



OPC General Assembly Meeting 2016



Thomas Burke

President & Executive Director OPC Foundation

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Agenda & Speakers

- ▶ Thomas Burke OPC Foundation Vision
- ▶ Stefan Hoppe OPC Marketing, OPC Collaboration Briefing, 2017 Events
- ▶ Michael Bryant OPC Board Of Director's Election Results
- ▶ Matthias Damm OPC Technology Overview
- ▶ Jim Luth A Message From The CTO, OPC UA Working Group
- ▶ Nathan Pocock OPC Certification

hidrate spark™

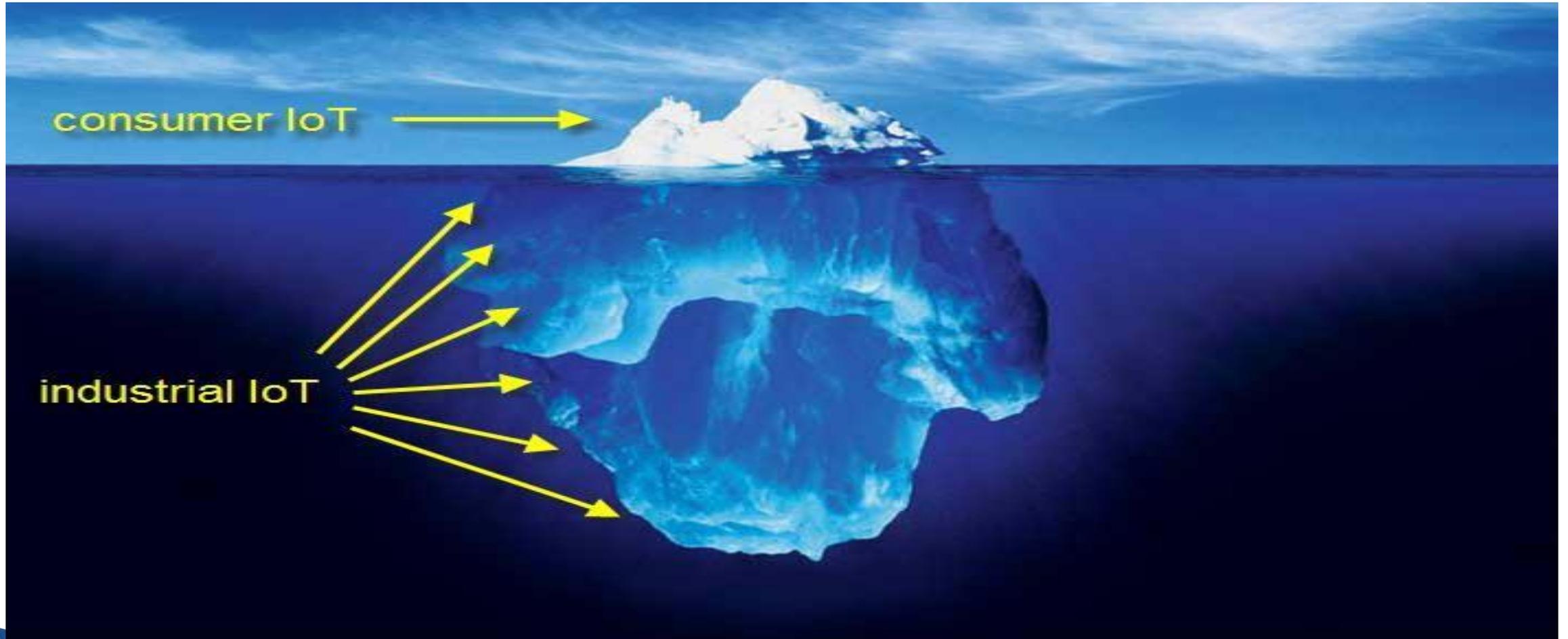
PREORDER

"A CONNECTED WATER BOTTLE
THAT WILL GLOW WHEN YOU NEED
TO TAKE A SIP"

TechCrunch

I WANT ONE

IIoT



World Wide Efforts

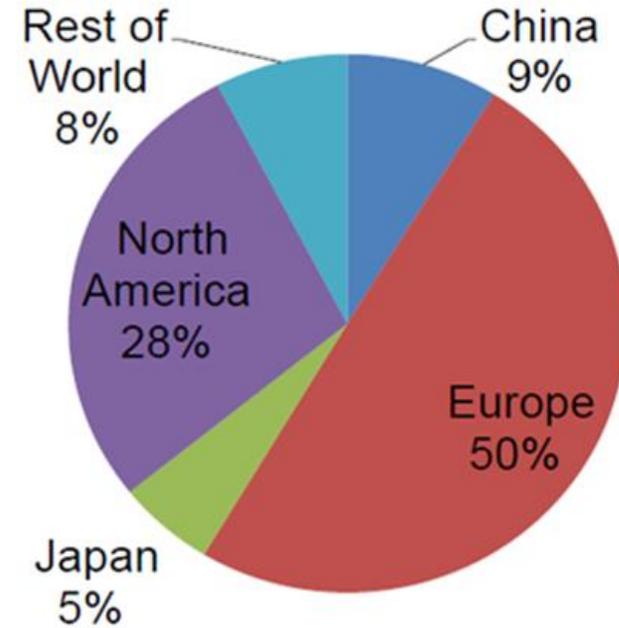


China 2025



OPC Foundation

- ▶ Vision
secure, reliable, multi-vendor,
multi-platform, multi domain
interoperability from sensor to enterprise
- ▶ International
 - Companies from Automation & IT
 - International standard IEC62541



OPC Korea

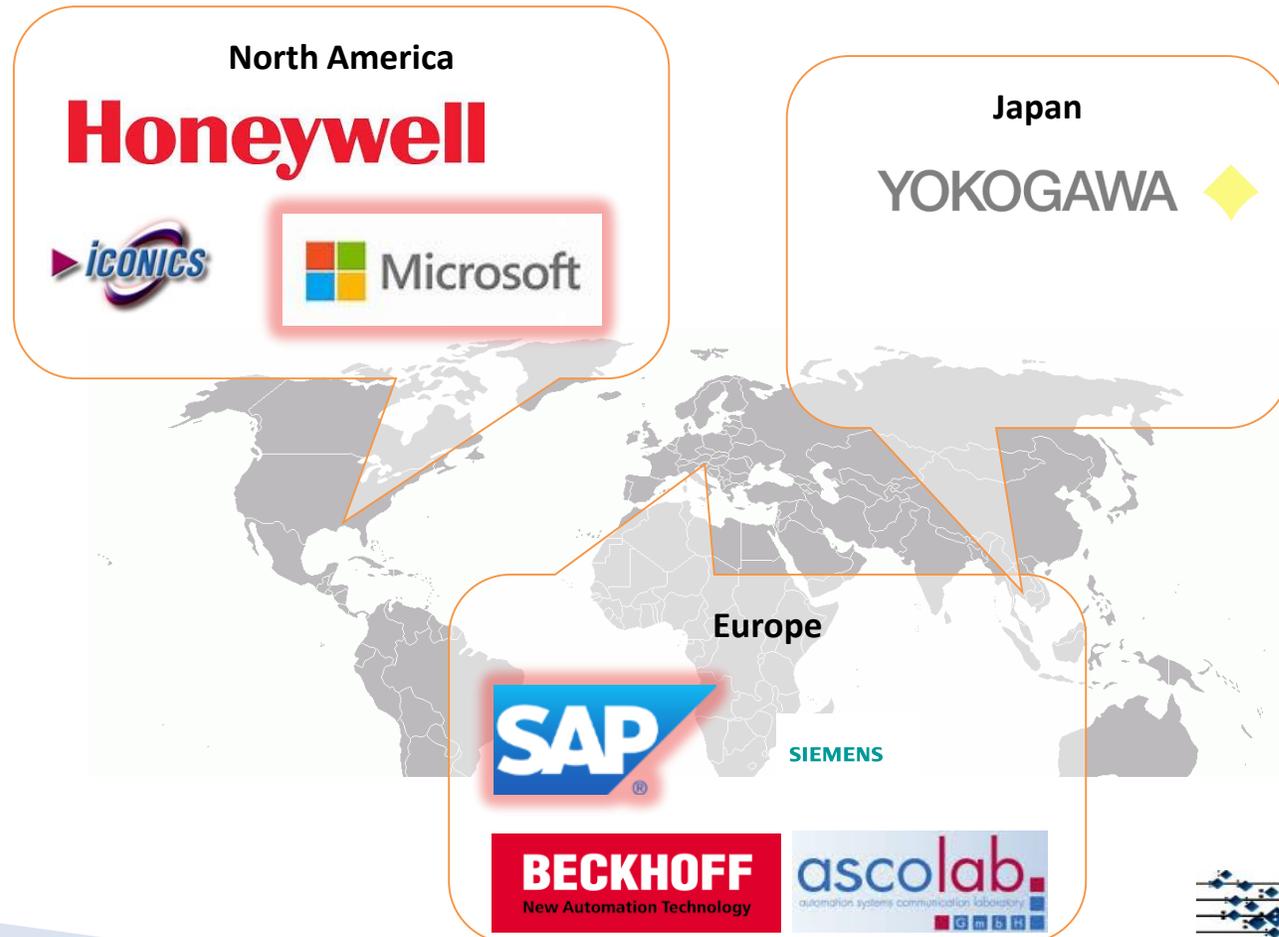


2017 – 2018 Board of Director Voting

- ▶ Russ Agrusa ICONICS
 - ▶ Veronika Schmid-Lutz SAP
 - ▶ Stefan Hoppe Beckhoff
 - ▶ Matthias Damm Ascolab
-
- ▶ 93 Members voted

OPC Foundation Board of Directors

- ▶ International board – democratic elections by members every year
 - Companies from Automation & IT

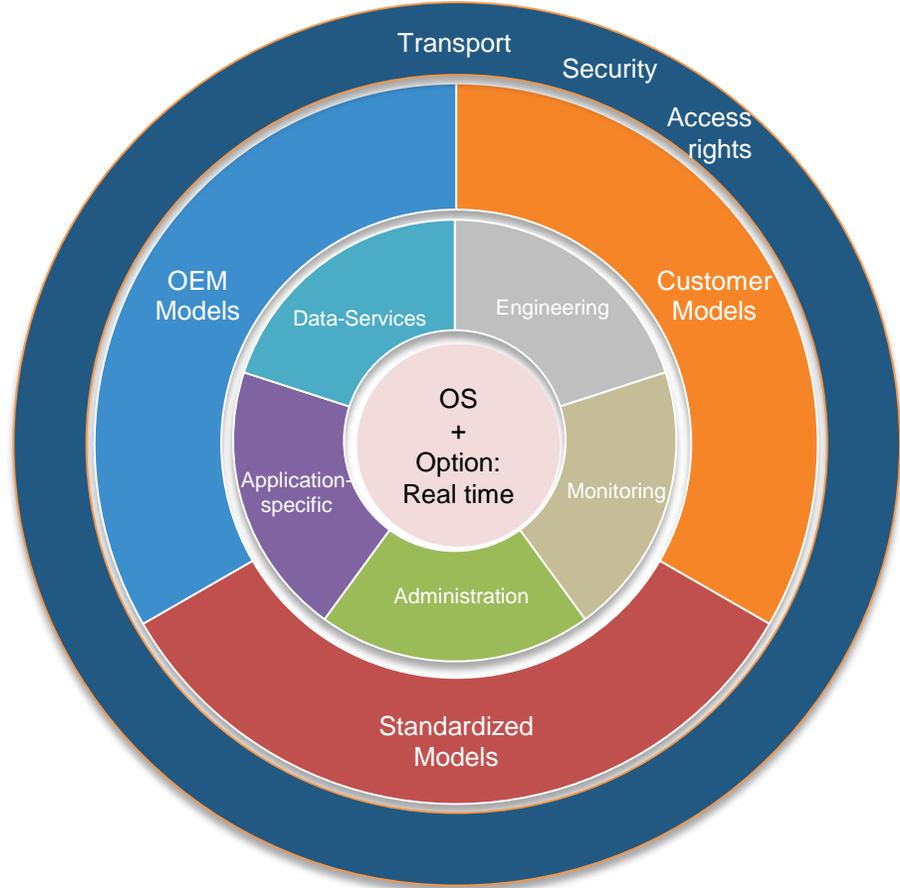


OPC Adoption!

- ▶ By the Numbers!
 - Statistics as of June 1, 2016
 - Companies building OPC products 4200+
 - Number of OPC products 35,000+
 - Number of OPC installations 47 million+

Connecting things in IIoT, M2M, ...

Requirements



Service Oriented Architecture (SOA)

- Device provides **Services** and **Discovery** of Services
- **Standardized** Access

Support of

- **Interoperability**
- **Security**: Rolls of access per user
- **Information-Modeling**
Type and Data consistency

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.

PLCopen
for efficiency in automation

BACnet
INTEREST GROUP EUROPE

m2m
alliance

AVM
Netzwerk für Automatische
Datenfassung, Identifikation und Mobilität

**MES
DACH
VERBAND**

ISA

FDI
COOPERATION

FDT Group

OMAC
The Organization for Machine
Automation and Control

MDIS

energistics
Energy Intelligence

MTConnect

OPC UATM

EUROMAP
European Plastics and Rubber Machinery

VDMA

<AutomationML/>

CLPA
CC-LINK
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EtherCAT
Technology Group

IO-Link

ODVA

PI
PROFIBUS · PROFINET

**ETHERNET
POWERLINK**
Standardization Group

**INDUSTRIAL
DATA SPACE e. V.**

**SERCOS
international**

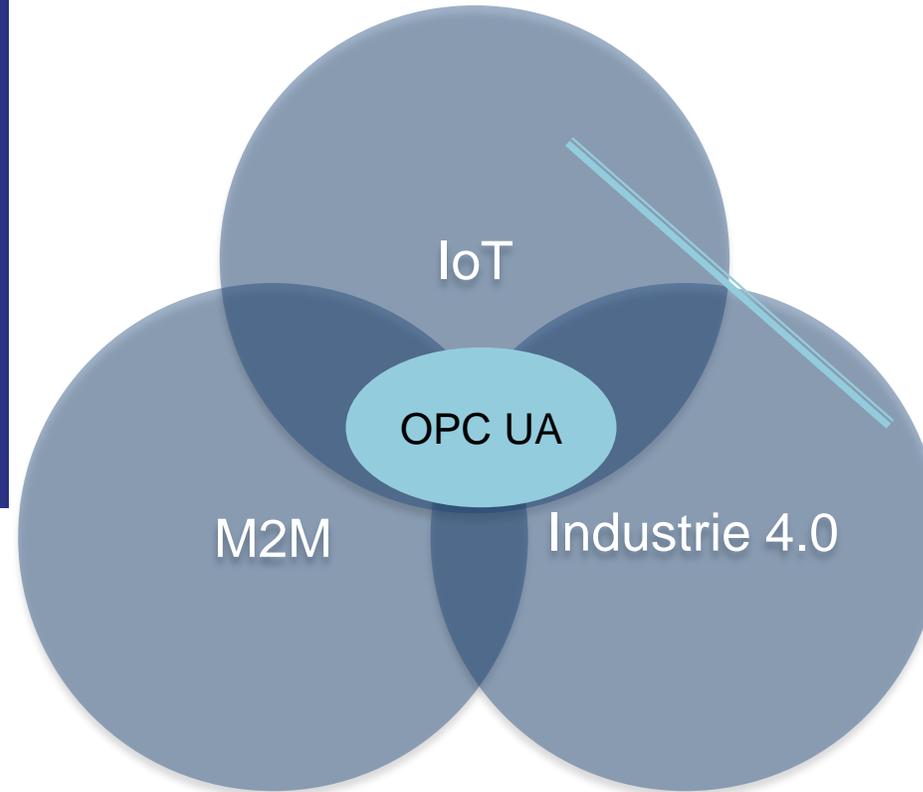
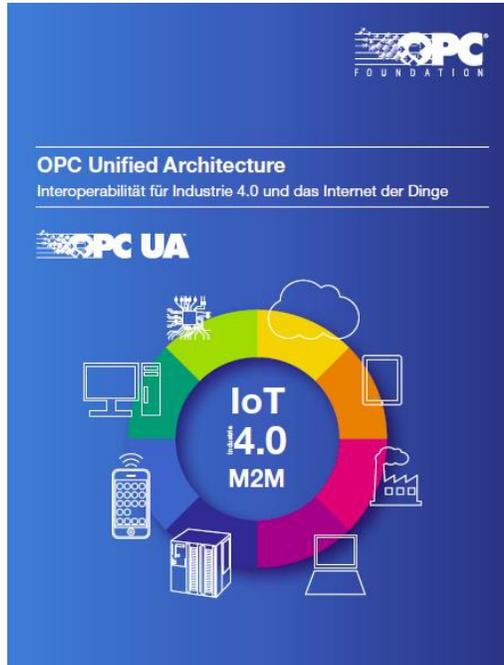
CiA

New logo's integrated:

- VDMA
- Industrial Data Space
- CAN in Automation (CiA)
- IO-Link
- CLPA

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OPC UA & Internet of Everything



OPC Unified Architecture

OPC UA – Videos (Commitment)

Commitment from big brand companies

Siemens, SAP, Microsoft, Mitsubishi, FESTO, National Instruments, BECKHOFF, Harting, ..others

https://youtu.be/HmjewoXqG_w

Rohit Bhargava
Microsoft, CTO Worldwide Discrete Manufacturing

Thomas Hahn
SIEMENS, Chief Expert Software

Veronika Schmid-Lutz
SAP, Chief Product Owner Manufacturing

Olaf Wilmsmeier
HARTING, Product Manager Software

OPC Unified Architecture Interoperability for Industrie 4.0 and the Internet of Things

OPC pod at Microsoft booth

...always overcrowded...



OPC-UA flyer about Azure IoT

Microsoft commitment: Flyer about OPC UA integration into Azure

Microsoft

5 Clicks to Digital Factory: Connect your Machines easily with Industry-4.0-Standard OPC UA to the Cloud

Microsoft and the OPC Foundation (www.opcfoundation.org) have worked closely together over the last number of months to deeply integrate OPC UA into the Azure IoT Suite. The result of this collaboration is a reference implementation available open-source on the OPC Foundation's GitHub (<https://github.com/opcfoundation>). The architecture of the implementation is shown in the following diagram:

The diagram illustrates a four-step process for connecting industrial devices to the cloud:

- 1 Direct telemetry channel:** Industrial Devices (OPC and OPC UA Servers) connect directly to the Cloud Gateway IoT Hub.
- 2 Telemetry channel via OPC Publisher:** Industrial Devices connect to an OPC Publisher, which then connects to the Cloud Gateway IoT Hub.
- 3 Field Gateway/Relay:** Industrial Devices connect to a Field Gateway/Relay, which then connects to the Cloud Gateway IoT Hub.
- 4 Cloud Services:** Data from the Cloud Gateway IoT Hub is processed by Microsoft Azure services, including OPC Client & Visualizations, Hot Path Analytics, and Presentation & Business Connections.

1 Direct telemetry channel:
Pub/Sub
New OPC UA Servers supporting the upcoming Publisher/Subscriber specification extension have the ability to publish OPC node data to Azure IoT Hub for telemetry data via JSON/AMQP messages directly.

2 Telemetry channel via OPC Publisher
Existing OPC Servers (both OPC and OPC UA) will always support the UA-Binary protocol. The OPC Publisher connects to these servers and subscribes to OPC nodes available on the servers and publishes them to Azure IoT Hub for telemetry data via JSON/AMQP messages.

3 Field Gateway/Relay
If edge intelligence (e.g. analytics) or store and forward for lossy connections to the cloud are requirements, a Field Gateway is additionally required. It can also act as a Relay for UA-Binary-encoded command and control messages and responses. Note that the OPC Publisher and Field Gateway can also be integrated into a single device, if required. Note that Azure IoT device management agents (per device) will run in parallel, to manage device firmware updates and settings.

4 Cloud Services
Customers can program Industry 4.0 Services, e.g. ERP services, process optimization services, manufacturing on demand services, etc. against an OPC Graph Database and API, or they can simply run OPC Clients for visualization in the cloud. A reference implementation for both will be provided by us open-source.

Contact:
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Ingo.Oppelt@microsoft.com

Microsoft

»OPC UA is an essential component of the connected products that manufacturing customers need today, and it is increasingly seen as an important part of enterprise IoT scenarios and business models. In keeping with our commitment to openness and collaboration, Microsoft is fully committed to supporting OPC UA and its evolution.

Matt Vesny, Director of IoT Business Development, Microsoft, OPC board member

Microsoft

»The road to industrial cloud analytics leads through OPC UA.«

Clemens Vatter, Principal Program Manager, Microsoft Azure and OPC Technical Advisory Council Member

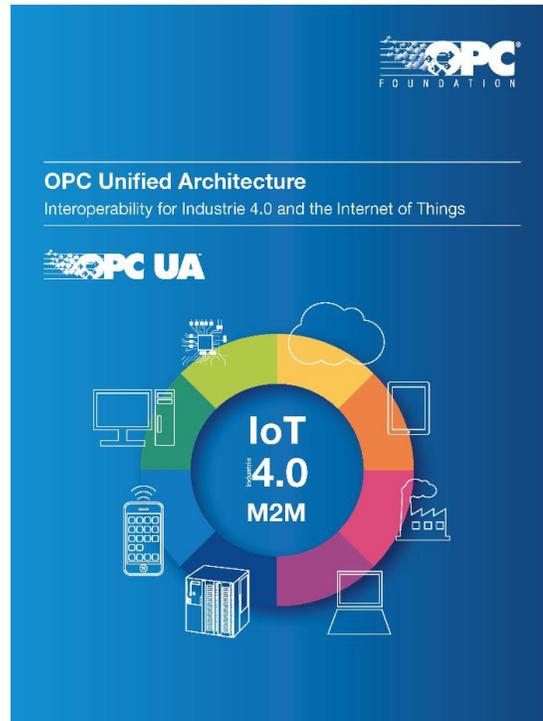
OPC UA is an essential foundation for the convergence of OT and IT, providing a standardized communication, security and metadata/semantics abstraction for almost all industrial equipment. From an IT perspective, OPC UA is the programming interface of the "connected factory" and any other industrial facility and a critical enabler for Industrial Internet of Things (IIoT) as well as the Reference Architecture Model for Industry 4.0 (RAMI4.0) adoption.

OPC UA also serves as a critical gateway technology to cloud-enable industrial equipment, en-

abling data and device management, insights, and machine learning capabilities for equipment that was not designed to have these capabilities built-in. The cloud enables globally-available, industry-specific Software as a Service (SaaS) solutions that are cost-prohibitive to stand up for each industrial facility on its own. As customers and partners collaborate to modernize their plants and facilities, OPC UA is delivering digital transformation simply and easily. Microsoft's support of OPC UA offerings will reduce barriers to IoT adoption and help deliver immediate value.

Brochure

- ▶ Brochure: “Interoperability for Industrie 4.0 and the Internet of Things”
- ▶ Print & online version available in English / German / Chinese / Japan
<https://opcfoundation.org/resources/brochures/>



- ▶ Testimonials
- ▶ Technology
- ▶ Collaboration
- ▶ Success Stories
- ▶ Getting Started

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Thank you



**OPC UA: The worldwide
accepted standard for M2M, IIoT
and Industrie4.0**

- ▶ **OPC Foundation**
www.opcfoundation.org

- ▶ **Thomas J. Burke**
- ▶ **OPC Foundation President**
 - ▶ **& Executive Director**

