

OPC General Assembly Meeting 2016



- **2016 OPC marketing update**
 - **OPC UA to become the accepted standard for IIoT and Industrie4.0**
 - **Increase visibility**
 - **Grow into new markets by collaboration**
 - **Provide more content on OPC Foundation web**
- **2017 OPC marketing strategy, plans & events**



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OPC UA in the world



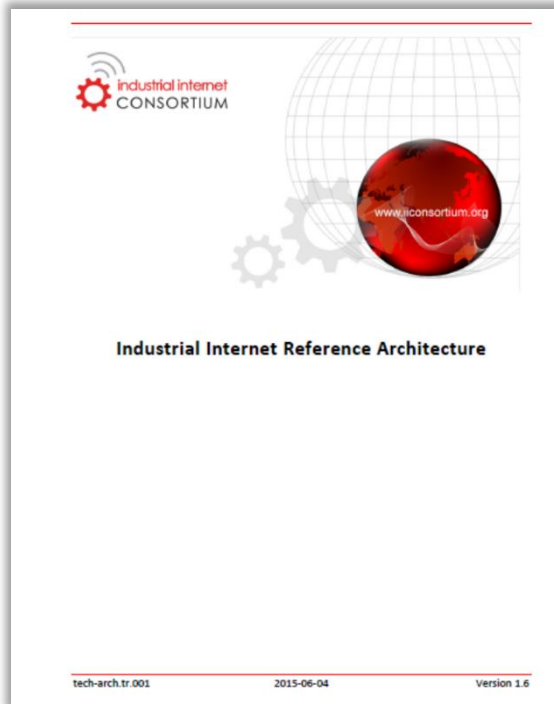
IIC

Industry4.0

China2025



North America: Industrial Internet Consortium Listing OPC UA and other protocols



- OPC UA listed

9.2.2 SECURITY IN REQUEST-RESPONSE AND PUBLISH-SUBSCRIBE COMMUNICATIONS

Two common patterns in IIS communications are request-response and publish-subscribe. The request-response pattern is common in industrial systems. Examples of the implementation of this pattern include Java Remote Method Invocation (Java RMI) [6], Web Services/SOAP [7], 405 RPC-over-DDS [8], RESTful Servers, OPC [9], Global Platform Secure Channel Protocol and Modbus [10]. As the protocols of this pattern vary in degrees of support for security, they should be independently and carefully evaluated with regard to confidentiality, integrity and availability requirements. As an example, Modbus, a popular application-level fieldbus protocol within industrial systems, lacks support for authentication and encryption, and does not 410 provide message checksums, and lacks support for suppressing broadcast messages.

- Today 3 testbeds with integrated OPC UA

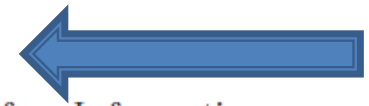
- OPC UA + TSN in Manufacturing
- OPC UA Sensor in Brownfield environment
- OPC UA and AutomationML for factory

German Industrie 4.0 recommends OPC UA

[http://www.zvei.org/Downloads/Automation/5305 Publikation GMA Status Report ZVEI Reference Architecture Model.pdf](http://www.zvei.org/Downloads/Automation/5305_Publikation_GMA_Status_Report_ZVEI_Reference_Architecture_Model.pdf)



- Approach for implementation of a Communication Layer
 - OPC UA: Basis IEC 62541
- Approach for implementation of an Information Layer
 - IEC Common Data Dictionary (IEC 61360 Series/ISO13584-42)
 - Characteristics, classification and tools to eCl@ss
 - Electronic Device Description (EDD)
 - Field Device Tool (FDT)
- Approach for implementation of a Functional and Information Layer
 - Field Device Integration (FDI) as integration technology
- Approach for end-to-end engineering
 - AutomationML
 - ProSTEP iViP
 - eCl@ss (characteristics)



OPC UA: Security analyzed

Who: Federal Office for Information Security (German Government BSI)

Why: Because of relevance of OPC UA for German Industry

What: Security Evaluation of OPC-UA – finalized March 2016

- Analysis of specification / Analysis of Reference Implementation

Result: German version available on BSI web and OPC web

English version available Feb 2017



Bundesamt
für Sicherheit in der
Informationstechnik

China National Standard

- ▶ TC124 has held first OPC UA GB certification working group meeting in October 2016
- ▶ The first OPC UA related standard will be released:
 - 20090699-T-60 Part 1: Overview and Concepts
 - 20090700-T-60 Part 2: Security Model
 - 20090701-T-60 Part 3: Address Space Model
 - 20090702-T-604 Part 4: Services
- ▶ OPC China will fully cooperate with TC124 and drive to release this standard before the end of 2016
- ▶ Continue with Part 5+ in 2017

OPC UA wall

Demo wall

Your device is not on the wall?

PDF Call for sponsor:

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



Siemens support OPC UA

11 Siemens products with integrated OPC UA

- SIMATIC S7-1500 PLC Family <https://opcfoundation.org/products/view/434>
- SIMATIC S7-400 with OPC UA CP (CP 443-1 OPC UA) <https://opcfoundation.org/products/view/444>
- RFID Reader SIMATIC RF600 <https://opcfoundation.org/products/view/449>
- SINUMERIK CNC control systems <https://opcfoundation.org/products/view/450>
- SIMOTION IT <https://opcfoundation.org/products/view/199>
- SINEMA Server <https://opcfoundation.org/products/view/446>
- SIMATIC NET OPC Server <https://opcfoundation.org/products/view/202>
- SCADA system SIMATIC WinCC Open Architecture <https://opcfoundation.org/products/view/436>
- SIMATIC B.Data <https://opcfoundation.org/products/view/437>
- SIMATIC HMI Comfort Panels <https://opcfoundation.org/products/view/432>
- SIMOCODE pro Motor Management System <https://opcfoundation.org/products/view/247>

SAP: SoA Reshape Automation Pyramid

Hanover Messe: Impressions

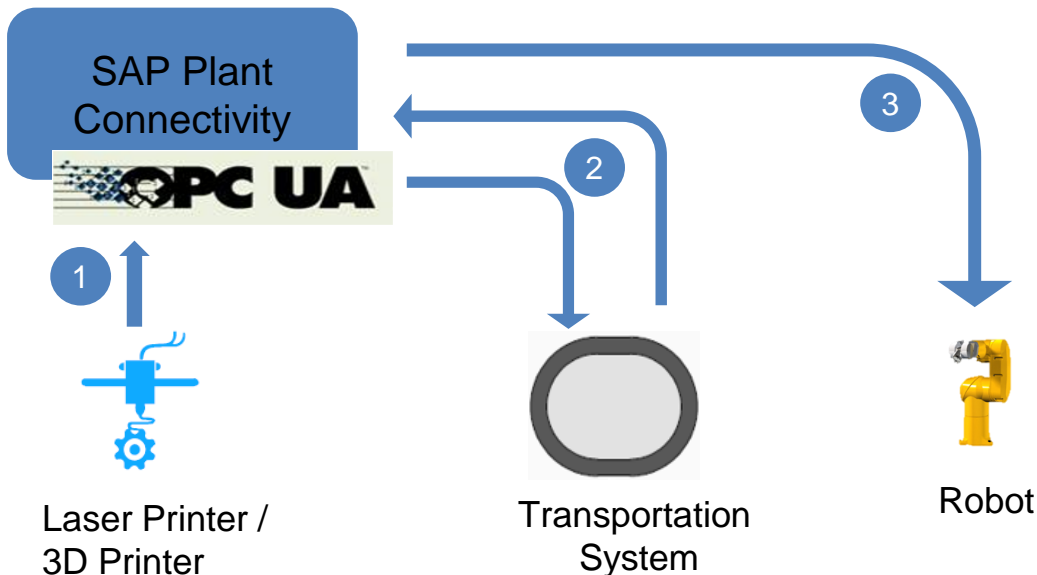


SAP: SoA Reshape Automation Pyramid

Orchestration & Synchronization the shop floor

Orchestration:

- Event occurs on Unit X
- Unit Y is triggered by SAP Plant Connectivity



Example:

1. Upper Shell for customer order 4711 is printed (Laser Printer ready)
2. Carrier with subshell ordered to assembly station
3. As soon as carrier arrives Robot is triggered to start assembly process

Benefits:

- Simplified System Landscape
- Flexibility / no hard coded steps

Microsoft support OPC UA

...always overcrowded...

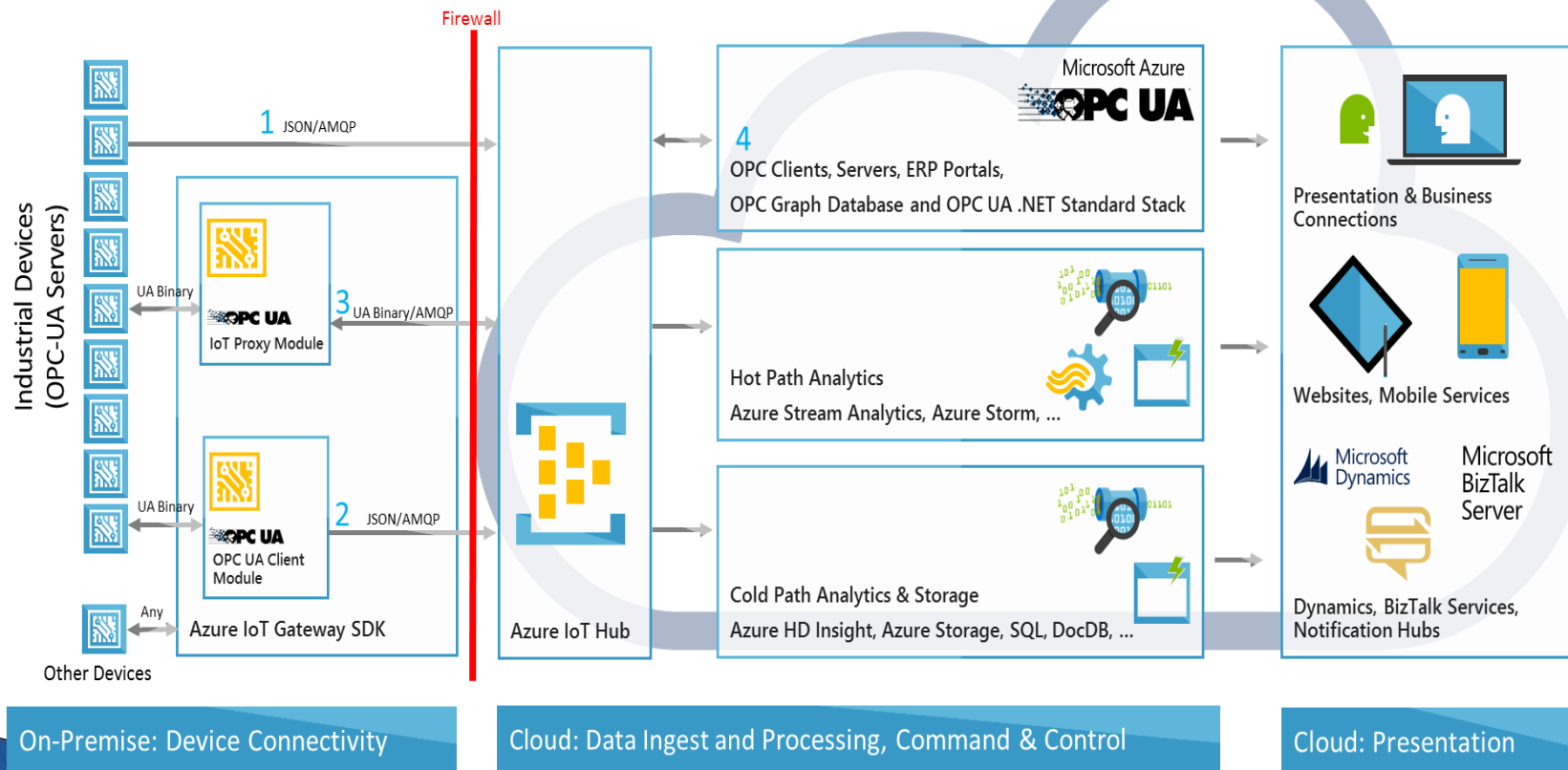


OPC UA integration into Azure IoT

Download flyer here

<https://opcfoundation.org/wp-content/uploads/2016/10/Microsoft-OPC-UA-5-Clicks-To-Digital-Factory.pdf>

Azure IoT Gateway with integrated OPC UA RELEASED ! (OPC Classic on road)



Microsoft Windows 10 listing OPC UA

Microsoft Windows 10 Anniversary slide deck:

CONNECTED THINGS

Open platform that seamlessly connects things, endpoints and the cloud



Open Standards & Interface

- Standards based approach to IoT and interoperability
 - ALLJOYN/OCF Integration for consumer IoT
 - OPC UA for Industrial IoT
- Ubiquitous connectivity
 - USB, Wi-Fi, BLE, Cellular
- Low level BUS and hardware support



Azure Cloud Integration

- Secure Azure connection with TPM
- Best in-class connectivity with Azure

HPE Gateway EL20 IoT Gateway with Azure IoT Gateway SDK



**Hewlett Pack
Enterprise**

Hewlett Packard Enterprise 

EdgeLine Server EL20 IoT Gateway

Industrial performance optimized edge gateway, powered by Intel Core i5 processor for data aggregation and high performance operations. GPU, LAN, USB & Remote capabilities.



SIEMENS

SINATIC ET-1500 Advanced Controller

Easy-to-use controller for industrial production and operation. Designed specifically for OPC UA clients integrated in various Siemens devices across an automation system.



MITSUBISHI ELECTRIC

MELSEC iQ-F series PLC

Advanced multi-channel controller for data aggregation and high performance operations. GPU, LAN, USB & Remote capabilities.



OPC UA @ Emerson and Rockwell

- ▶ **Emerson Process Management Machinery Health™ Protection System (CSI 6500 ATG)**
native OPC UA Support integrated



- ▶ **Rockwell Automation Show Nov 2016**
Compact Logix 5480 with integrated OPC UA Server

CompactLogix 5480 Futures

Multi-processor high performance controller

- Multi-processor Logix controller with Microsoft Windows IoT Enterprise for 3rd party applications
- Commercially available CPU for high performance
- Support of OPC UA Client/Server for Data Access
- Control program has ability to configure Ethernet based systems
- Execute Ethernet based DLL from control program

Secure Digital Card

- Optional non-volatile memory storage for the Logix user program and tag data

USB Ports

- USB device port for easy access for programming, troubleshooting, online edits and updating the controller firmware
- (2) USB 3.0 Host ports (OS)

6x Ethernet/IP Ports

- (3) Logix GbE ports - 2 ports configurable for Dual IP or DLR
- (1) Operating System GbE port

Monitor interface

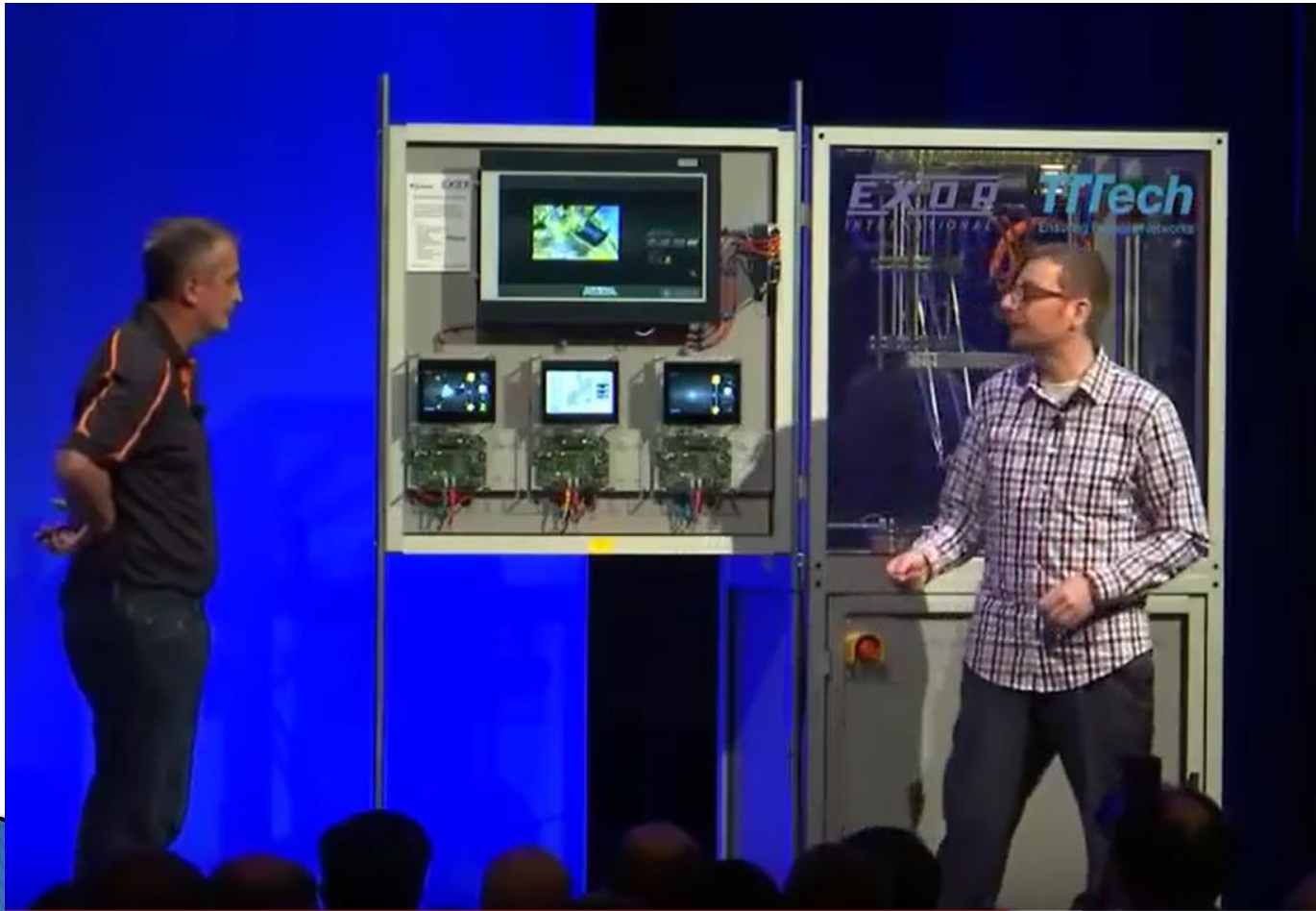
- TouchPort supports standard converters for HDSE, DVI, VGA displays

Rockwell Automation



OPC UA & TSN in Intel Key note

- ▶ IDF 2016: Intel CEO Brian Krzanich with Demo with Exor & TTTech (at 38min)
- ▶ <https://www.youtube.com/watch?v=Psd2JKu0PSw>



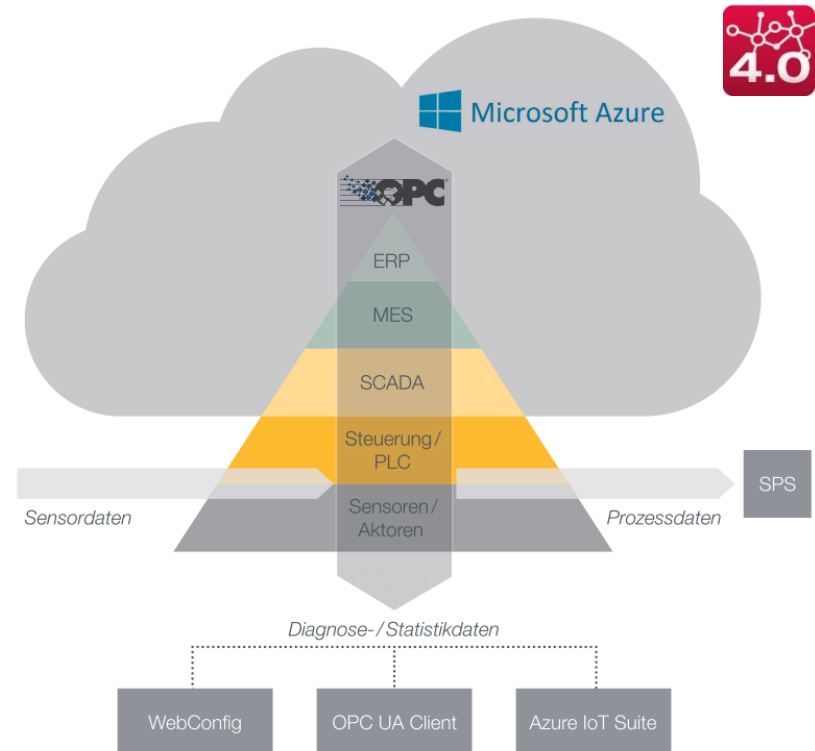


Member of OPC Foundation

Leuze electronic member of the OPC Foundation since September 2016

Why?

- I4.0: Exchange of data across different levels and in different directions
- Leuze electronic sensors provide data for I4.0
- Standardized model of communication is required
- OPC UA Key Enabler for I4.0
- OPC Foundation driving at a standardized communication (I4.0 context)
- Participation in Companion Standards



Press Conference OPC Foundation

OPC UA Solution



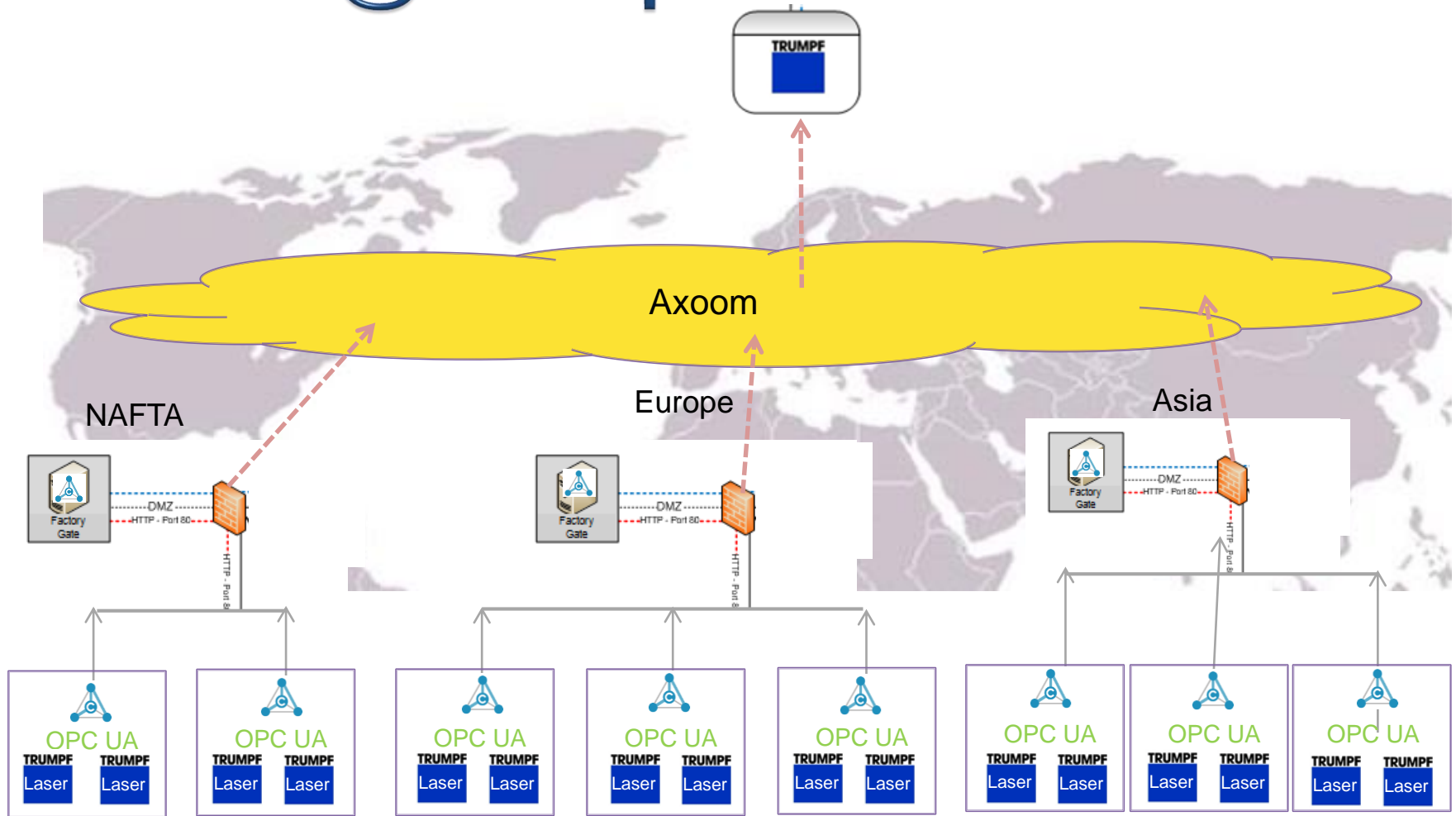
Powering Business Worldwide

Several autonomous Cyber Physical Systems (CPS) are vertically integrated and connected to a Smart Factory Cloud



Visit Eaton
Hall 9
Stand 371

OPC UA @ Trumpf Laser Machines



Number of lasers just schematically

OPC UA on chip level: Hilscher

- ▶ 2016: Commercial product OPC UA in chip

INDUSTRIAL INTERNET OF THINGS

SPONSORED WHITE PAPERS, VIDEOS AND PRODUCT RELEASES ON IIOT

October 13, 2016

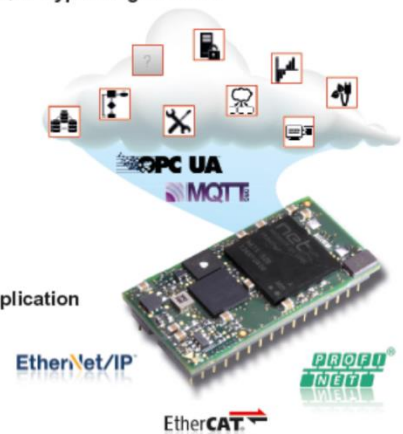
Hilscher
IoT-Enable Devices
with Hilscher's netIC
IOT; Multiprotocol,
Secure Boot, OPC UA,
MQTT

[LEARN MORE](#)



netIC IOT
Intelligent DIL-32 Communication IC with generic object interface

- Intelligent multiprotocol module for field devices
- IoT communication via OPC UA and MQTT bypassing the PLC
- Central „build process“ with intelligent engineering tool
- Protocol independent object interface to the application
- Customized device description file & source code for integration into the application



Events Europe 2016

- 11.02.2016 MES-DACH Congress, Germany
- 16.02.2016 E-World, Essen Germany (Smart Metering)
- 23.02.2016 Embedded World, Nuremberg
- 02.03.2016 ARC European Industry Forum 2015, Amsterdam
- 23.03.2016 Industrial IoT Summit London
- 07.04.2016 Industry of Things, Frankfurt
- 25.04.2016 Hannover Messe, Hannover

- 22/23.06.2015 OPC Day Europe 2016 in combination with Automatica Munich
- 27.09.2016 IoT World Europe, Berlin
- 25.10.2016 IoT World Barcelona
- 14.11.2016 IOP-Europe, Siemens, Nuremberg
- 22.11.2016 SPS/IPC/Drives, Nuremberg

- + multiple Industrie 4.0 events + multiple more “just presentation events”

Events North America 2016

Seminar cities (registered attendees)

- ▶ 09.09 OPC Day Montreal (110)
- ▶ 13.09 OPC Day Detroit (51)
- ▶ 15.09 OPC Day Chicago (IMTS) (120)

- ▶ 08.11 OPC Day Raleigh (57)
- ▶ 11.11 OPC Day Houston (144)



Events North America 2016

Events (trade shows / user group meetings)

- 08.02.2016 ARC Orlando
- 25.02.2016 Industry of Things, San Diego
- 19.04.2016 CSIA in Puerto Rico
- 24.05.2016 The Automation Conference, Chicago
- 18.04.2016 IOP hosted by Honeywell, Phoenix
- 19.04.2016 CSIA, Puerto Rico
- 19.06.2016 Honeywell User Group
- 01.08.2015 NI week, Austin
- 12.09.2016 Industrial Automation NA, Chicago
- 26.09.2016 Smart Industry, Chicago
- 06.11.2016 PackExpo, Chicago
Joined demo OMAC / PLCopen / OPCF
- 09.11.2016 Rockwell Automation Show, Atlanta

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.



- Markets

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

OPC Web - „Collaborations“

Logo	Vertical market	Teaser
	Automation	More... PLCopen , as an organization active in Industrial Control, is creating a higher efficiency in your application software development and lowering your life-cycle costs.
	Automation AutoID Supply Chain	More... RFID, but also other AutoID processes, are key technologies for the implementation of the philosophy of industry 4.0. The more important it becomes to integrate these technologies as simple as possible into total solutions. Therefore AIM-D e.V. (Association for Automatic Data Capture, Identification and Mobility), responsible for Germany, Austria and Switzerland, defined standards on the basis of an OPC UA.
	Automation CNC	More... An OPC UA information model has been developed within the cooperation of the German Machine Tool Builders' Association (VDW) and the OPC Foundation, in order to interface and exchange data with CNC systems.
	Automation	More coming soon MTConnect mapped their information model into OPC UA and thus became portable.
	Automation Plastics and	More... EUROMAP is the European umbrella association of plastics and rubber machinery manufacturers. It provides technical recommendations for this

OPC Web – „Collaborations“

▶ Progress in 2016: 17 (!) new collaborations listed in the web

▶ 2015 online

- ▶ AutomationML - EtherCAT
- ▶ BACnet - Sercos
- ▶ FDI - Powerlink
- ▶ PLCopen - CNC for HMI

Information level

- Overview
- Technical Overview
- Companies behind
- Further Information
- Contact partner

2016 new in web:

- | | | | |
|-----------------|-----------------------------|----------------|----------------------|
| ▶ ProfiNET | CLPA (basics) | DSATS (basics) | |
| ▶ AIM (AutoID) | Euromap | W3C (basics) | Energistics (basics) |
| ▶ IO-Link | OMAC | M2M (basics) | MDIS (basics) |
| ▶ VDMA (Vision) | CiA (basics) | SLC (basics) | MTConnect(basics) |
| ▶ OpenFog | IDS (Industrial Data Space) | | |

OPC UA companion specifications

- OPC UA & AutomationML: released
- PLCopen OPC UA Client for IEC61131-3: released
- OPC UA for AutoID: released

- MDIS (Oil&Gas): First interoperability workshop for companion spec done
- OPCF & OMAC: PackML Release candidate, first demo at PackExpo 2016
- (VDMA) Injection molding machine: Release candidate
- (VDMA) Machine Vision: started
- M2M and IDS starting now
- (VDMA) Robotic: under preparation

- VDMA: Preparing an „VDMA Leitfaden OPC UA“
for Hanover Messe 2017
English version later in 2017



OPC UA companion specifications

Basic Process / Rules

INTERNAL	<ul style="list-style-type: none">• Initiated by OPC Foundation members• Commitment from 3 OPC corporate members to join this group• Creation is voted by TAC members• Open only to OPC Foundation members• May have to get official copyright permission if model reflects another standard (e.g. 61850)• Results are voted for release by TAC members. 30 days.• OPC Foundation logo only
JOINT	<ul style="list-style-type: none">• Initiated by other organization – MoU with OPC Foundation• TCB and MCB have to approve• TAC members are informed about work item and progress• Open to OPC Foundation members• Chairman can be of either organization• Results are voted for release by TAC members. 30 days.• Dual logo specification e.g. OPCF + PLCopen• Agreements of use for both organizations
EXTERNAL	<ul style="list-style-type: none">• Initiated by other organization• No requirement on OPC-F involvement or membership• Logo and agreements of use from other organization ONLY• Can be listed on OPC F Web but identified as autonomous

Video's from OPC Day Europe

▶ Get video presentations from OPC Day Europe 2016

The most important sessions of OPC Day Europe 2016 have been recorded - first part is online available now:

- Industrie 4.0 – Status of standardization, Martin Hankel, Bosch-Rexroth
- Reference Architecture Model Industrie 4.0 (RAMI4.0), Roland Heidel
- Results of the OPC UA security Analysis, Jens Wiesner, BSI

.... plus all other video's

- ▶ Just register and you will receive an email with the links to the videos:

<https://opcfoundation.org/event-details/?ee=122>

New OPC “Logo Membership”

- OPCF create additional new member category “Logo member” on Jan 2nd
Benefits membership: <https://opcfoundation.org/membership/benefits/>
- “Logo Members” category companies get:
 - Lowest level membership - without member fees
 - Allowed to make use of OPC UA technology logo
 - Required: Formula with self description of OPC UA enabled product

No access:

- No access to OPC working groups
- No IP protection
- No right to use OPC code under RCL
- No use of the OPC Foundation member logo



To continue in 2016

Check OPC GA 2015 slides
→ Goals for 2016

Well done

OPC UA to become the accepted standard for IIoT and Industrie4.0

Well done

Increase visibility

Well done

Grow into new markets by collaboration

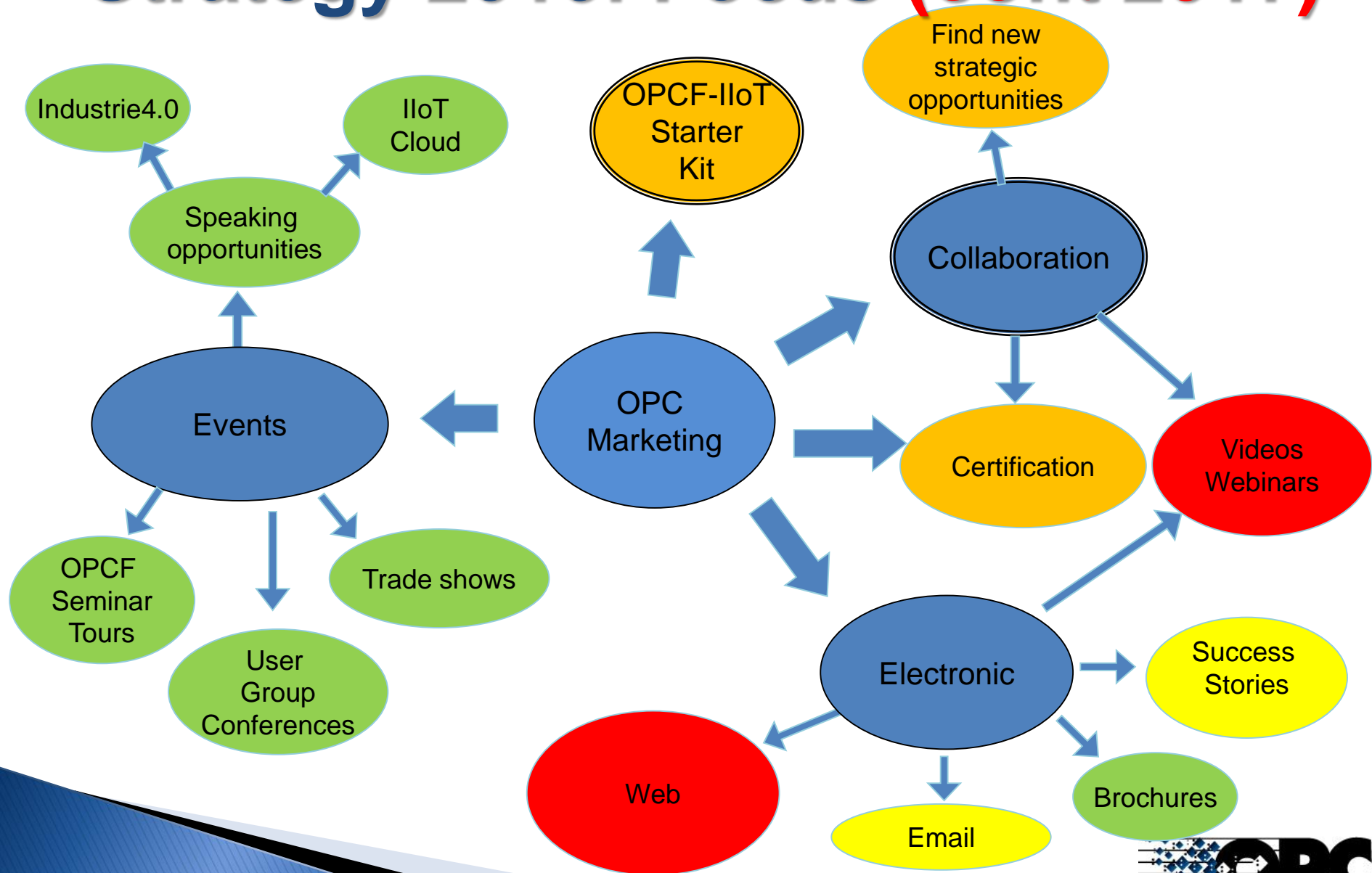
Well done

Provide more content on OPC Foundation web

2017

Create the marketing platform for OPC UA enabled products, devices & machines

Strategy 2016: Focus (cont 2017)



OPC Foundation: Transition



OPC Foundation in the transition...

From “Interoperability Standard for Industrial Automation”

To “The Industrial Interoperability Standard”

... on the way to additional markets



To continue in 2017

- **Seminar tours in North America: current thinking 9 cities
Toronto, Chicago, Cleveland, Philadelphia, San Francisco, Seattle,
Vancouver, Atlanta, Austin**
- **New area's: Singapore / Korea / India**
- **Video's for all collaborations
Basics: OPC UA Technical introduction / Security /
Collaborations: 2 min video (overview) plus 10 min video (more technical)**
- **Grow into new markets by collaboration**
- **Create the marketing platform for OPC UA enabled products, devices &
machines**

Thank you !



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