

# OPC UA

the interoperability standard  
for Industry 4.0 applications

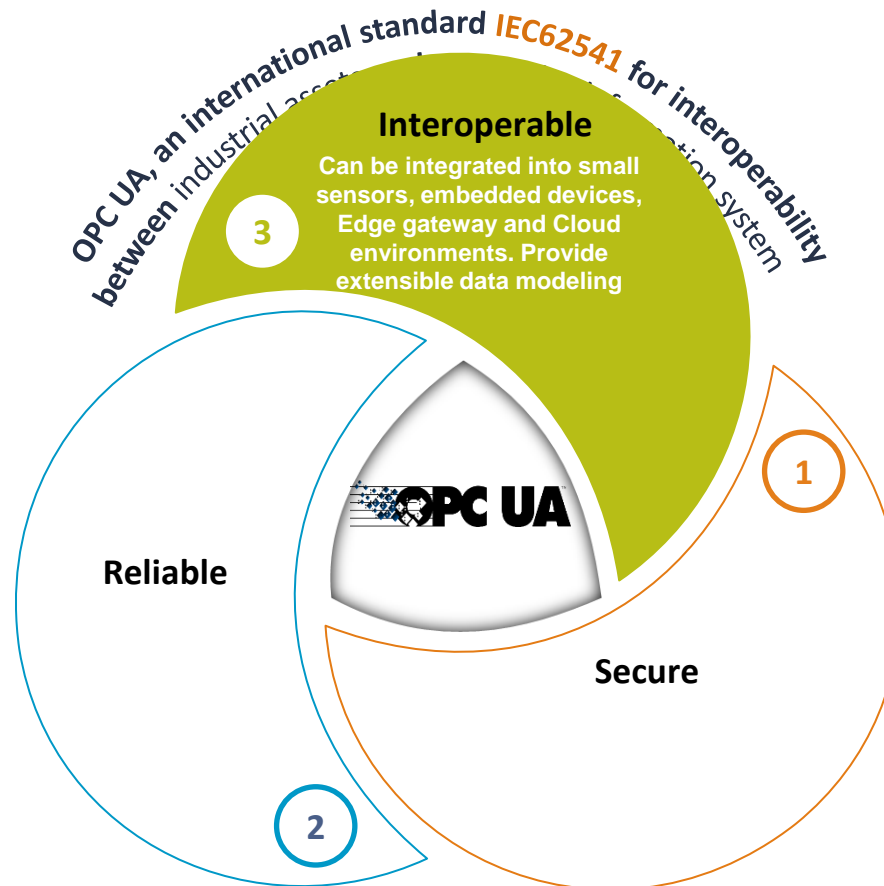
Capgemini  
Week of  
Innovation  
Networks

*Presented by Eric OURSEL  
Software Architect*

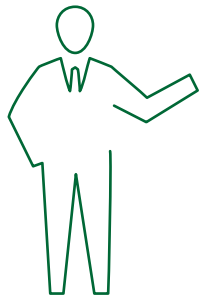
*Toulouse, September 28<sup>th</sup>*

*#CWIN17*

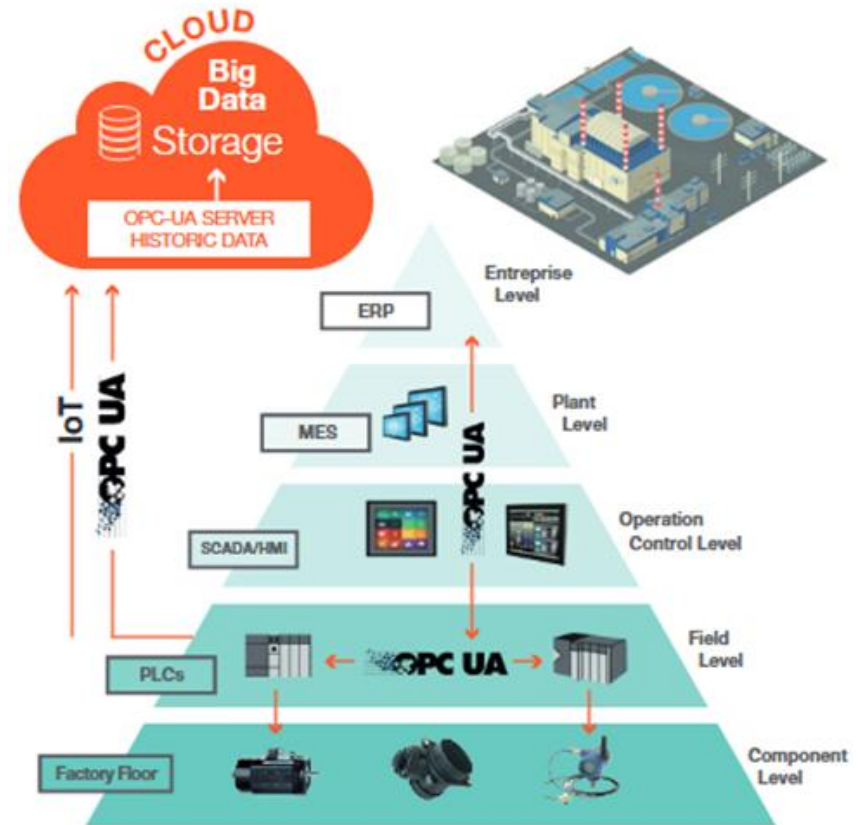
# What is OPC UA? *Definition and benefits*



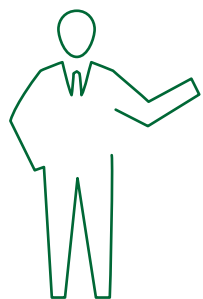
# OPC UA, a standard for Industrial Automation applications



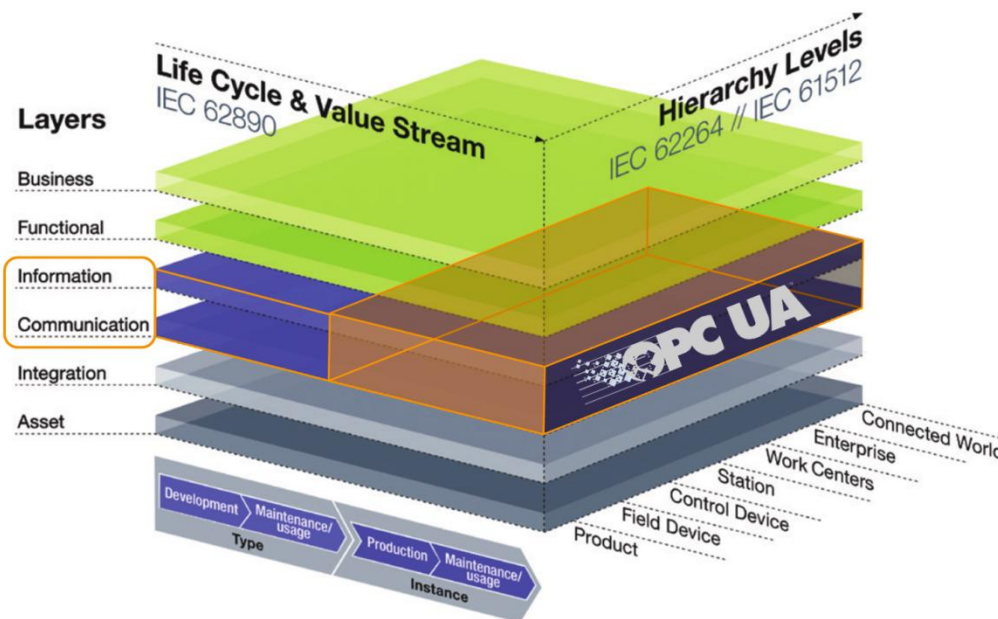
- Born in industrial automation market (Sensors, Actuators, PLC, Supervisory, MES, ERP).
- A key opener to Industrial IoT applications and Cloud applications.



# OPC UA, right in the core of Industry 4.0



■ **The Reference Architecture for Industry 4.0** has designated OPC UA as the mandatory communication standard for every Industry 4.0 product



© Plattform Industry 4.0

# OPC UA & Industry 4.0, an international partnership



Plastics rubber machinery

Robotics



Machine Vision



Integrated Assembly Line



Time Sensitive Networks



Cloud Integration



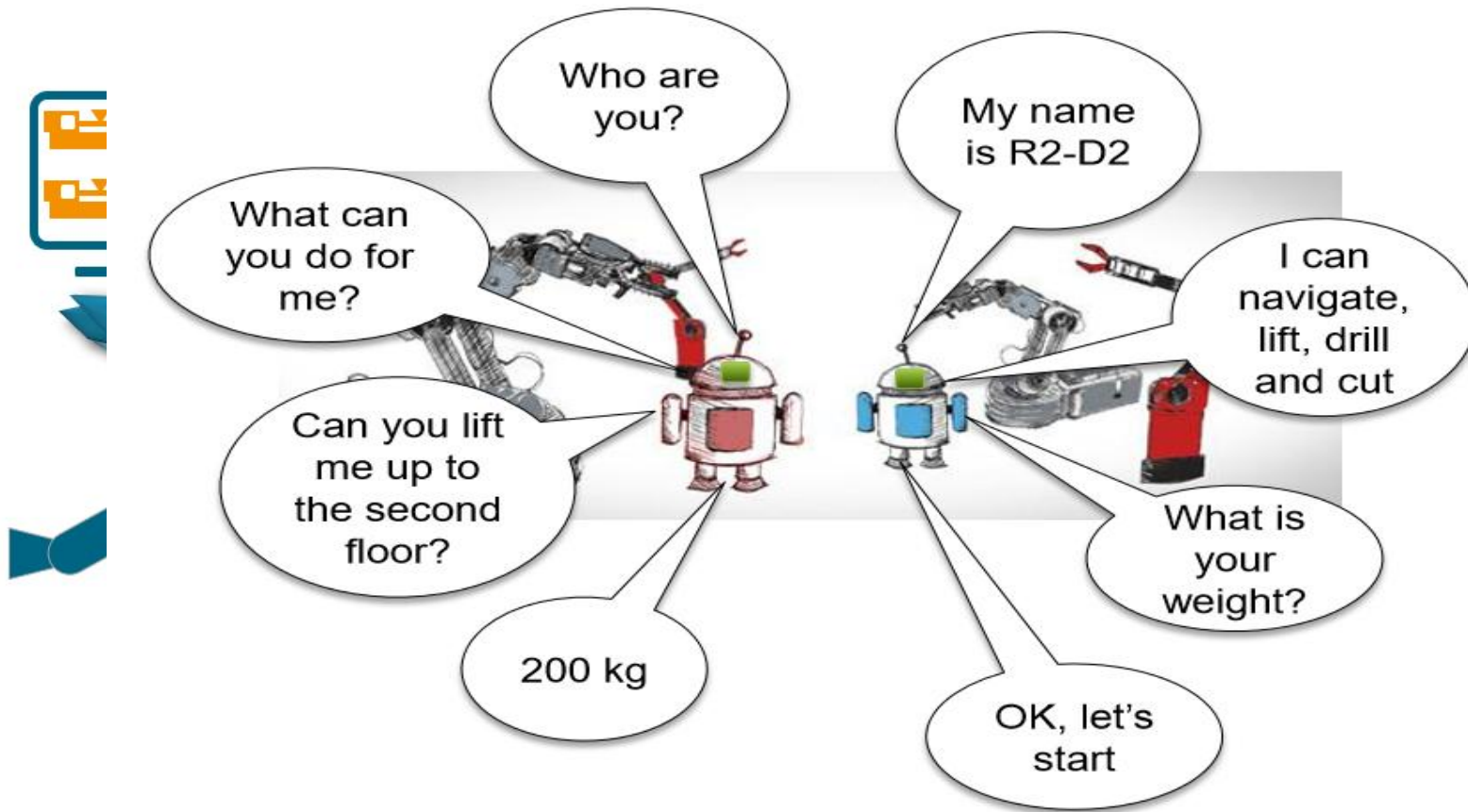
- Standardization organizations and major industrial companies are working together to create the future Industry 4.0 standards.
- Main technical challenges for Industry 4.0 (In Progress Innovation), create companion specification for selected domains.



# Companion specifications solve interoperability between different devices



The definition of information models enables the standardization of communication between machines/robots/software



© OPC Foundation, Matthias Damm



## OPC UA Showcases and Demonstrators

# Showcases and demonstrators



**smartFactory<sup>KL</sup>**

Hannover Messe, 24th to 28th April 2017

[https://www.youtube.com/watch?v=9R\\_P8FpslBY](https://www.youtube.com/watch?v=9R_P8FpslBY)



**OPC UA Ready devices for system integration into Smart Factories**



**OPC UA Ready Cloud environments for Industrial IoT applications**



**Device of the Week (September 20<sup>th</sup>)**  
**MOXA MC-1121**  
**Integrated on MS IoT Hub**



# Remote Terminal Units are becoming OPC UA Compatible



The Tbox RTU is a perfect example of an industrial communication device which is now OPC UA compatible.

Field Monitoring & Control

Modbus  
IEC 61850



EtherNET/IP  
Discrete I/Os



Agnostic HTML5  
Web Pages



Text Messages  
Emails

Internet, Intranets,  
Cellular & Wireless Networks, ...

FTP/HTTP  
MQTT/...

OPC UA  
DNP3  
IEC 60870-5-104  
and many more...



Reports / Big Data  
Business  
Intelligence



SCADA Systems

# OPC UA for SmartGrid networks Use Case

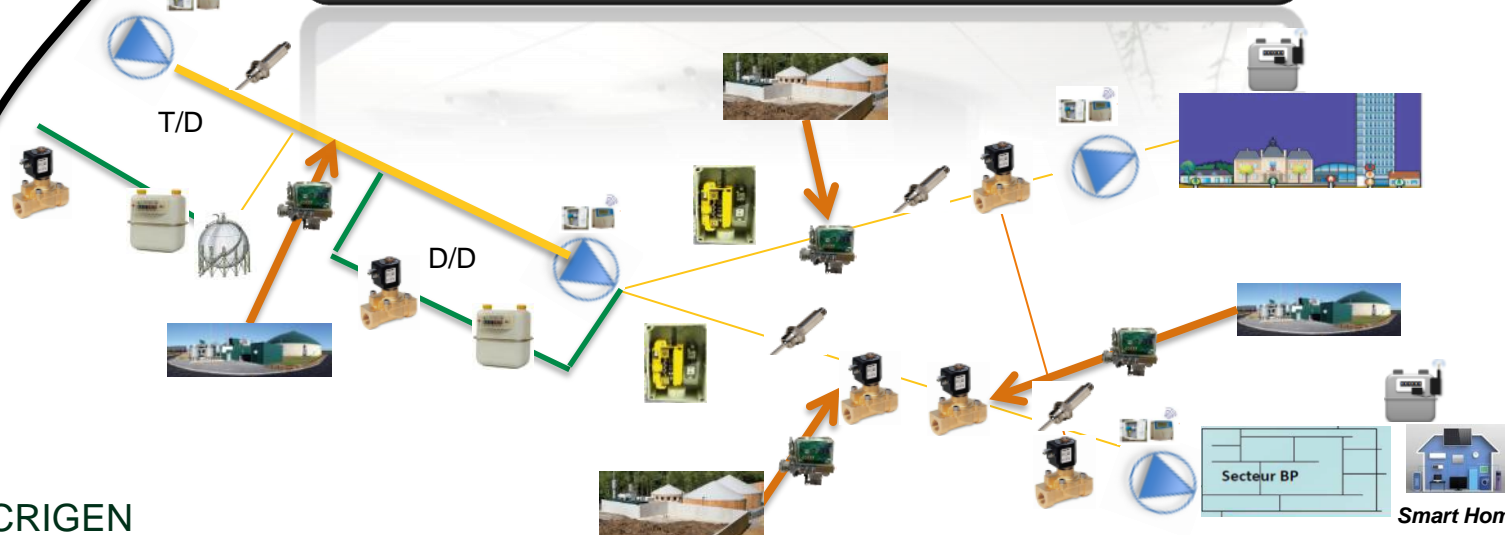
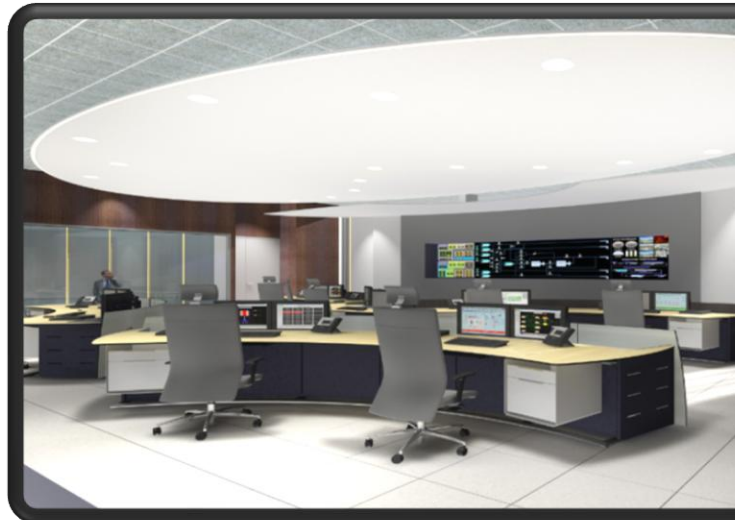
## Research Project GONTRAND : A SmartGrid approach to Gas distribution.



PIDT

T/D

D/D

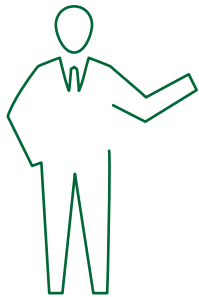


© Gontrand Project, CRIGEN



**More information about OPC Foundation and OPC UA**

# OPC Foundation, An international standardization committee



**Capgemini is a corporate member of OPC Foundation**

- More than 500 industrial companies, end users, software vendors, software integrators
- Mission:
- Define the standard and companion specifications
- Validate the software and provide a certification program
- Promote the technology and collaborate with others standardization organizations (ISA, VDMA, IIC, MDIS, BACNET)
- Publish open source starter kits.



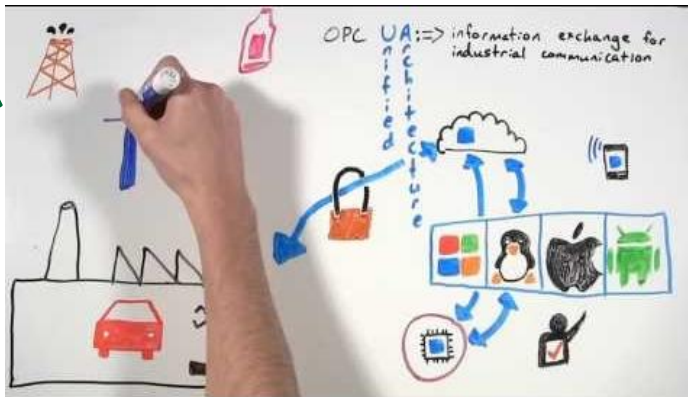
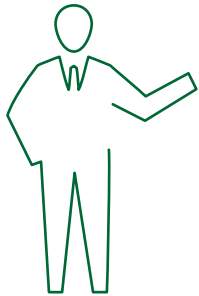
## OPC Foundation Ecosystem

OPC Foundation Website: <https://tinyurl.com/y5cajp>

 @OPCFoundation



# Extra materials on OPC UA

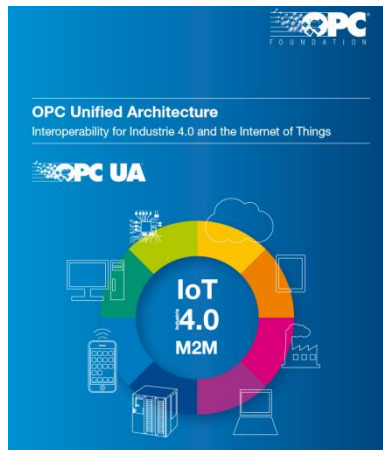


**Video OPC UA in 3 minutes:**

<https://www.youtube.com/watch?v=nyju913laxI>

**Videos: Commitment from big brand companies**

<https://youtu.be/pFfyjpexa2o>



**OPC UA Brochure:**

<http://bit.ly/2sTulmv>





Download: [ical](#) | [vcal](#)

## Convention OPC UA France

**17 octobre 2017**

Bloquez vos agendas !

Sogeti High Tech et l'ensemble de la communauté OPC UA France vous donne rendez-vous le **mardi 17 octobre de 9h à 12h30** pour découvrir la **norme d'interopérabilité de l'industrie du futur**.

Le président de la Fondation OPC **Tom Burke** sera présent pour le discours d'ouverture de cette matinée exceptionnelle en France.

Cette journée vous offrira l'opportunité de rencontrer tous les offreurs de solutions OPC UA.

Lors d'une grande table ronde, des industriels français témoigneront de leur expérience dans la mise en œuvre de cette technologie au sein de leur entreprise.

**Rendez-vous le 17 octobre 2017 au HIVE - 35 Rue Joseph Monier - 92500 Rueil-Malmaison.**

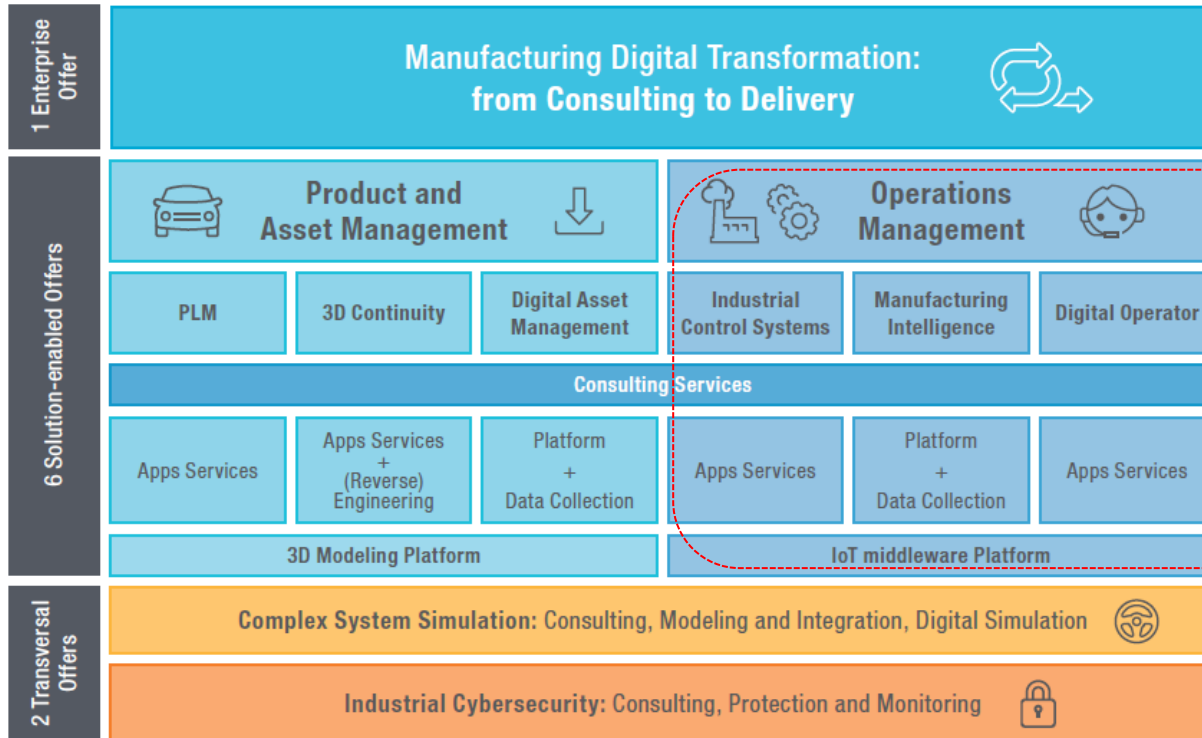
Le nombre de places est limité. **Inscrivez-vous vite!** <https://tinyurl.com/y7fd5qgt>





## Our Offer and Services

# OPC UA right in the Capgemini Digital Manufacturing portfolio



**OPC UA is mostly used in operations management services**



Unifier sa communication industrielle avec OPC UA

Une solution « Plug & Play » pour optimiser l'interopérabilité de vos systèmes industriels



Check our OPC UA brochure  
<https://tinyurl.com/yc3vvx7r>

Pour améliorer la qualité et la compétitivité des entreprises manufacturières, l'usine 4.0 révolutionne les usages industriels, et fait le choix d'opter dans son programme, le standard OPC UA au sein des usines de communication industrielle entre les équipements industriels. OPC UA est un standard d'échange de données adapté aux besoins d'interopérabilité des systèmes industriels et de l'IT.

Indépendant de tout constructeur et multibranche, OPC UA rend l'ensemble des systèmes industriels, tout en garantissant un haut niveau de sécurité, grâce à la prise en compte des derniers standards de cybersécurité. Ce standard permet l'échange de données et l'intégration de modèles métiers utilisés dans l'industrie. Les machines peuvent ainsi communiquer entre elles, s'adapter aux évolutions des chaînes de production, et apporter de l'intelligence dans les échanges avec les systèmes MES, ERP, IoT industriel. Flexible et complètement sécurisé, OPC UA est le protocole de communication privilégié dans la mise en œuvre d'un plan de transformation digitale réussi.

\*Open Connectivity - Global Architecture



# Our Value proposition



## Consulting

- Build state of the art architectures for Digital Manufacturing, Energy utilities, railway and airports infrastructures
- Build architectures with end to end interoperability for industrial control systems (data collection, supervisory systems, MES , Data Historian and industrial ERP
- Digital transformation of industrial information systems

## Integration

- OPC UA Information Modeling from existing interoperability standards (ISA 95, IEC61850)
- System Integration with OPC UA/OPC COM servers, clients, and proprietary DCS and PPLC
- System Integration with SCADA and Data Historian products with OPC COM/OPC UA and others industrial communication protocols
- Custom OPC UA servers and clients

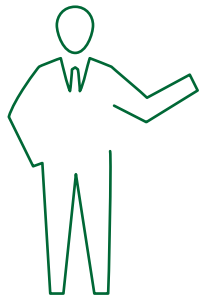
## 3<sup>rd</sup> Party Application Maintenance

- OPC Servers and Clients, PLC, SCADA, MES

## Training

- OPC UA overview and concepts
- Software development of OPC UA software solutions

# Lessons learnt and how to begin your journey with OPC UA



- OPC UA is not Science Fiction. It is applicable today in production
- Start from business requirements No big bang but progressive modernization of industrial existing architectures.
- Architecture driven methodology, Agile Methodology, Build Proof of Concepts
- Build on top of existing commercial software or open source. Many possibilities.



# Thank You!

Capgemini  
Week of  
Innovation  
Networks



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Software Architect



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## About Capgemini and Sogeti

With more than 180,000 people in over 40 countries, Capgemini is one of the world's foremost providers of consulting, technology and outsourcing services. The Group reported 2016 global revenues of EUR 12.5 billion. Together with its clients, Capgemini creates and delivers business, technology and digital solutions that fit their needs, enabling them to achieve innovation and competitiveness. A deeply multicultural organization, Capgemini has developed its own way of working, the Collaborative Business Experience™, and draws on Rightshore®, its worldwide delivery model.

Sogeti is a leading provider of technology and software testing, specializing in Application, Infrastructure and Engineering Services. Sogeti offers cutting-edge solutions around Testing, Business Intelligence & Analytics, Mobile, Cloud and Cyber Security. Sogeti brings together more than 23,000 professionals in 15 countries and has a strong local presence in over 100 locations in Europe, USA and India. Sogeti is a wholly-owned subsidiary of Cap Gemini S.A., listed on the Paris Stock Exchange.

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