

OPC Foundation General Assembly Meeting

Wed, Dec 12, 2018 8:00 AM - 9:00 AM MST

- ▶ **Stefan Hoppe** **OPC Foundation Vision**
- ▶ **Michael Bryant** **OPC Board Of Director's Election Results**
- ▶ **Jim Luth** **OPC Technology Overview**
- ▶ **Matthias Damm** **OPC Field Level Initiative**
- ▶ **Paul Hunkar** **OPC Certification**
- ▶ **Stefan Hoppe** **OPC Activities in the world / Collaboration**

OPC Foundation Vision



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

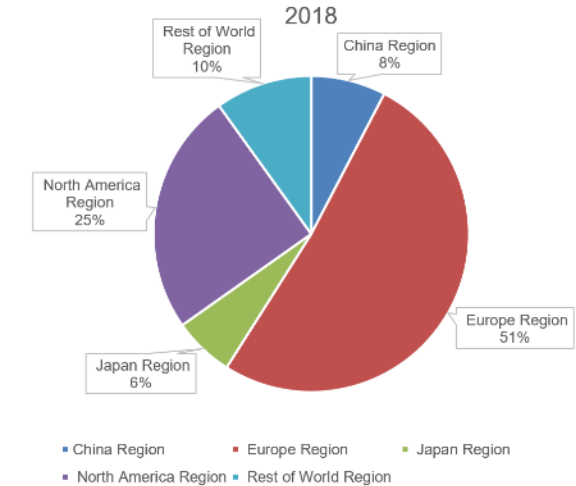
OPC Foundation

- ▶ Vision <https://opcfoundation.org>
Secure, reliable, multi-vendor, multi-platform, multi domain interoperability from sensor to enterprise
- ▶ International
 - Non profit organization (founded 1995)
 - Companies from Automation & IT
 - Standard: OPC UA is IEC62541



- ▶ Deliverables
 - Specification: open available
 - Code open source / Stacks in AnsiC/C++, C# .NET Standard, Java
 - Tools: Helpfully to speed up implementations and tests
 - Certification: open labs for OPC members and non-members
- ▶ Ecosystem with toolkits and education

OPC Member



→ 636 Members (Dec 12th ,2018)

OPC Board 2018

Microsoft, SAP,
Siemens, Beckhoff, Honeywell
Yokogawa, ICONICS, Ascolab

Volkswagen is 600th member of OPCF



“With OPC UA at the heart of Industrie4.0, adopting the OPC UA technology and using it to its full potential in our factories is a natural progression.

Being a member of the OPC Foundation guarantees early information to upcoming key technologies like the OPC UA Companion specifications which provide secured and standardized information and interfaces for assets.”

Michael Schweiger, Volkswagen



Volkswagen

Prediction:

→ End users will not order “just OPC UA enabled machines”

→ Instead the order will be like

1) OPC UA enabled, certified product

2) Support specific information models: e.g. AutoID, or VDMA Robotics

3) Future: Certified information model



OPC Foundation: New Class A members 2018



OPC Foundation – Budget 2018

Total Income	\$ 3.181.200
- Membership Dues	\$ 2.560.000
- Tradeshow, Sponsoring	\$ 459.900
- Workshop, Tools	\$ 161.300

Total Expenses	\$ 2.844.200
- Program Services (Marketing, Technical, ..)	\$ 1.584.300
- Support Services (Global)	\$ 1.259.900

Total	
Total Income	\$ 3.181.200
Total Expense	\$ 2.844.200
Net Income	\$337.000



Result Board Election

Michael Bryant

Secretary OPC Foundation

Michael.bryant@opcfoundation.org

OPC Foundation Election

OPC Board Members:

Russ Agrusa – ICONICS

Matthias Damm – Ascolab

Stefan Hoppe – Beckhoff

Veronika Schmid-Lutz – SAP

Thomas Burke – OPC

Thomas Hahn – Siemens

Ziad Kaakani – Honeywell

Shinji Oda – Yokogawa

Matt Vasey – Microsoft

Procedure:

- Each year the membership elects either 4 or 5 board members to serve a two-year term.
- On August 20, 2018, an email was sent to all Designated Representatives requesting nominations for four open board seats to be received by September 28, 2018.
- The OPC Foundation received five nominations.
- The ballot was sent to all Designated Representatives on November 1, 2018 with a deadline for voting of December 10, 2018

OPC Foundation Election Results

Elected to Board Seats for 2019 – 2020:

- **Mr. Russ Agrusa, ICONICS**
- **Mr. Matthias Damm, Ascolab**
- **Mr. Stefan Hoppe, Beckhoff**
- **Ms. Veronika Schmid-Lutz, SAP**

Thanks to all members who voted.

OPC Foundation Board of Directors

Russ Agrusa

- ICONICS

Thomas Burke

- OPC Foundation (Officer: Strategic Marketing)

Matthias Damm

- ascolab

Thomas Hahn

- Siemens (Officer: Vice President)

Stefan Hoppe

- BECKHOFF (Officer: President)

Ziad Kaakani

- Honeywell (Officer: Treasurer)

Shinji Oda

- Yokogawa

Veronika Schmid-Lutz

- SAP (Officer: Chairwoman of Board)

Matt Vasey

- Microsoft

Juergen Weinhofer

- Rockwell Automation

Bernhard Eschermann

- ABB

Fabrice Jadot

- Schneider Electric



Designated Member Representatives
nominate and elect Directors for 2 years

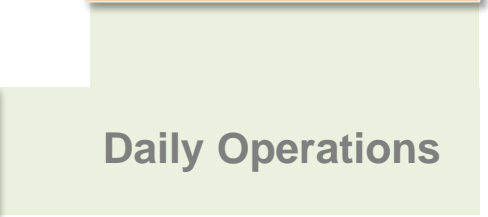
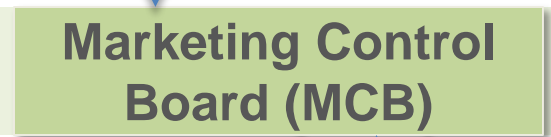
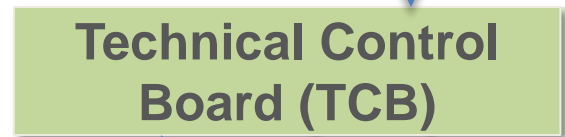
Report in
Annual Meeting

Nominate candidates for election
Extend / reduce number of seats



Elect

Report / Control



Send member
representatives to
working groups and
marketing teams

Report / Control

Report / Control



1

Report

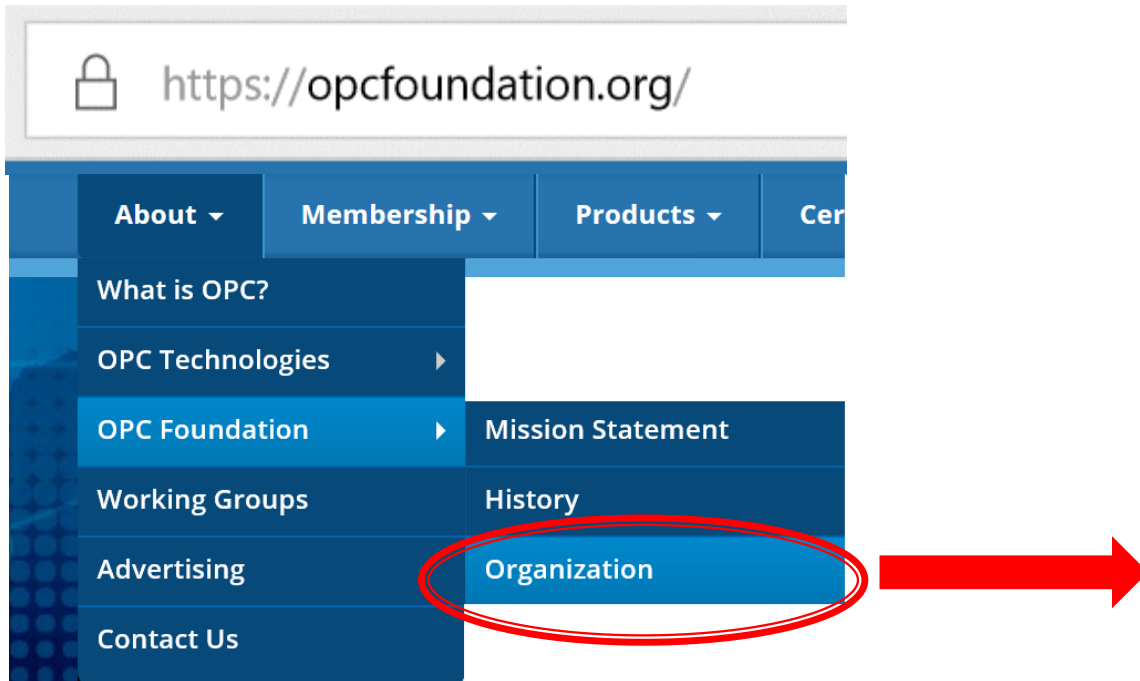
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- Starts new working groups
- Review and release of specifications developed in technical working groups

OPC Foundation: Organization

Find more information here:



The OPC Foundation Organization includes:

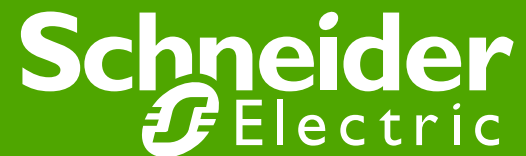
- Board of Directors
- Officers
- Directors
- Control Boards (Technical & Marketing)
- Technical Advisory Council
- Technical Working Groups
- OPC Regional Associations

Board of Directors

Russ Agrusa – ICONICS
Thomas Burke – OPC Foundation
Matthias Damm – ascolab
Thomas Hahn – Siemens AG
Stefan Hoppe – BECKHOFF
Ziad Kaakani – Honeywell Process Solutions
Shinji Oda – Yokogawa
Veronika Schmid-Lutz – SAP
Matt Vasey – Microsoft
Bernhard Eschermann – ABB
Fabrice Jadot – Schneider Electric
Juergen Weinhofer – Rockwell Automation



OPC UA Technology Overview



Jim Luth

Software Architect, Process Automation R&D

OPC Foundation CTO, UA Working Group Chairman & TAC Member

Jim.Luth@Schneider-Electric.com

2017-2018 Releases

- ▶ 11/2017 - 1.04 Maintenance Release of most existing OPC UA Parts.
- ▶ 02/2018 – 1.04 Maintenance Release of all other existing OPC UA Parts.
- ▶ 02/2018 – Release of new Part 14: Pub/Sub

Release mechanism & Priority

- ▶ Most new OPC UA features driven by companion specifications requirements from collaborations.
- ▶ Requires rapid feature release mechanism not possible with current cadence of maintenance releases.
- ▶ All future enhancement will be released as “Amendments” to speed release of new features.

OPC UA 1.04 Amendments

#	Title	Status	Status Date	Editor
1	AnalogItem Types	Release	2018-11-06	Karl Deiretsbacher
2	ChoiceStates and Guards	Release	2018-11-06	Wolfgang Mahnke
3	Method Metadata	Release	2018-11-06	Jeff Harding
4	Elliptical Curve Cryptography	Draft		Randy Armstrong
5	Dictionary Reference	Draft		Matthias Damm
6	UADP Header Layouts	Draft		Wolfgang Wallner
7	Interfaces and AddOns	Draft	2018-10-03	Karl Deiretsbacher
8	Certificate and KeyCredential Management	Pre-Draft		Randy Armstrong
9	Global Names	Pre-Draft		Paul Hunkar
10	Engineering Units and Currencies	Pre-Draft		Karl Deiretsbacher

2018/2019 Other Topics

- ▶ TSN Draft
- ▶ PubSub Profiles
- ▶ UDP binding for Client/Server
- ▶ Secure device enrollment
- ▶ UA metadata in the cloud

UA Working Group Organization

- ▶ Weekly web meeting (11:00 AM – 1:00 PM ET)
- ▶ Four-day face-to-face meeting every quarter

- ▶ Sub-groups
 - Security – Randy@sparhawksoftware.com
 - Pub/Sub Prototyping – Matthias.Damm@ascolab.com
 - TSN – Jim.Luth@Schneider-Electric.com (acting)

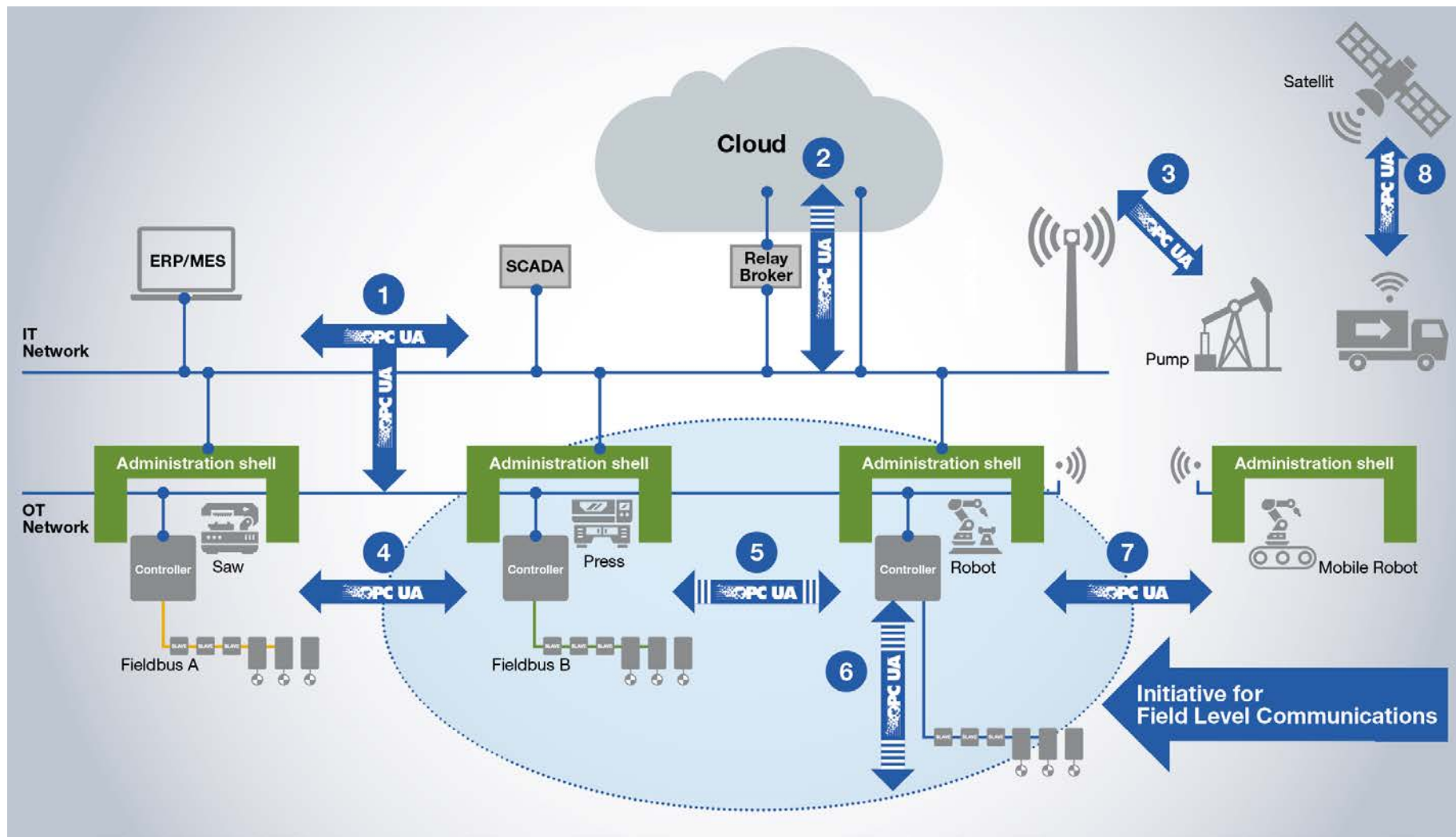
- ▶ Email Jim.Luth@Schneider-Electric.com to join the main group or any subgroup.



OPC UA Field Level Communications

Matthias Damm
ascolab

OPC Unified Architecture – from Sensor to Cloud



- 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

Vision for Field Level Communications Initiative

The vision of the initiative is...

...to aim for an open, unified, standards-based IIoT communication solution between sensors, actuators, controllers and cloud addressing all requirements of industrial automation

Field Level Communications Initiative

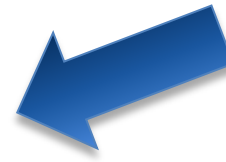
Information Models
Semantic
Security
IT Connectivity



IEEE
802



TSN



Converged, real-time
capable Ethernet networks



Combine Strength



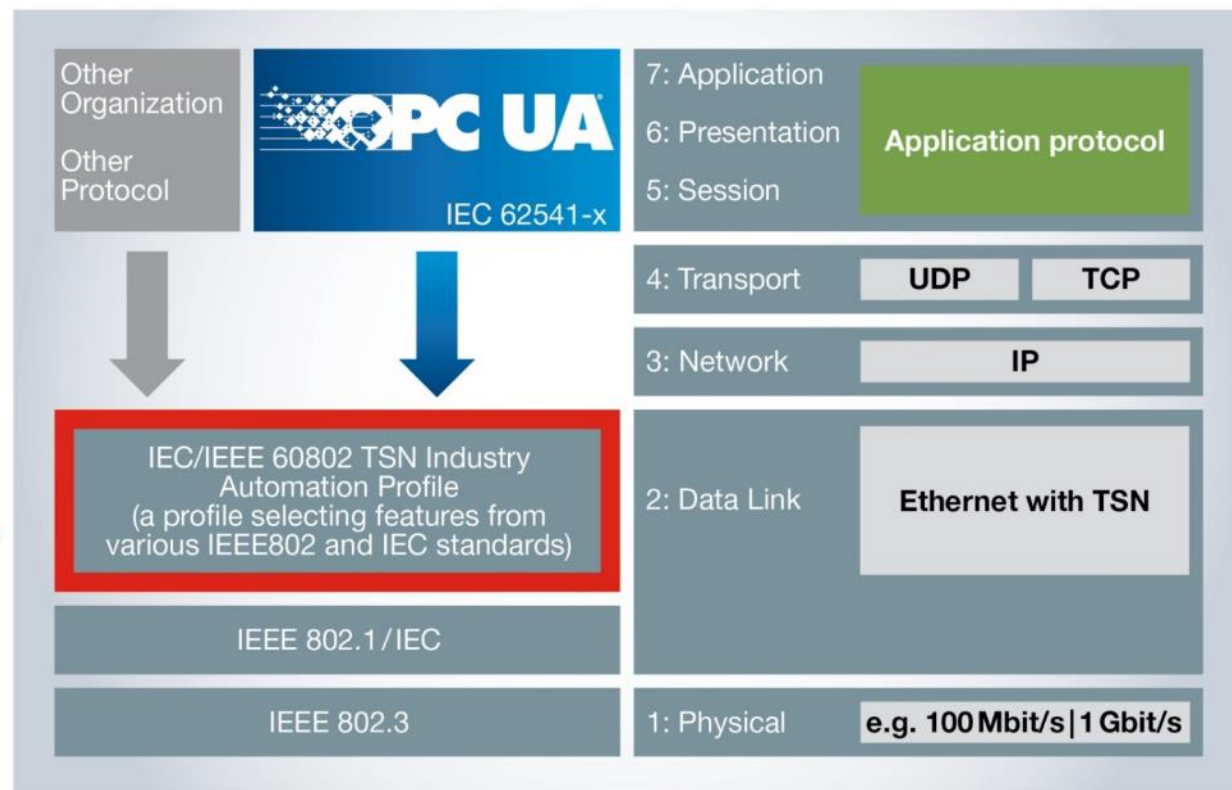
Major automation vendors in the
initiative add their long time field
level communications know-how

Technology base – collaboration with IEC and IEEE

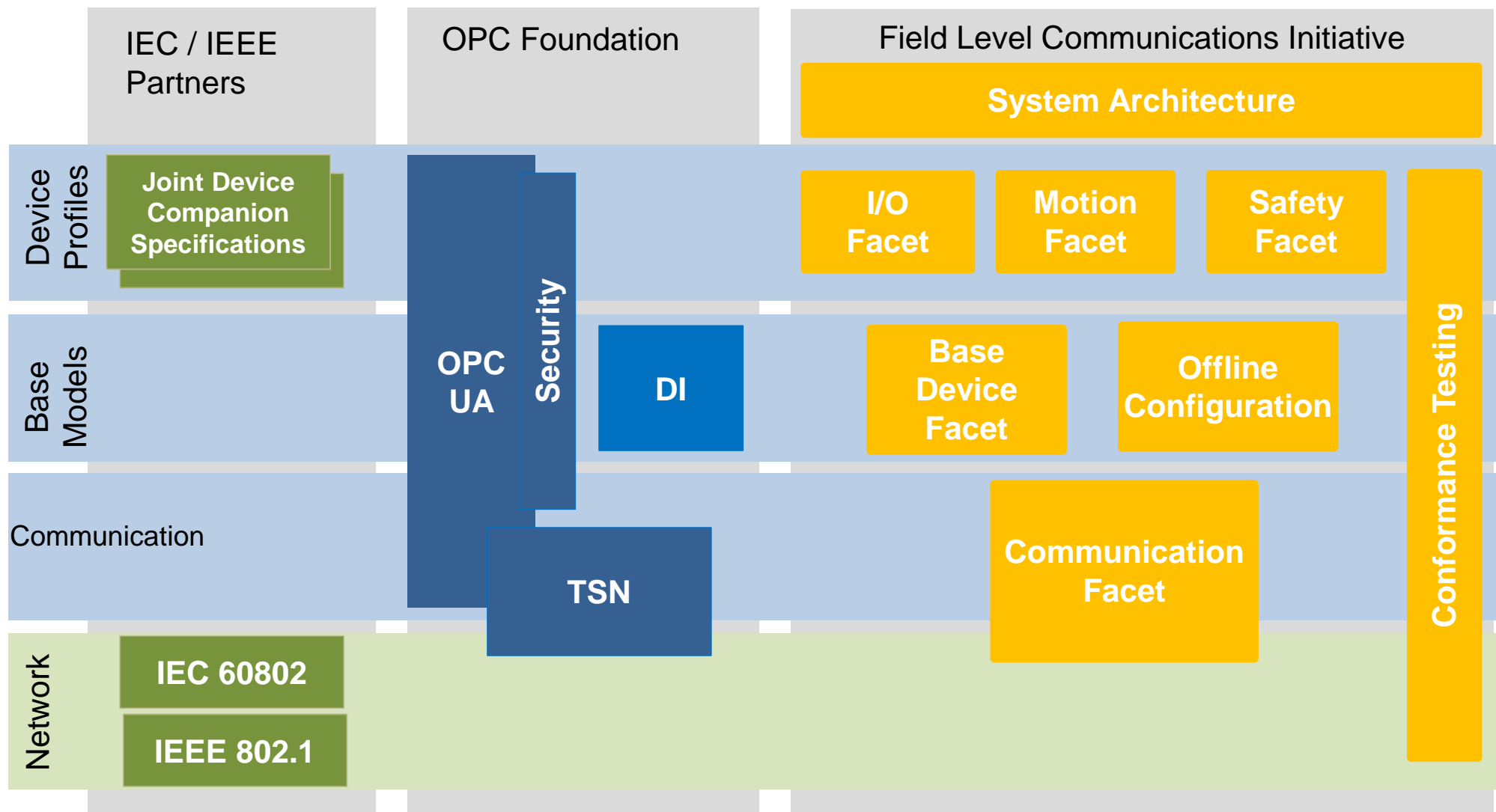
The working groups will closely align with the TSN Profile for Industrial Automation (TSN-IA-Profile) which will be standardized by the IEC/IEEE 60802 standardization group. This will help ensure that a single, converged TSN network approach is maintained so that OPC UA can share one common multi-vendor TSN network infrastructure together with other applications.

Goal of IEC/IEEE 60802

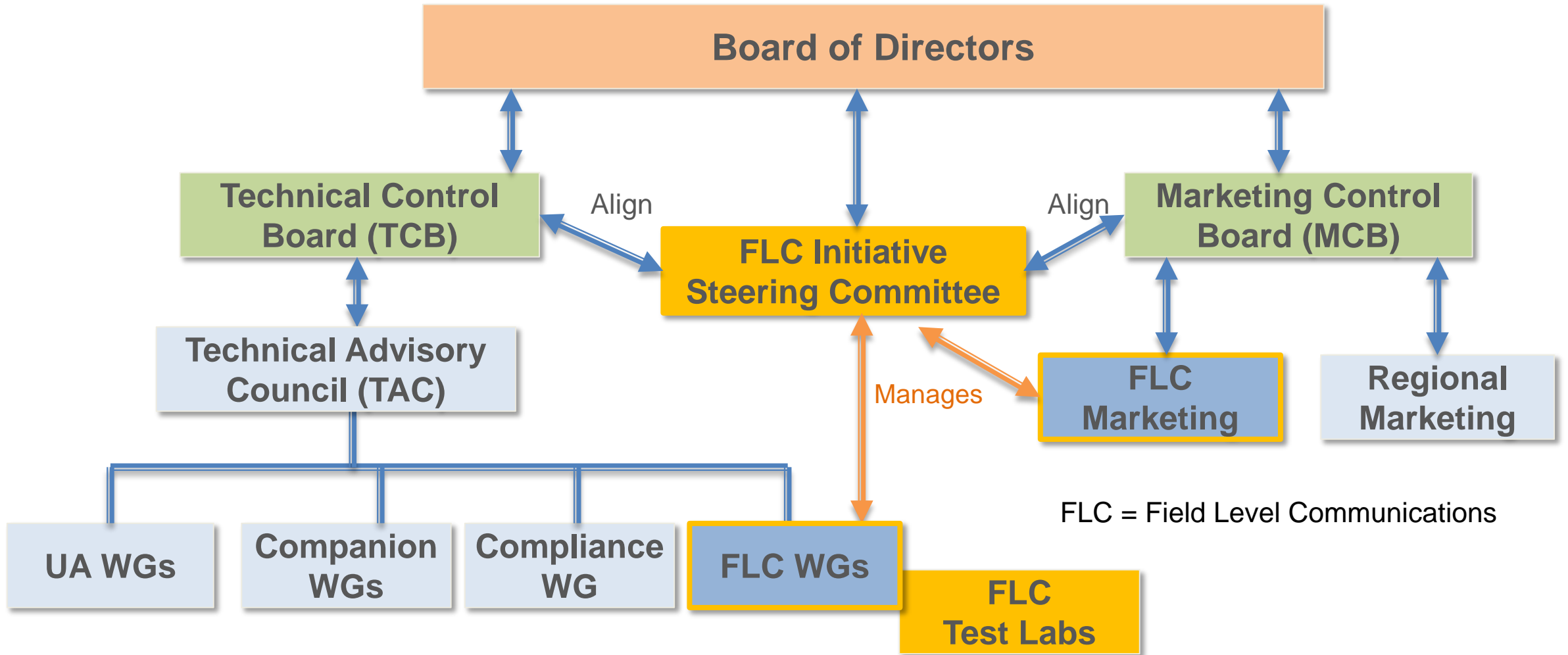
- Converged TSN network: different protocols can share the same TSN network infrastructure
- Use of common HW components



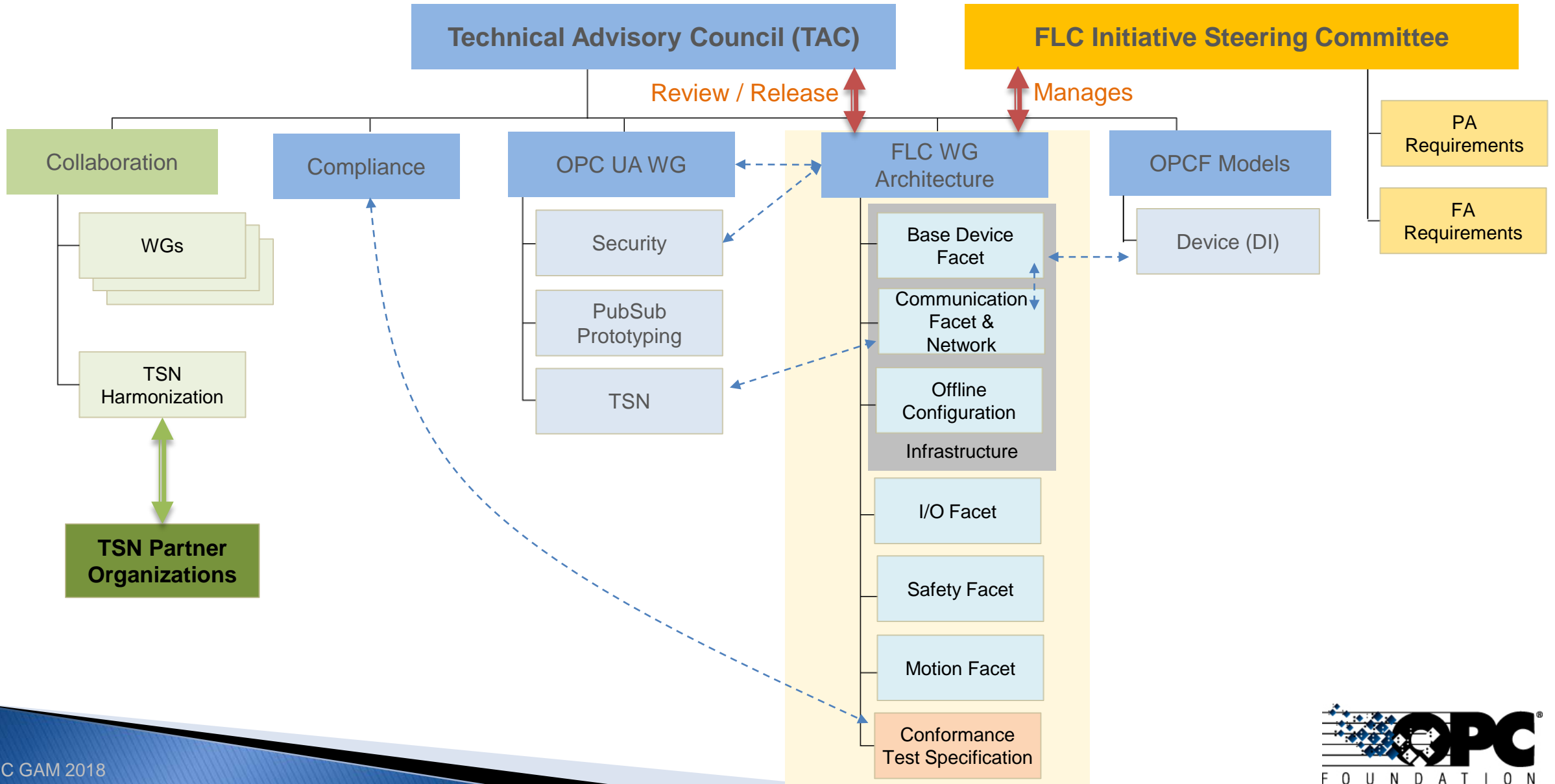
Technology overview – FLC work items and dependencies



Integration of FLC Initiative into OPC Foundation



FLC Initiative Working Groups



FLC Initiative Roadmap

- ▶ Initial publication (November 5th 2018)
 - Press release
 - Call for interest to OPC Foundation members to join FLC Steering Committee
- ▶ Official announcement (November 27th 2018)
 - OPC Foundation press conference SPS/IPC/Drives
 - Publication of initial FLC Steering Committee members
 - Call for interest to OPC Foundation members to join FLC technical working groups
- ▶ FLC Steering Committee
 - December 7th, 2018 Electronic Kick-Off
 - December 17/18, 2018 Face to face meeting in Frankfurt
- ▶ FLC Technical Working Group
 - January 7 -10, 2019 Kick-off face to face meeting in Munich

Initial Supporters Field Level Communications Initiative



Initial supporting Automation Industry Players





OPC UA Certification

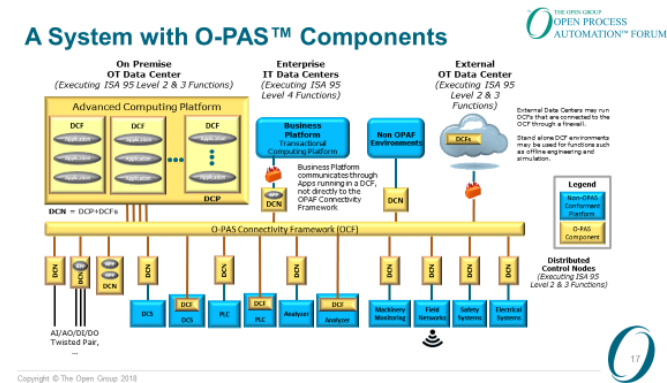
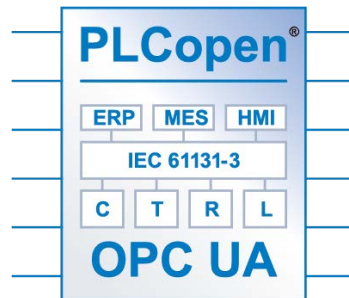
Paul Hunkar
Director of Certification and Compliance
OPC Foundation

Companion Spec Certification

- ▶ Lab is certifying products based on Companion Specifications



- ▶ Working on adding additional information model



Companion Specification Certification

12.2 Conformance Units and Profiles

This chapter defines the corresponding *Profiles* and *Conformance Units* for the OPC UA Information Model for **<title>**. *Profiles* are named groupings of *Conformance Units*. *Facets* are *Profiles* that will be combined with other *Profiles* to define the complete functionality of an OPC UA *Server* or *Client*.

12.3 Server Facets

The following tables specify the *Facets* available for *Servers* that implement the **<title>** Information Model companion specification.

A specification can define multiple facets if not all features are to be implemented by all servers and clients. The name of the facet shall give a hint of the subset. An overall description shall be provided that explains the subset and its potential use. The following table is a template for a facet.


Table 38 defines a facet for the minimum functionality necessary

Table 38 – Template Server Facet Definition

Conformance Unit	Description	Optional/ Mandatory
CU 1	Supports	M
CU 2	Supports	M
CU 3	Supports	O
Profile		
ComplexType Server Facet (defined in OPC UA Part 7)		M
BaseDevice_Server_Facet (defined in OPC UA Part 100)		M

12.4 Client Facets

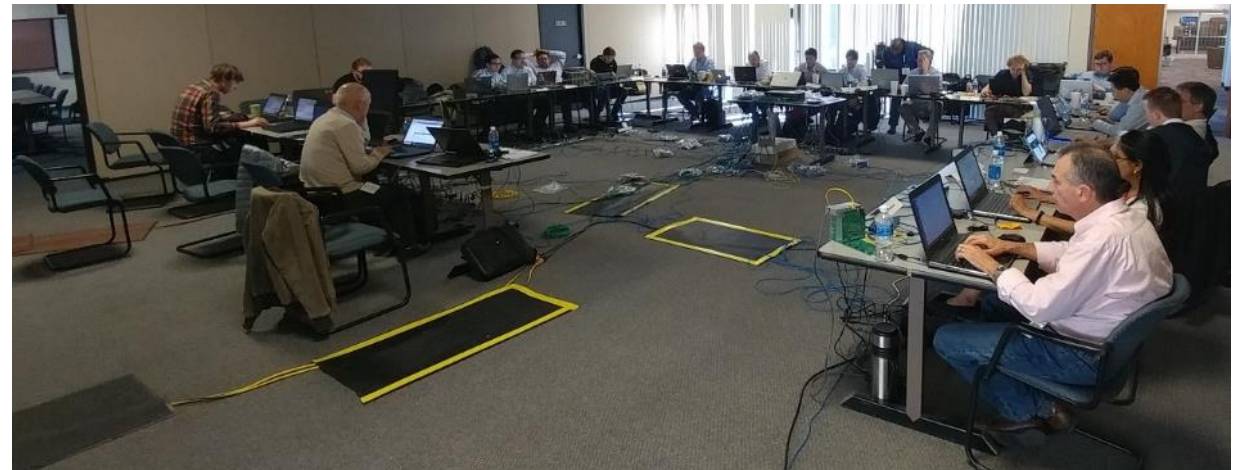
The following tables specify the *Facets* available for *Clients* that implement the **<title>** Information Model companion specification.



Test Case	Result	Facet	Optional	Reference	Notes
completes successfully. Expect No DataChange notifications for CalculatedPosition, Moving or onInSteps. Fault should not change. Choke not move.	Good	Bad_ArgumentsMissing	y	MDS Choke Object->Section 5.6.5	
completes successfully. Expect No DataChange notifications for CalculatedPosition, Moving or onInSteps. Fault should not change. Choke not move.	Good	Bad_ArgumentsMissing	y	MDS Choke Object->Section 5.6.5	
completes successfully. Expect No DataChange notifications for CalculatedPosition, Moving or onInSteps. Fault should not change. Choke not move.	Good	Bad_ToolManyArguments	y	MDS Choke Object->Section 5.6.5	
completes successfully. After successful call to EnableDisable method, expect DataChange notification for the variable indicating change from TRUE to FALSE.	Good	Good	y	Section 5.2.3	Invoke EnableDisable method success scenarios. Verify associated DataChange notifications
completes successfully, the status of the onInStep is Bad_InvalidState	Good	Good		MDS Base Object->Section 5.2.2	Verify correct operation result when Choke is disabled
completes successfully. Fault should not change. Choke does not move	Good	Bad_InvalidState		MDS Base Object->Section 5.2.2	Verify correct operation result when Choke is disabled

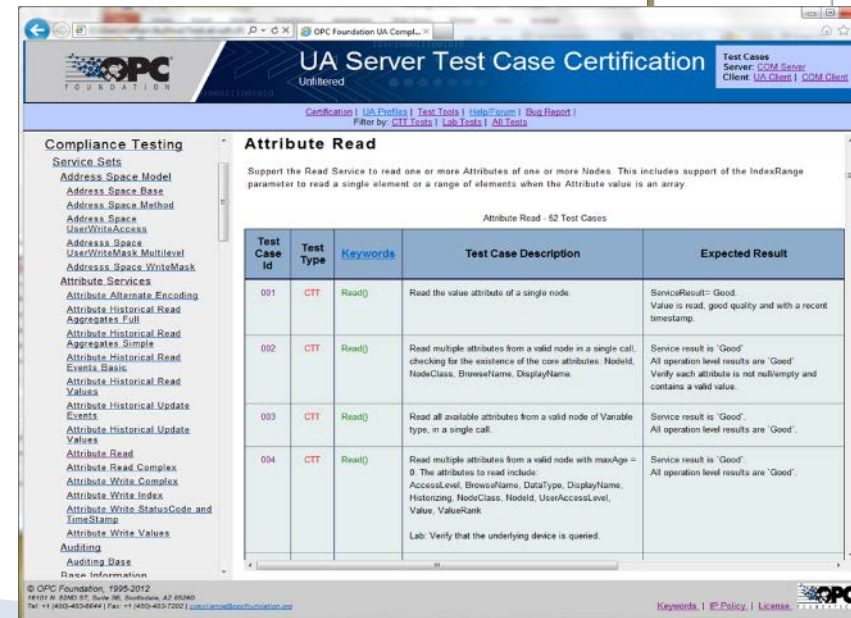
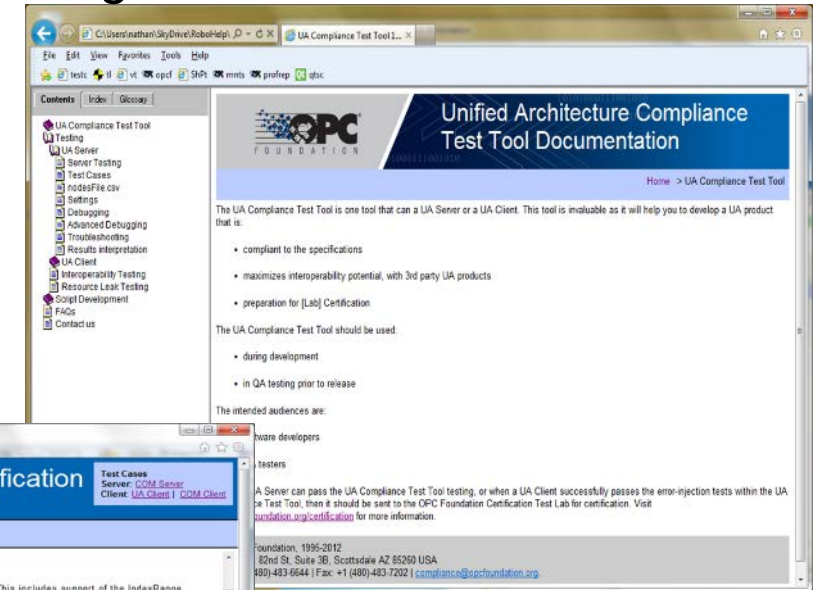
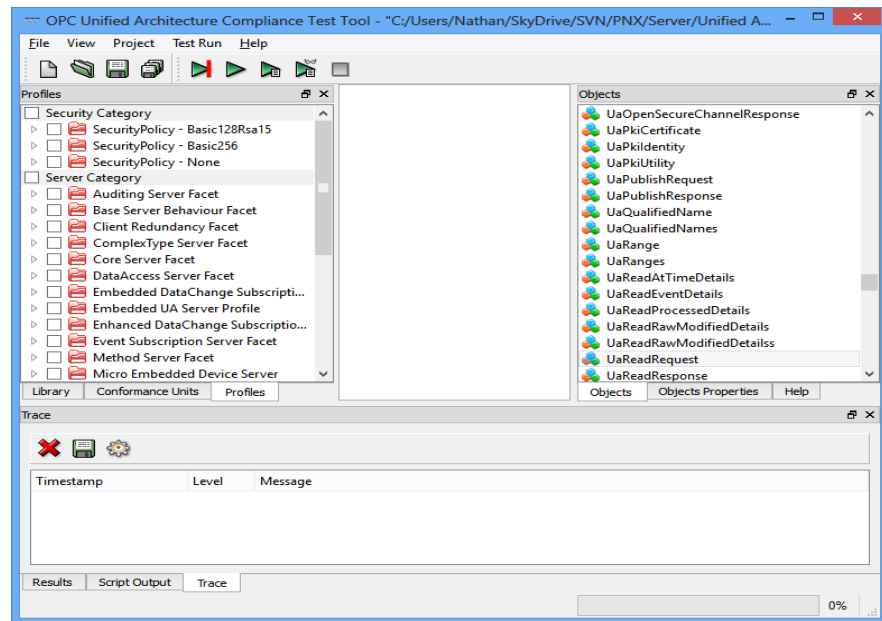
Interoperability Events

- ▶ Very successful
 - North American multiple international attendees
 - Japanese sold out
 - European IOP Over sold
- ▶ Next IOP North America - schedule for March 4-9, 2019
 - Honeywell will host in Phoenix (registration is available On the OPC Website)



UA Compliance Test Tool (CTT)

- ▶ New version of the CTT have been released
- ▶ Continuing to improve the functionality available in the CTT (looking for help)
- ▶ Working on Pub/Sub & TSN Testing
- ▶ Will be work with new FLC



CMP Working Group

- ▶ Weekly web meeting (10:00 AM – 12:00 PM ET)
- ▶ Email Paul.Hunkar@opcfoundation.org to join the Compliance Working Group
- ▶ Email Compliance@OPCFoundation.org for certification questions or to schedule time in a lab



Activities & Collaborations

Stefan Hoppe
President OPC Foundation

OPC UA in the world



IIC



Industrie4.0



Made in China2025



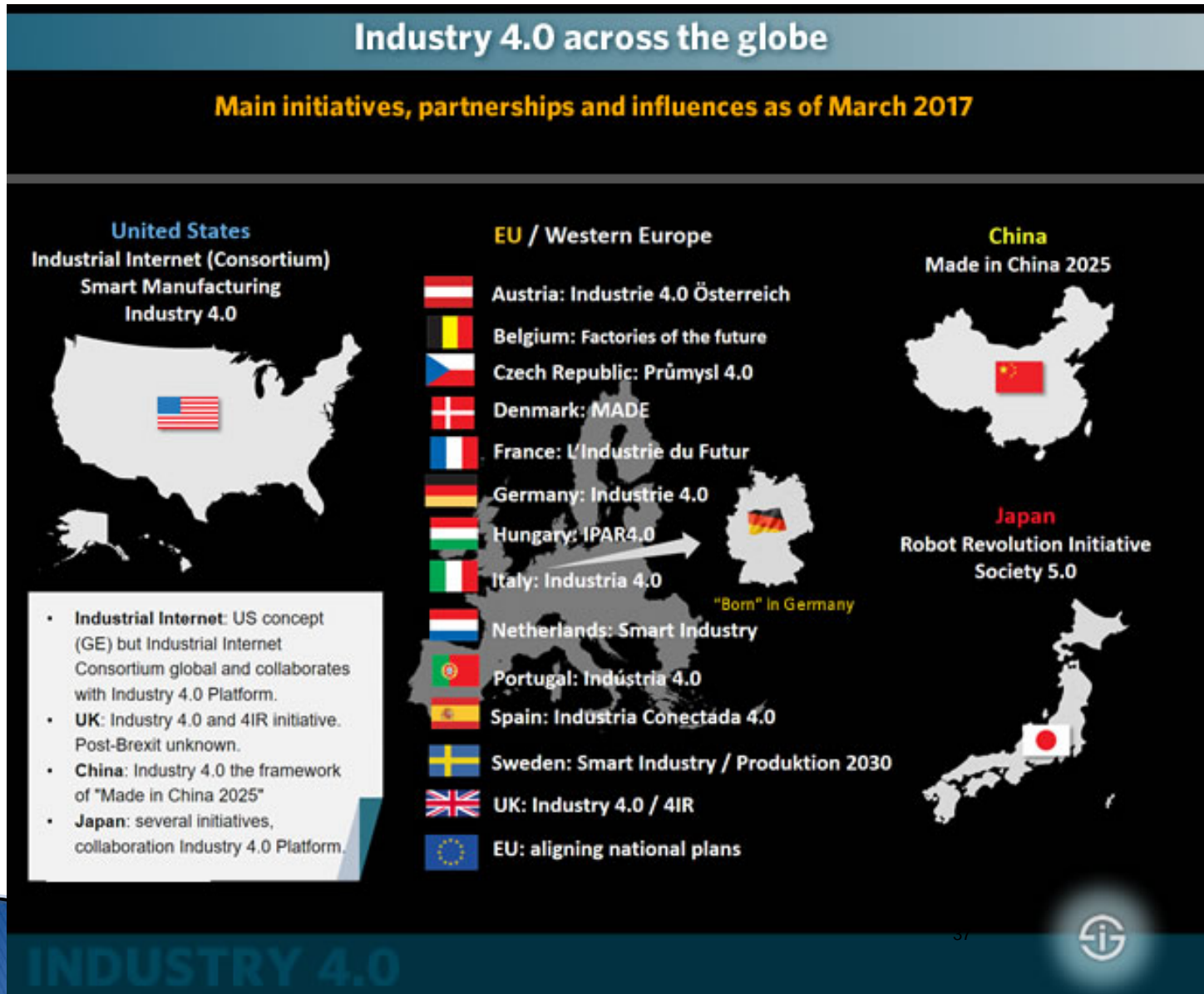
Japan IVI



Korea MII3.0



OPC UA in the world



Industrie4.0 is
 > the enabler <
 across the globe

Collaborations

The OPC Foundation closely cooperates with organizations and associations from various branches. Specific information models of other standardization organizations are mapped onto OPC-UA and thus become portable.



OPC Foundation strategy:

- Rules for OPC UA CS developed together with partners
- Predefined process for joint OPC UA CS
- Templates to ensure standardized format and potential certifications
- Compliance
- Intellectual Property
- Working Processes

Markets

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

- Automation
- Building Automation
- Energy
- Engineering
- Measurement
- Oil & Gas
- Transportation

- VDMA: Manufacturing industries
- 15+ verticals active on OPC UA CS

VDMA represents the breadth of the manufacturing industry
VDMA has more than 3200 member companies

<ul style="list-style-type: none"> Agricultural Machinery Air Conditioning and Ventilation Air Pollution Control Air-handling Technology Building Control and Management Cleaning Systems Compressors, Compressed Air and Vacuum Technology Construction Equipment and Building Material Machines Drying Technology Electrical Automation Electronics, Micro and Nano Technologies Engine Systems for Power and Heat Generation Engines and Systems 	<ul style="list-style-type: none"> Fire Fighting Equipment Fluid Power Food Processing Machinery and Packaging Machinery Foundry Machinery Gas Welding Hydro Power Integrated Assembly Solutions Large Industrial Plant Manufacturing Lifts and Escalators Machine Tools and Manufacturing Systems Machine Vision Materials Handling and Intralogistics Measuring and Testing Technology 	<ul style="list-style-type: none"> Metallurgical Plants and Rolling Mills Metallurgy Micro Technologies Mining Plastics and Rubber Machinery Power Systems Power Transmission Engineering Precision Tools Printing and Paper Technology Process Plant and Equipment Productronic Pumps + Systems Refrigeration and Heat Pump Technology Robotics 	<ul style="list-style-type: none"> Robotic + Automation Security Systems Software and Digitization Surface Treatment Technology Textile Care, Fabric and Leather Technology Textile Machinery Thermal Turbines and Power Plants Thermo Process Technology Valves Waste Treatment and Recycling Wind Energy Woodworking Machinery OPC UA CS Release (Candidate) OPC UA CS under development. Awareness existent
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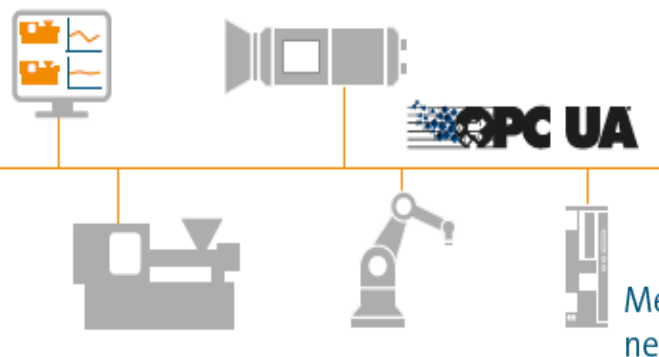
VDMA enables cross domain harmonized information models



Cross domain harmonized information models



Domain specific harmonized information models



Meshed communication network

VDMA members

- » High demand on foundation of OPC UA CS workgroups
- » Over 250 companies are involved
- » The commitment of companies is reflected in high investments
 - Vision group estimated 1 to 1.5 million €

VDMA organization

- » Central coordination of workgroups within over 15 industries to enable cross domain harmonization
- » 3 OPC UA main events p.a. with a total of 300 participants
- » Over 60 OPC presentations, discussions and workshops in 2018 with the main topic OPC UA
- » International support via VDMA China, VDMA India, VDMA Japan

→ The VDMA performs as the central association for the development of OPC UA Companion Specification in the machine building and manufacturing industry

The establishment of OPC UA workgroups is growing rapidly

- VDMA represents the broad manufacturer industry



- » Agricultural Machinery
- » Air Conditioning and Ventilation
- » Air Pollution Control
- » Air-handling Technology
- » Building Control and Management
- » Cleaning Systems
- » Compressors, Compressed Air and Vacuum Technology
- » Construction Equipment and Building Material Machines
- » Drying Technology
- » Electrical Automation
- » Electronics, Micro and Nano Technologies
- » Engine Systems for Power and Heat Generation
- » Engines and Systems

- » Fire Fighting Equipment
- » Fluid Power
- » Food Processing Machinery and Packaging Machinery
- » Foundry Machinery
- » Gas Welding
- » Hydro Power
- » Integrated Assembly Solutions
- » Large Industrial Plant Manufacturing
- » Lifts and Escalators
- » Machine Tools and Manufacturing Systems
- » Machine Vision
- » Materials Handling and Intralogistics
- » Measuring and Testing Technology

- » Metallurgy
- » Micro Technologies
- » Mining
- » Plastics and Rubber Machinery
- » Power Systems
- » Power Transmission Engineering
- » Precision Tools
- » Printing and Paper Technology
- » Process Plant and Equipment
- » Productronic
- » Pumps + Systems
- » Refrigeration and Heat Pump Technology
- » Robotics
- » Robotics + Automation
- » Security Systems
- » Software and Digitization

- » Surface Treatment Technology
- » Textile Care, Fabric and Leather Technology
- » Textile Machinery
- » Thermal Turbines and Power Plants
- » Valves
- » Waste Treatment and Recycling
- » Wind Energy
- » Woodworking Machinery

- » OPC UA CS Release (Candidate)
- » OPC UA CS under development
- » Awareness existent

VDMA OPC Workgroups involve different stakeholders

- Workgroup Plastics and Rubber Machinery



MES suppliers:

- » ARBURG GmbH + Co KG
- » bfa solutions ltd
- » BMS bvba
- » INCLUDIS GmbH
- » inray Industriesoftware GmbH
- » MPDV Mikrolab GmbH
- » ProSeS BDE
- » RJG Germany
- » Steinberger Software
- » Stöckeler Software Services e.U.
- » TIG – Technische Informationssysteme Ges.m.b.H.

Controller manufacturers:

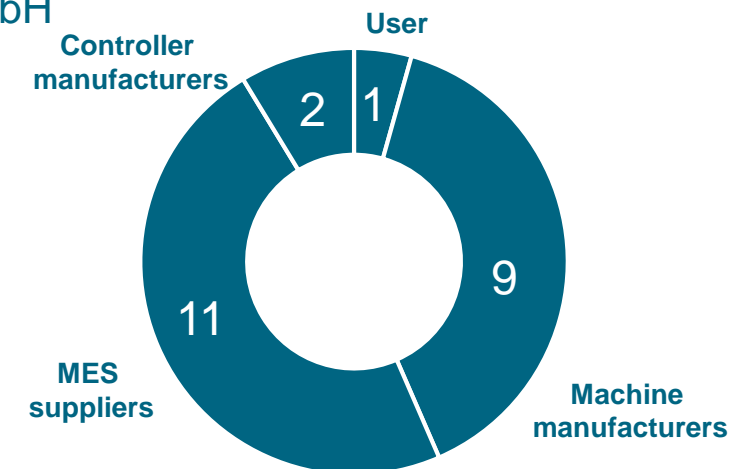
- » B&R Industrial Automation GmbH
- » Beckhoff Automation GmbH & Co. KG

User:

- » LEGO Systems A/S

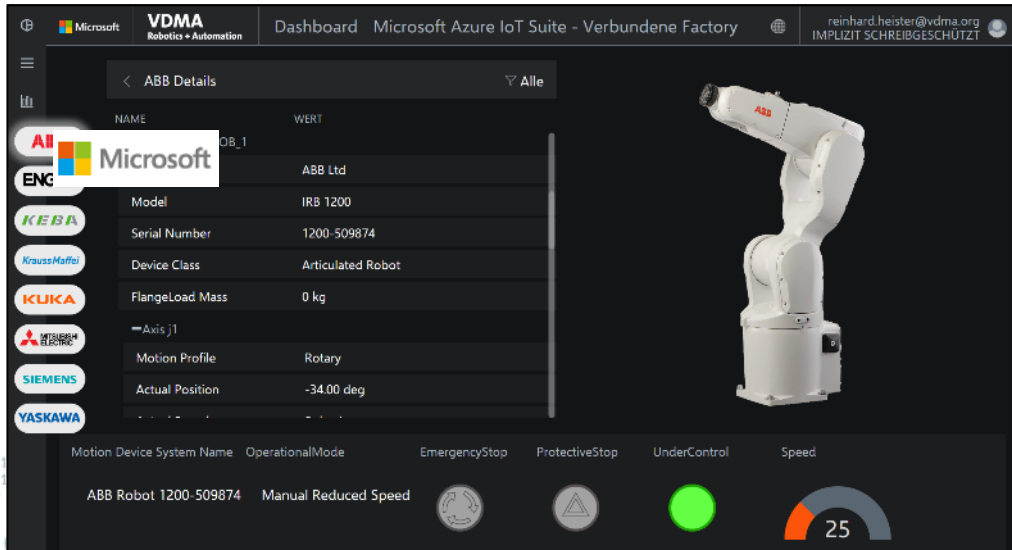
Injection moulding machine manufacturers:

- » ARBURG GmbH + Co KG
- » ENGEL AUSTRIA GmbH
- » FANUC Germany/EUROPE
- » Ferromatik Milacron GmbH
- » KraussMaffei Technologies GmbH
- » NEGRI BOSSI S.p.a.
- » Netstal-Maschinen AG
- » Sumitomo (SHI) Demag Plastics Machinery GmbH
- » Wittmann Battenfeld GmbH



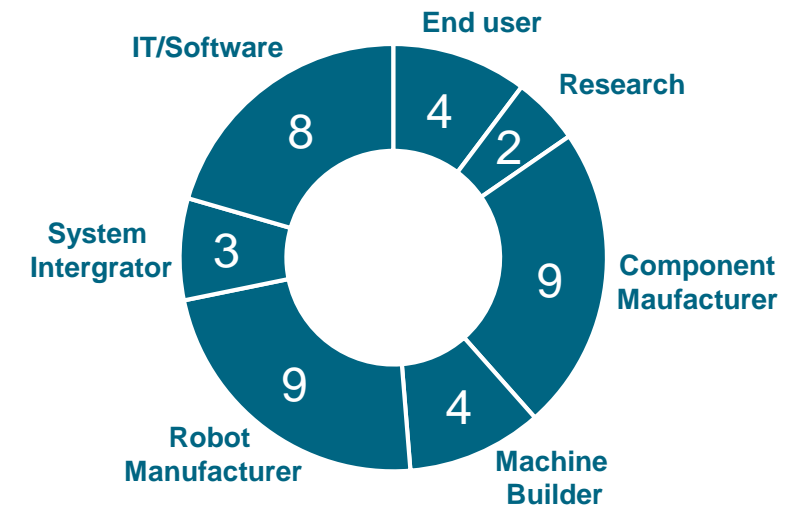
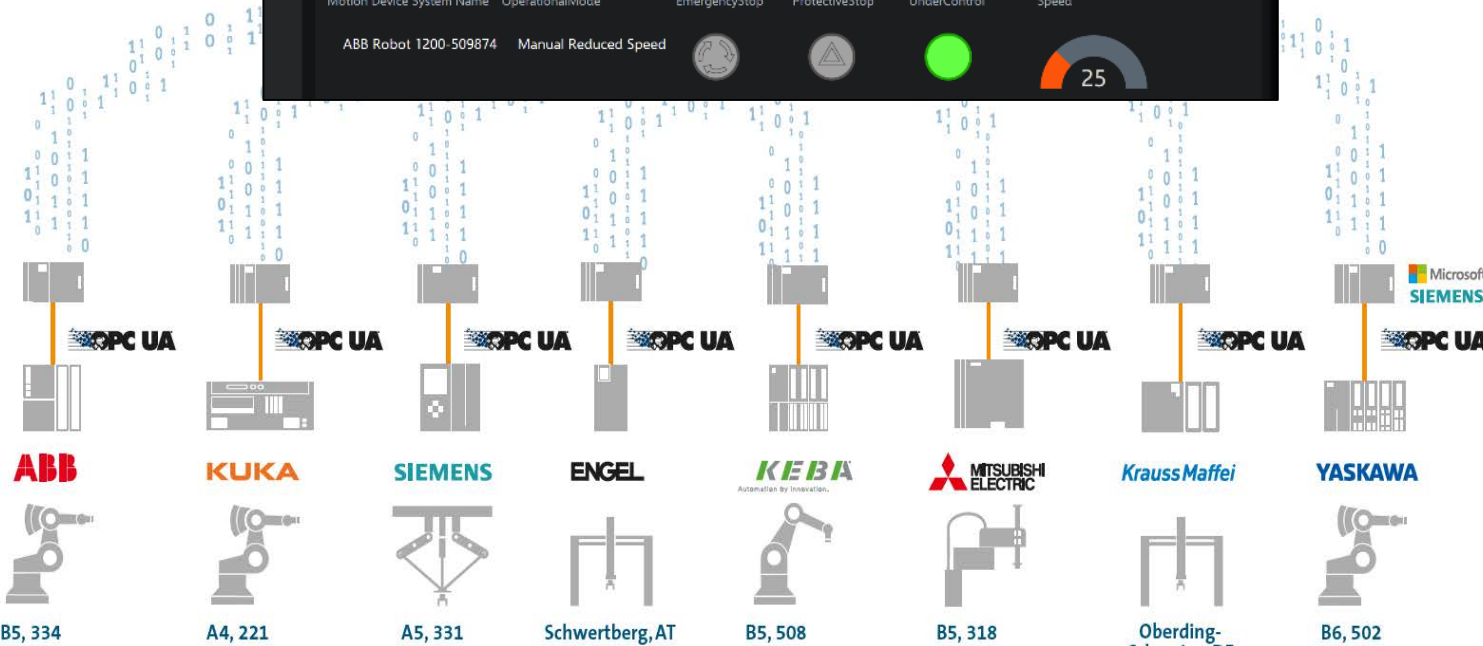
OPC UA Companion Specifications are implemented

- Demonstrator VDMA OPC Robotics Initiative



Applications of this demonstrator

- » Asset management
- » Condition monitoring
- » Preventive Maintenance
- » Vertical integration
 - Information flow from shop floor to cloud
 - ERP, MES, SCADA



The VDMA is Developing International Standards

- VDMA OPC Vision Initiative leverages its international network



Machine Vision

- » 60 Involved companies world wide
- » over 100 participants

OPC Vision is an accepted G3 Standard -
the group of leading machine vision associations:

- » AIA (USA)
- » EMVA (EUROPA)
- » JIIA (JAPAN)
- » VDMA (EUROPA)
- » CMVU (CHINA)



What is umati?

There's no better connection than that of a common language – also for machine (tools).

- umati should enables machine tools and peripherals to connect to customer-specific IT ecosystems, inside or outside the production environment, via an open, universal interface – easy, secure, and seamless.
- umati's core feature is standardized **semantics**, embedded in an **information model** based on the **open communication standard OPC UA**.
- umati supports **specific extensions** for manufacturers and customers of machine tools.
- umati aims to establish a **worldwide standard** for the connectivity of machine tools.

Eine Initiative des
An Initiative by **VDW**

BECKHOFF

chiron

DMG MORI



+GF+

GROB

HELLER

HEIDENHAIN

LIEBHERR

ePiffner

rexroth
A Bosch Company

SIEMENS



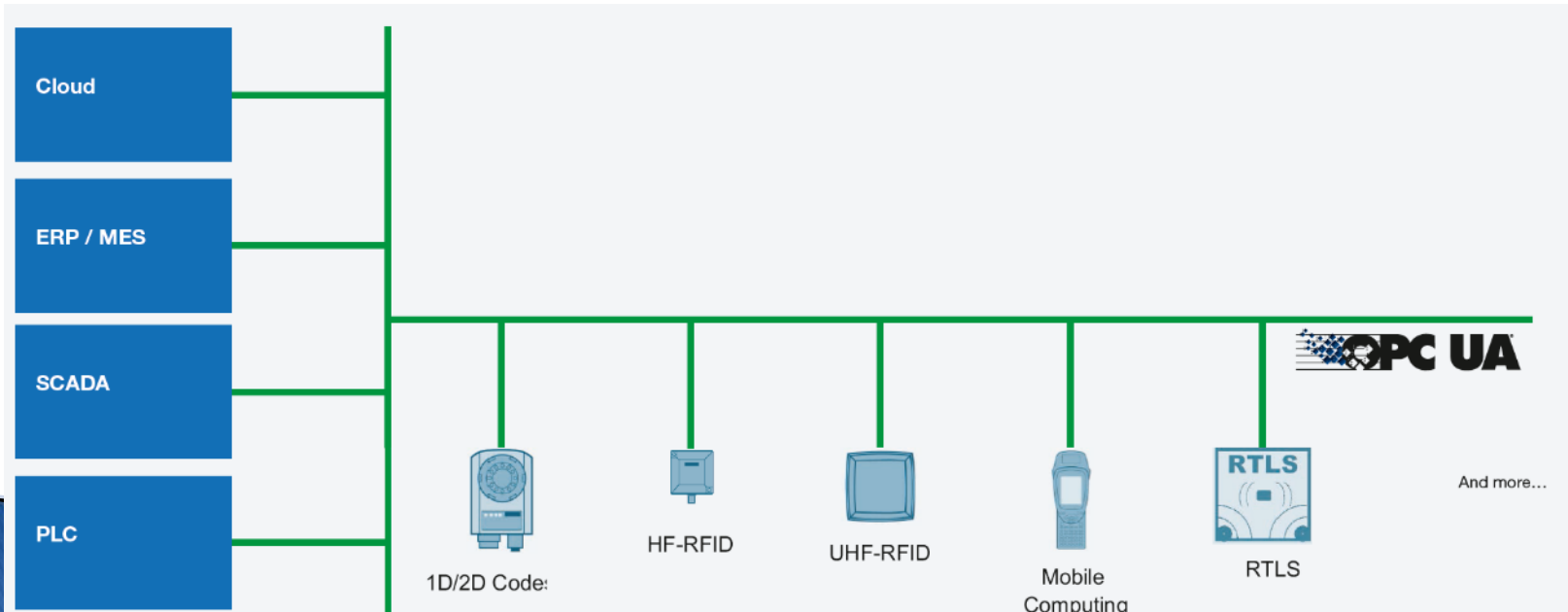
OPC UA for AutoID

One communication standard for the whole AutoID world

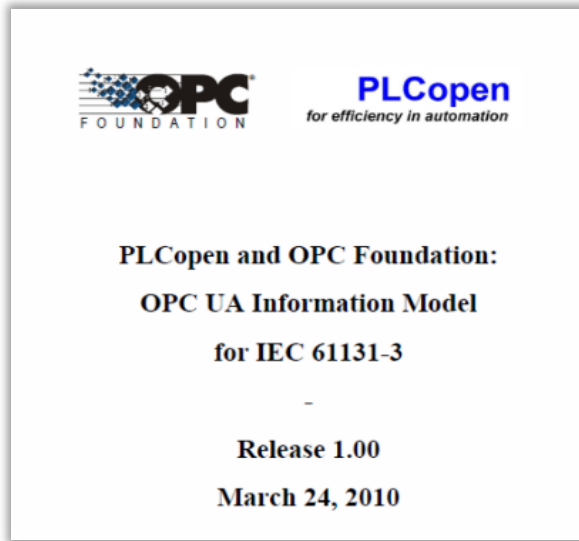
- ▶ Standardized, secured data and interfaces
- ▶ Different devices like HF/UHF-RFID, OCR, Optical (1D/2D barcode), RTLS

Adaption

- Harting, Siemens (4 types)
- Balluff, Leuze (2 types), Sick, Turck (P+F 2019)



Adoption: PLC controller



Supporting “OPC UA for IEC61131-3”

- 3S
- BECKHOFF
- Bosch-Rexroth
- B&R
- Honeywell
- Phoenix Contact
- WAGO



New OPC UA adoption wall PLC controllers

- ABB
- BECKHOFF
- Bosch-Rexroth
- B&R
- FESTO
- Honeywell
- Lenze
- Mitsubishi Electric
- National Instruments
- Siemens
- Schneider
- Phoenix Contact
- Rockwell
- Omron
- WAGO




Status „IO-Link in OPC UA“

- New Companion Spec „IO-Link in OPC UA“ v1.0 available NOW!
 - Reviews within IO-Link Community and OPC Foundation have been successfully completed between July and November 2018
 - More informations at <http://www.io-link.com/en/>

- 23 Companies actively contributed to the Technical Working Group

• TE Connectivity <i>(Project Lead)</i>	• ABB	• Fiatic	• Sick
• Ascolab <i>(Lead Editor)</i>	• Ascolab	• Hilscher	• Siemens
• Balluff <i>(Technical Coordination)</i>	• Balluff	• ifm	• Softing
	• Beckhoff	• Nucos	• TEconcept
	• Comtrol	• Pepperl+Fuchs	• TE Connectivity
	• Codewerk	• Phoenix-Contact	• Turck
	• Datalogic	• Schneider Electric	• 4CE-Industry
	• Festo	• Schmersal	

 **IO-Link**

- Implementation „Adoption“
 - Hilscher – technical demo at SPS/IPC/Drives 2018



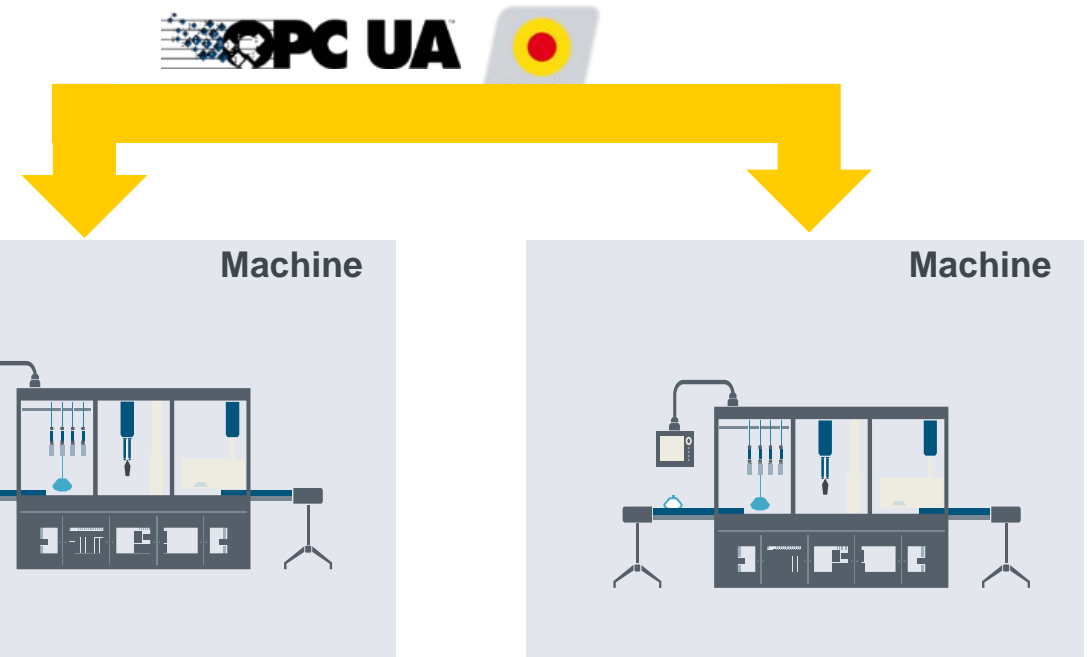
First results of Joint Working Group Safety over OPC UA based on PROFIsafe

Timeline

- Joint WG started in 02/2018
- “First Draft” available for use case C2C
- Release planned around HM2019
- Extend scope of spec down to field level

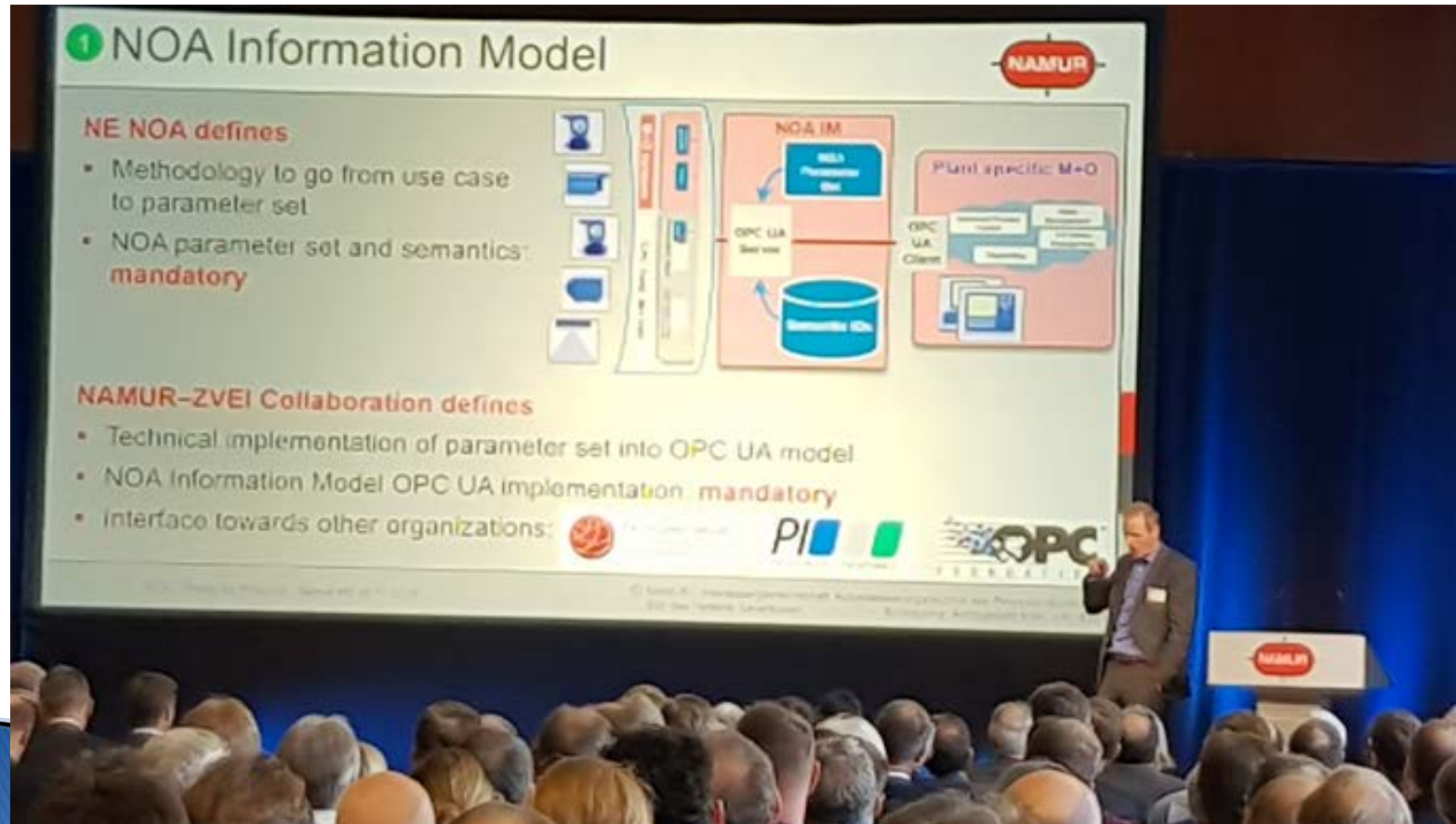
Major Elements

- PROFIsafe’s black channel approach accepted by users, vendors and authorities (e.g. TÜV)
- Open technology: available to all members of PI and OPC Foundation
- OPC UA Client/Server, OPC UA Pub/Sub (e.g. over UDP, later TSN)
- Dynamic establishment of connections, e.g. communication between AMRs and machines



Process Automation: OPC UA mandatory for NOA

- ▶ NAMUR is an international user association of automation technology in process industries
<https://www.namur.net/en.html>
- ▶ The NAMUR Open Architecture (NOA) concept offers possibilities to enable innovative solutions for new and existing plants: **“NOA Information Model OPC UA implementation mandatory”**



More information about NOA:

<https://www.namur.net/en/focus-topics/namur-open-architecture/>



OPCF joint working group (JWG) – Definition, Criteria, How-to

OPC Foundation Joint Working Groups

Introduction

OPC UA is a series of specifications providing multivendor multiplatform secure reliable information integration interoperability from the embedded world to the cloud. Key parts of OPC UA is about information modeling, and is the foundation providing a complete infrastructure to facilitate other organizations complex data modeling leveraging the OPC UA infrastructure to take advantage of the seamless interoperability.

The modelling capabilities of OPC UA are the fundamental components necessary for semantic interoperability. An increasing number of organizations created standard OPC UA information models for specific domains and/or are currently under development. These OPC UA information models are described in what is known as OPC UA companion specifications.

OPC UA companion standards address use cases and with that increase the applicability and adoption of the OPC UA technology in different verticals.

See <https://opcfoundation.org/developer-tools/specifications-unified-architecture> for released companion specifications.

The OPC Foundation has been providing support to other consortiums and standard organizations to develop the OPC UA companion specifications via an infrastructure known as joint working groups (JWG).

A “Joint Working Group (JWG)” is a working group formed between an organization (subsequently called “cooperating organization”) and the OPC Foundation. The goal of the JWG is the development of an OPC UA companion standard for use cases defined by the cooperating organization, with a compliance testing strategy to insure compliant implementations of the OPC UA companion standard.

„Joint” means, that

- Members of both organizations are invited to participate in the working group.
- The cooperation and its purpose are announced to all OPC members and exposed on the OPC Foundation web. Press releases may be issued as agreed by both organizations.
- The companion specification and associated deliverables will follow the layout and rules that the OPC Foundation defines for companion specifications. This will result in consistency for all JWG companion specifications.
- The companion specification will be reviewed by the OPC Technical Advisory Council (TAC) for completeness and will receive the OPC Foundation Logo.
- The released specification will be made available in the download section of the OPC Foundation website.

A “joint companion specification” is not a technology of the OPC Foundation. The OPC Foundation does not guarantee exclusiveness and cannot prove that the use cases of the cooperating organization are fulfilled.

Participation of OPC Foundation members is voluntary. There shall be no expectation that OPC-F provides resources for the JWG.

Joint Working Groups v1.0

Public documentation for joint working groups

<https://opcfoundation.org/joint-working-groups/>

- Definition
- Criteria
- How to create
- Levels of adoption (specification / adoption / certification)

A “joint companion specification” is not a technology of the OPC Foundation.

The OPC Foundation does not guarantee exclusiveness and cannot prove that the use cases of the cooperating organization are fulfilled.

Participation of OPC Foundation members is voluntary. There shall be no expectation that OPC-F provides resources for the JWG.

OPC Foundation: Experts program

Experts

IM = Information Modeling
AD = Application Design
SC = Security Consulting
TR = Training
IS = Implementation Support

Public documentation for “OPC Experts”

<https://opcfoundation.org/experts/>

- list with valued OPC UA experts that are willing to offer services to interested vendors or organizations
- These experts have been approved by the OPC Technical Control Board (TCB) based on a set of criteria.
However, the OPC Foundation does not assume liability for the quality and outcome of these services.
- The TCB will re-evaluate the listed experts approximately every year.




























Expert Name (alph)	Contact	Language	IM	AD	SC	TR	IS
Armstrong, Randy	randy@sparhawksoftware.com Canada Phone +1 425 296 7731	English	Y	Y	Y	Y	Y
Aro, Jouni	jouni.aro@prosysopc.com Finland Phone +358 9 420 9007	Finnish English	Y	Y	Y	Y	Y
Condemine, Michel	michelc@4ce-industry.com Montpellier, France Phone +33 4 67 79 07 37	French English	Y	Y	Y	Y	Y
Damm, Matthias	info@unified-automation.com Kalchreuth, Germany Phone: +49 911 495 25000	German English	Y	Y	Y	Y	
Gappmeier, Gerhard	info@unified-automation.com Kalchreuth, Germany Phone: +49 911 495 25000	German English		Y	Y		
Hunkar, Paul	Paul.Hunkar@dsinteroperability.com Cleveland, Ohio Phone +1 (440)-337-4161	English	Y	Y	Y	Y	
Mahnke, Wolfgang	info@unified-automation.com Kalchreuth, Germany Phone: +49 911 495 25000	German English	Y	Y	Y	Y	

Collaborations

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

New content on OPC web

- VDMA Powertrain
- VDAM Weighing
- MTConnect
- VDW umati
- ProfiSafe over OPC UA

	Automation	
	Automation AutoID Supply Chain	
	Automation	
	Automation Plastics and rubber machinery	
	Automation Machine Vision	
	Automation Robotics	
	Open-SCS	
	Automation	<p>More...</p> <p>The TMC (Tobacco Machine Communication) working group defined an OPC UA companion specification to harmonizing data exchange and interoperability requirements for the common benefit of both cigarette manufacturers and OEMs.</p>
	Automation CNC	
	Automation	
	Automation Process Industry	
	Automation Process Industry	
	Automation Engineering	
	Automation Fieldbus	
	Automation Fieldbus	
	Automation Fieldbus	
	Automation Fieldbus	
	Automation Fieldbus	
	Automation Fieldbus	
	Automation Fieldbus	
	Building Automation	
IEC61850	Electrical substation	
	Oil and Gas	
	Oil and Gas	
	Standardization	
	Security	
INDUSTRIAL DATA SPACE e.v.	Standardization	
	Standardization	
	Standardization	

Collaborations – on OPC Japan web

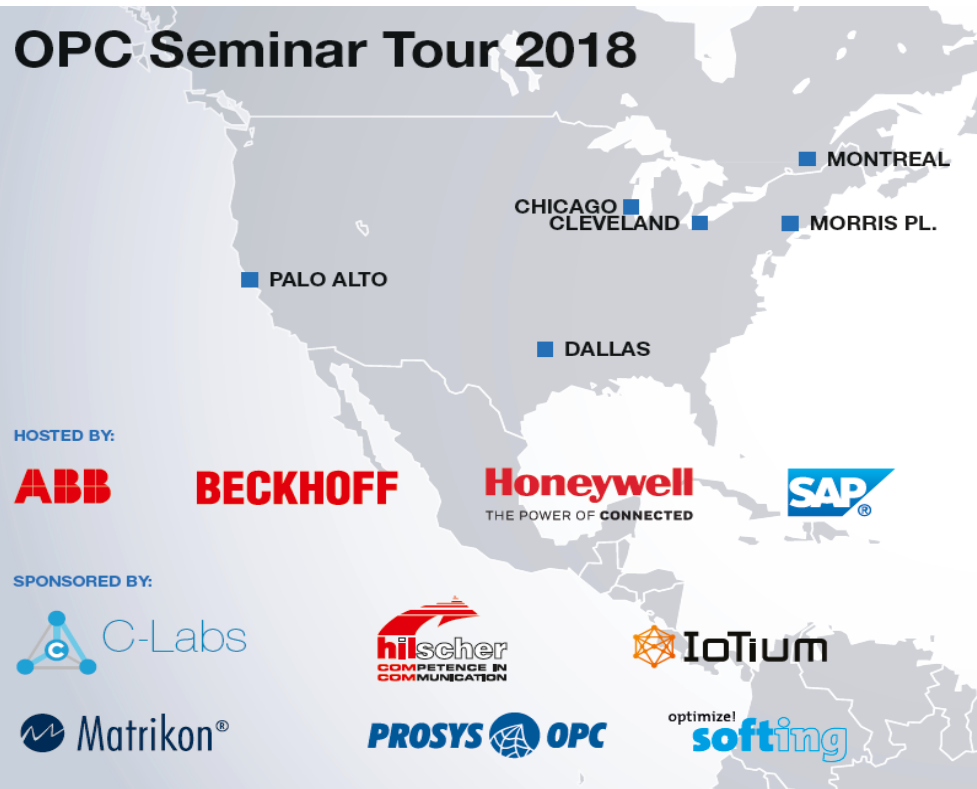
<https://jp.opcfoundation.org/markets-collaboration/>

- Collaborations now available on OPC Japan web

 for efficiency in automation	オートメーション	More... PLCopenは、産業用制御機器で活動する組織であり、アプリケーションソフトウェア開発の効率を高め、ライフサイクルコストを削減に貢献します。
 Verband für Automatische Datenfassung, Identifikation und Mobilität	オートメーション オートID サプライチェーン	More... RFIDだけでなく、他のAutoIDプロセスにおいても、業界を越え始める重要な技術です4.0。シンプルにこれらの技術をトータルソリューションに統合することが重要になります。したがって、AIM-D e.V.（オーストリア、スイスでOPC UAを基準とした規格を定めています）（Automatic Data Capture、Identification and Mobilityの協会）。
 VDMA EUROMAP European Plastics and Rubber Machinery	オートメーション プラスチックとゴム 製造機械	More... VDMA EUROMAPグループは、プラスチックおよびゴム機械製造業界の標準を定義しています。
 VDMA	オートメーション	More... VDMAマシンビジョングループは、OPC UAを搭載したマシンビジョンシステムの概要情報を定義しています。
 VDMA	オートメーション フィールドバス	More... VDMAロボットグループは、OPC UAでロボット情報モデルを定義しています。

Activities 2018: NA & Asia

OPC Seminar Tour 2018



- Jan 16th OPC Seminar Houston
- Feb 09th OPC Seminar Palo Alto hosted by SAP
- Sep 10th OPC Seminar Montreal sponsored by Beckhoff
- Sep 11th OPC Seminar Cleveland hosted by ABB
- Sep 13th OPC Seminar Chicago hosted by IMTS
- Sep 14th OPC Seminar Morris Plains hosted by Honeywell

OPC Seminar Tour Asia July 10–13, 2018



- July 10th OPC Seminar Seoul hosted by Samsung
- July 11th OPC Seminar Taipei hosted by Microsoft
 canceled due to official typhoon warning
- July 12th OPC Seminar Shenzhen sponsored by Huawei
- July 13th OPC Seminar Singapore sponsored by Beckhoff

Activities 2018: China

- ▶ Total of 61 member companies as of Sept 2018
 - 12 new members since Jan 2018
 - Projected 65 by end of 2018
- ▶ Total of 22 OPC Seminars
 - Reached 3000+ seminar participants
- ▶ Participated in 4 Tradeshows
- ▶ OPC Specification parts 9,10,11 and 13 are Chinese National Standard.
- ▶ Conducted 5 Training Classes
 - 65 persons trained
- ▶ China Compliance Lab ongoing operation
 - Ongoing testing of 2 OPC UA products
 - The laboratory is applying for National Certification (CNAS) to enable future OPC certifications to be recognized by the Chinese government to promote Chinese corporate certification needs.
- ▶ Over 30 articles in print and/or online media



21 page document listing activities 2018

China National Standard

▶ Translated and Accepted 2017

- OPC UA Part1 - GB/T 33863.1
- OPC UA Part2 - GB/T 33863.2
- OPC UA Part3 - GB/T 33863.3
- OPC UA Part4 - GB/T 33863.4
- OPC UA Part5 - GB/T 33863.5
- OPC UA Part6 - GB/T 33863.6
- OPC UA Part7 - GB/T 33863.7
- OPC UA Part8 - GB/T 33863.8

▶ Translated and Accepted 2018

- OPC UA Part9 - GB/T 33863.9
- OPC UA Part10 - GB/T 33863.10
- OPC UA Part11 - GB/T 33863.11
- OPC UA Part13 - GB/T 33863.13



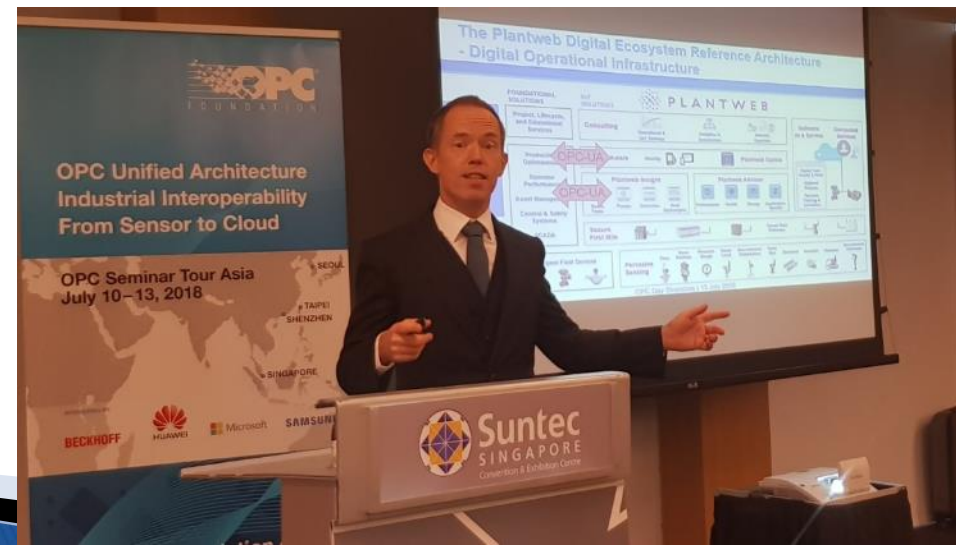
Activities 2018: Asia

- Shenzhen / Taipei / Singapore



Dr. Heister, VDMA
OPC Seminar Shenzhen

Jonas Berge, Emerson
OPC Seminar Singapore



Microsoft Taipei, Taiwan Pushing OPC UA technology



邁入物聯網世界的第一步 – 運用OPC UA將裝置連網

物聯網於2018年的現今，已成為現在進行式，在物聯網的世界中，裝置的連網是邁入物聯網的第一步。而在硬體間彼此溝通的標準一直是百家爭鳴。OPC Foundation所提出的OPC UA通訊標準提供了一個統一安全的平台，讓所有的裝置可以互相串聯，並於近幾年來，受到業界的高度重視。

微軟同樣相當重視 OPC UA 的發展，因此在Azure IoT領域中，也相當程度的支援 OPC UA 的通訊標準。我們將於本次 workshop 當中了解 OPC UA 的重要概念，也帶您一同了解微軟如何在裝置端以及雲端支援 OPC UA。此外，也將透過實作課程，帶領您親自使用微軟提供的資源，快速打造一個透過 OPC UA 連接裝置端與雲端的 Azure IoT Solution。



Activities 2018: India

- Success of OPCF & VDMA joint activities
- Activities in India
 - Oct 22 Pune
 - Oct 23 BangaloreSAP & Microsoft involved



Activities 2018: Europe

VDMA OPC UA Demonstrator booth at automatica 2018



OPCF @ SPS IPC Drives 2018

OPC Booth Hall 5 – 347
16 Partners

- ✓ Automation ML
- ✓ Canary Labs
- ✓ Dreamreport / Ocean Data Systems
- ✓ HMS Industrial Networks
- ✓ IBH Softec
- ✓ ICONICS
- ✓ Kepware/ PTC
- ✓ Leuze electronic
- ✓ MatrikonOPC
- ✓ Prosys OPC
- ✓ Rockwell Automation
- ✓ Siemens
- ✓ Softing
- ✓ Takebishi
- ✓ Unified Automation
- ✓ Utthunga





The Industrial Interoperability Standard

OPC
FOUNDATION
The Industrial Interoperability Standard

Eco-System

OPC
FOUNDATION
ON

OPC Foundation
including TSN

OPC
FOUNDATION
SIEMENS
Ingenuity for Life

**OPC UA within
Totally Integrated Automation**

- OPC UA integration at all automation levels
- Open and secure communication from the plant to the cloud
- Support, easy mapping and integration of existing IT/OT systems

3BT 212

aqua
metro

LM



SPS IPC Drives 2018: OPC Foundation booth

TSN square in middle of the booth



SPS IPC Drives 2018: OPC Press conference over crowded



SPS IPC Drives 2018: OPC Press conference Tom Burke on stage



SPS IPC Drives 2018: OPC Press conference United Nations for Industrial Communication and IIoT

Rockwell, Siemens, Mitsubishi, Schneider, ABB
On stage at and OPC Foundation Press Conference



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OPC Foundation: United Nations for Industrial Communication and IIoT

Mit Hallenplan!

sps ipc drives
Nürnberg, 27.-29.11.2018

THE OFFICIAL DAILY 2018

PUBLISHED BY
Elektronik
www.elektroniknet.de

computer-automation.de elektronik.de markt-technik.de

Tatsächlich historisch (u.a.)
Takayuki Tsuzuki (Mitsubishi),
Rainer Brehm (Siemens),
Paul Brooks (Rockwell) und Stefan Hoppe (OPC Foundation) besiegeln die Zusammenarbeit in Richtung *Kommunikationsstandard!



including TSN down to field level

Twittern Sie mit!
#sps_live und @spsipcdrives

DAY 2
Halle 7A / Stand 300 - 26. November 2018

Messe-News
Seiten 1 bis 11 und
Seiten 63 bis 67

Die Foren
Seiten 12 bis 19

Produkte
Seiten 20 bis 62

Kommentar

Feldbus-Krieg ade!
Es ist geschafft: Unter dem Dach der OPC Foundation werden sich alle Automationshersteller mit Rang und Namen auf eine zukünftige Kommunikationslösung basierend auf TSN und OPC UA einrichten. So gehen markierte die Pressekonferenz der OPC Foundation einen historischen Moment! Der seit 30 Jahren schwelende Feldbus-Krieg dürfte – mit einer Migrationsphase – langsam auslaufen. Es ist bemerkenswert, dass insbesondere die dominierenden Anbieter wie Siemens, Rockwell und Mitsubishi über ihren Schattensprachen sind und ihre Kommunikationspläne nun offen. Und es ist ein dicker Applaus wert, dass es eine Gruppe tragetragender Firmen – unter dem nie offiziell definierten Begriff der Shaper – mit viel Diplomatie, Geschick und einer großen Portion Hartnäckigkeit geschafft hat, die Giganten der Branche zu diesem Schritt zu bewegen.

Meinrad Happpacher,
Computer & AUTOMATION

Die UNO der Automation

Die Pressekonferenz der OPC Foundation wurde mit Spannung erwartet: feiert doch die Fachwelt darauf, welche Rolle der Ethernet-Standard TSN bei den Aktivitäten der OPC zukünftig spielen wird. Die im Vorfeld als „historisch“ angekündigte Pressekonferenz für Dienstag 16.45 Uhr enttäuschte dann auch nicht.

Historisch wird es tatsächlich als OPC-Board-Mitglied Matthias Damm, Ascitech, während der Pressekonferenz das Thema „OPC UA bis in die Feldebene“ vortrug. Er listet 21 namhaften Automationshersteller auf – darunter Rockwell, Siemens und Mitsubishi –, die nun ein gemeinsames Ziel verfolgen: Unter dem Dach der OPC Foundation wollen sie die Technologie OPC UA bis in die Feldebene vorantreiben. Dabei sollen die Vorteile der OPC-UA-Technik mit ihren Informationsmodellen, ihrer Semantik und der integrierten Security gepaart werden mit dem Kommunikations-Know-how der Hersteller in der Feldebene. Geeignet haben sich alle Beteiligten, so Damm, die TSN-Definition wie auch die Definition der TSN-Profil für die Industrie-Automation (TSN-IA) bei IEC und IEEE zu belassen, um Doppelstandardisierungen zu vermeiden und somit in Zukunft über eine einzige TSN-Netzwerk-Technologie verschiedene Protokolle fahren zu können. „Die neue Initiative ist ein wichtiger Schritt für die Integration von OPC UA in Felgeräte“. Die komplettiert die Vision der OPC Foundation, einen durchgängigen Standard anzubieten, der vom Sensor bis zur Cloud genutzt wird“, so Damm. „Wenn dabei die Übertragung mit deterministischer Echtzeit erfolgen soll, wird in Zukunft optional TSN eingeschaltet und somit OPC UA über TSN transportiert.“ Die

Die Akteure der Feldebene
Stand 27.11.2018 finden sich folgende Firmen im Field Level Communications Steering Committee der OPC Foundation wieder: ABB, Beckhoff, Bosch-Rexroth, B&W, Cisco, Hilscher, Hirschmann, Huawei, Kalyco, Kuka, Mitsubishi Electric, Moxa, Omron, Phoenix Contact, Pilz, Rockwell Automation, Schneider Electric, Siemens, TITECH, Wago, Yokogawa.

Keba acquires LTI Motion

On the first day of the show, Keba announced the acquisition of LTI Motion. With the acquisition, the company aims to evolve into a total solution provider in the industrial automation sector.

In addition to the servo drive technology manufacturer LTI Motion, the Austrian company Keba will also acquire the associated Heinz Fiege GmbH, which specializes in application-related spindle technology. A corresponding contract between Keba AG and the seller, Körber AG, was signed on November 15, 2018.

The motivation for the takeover: „The portfolios of Keba and LTI Motion complement each other perfectly“, explained Keba CEO Gerhard Luftsteinsteiner. „Keba is a specialist in the field of control and safety as well as in operation in industrial environments. LTI Motion in the field of servo drive technology. The big advantage for our existing customers is that we can now offer them a complete solution.“

Gerhard Luftsteinsteiner, CEO of Keba AG (left) and Hartmut Braun, Managing Director of LTI Motion.

(Continued on page 3) >

HEIDENHAIN verbindet

Halle 7 Stand 7-190

Title page day 2 trade show magazine....

.... Marketing mission accomplished...



OPC Foundation Press releases 2018 :

Find all press releases here <https://opcfoundation.org/news/opc-foundation-news/>

- 2018-01 Meltdown / Spectre Patch
- 2018-02 OPC Foundation publishes OPC UA specification for POWERLINK
- 2018-02 OPC Foundation and FieldComm Group announce cooperation
- 2018-02 ARC Advisory Group report finds: OPC UA standard well positioned as base for IIoT / I4.0 solutions
- 2018-03 OPC Foundation announces OPC UA PubSub release as important extension of OPC UA communication platform
- 2018-04 OPC Foundation announce updated OPCF IPR Policy
- 2018-04 MTConnect Institute and OPC Foundation to Update and Revise MTConnect OPC UA Companion Specification
- 2018-04 German Machine Tool Manufacturers (VDW) rely on OPC UA
- 2018-04 OPC Foundation and ZVEI cooperate for OPC UA based mapping of Industrie4.0 Asset Administration Shell
- 2018-05 Review of Kaspersky Labs Report Confirms OPC Foundation's Transparent, Open Source OPC UA Implementations Strategy Improves Security
- 2018-05 OPC Foundations efforts on GDPR – General Data Protection Regulation
- 2018-06 VDMA releases OPC UA Companion Specifications for Robotics and Machine Vision
- 2018-07 Veronika Schmid-Lutz (SAP) Elected Chair of OPC Foundation Board of Directors
- 2018-09 The OPC Foundation welcomes Volkswagen as its 600th OPC Foundation member
- 2018-10 OPC announce new President
- 2018-11 OPC UA including TSN initiative
- 2018-11 OPC Foundation extends board seats

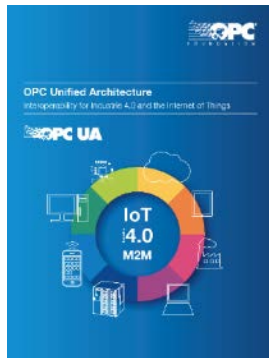


Information: Brochures Updated (v7)

- ▶ “Interoperability for Industrie 4.0 and the Internet of Things”
- ▶ Edition 2018: Extended with
 - ▶ Made in China 2025
 - ▶ North America IIC related OPC UA testbeds
 - ▶ Korea Manufacturing Initiative 3.0
 - ▶ Japan Industrial Value Chain Initiative
- ▶ <https://opcfoundation.org/resources/brochures/>
- ▶ PubSub communication
- ▶ OPC UA over TSN

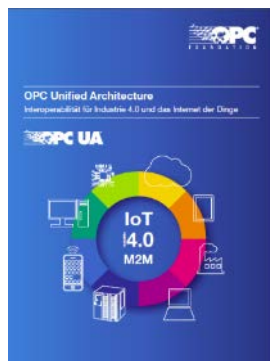
Next update planned
for April 2019

English



Updated

German



Updated

Japan



Under
translation

China



Under
translation

Korea



Updated

OPC UA Videos



- ▶ Landing page <https://opcfoundation.org/resources/multimedia/>
- ▶ 12 new videos
 - ▶ General positioning OPC UA / SAP / Microsoft
 - ▶ Robotic / Injecton moulding / Machine Vision

Microsoft, Industrial Azure	https://youtu.be/QJ1DWTvGQxo
SAP, Digital Manufacturing	4min https://youtu.be/C3KxmRBDPZs 15min https://youtu.be/kzb7YozH1to
VDW Machine Tool Connectivity for Industrie4.0 , VDW	5min 10min https://youtu.be/5CbBZMmhts
Getting Started - End User products Getting Started - Developer Kits	https://youtu.be/ZbNOVnDsg0E https://youtu.be/Qc847cdo8U0
VDMA Weighing	Dirk Bösel VDMA Weighing - 3min https://youtu.be/uV8kPb3QOLg

Activities 2019

<https://opcfoundation.org/events/>

Events

The OPC Foundation conducts and attends numerous events throughout the year that showcase OPC technology and its member's solutions. These include trade shows, technology training, interoperability events and attendance at select member functions.

OPC Foundation Member Companies have the opportunity to sponsor and participate in the OPC Foundation sanctioned events.

See the Sponsorship Prospectus here :

- Updated: [2019 Banner advertisement and Newsletter](#)
- Updated: [2019 Events and Seminar Tour: Call for Sponsor](#)
- Updated: [2018/2019 Europe and North America: OPC UA device demo wall](#)



Block the date:

**OPC Day Automotive
Date: 21.05.2019**



AIDA

Interoperability Workshops

- 2018 : IOP's in US / Asia / Europe
- 2019 : Additional IOPs hosted by Siemens



Call for action / Questions

- Demo wall
Your device is not on the wall?
PDF Call for sponsor:
<https://opcfoundation.org/events/>
- Sponsor at Seminar Tour
Act as sponsor on seminar tours?
<https://opcfoundation.org/events/>
- Any questions?
Feel free and ask!
Stefan.hoppe@opcfoundation.org



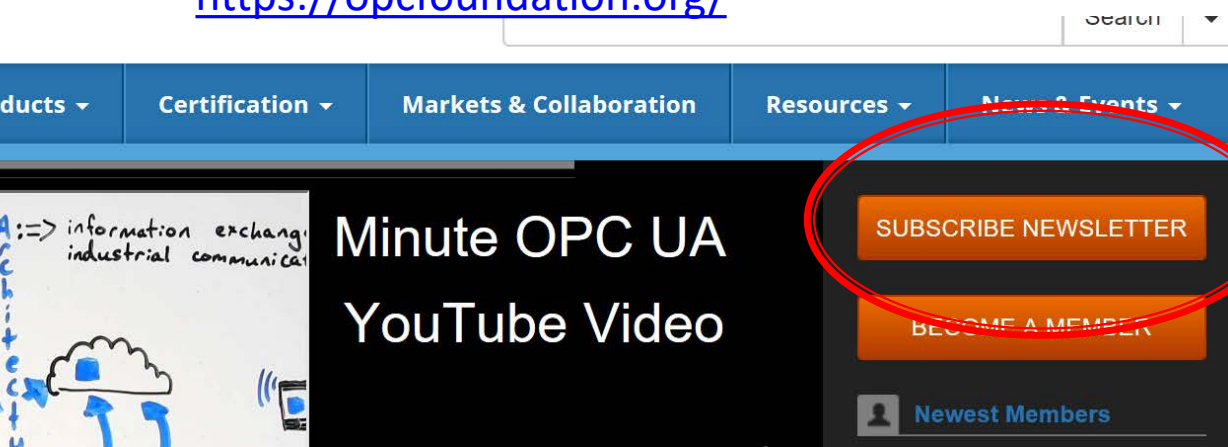
Thank you!

Questions?



... send email to
Stefan.hoppe@opcfoundation.org

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⇒ information exchange industrial communication

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