OPC FOUNDATION®

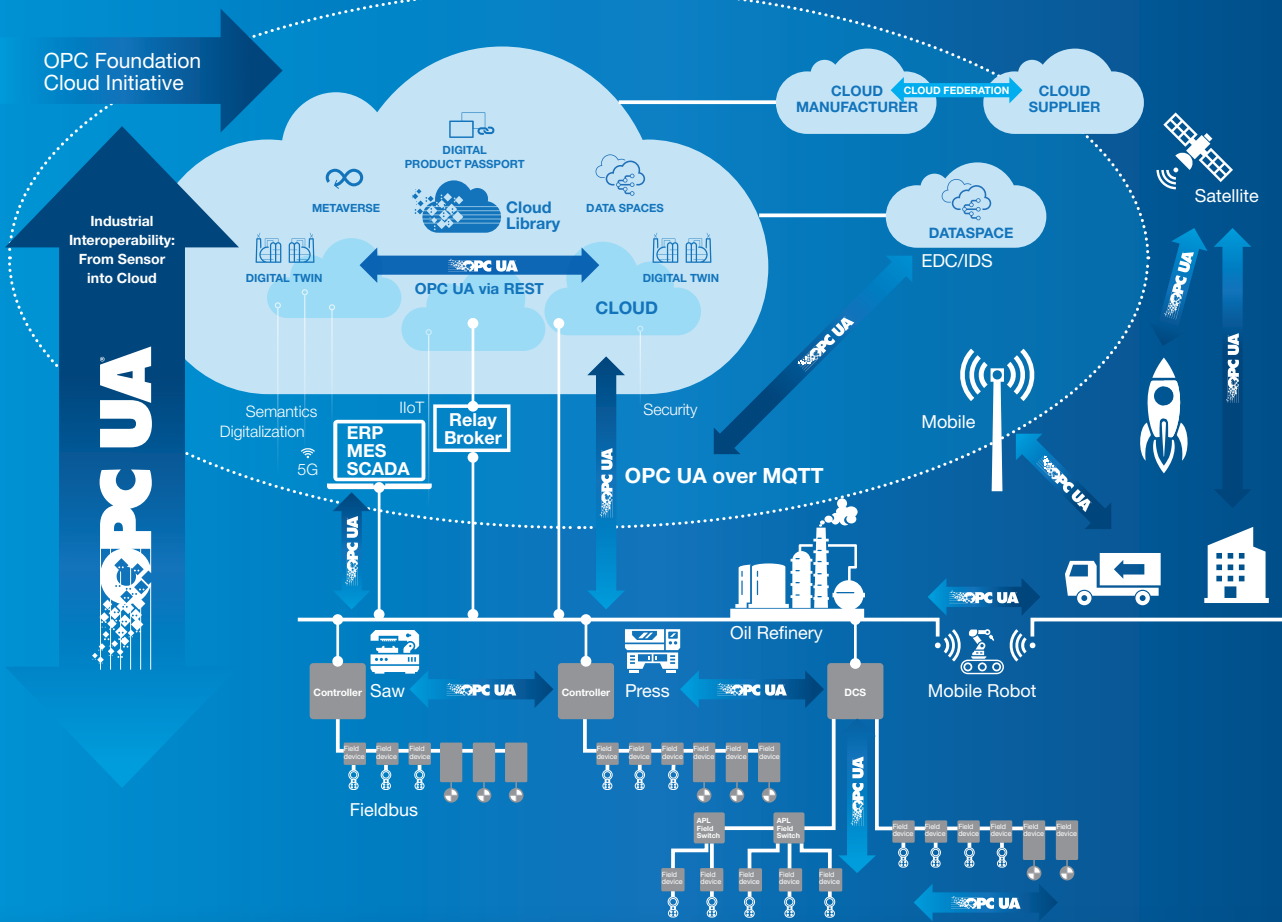# OPC Foundation Cloud Initiative
The Industrial Cloud Interoperability Standard

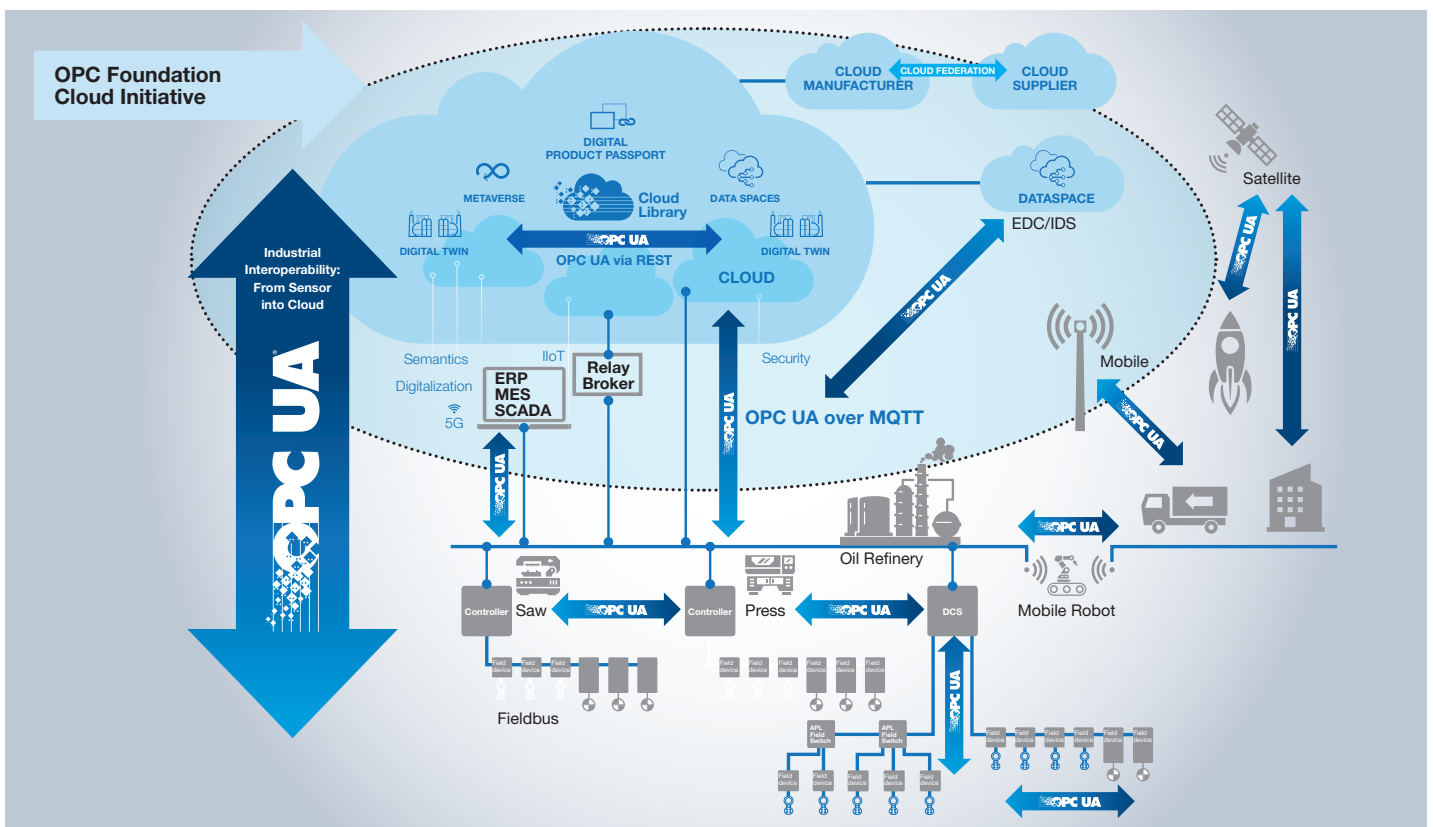**Silent Update // November 2024**

OPC Foundation
Cloud Initiative

Industrial
Interoperability:
From Sensor
into Cloud

OPC UA

DIGITAL
PRODUCT PASSPORT

METAVERSE

Cloud
Library

DATA SPACES

CLOUD
MANUFACTURER   CLOUD FEDERATION   CLOUD
SUPPLIER

Satellite

DATASPACE
EDC/IDS

DIGITAL TWIN

OPC UA
OPC UA via REST

DIGITAL TWIN

CLOUD

OPC UA

OPC UA

Mobile

Semantics
Digitalization

IIoT

Security

ERP
MES
SCADA

Relay
Broker

5G

OPC UA over MQTT

OPC UA

Oil Refinery

OPC UA

OPC UA

Mobile Robot

OPC UA

Controller   Saw

OPC UA

Controller   Press

OPC UA

DCS

Field
device   Field
device   Field
device

Field
device   Field
device   Field
device   Field
device   Field
device   Field
device

OPC UA

Fieldbus

APL
Field
Switch

APL
Field
Switch

Field
device   Field
device   Field
device   Field
device   Field
device

Field
device   Field
device   Field
device   Field
device   Field
device

OPC UA

Supporting cloud providers

Alibaba Cloud   aws   Google Cloud   HUAWEI   Microsoft   SAP

Working Groups (WG) coordinated by the OPC Foundation Cloud Initiative

1 UA Cloud Library
A query-able online store of OPC UA Information Models.

2 OPC UA over MQTT
Secure transport from edge to cloud and cloud to cloud.

3 OPC UA over MQTT Prototyping
Verification of the specifications by implementation in more than 2 products

4 OPC UA over MQTT Testbed
Testing the OPC UA over MQTT communication of available products for interoperability

5 OPC UA REST Interface
Easy access to OPC UA information for the IT world via a standardized REST interface

6 OPC UA WoT Connectivity
Standardized industrial connectivity software configuration.

7 OPC UA Industrial Metaverse
Connecting the virtual and real world with OPC UA

8 OPC UA AI
Leveraging Large Language Models for and with OPC UA

9 OPC UA Data Space (in planning)
Provide decentralised semantic OPC UA information to central Data Spaces but keeping Data sovereignty

OPC UA – One harmonized Solution – Scaling from Field to IT/Cloud and Inside IT/Cloud

Goals

Digitalization in manufacturing is resulting in a world divided between those who possess and effectively utilize data and those who lack access to those resources. This is a barrier to both corporate success and macro-economic growth. Legislators (such as the EU with the upcoming Data Act) are responding to this by requiring vendors to share data among much broader eco-systems. In parallel to require broader eco-systems, central use-cases for traceability like the Digital Product Passport (DPP) and security aspects like in the Cyber Resilience Act (CRA) are defined.

At the OPC Foundation, we believe that this will create a greater need for interoperability of end-to-end information models and data communication to support these legislative demands.

We will replicate the best-practice collected in the OPC Foundation Field Level Communications Initiative bringing in experts in applications to complement the technology experts from the OPC Foundation. The OPC Foundation Cloud Initiative will bring greater focus of existing working groups on actionable user challenges and opportunities for enhancement and initiating new working groups to develop OPC UA technology into new cloud-centric applications.

Deliverables

– Standardized interoperability:
Accelerate **interoperability of IT and cloud applications** using OPC UA, e.g. data analytics using AI, industrial data spaces, digital product passports, industrial metaverse was well as digital twin applications.

– Best practices:
Create a **cloud reference architecture** to provide best practices, increase standardized data sharing and cloud-optimized profiles for the OPC UA standard.

– Semantic Data Models in the Cloud:
Maintain OPC UA Information Models (Companion Specifications) in the cloud to utilize the context of data in cloud services.

– Establish a new **Protected Identity** for OPC UA Cloud eXchange "UACX".

– Establish validation and certification for OPC UA Cloud Interoperability.

Detailed descriptions of the existing working groups, URLs for the open source reference code and further information can be found here:
www.opcfoundation.org/cloud

Supporting cloud providers

Alibaba Cloud · aws · Google Cloud · HUAWEI · Microsoft · SAP

Supporting end-users

Boehringer Ingelheim · Continental ContiTech · DANONE ONE PLANET. ONE HEALTH · equinor · L'ORÉAL OPERATIONS · Miele · Mondelēz International SNACKING MADE RIGHT · Renault Group · JTI · Tetra Pak PROTECTS WHAT'S GOOD™ · VOLKSWAGEN AKTIENGESELLSCHAFT

Supporting automation providers

ABB · BECKHOFF · Honeywell · MITSUBISHI ELECTRIC Changes for the Better · Rockwell Automation · Schneider Electric · SIEMENS · YOKOGAWA Co-innovating tomorrow™

Interested? Join us!

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