (OMAC) – OPC 40600 – UA for Weihenstephan Standards – OPC 30270 – UA for Industrie 4.0 Asset Administration Shell
Oil & Gas		Engineering
<ul style="list-style-type: none"> – OPC 30020 – UA for MDIS – OPC UA for Energetics ProdML* – OPC UA for Energetics WitsML* 		<ul style="list-style-type: none"> – OPC 30250 – UA for DEXPI – OPC 30040 – UA for AutomationML
Energy		Field Device Integration
<ul style="list-style-type: none"> – OPC 10040 – UA for IEC 61850 – Electrical Substation Automation (Release Candidate) – OPC UA for UA for Wind Power Plants (IEC61400-25)* 		<ul style="list-style-type: none"> – OPC 30080 – UA for Field Device Integration (FDI) – OPC 30090 – UA for Field Device Tool (FDT)
Building		Field Communication
<ul style="list-style-type: none"> – OPC 30030 – UA for BACNET (Release Candidate) 		<ul style="list-style-type: none"> – OPC 30100 – UA for SERCOS Devices – OPC 30110 – UA for POWERLINK – OPC 30130 – UA for Control & Communication System Profile (for Machine) CSP+ (CCLink) – OPC 30120 – UA for IO-Link Devices and IO-Link Masters – OPC 30140 – UA for PROFINET – OPC 30141 – UA for PROfinenergy – OPC 30142 – UA for PROFINET Remote IO – OPC UA for CIP Devices*
	Miscellaneous	
	<ul style="list-style-type: none"> – OPC 30060 – UA for Tobacco Machines – OPC 30200 – UA for Commercial Kitchen Equipment 	


► 85+ groups with domain experts have defined the semantics for their verticals

► Largest eco-system for information models for the automation world

SEMANTIC Interoperability: The key for the digitalization

► New landing page with complete overview here:

www.opcfoundation.org -> About -> Working Groups-> List of Working Groups

FILTER  Delete all Filters

50 records per page

Search

Document Type

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Classification

- ☐ Core UA Topics
- ☐ Generic Models
- ☐ Factory Automation
- ☐ Process Automation
- ☐ Energy Automation
- ☐ Building Automation
- ☐ Device Types
- ☐ Mechanical Engineering Industry
- ☐ Oil and Gas, Mining
- ☐ Enterprise - Asset Mgmt - Packaging
- ☐ Cloud Computing
- ☐ Engineering Data
- ☐ Field Bus Mappings
- ☐ Field Device Integration

DOC-NUMBER	TITLE	ABSTRACT
<input type="checkbox"/> 10000 [1...70]	Unified Architecture Core	Core specification for the OPC Unified Architecture. OPC UA is applicable to components in all industrial domains, such as industrial sensors and actuators, control systems, Manufacturing Enterprise Resource Planning Systems, including the Industrial Internet of Things (IIoT), Machine To Machine (M2M) as well as Industrial Enterprise Resource Planning Systems. These systems are intended to exchange information and to use command and control for industrial processes. OPC UA defines a model to facilitate this information exchange. OPC UA specifies the following: <ul style="list-style-type: none">• The information model to represent structure, behaviour and semantics.• The message model to interact between applications.• The communication model to transfer the data between end-points.• The conformance model to guarantee interoperability between systems.
<input type="checkbox"/> 10000 [77...79]	Unified Architecture Core - Erratas for 1.02, 1.03, and 1.04	Errata Series
<input type="checkbox"/> 10000 [80...99]	Unified Architecture Field eXchange	The OPC UA FX specification is a multi-part document. It specifies a standardized information model and connection model for AutomationComponents, providing timely data delivery, secure Interactions addressed by UA FX include Controller-to-Controller, Controller-to-Device, Controller-to-Compute, Device-to-Device, and UA FX extends the existing OPC UA communication solution (e.g., OPC 10000-14 and OPC 10000-100) to address all industrial automatic discrete manufacturing and process industries providing vendor-independent end-to-end interoperability of field-level devices for all automation use cases. This release of the specification includes Controller-to-Controller interactions. Other interactions will be included in future releases.
<input type="checkbox"/> 10000-100	Unified Architecture - Device Model	This part of the OPC UA specification defines the information model associated with Devices. This specification describes three models other as follows: <ul style="list-style-type: none">• The (base) Device Model is intended to provide a unified view of device...
<input type="checkbox"/> 10000-110	Asset Management Basics	Basic concepts for asset management used in an OPC UA Information Model. It considers different aspects of asset management. A use all or nothing of this specification, but can choose which concepts they want to support. In s...
<input type="checkbox"/> 10000-120	XML Data Type Mapping	Defines mechanisms for a bidirectional mapping of built-in data types between OPC UA and XML. Some data types can directly be mapped, for others the limitations are described. The document defines specific OPC UA DataTypes for bu...
<input type="checkbox"/> 10000-200	Industrial Automation - Basics	This specification contains basic building blocks commonly used in industrial automation. Version 1.00 contains modelling concepts for Statistical Data, Calibration

Collaborations – Status overview working groups

Status Sept 2022: 12 releases and 5 new working groups

► Releases

- OPC 10000-1..24, OPC UA v1.05
- OPC 10000-100, Device Model v1.03
- OPC 10000-110, Asset Mgmt Basics
- OPC 10000-200, Industrial Automation v1.01
- OPC 30400-1..2, Cloud Library
- OPC 30080, FDI v1.03
- OPC 30142, PROFINET-RemoteIO
- OPC 40001-1 Machinery Basic Building Blocks v1.02
- OPC 40501-1 Machine Tools v1.01
- OPC 40084-1..12 PlasticsRubber-Extrusion v2.00
- OPC 30060 Tobacco Machinery v2.00
- OPC 4056n Mining

► New Working Groups

- Power Consumption Mgmt
- Additive Manufacturing
- Analyzer System Integration
- Global Positioning
- OPC UA for CAISI”
Common Analytical Instrumentation
System Integration

Power Consumption: Joint activities including OPCF, PNO, ODVA and VDMA

► Development of energy management interfaces for IoT technologies

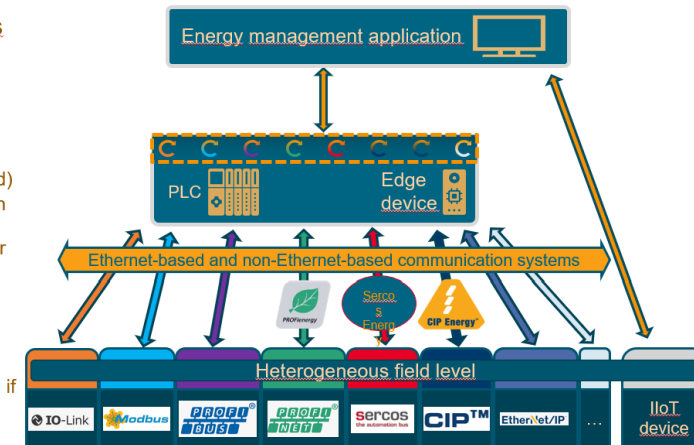
→ With the help of an energy information model

- Unification of energy information in an energy information model
- Use of energy information from different sources of the heterogeneous field level
- Development of the energy information model based on existing standards and OPC UA

State of the Art - Communication of energy information



- Energy information originate of different sources of a heterogeneous field level
- Challenges for plant operator to use energy information in the energy management application
 - Different communication interfaces (Ethernet-based and non-Ethernet-based)
 - Different semantics of energy information
 - Existing approaches for standardization
 - energy profiles (e. g. PROFenergy for PROFINET)
 - Have individual semantics
 - Lowers the effort for energy program development
 - High engineering effort to communicate energy information into upper levels
 - Unification of energy information needed if different source should be used



VDMA | Power Consumption Management | Heiko Herden

08.11.2022



**OPC UA
FOR A HARMONIZED
ENERGY MODEL**

www.opcfoundation.org/podcast



**PROF. DR.
KARL-HEINZ
NIEMANN**
UNIVERSITY OF
APPLIED SCIENCES,
HANNOVER

Agenda

- ▶ **Organization**
 - **Members / Board of Director**
- ▶ **Technology: Status & roadmap**
 - **Field Initiative**
 - **Cloud Initiative**
- ▶ **Collaborations & Information Models**
- ▶ **News**
 - **.NET Standard Stack Initiative**
 - **Academic program**
 - **Marketplace**
 - **Success Stories**

New: .NET User Group

- ▶ Group of companies to increase quality of the stack and integrate additional functionalities
- ▶ Focus on IT/cloud-connected scenarios
- ▶ Complementing, not competing with commercial toolkits
- ▶ 3 initial funder OPCF Board of Director companies: ABB, Microsoft, SAP
- ▶ No change in licensing
.NET OPC stack will remain available to OPC members and as Open-source release

GitHub: <https://github.com/OPCFoundation>

Nov 8th, 2022: OPC Foundation press release



News Release

OPC Foundation welcomes the new “.NET User Group” to maintain the open-source UA-.NET Standard project

ABB, Microsoft, and SAP have joined forces to extend and enhance the OPC Foundation's open-source .NET offerings

Scottsdale, AZ – November 8th, 2022 - The OPC Foundation (OPCF) welcomes the launch of the “.NET User Group” initiated by three companies represented on the OPC Foundation Board of Directors ABB, Microsoft, and SAP. This group aims to maintain and extend the existing open-source “UA-.NET standard” project, which is available on GitHub. All three companies use this open-source project in their products in addition to commercial solutions.

Each company is donating a full-time development resource to coordinate the future direction of the initiative, increase project quality, and implement new features. This ensures that important extensions to the standard, like ECC security, are integrated in a timely manner. Through coordinated project management, the group is helping all users, and the broader developer community, to more quickly and easily implement OPC UA in their applications. The initiative is open for additional OPC Foundation members and encourages the public to continue their contribution to the open-source project.

With the engagement of the new .NET User Group Initiative, there will be no change to the existing license of the UA-.NET code on GitHub: The dual license allows RCL for OPC Foundation corporate members and GPLv2 for others. RCL allows corporate members to use the code in their products without opening their own additional implementation.

Mr. Martin Regen from Microsoft chairs the .NET User Group Initiative. The three founding companies manage the UA-.NET Standard development. The UA-.NET Standard project is still freely available to all developers for use in their in-house and commercial applications. OPC Foundation members who want to help maintain the UA-.NET project are welcome to join the initiative. To get started, the OPC Foundation invites interested parties to contact Martin Regen by email martin.regen@microsoft.com

Claudius Link, of SAP, commented, “For SAP customers, transparency and fluid availability of manufacturing data is critical. Openness and industry-wide accepted standards are indispensable to connect SAP applications with equipment and systems on the shop floor. We are excited to be one of the founders of the “.NET User Group”, where we continue to develop and maintain the OPC UA-.Net Standard library in an open-source community. “

Stefan Hoppe, OPC Foundation President, said, “One of the OPC Foundation special advantages is the strength of our community where members from diverse industries and competing companies regularly work together to improve the OPC UA standard and make it easier to adopt. The .NET User Group Initiative is an excellent example of this process in action.” Mr. Hoppe concluded, “The OPC Foundation

Industrial Ethernet Security Harmonization Group: Vision

- ▶ Industrial Ethernet Security Harmonization Group (IESHG)
- ▶ The associations (FCG, ODVA, OPC F and PI) will create harmonized security concepts across our communication systems for Industrial Automation in targeting the capabilities to comply with IEC/ISA 62443-3-3
- ▶ This harmonization will include recommendations to keep our customers environments as secure as possible while making it easy to both implement and operate in a heterogeneous environment often found in their facilities.

FAQ on Security Concepts available for download
Focus on harmonizing certificate related terms
<https://opcfoundation.org/security>

Nov 8th, 2022: OPC Foundation press release



News Release

Industrial Ethernet Security Harmonization Group (IESHG) publish first whitepaper

Scottsdale, AZ – November 8th, 2022 - The major Standards Development Organizations OPC Foundation, PI, ODVA and FieldComm Group announce the release of the first whitepaper of their joint working group called Industrial Ethernet Security Harmonization Group (IESHG).

The IESHG meets on a regular basis to discuss security topics in the industrial automation context. The goal of the working group is the alignment of industrial ethernet security concepts, so that end users of the protocols have less complexity when using security in their automation systems.

The first whitepaper was created to shed light on different topics of the security concepts of industrial automation environments. General concepts are explained in an FAQ, like Public-key infrastructures, the different certificate types of the SDOs, as well as certificate management tools.

Download the document here: <https://opcfoundation.org/security/>

Further concepts are currently being worked out, that will lead to further whitepapers.

The IESHG work group leader Simon Merklin, Endress+Hauser says: "The end user and legal security requirements for industrial ethernet technologies accelerate at a high speed in these days. With the IESHG, we ensure that the security concepts of our SDOs lead to harmonized and easy to use secure solutions. With this great group of security experts, we pave the security road for technological advancements, like Ethernet-APL in combination with our industrial ethernet technologies."

Randy Armstrong, the Chair of the OPC UA Security Working Group says: "Security has become a top priority for IA users today and the onus is on SDOs and IA product vendors to provide solutions that make it practical for IA users to manage large networks of devices with security enabled by default. The IESHG allows the SDOs to help address this challenge by finding ways to agree on common terminology and solutions."

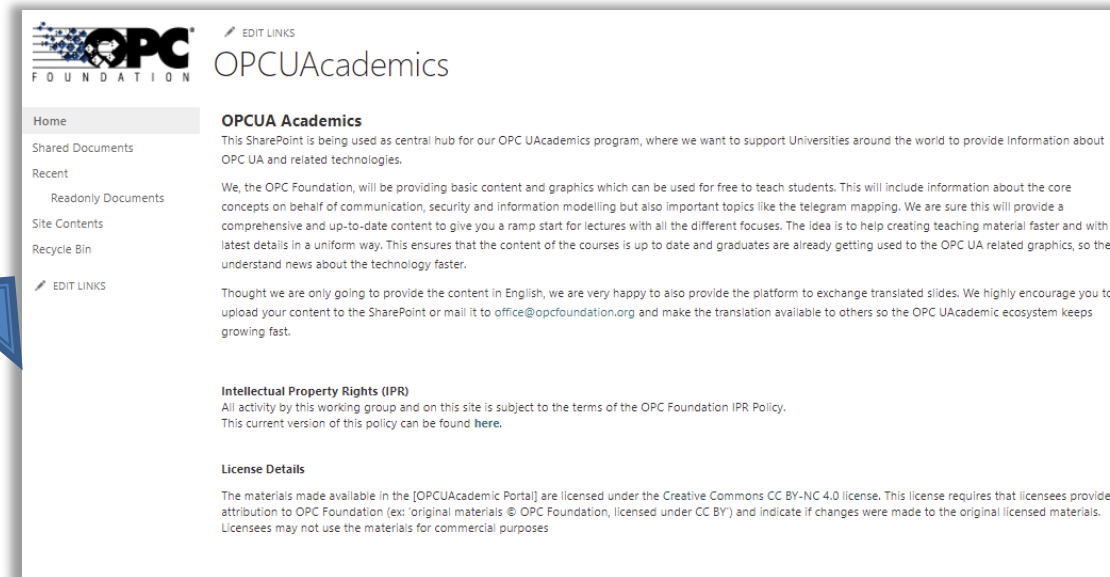
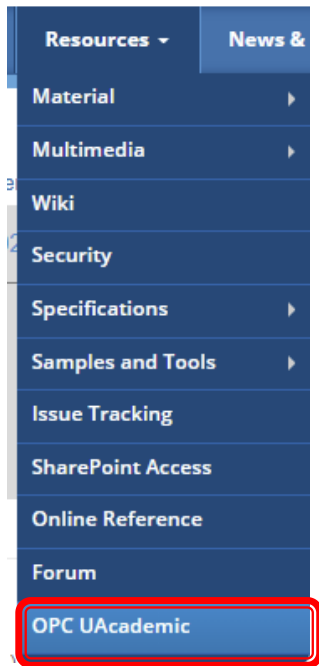
Stefan Hoppe, President of the OPC Foundation, commented: "The OPC Foundation supports the IESHG effort and is glad to contribute its deep security experience, which it used to design the OPC UA standard to be secure from the ground up and continues to extend via its twenty-member-strong security working group. The global OPC UA adoption we achieved can, in part, be attributed to companies' demand for secure data connectivity as they seek to digitalize and modernize. Based on this realization, we believe our harmonization efforts with the other SDOs will help the industry innovate faster with more confidence."

About the OPC Foundation:

Since 1996, the OPC Foundation has facilitated the development and adoption of the OPC information

Industrial Ethernet Security Harmonization Group
FAQ ON INDUSTRIAL ETHERNET SECURITY CONCEPTS

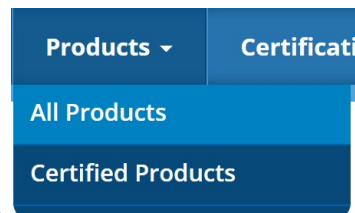
OPC UAcademics



- Done: (100%) Recording of the slides done - professors see/hear what we want to highlight with a slide
- Done: Translate to Chinese done
- Next:
Translation to other languages like Japanese, French, Spanish, Arabic

New Product Catalog

- ▶ Online!
 - Two different lists
 - All products
 - Certified products



- ▶ Call for action:
check / fill up product information

2007CE00C7 1704CE0088 1307CE003B

Certified Profile: Embedded UA Server Profile

Security Policies: SecurityPolicy - Basic128Rsa15,
SecurityPolicy - Basic256,
SecurityPolicy - Basic256Sha256,
SecurityPolicy - Aes128-Sha256-
RsaOaep,
SecurityPolicy - Aes256-Sha256-
RsaPss

User Identity Tokens: User Token - User Name
Password



Certificate Number: 1.0.0.04 1.0.0.0

Certification ID:

Expiration:

CTT Version:

Product Name: SIMATIC NET
OPC Server

Product Version: V16 Update 2

Product MD5 Hash: d912c18340f9b
059a9aac49e9
332983f

MARKETPLACE

Discover OPC servers, clients, toolkits and services from members of the OPC Foundation.

<div> <div>FILTERS ?</div> <div>MORE TECHNICAL ?</div> <div>Delete all Filters</div> </div>			
<div> <div>Product Categorisation ?</div> <div>Application Profile ?</div> <div>Security</div> <div>Transport</div> <div>UA Capabilities</div> <div>Markets ?</div> </div>		<div> <div>PRODUCT</div> <div>MEMBER</div> </div>	
		<div> <div>KEPServerEX</div> </div>	Kepware Technologies
		<div> <div>Discover OPC UA - 1 day</div> </div>	4CE Industry - OpenOpcUA
		<div> <div>TF6100 TC3 OPC UA</div> </div>	Beckhoff Automation GmbH & Co. KG
		<div> <div>GENESIS64™: Next Generation in HMI/SCADA Automation Software</div> </div>	ICONICS, Inc.
		<div> <div>AnalytiX®: Solutions for Operational Excellence</div> </div>	ICONICS, Inc.
		<div> <div>Hyper Historian™: High Speed, Mission Critical Plant Process Data Historian</div> </div>	ICONICS, Inc.
		<div> <div>MobileHMI™: Instant KPIs and Alerts on Any Glass, Anytime™</div> </div>	ICONICS, Inc.
		<div> <div>dataFEED OPC Classic SDK</div> </div>	Softing Industrial Automation GmbH

eBook – 7th edition published

- ▶ eBook <https://opcfoundation.org/resources/ebooks/>



- ▶ Concept
 - Publish 3 editions per year
 - Content is about podcasts, success stories etc.
- ▶ OPCF regions
 - Content is available for local language channels
 - Call for action: Please provide content

eBook – Edition 7 published Dec 9th, 2022



Success Stories

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

Resources ▾	News & Events ▾
Material ▶	Presentations
Multimedia ▶	Logos
Wiki	Brochures
Security	eBooks
Specifications ▶	Case Studies
Samples and Tools ▶	Technology Articles
Issue Tracking	Whitepapers
SharePoint Access	Books
Online Reference	hule

- ▶ equinor, Microsoft, Prediktor
- ▶ Renault & Google Cloud
- ▶ Miele & Microsoft
- ▶ Rosendahl-Nextrom, Siemens



Call for action:
Provide your end customer success story

Huge number of initiatives

- Large enterprise companies have no issues supporting this... however...
- Small / Medium enterprise companies are confused about unclear interaction of all these initiatives
Confusion prevents the adaptation!

Catena-X Manufacturing-X OPC UA

Gaia-X AutomationML 85+ OPC UA
Companion Specs

umati Asset Administration Shell

MTP IDTA → Digital Twin

OPAF

Digital Twin Consortia

Open Industry Alliance
“Service Bus”

Position paper (in progress):

„The interaction of management shell, AutomationML and OPC UA -

A big picture of interoperability solutions“

Cooperation
AML, IDTA, OPCF, VDMA

OPC Foundation: The United Nations for Industrial Automation

Thank you! - Questions? Please contact us!



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Stefan.hoppe@opcfoundation.org

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

