

# IOT Innovation Summit

October 8 2019  
Brussels



Alliance for  
Internet of Things  
Innovation



# IOT Innovation Summit



Next speaker

Juergen Sturm  
Chairman of AIOTI  
Management Board



# IOT Innovation Summit



Next speaker

Wael El Rafai  
VP, Digital Insights Solution  
Engineering, Hitachi Vantara



# Chaos & complexity; curiosity & innovation

Wael Elrifai  
Hitachi vantara;





Thank you!

Wael.ElRifai@HitachiVantara.com

# IoT & quality of urban life



# IOT Innovation Summit



Next speaker

Nicolas Richet  
ENTSO-E



# Potential of IoT in energy transition and climate mitigation

AIOTI Event

Nicolas Richet - ENTSO-E CIO

Brussels, 08 October 2019

# ENTSO-E and IoT ?

Electricity : THE essential commodity of  
“developed” economies ?

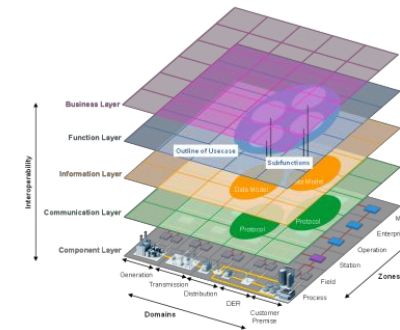
Digital : the critical enabler of the modern  
power system

The electrical power system : a cyberphysical  
system of systems



From  
supporting  
decarbonization ...

... to  
bringing  
water  
to citizens





# What is this ?



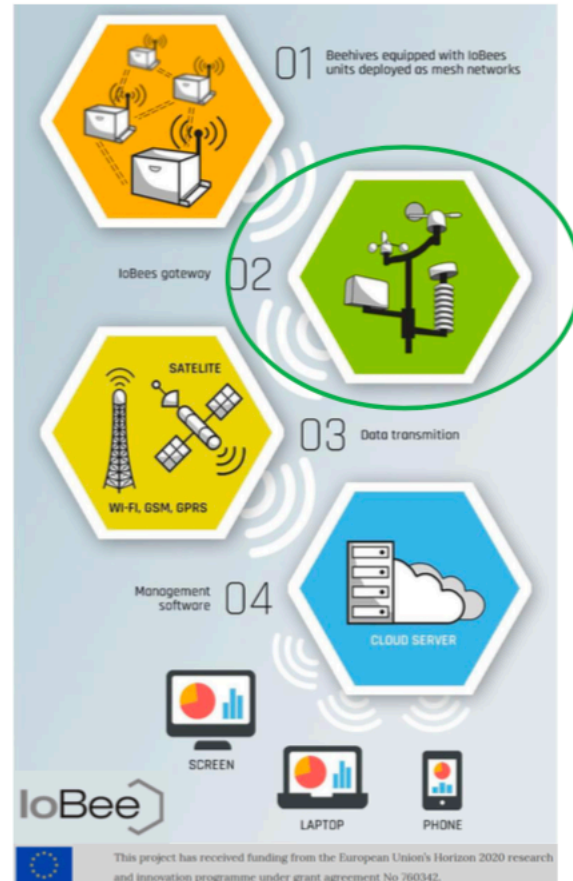
A beehive

A monitoring  
unit

## A “Thing” !



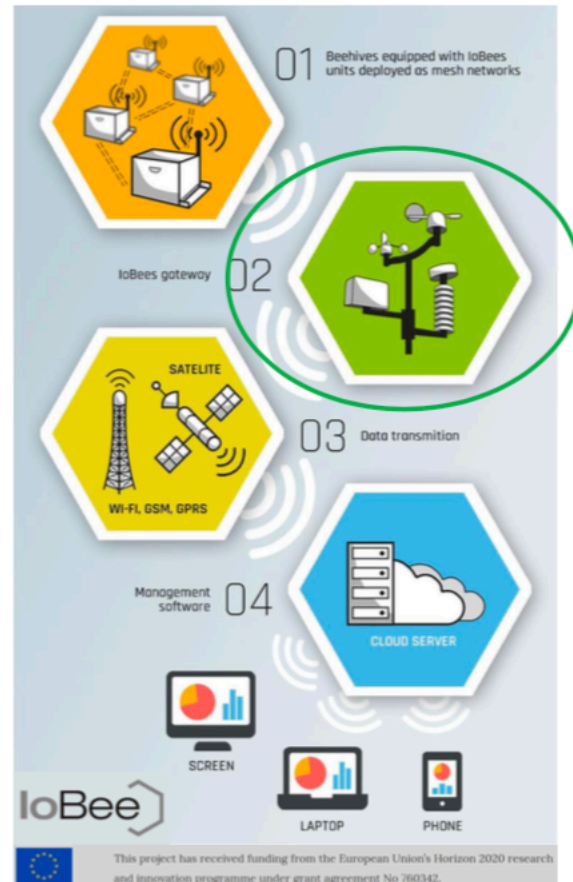
# A “Thing” of interest not only to the bees



Weather monitoring data  
is of high value for  
energy management

(among others probably)

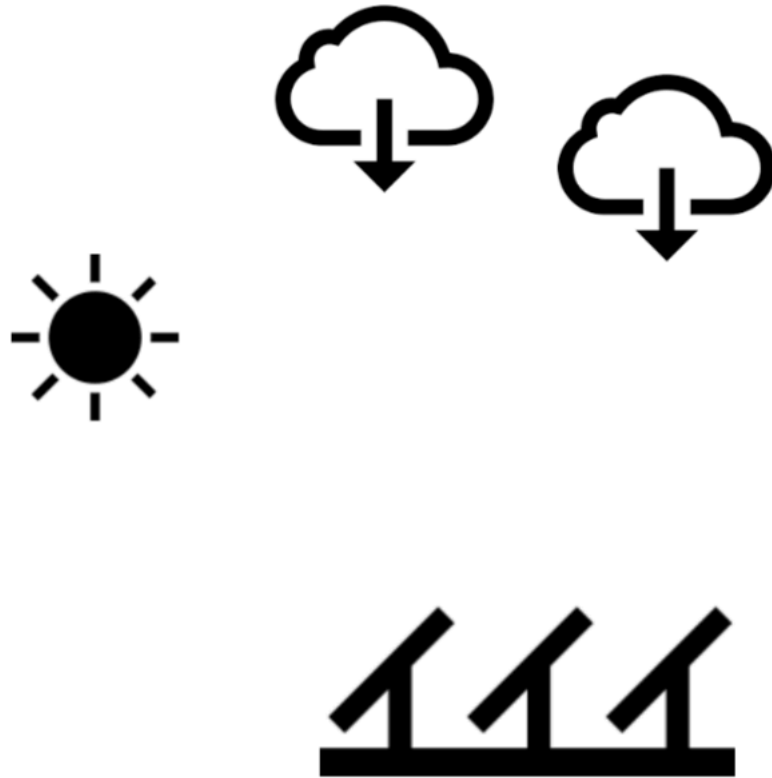
# “Things” : a source of data ... (an energy-centric perspective)



Weather monitoring data  
is of high value for  
energy management

(among others probably)

# “Things” : a source of data ... (an energy-centric perspective)

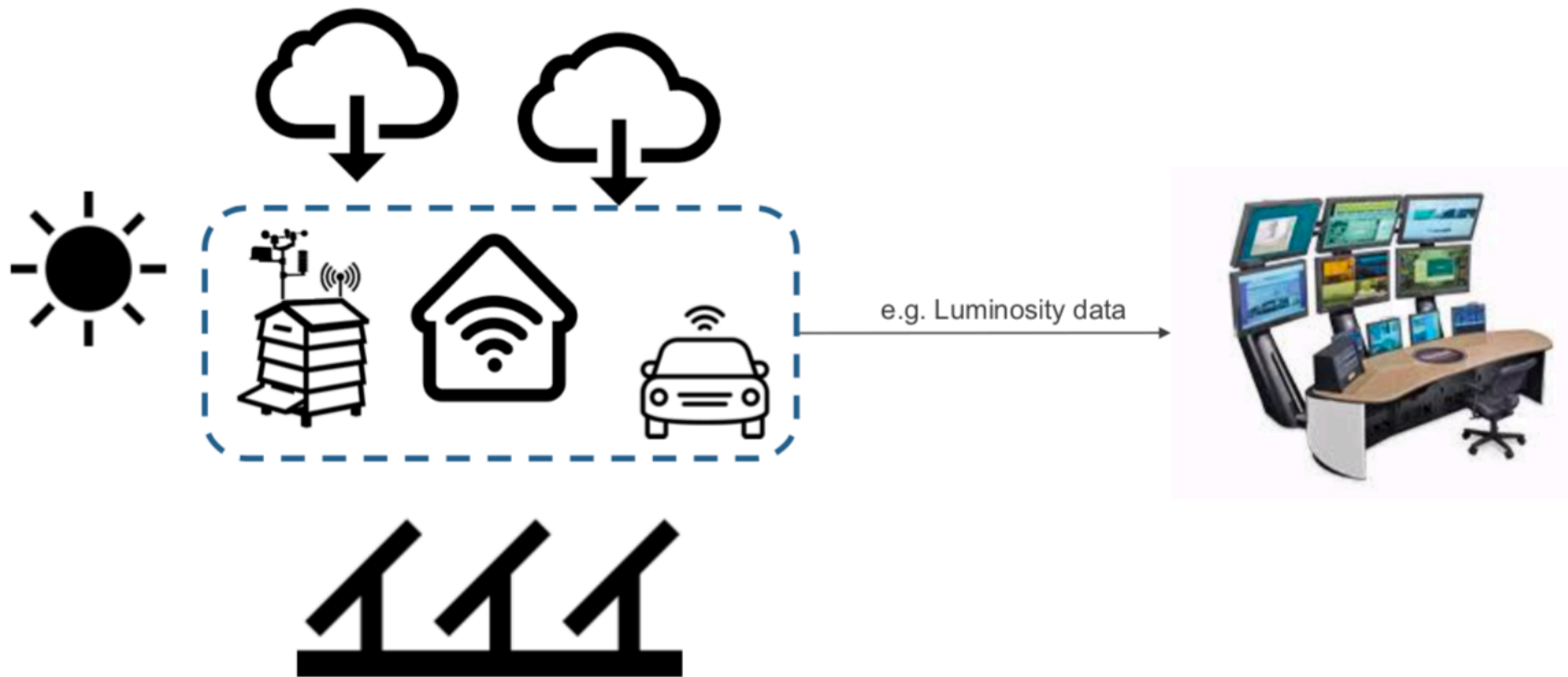




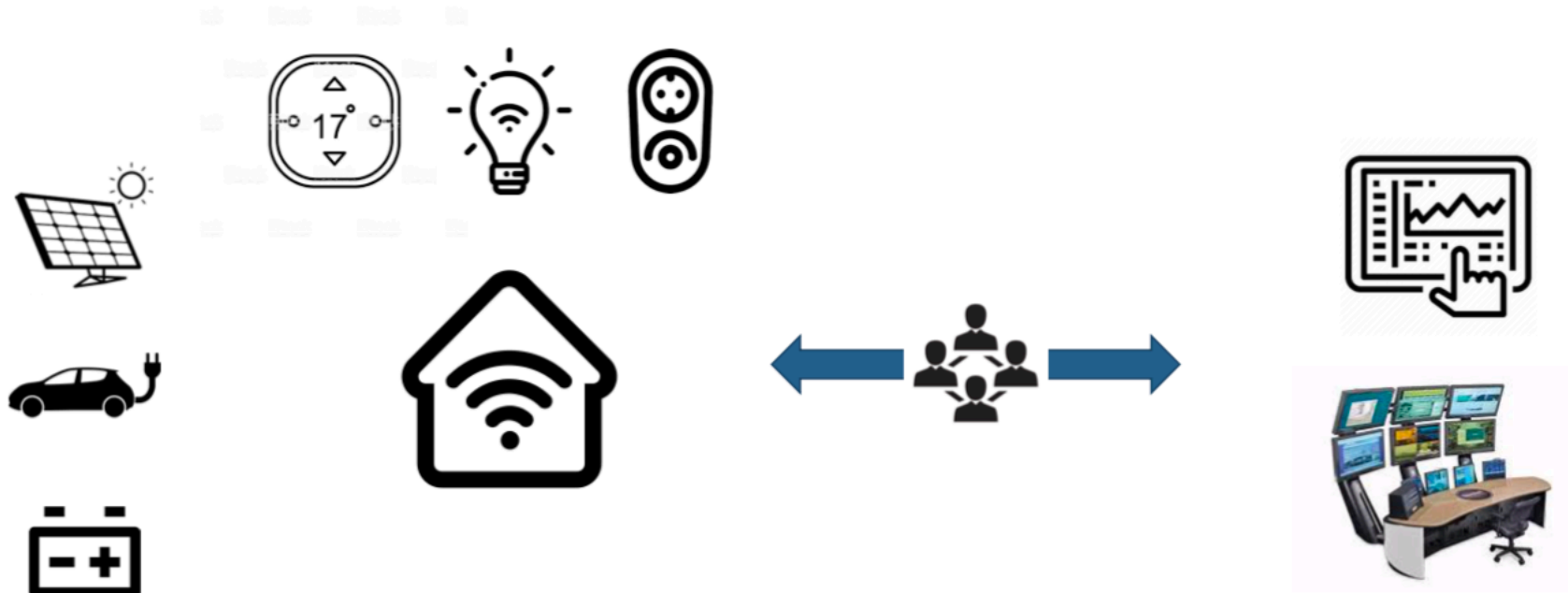
# “Things” : a source of data ... (an energy-centric perspective)



# “Things” : a source of data ... (an energy-centric perspective)



# “Things” : a source of data ... and an access to flexibility (an energy-centric perspective)



# Service-oriented “Things” (a thing-centric perspective)



# Service-oriented “Things” (a thing-centric perspective)





# Service-oriented “Things” (a thing-centric perspective)



# Business case confirmation, and technology challenge : interoperability (AND security)



*Isolated fortress*



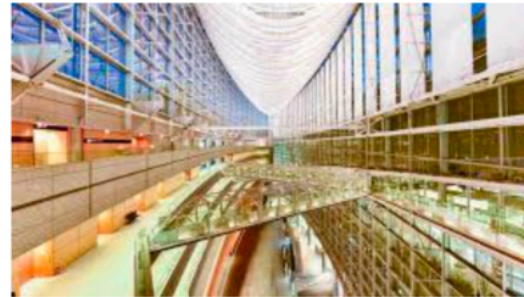
*Isolated fortress*



*Isolated fortress*

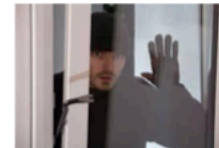


Data ?



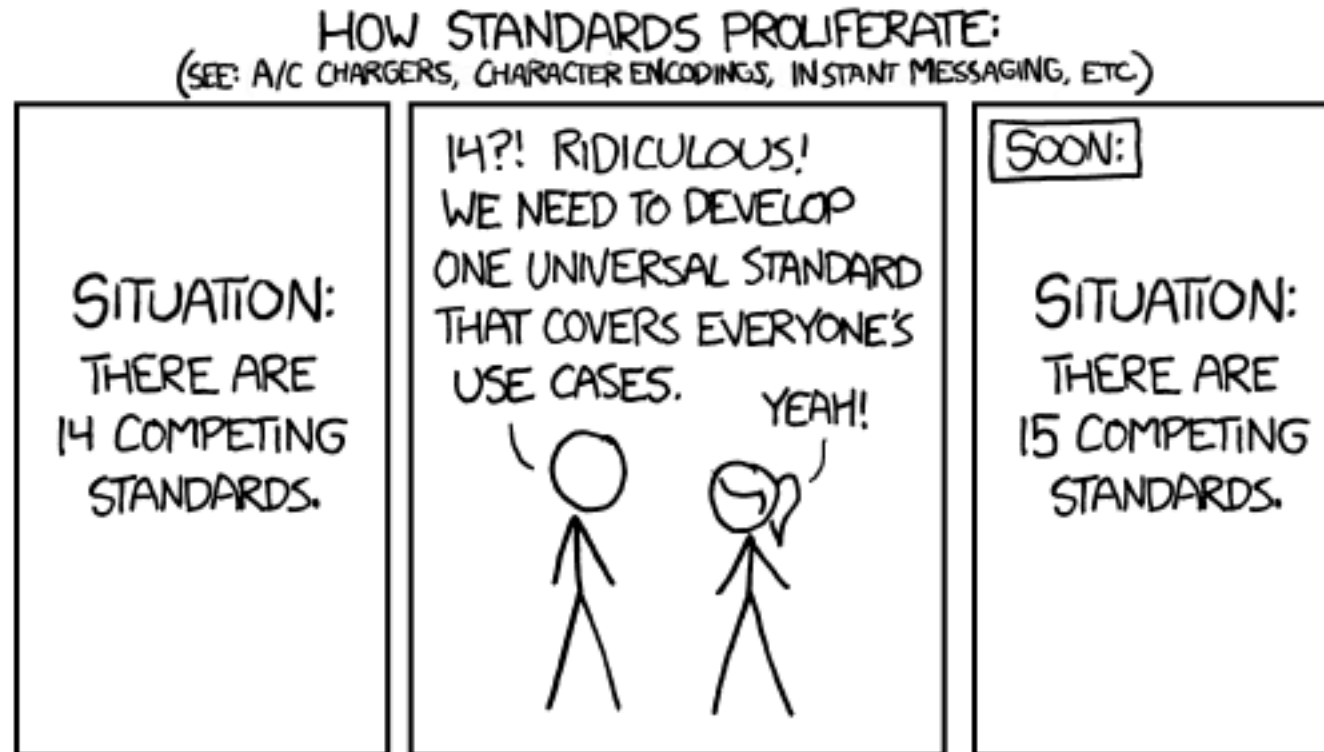
*Communication-enabled*

Données ?

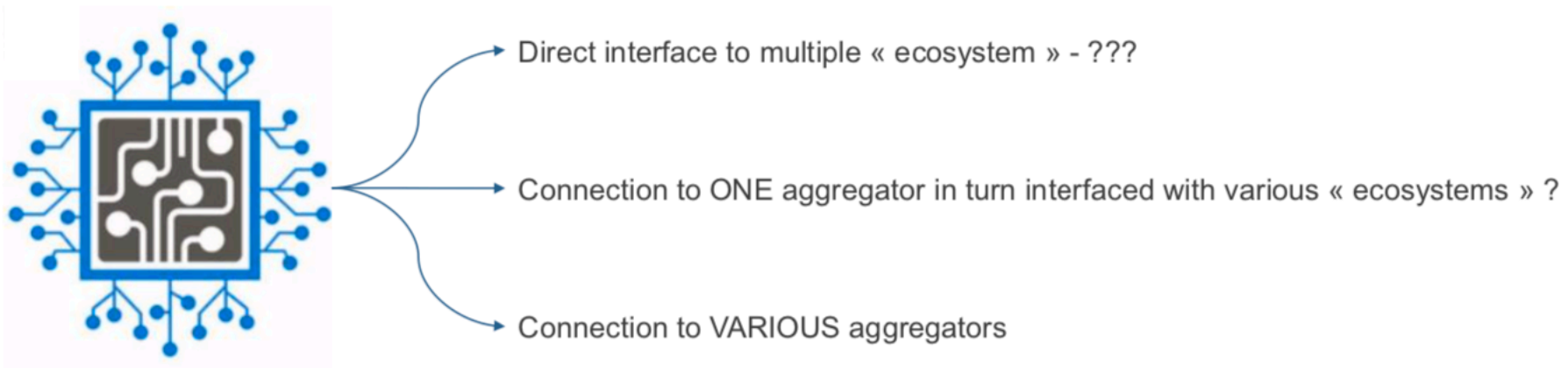


*Cyber Risk*

# One standard to rule them all ?



# The “Thing”-data as a Service !



# Not that easy but so promising (a crystal-ball gut-feel conclusion)



## Enablement of “Things” :

- Service providers and aggregators
- Platforms

## One connection, countless possibilities

IFTTT is the leading connectivity platform powering the digital transformation of products into integrated services. One connection enables you to integrate with any service in our ecosystem with the tap of a button and at a fraction of the cost.

[https://ifttt.com/True\\_Energy](https://ifttt.com/True_Energy)

The shortcut to green and cheap electricity

SmartHome

About True Energy

## True Energy on IFTTT.com

We have created two triggers that can be used by IFTTT.com users in Denmark: Danish electricity trigger and Smart household appliances.

### Danish Electricity

This trigger fires the hours, where price or climate impact of electricity in Denmark is either high, low or normal.

### Smart Household Appliances

This trigger will start your household appliances like dishwasher, washer and dryer at the optimal time. You set a earliest start time, what time your machine has to be ready, and a duration. The trigger will start when electricity is optimal.



Thank you!

# IOT Innovation Summit



Next speaker

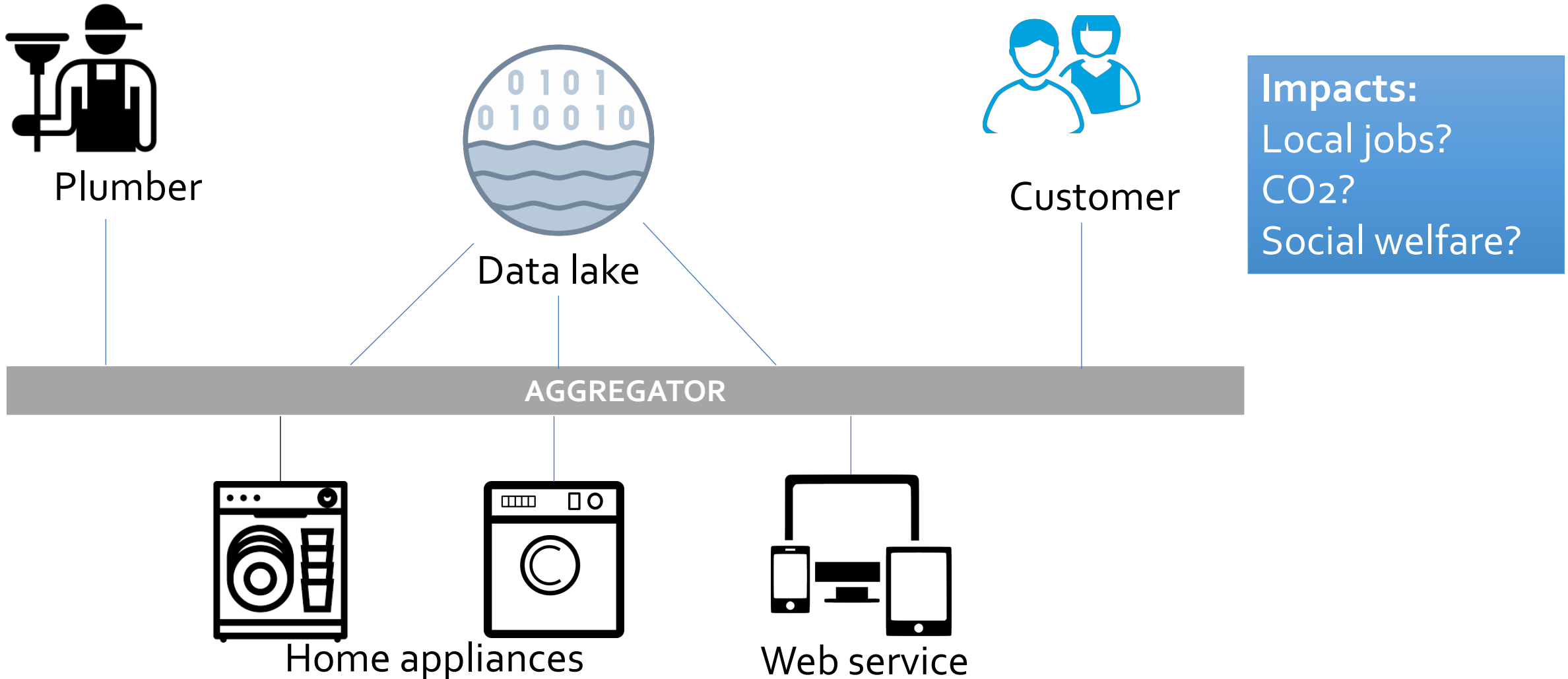
Alena Siarheyeva  
ISEN YNCREA



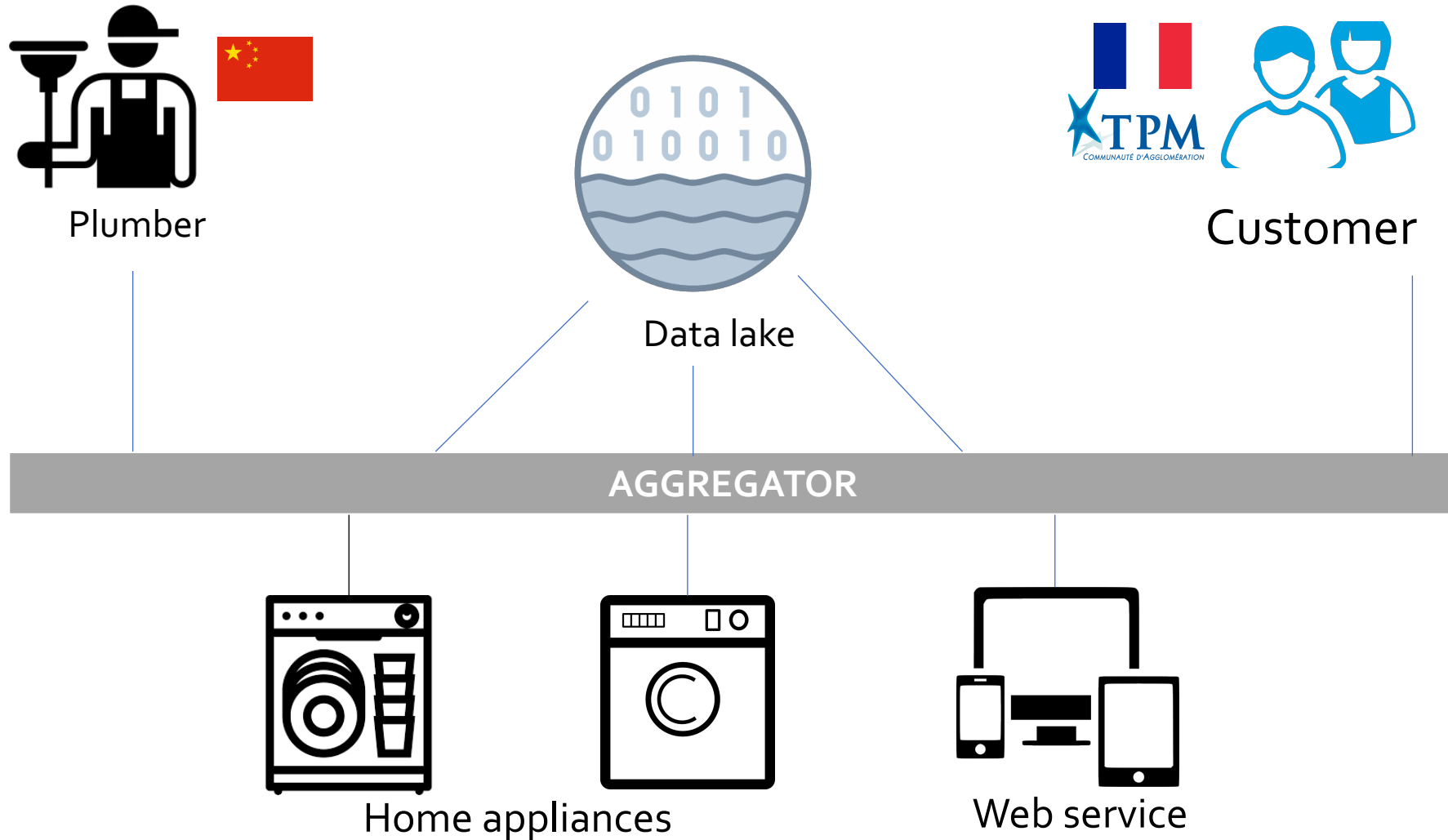
# Insights from the « Soft city » track



# Governance for IoT platforms

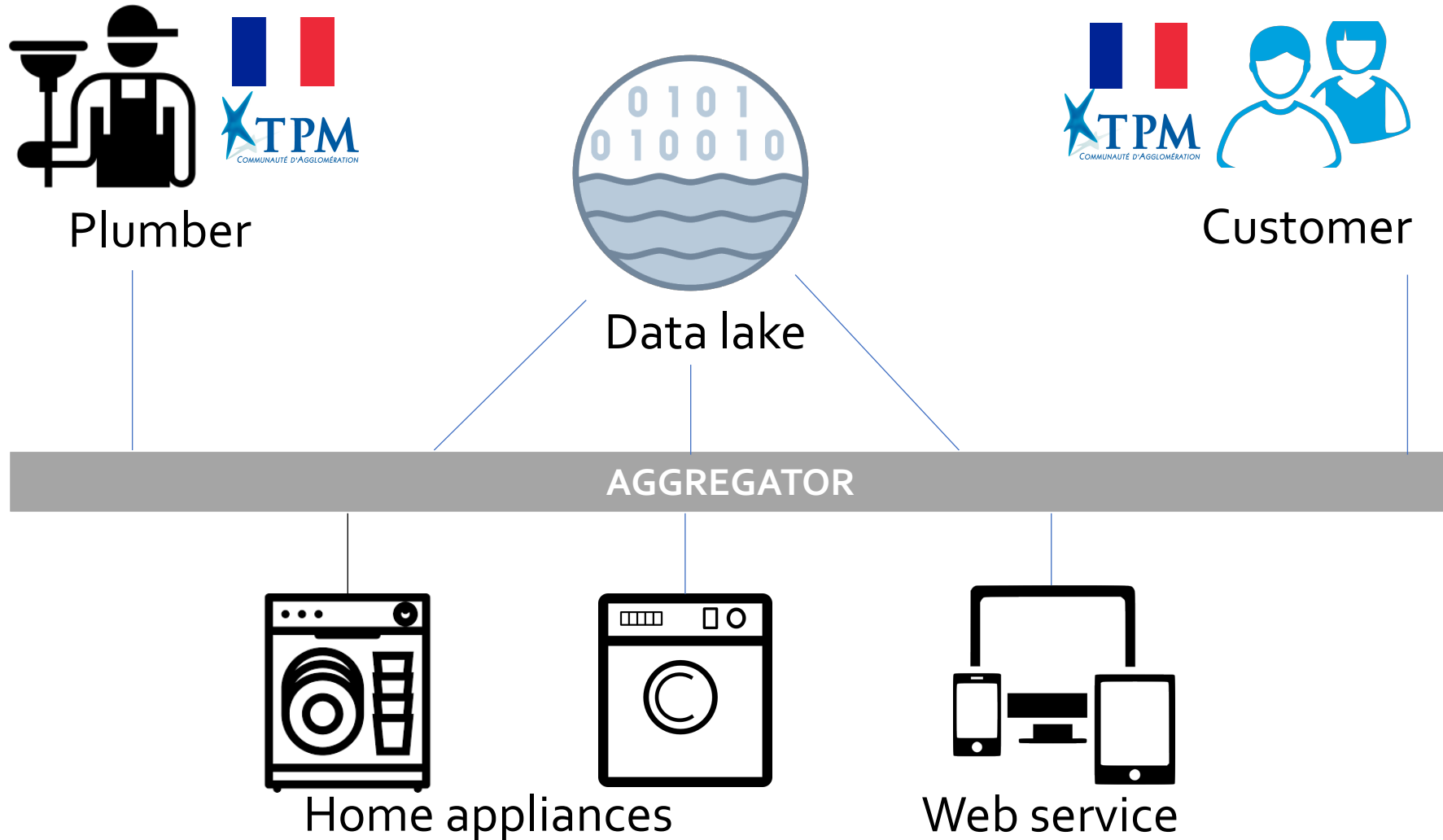


# “Invisible hand of a globalized market”



**Impacts:**  
Local jobs ↓  
CO<sub>2</sub> ↑  
Social welfare ↓

# "Economy of proximity" "Environmental sobriety"



**Impacts:**  
Local jobs = or ↑  
CO<sub>2</sub> ↓  
Social welfare ↑



# IOT Innovation Summit

## Next speakers

Moderator :  
Martin Brynskov  
(OASC)



Participants :  
Anita Beblek  
(agrathaer)  
Jens Gayko  
(SCI 4.0)  
Svetoslav Mihaylov  
(European  
Commission)



# Permissioned Distributed Ledger - Applicability and compliance to data processing requirements

Presentation



# IOT Innovation Summit

Next speaker

Christophe  
Gossard

John  
Deere



IOT  
Innovation  
Summit

# Industrial Permissioned Distributed Ledgers



The Standards People



# Why an ISG on Permissioned Distributed Ledgers

- ❖ The first industrial implementations of blockchain are mostly in a private environment. It provides some advantages but it is not a real distributed blockchain environment.
- ❖ First attempts to have a distributed blockchain network among different companies/entities (permissioned) have stuck in some problems regarding accountability and predictability of performance.
- ❖ Providing carrier grade services implies process beyond the functioning of the code. A permissioned blockchain must be operable and scalable before be marketable.
- ❖ Governance of permissioned blockchains can be agreed in different manners but some technical governance should benefit from technical specifications.

# Scope of Permissioned Distributed Ledgers ISG

## Extract from the Term of Reference

- ✓ We will analyse and provide the foundations for the operation of permissioned distributed ledgers, with the ultimate purpose of creating an open ecosystem of industrial solutions to be deployed by different sectors, fostering the application of these technologies...
- ✓ The ISG PDL will start from already available experiences seeking for the definition of open and well-known operational mechanisms to:
  - ✓ Validate participant nodes
  - ✓ Decide consensus among the participant nodes
  - ✓ Publish and execute operations regarding the recorded transactions
  - ✓ Facilitate the automation of node management and operation
  - ✓ Communicate events relative to node operation
  - ✓ Establish trusted links among different ledgers using these mechanisms

# ISG PDL Plans

- ✓ Address a gap in the luxuriant landscape of DLT/Blockchain/Cryptocurrency/... landscape.
  - ✓ Challenging as it is
  - ✓ Avoid the temptation of reinventing wheels (or levers)
- ✓ Three essential concepts
  - ✓ Permissioned distributed ledgers
  - ✓ Operational aspects (minimal requirements and best practices)
  - ✓ Matching physical assets within digital world.
- ✓ Intended for any service (not limited to telco or network services)
  - ✓ PDL-as-a-service
  - ✓ PDL as a network service
  - ✓ PDL as a network service enabler

# Work Items

✓ DGR/PDL-001\_Landscape. PDL Landscape of Standards and Technologies

This document will identify current activities in standardisation and in research which are particularly relevant to PDL, with the goal of identifying applicable solutions, required enhancements and recommendations for further collaboration. As appropriate, activities of professional or non-profit initiatives will also be considered.

✓ DGR/PDL-002-CDPR - PDL Applicability and compliance to data processing requirements

This document will analyse the essential data processing requirements in terms of trust, security and effective conformity assessment, and make recommendations on how PDL can be used by organisations, operations, deployment, hardware, and software to be trusted.

The report will reference use-cases work by other standards-developing organisations and material in the public domain. The essential requirements for the PDL technology to ensure compliance to existing regulatory aspects will also be analysed.

✓ DGR/PDL-003App\_scenarios

This GR documents and describes permissioned distributed ledger Application Scenarios. The aim is to consider and describe the potential application scenarios for the operation of PDLs, including provision models with special emphasis on as-a-service paradigms, and PDL infrastructure governance aspects. The report will provide definition of terms to be used in the scenarios and recommendations for future normative specifications



- ✓ Asociación consorcio red Alastria (ES)
- ✓ C3L (Cadzow Comm Consulting Ltd) (UK)
- ✓ Certicar (ES)
- ✓ CYS (CY)
- ✓ Ericsson (SE)
- ✓ Huawei (UK)
- ✓ Infineon Technologies (DE)
- ✓ InfoCert (IT)
- ✓ Intel (UK)
- ✓ INRIA (FR)
- ✓ John Deere GmbH (DE)
- ✓ King's College London (UK)
- ✓ Logaltv Servicios de Tercero de Confianza SL (ES)
- ✓ Mangrovia Blockchain Solutions (IT)
- ✓ Ministry of Economy and Business (ES)
- ✓ MISE (Ministero Sviluppo Economico) (IT)
- ✓ NEC Europe Ltd (UK)
- ✓ PCCW Global B.V. (FR)
- ✓ PT Portugal (PT)
- ✓ Renault (FR)
- ✓ Telefonica (ES)
- ✓ Vodafone (UK)



# Key enablers of IoT in the future : Building the Sentient Web

First session

# IOT Innovation Summit

## Next speakers

Moderator :  
Dave Raggett  
(W3C)

Participants :  
Thomas Hahn  
(Siemens & BDVA)  
Kai Hackbarth  
(Bosch & OSGI)  
Franck Boissiere  
(European  
Commission)



# Key enablers of IoT in the future : Ignite Data Marketplaces

Second session

# IOT Innovation Summit



Next speaker

Natalie Samovich  
AIOTI Steering Board  
Chair



# Open Energy Marketplaces evolution

AIOTI

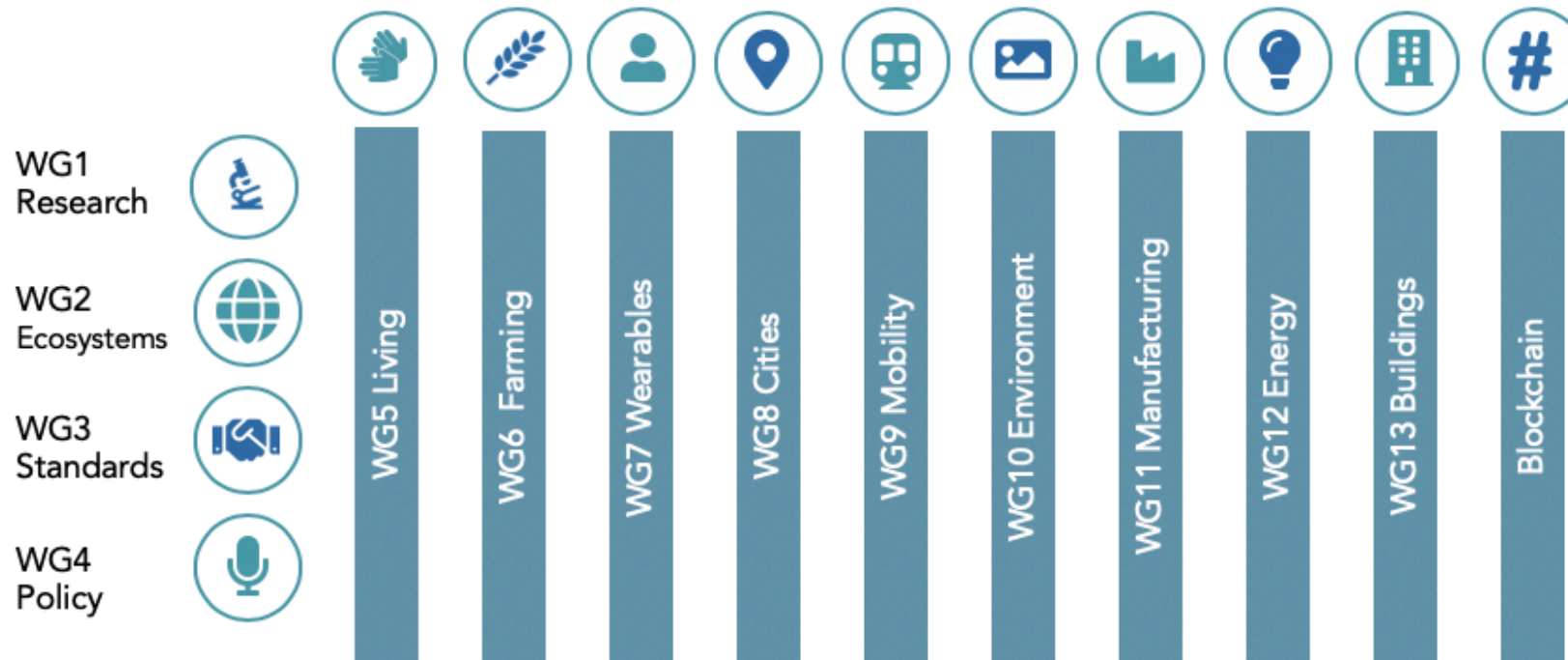
Natalie Samovich, Chair Steering Board  
Chair Working Group Smart Energy

## THE PERSPECTIVE OF AIOTI:

IoT as a significant cross-sector  
technology,  
driving developments forward  
that require interoperable  
environments and platforms



# AIOTI IS STRUCTURED CROSS-SECTOR





# **SOCIETAL CHALLENGES**

# In 2050 the Customer is fully engaged

## VISION 2050

A SYSTEM OF SYSTEMS



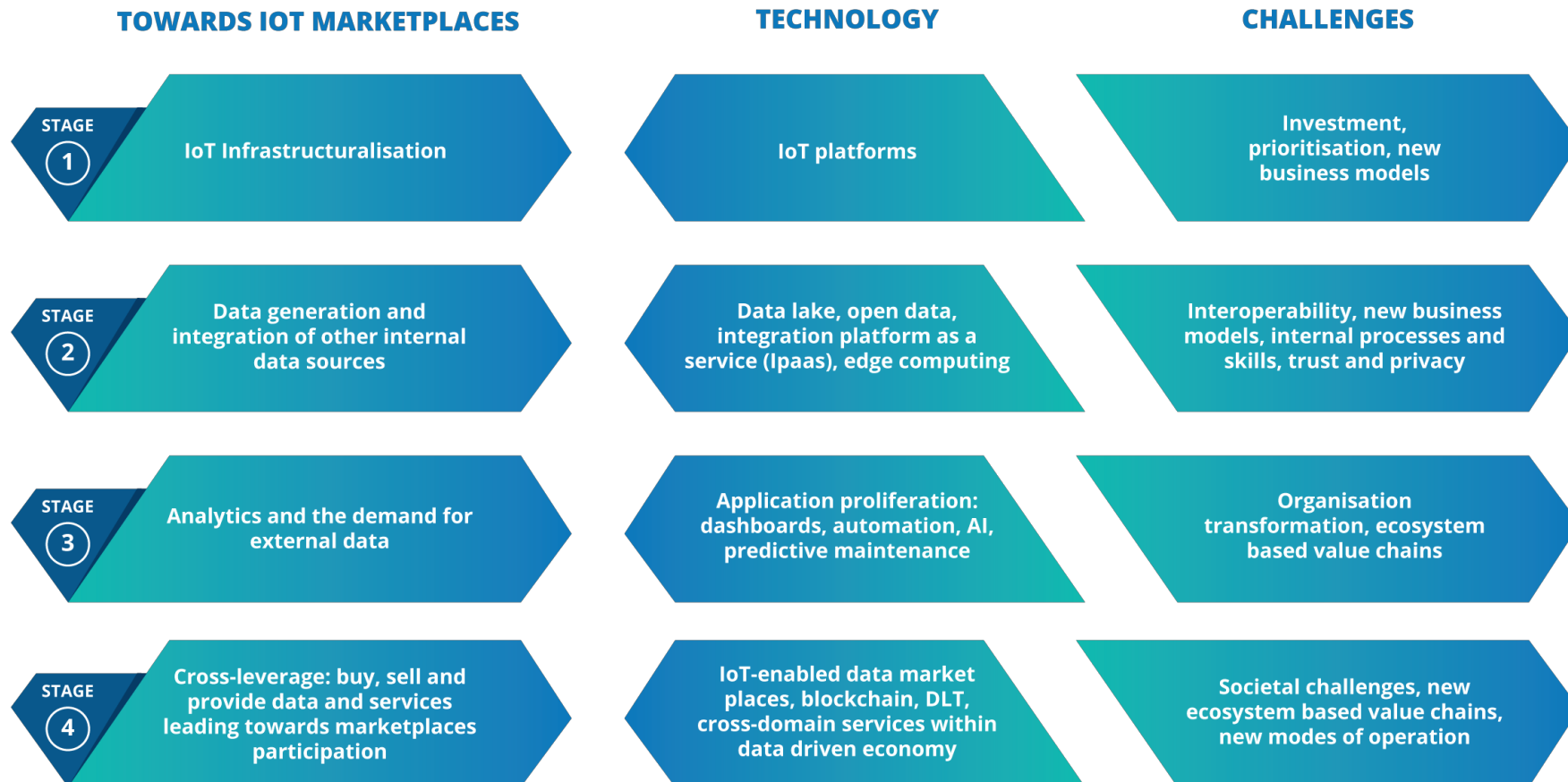


**MOONSHOT MISSION FOR POWER PLATFORMS**

# **UNLOCKING INTEROPERABLE MARKETPLACES AND PLATFORMS**

**MULTI-SIDED markets for SERVICES**  
**MULTIPLE REVENUE sources**  
**EE, DER RES, Demand response**  
**Aggregated Auxiliary Services**  
**Bundled with Transport, Telecom and other**  
**Long run efficiency, fairness, simplicity, transparency**

# STAGES OF IOT MARKETPLACES

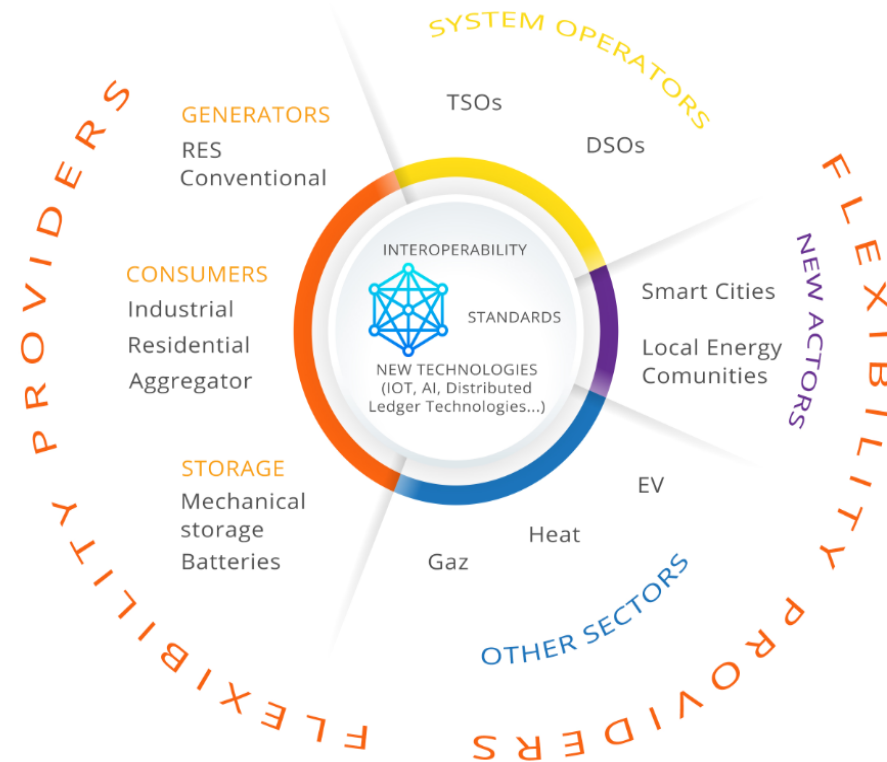




# POWER PLATFORMS – THE DIGITAL CONNECTION BETWEEN ACTORS OF THE ENERGY SYSTEM

- Connect the dots and enhance flexibility services
- Enhance interconnection and interactivity between actors

SOURCE: ENTSO-E L. Schmitt, May, 2019



Internet  
of Things



Artificial  
Intelligence



Distributed  
Ledger Technologies



Governance  
Ethics



**Building Blocks for more flexible highly participatory  
Multi Sided cross domain Marketplaces of the future**

---

**Aggregation and disaggregation layers**

---

**Units of operation APIs**

---

**Golden mile: interoperable, instant , scalable,  
transactive and secure Power platforms**



# IOT Innovation Summit

Data Share Enabling  
Infrastructures

Socio-Economic

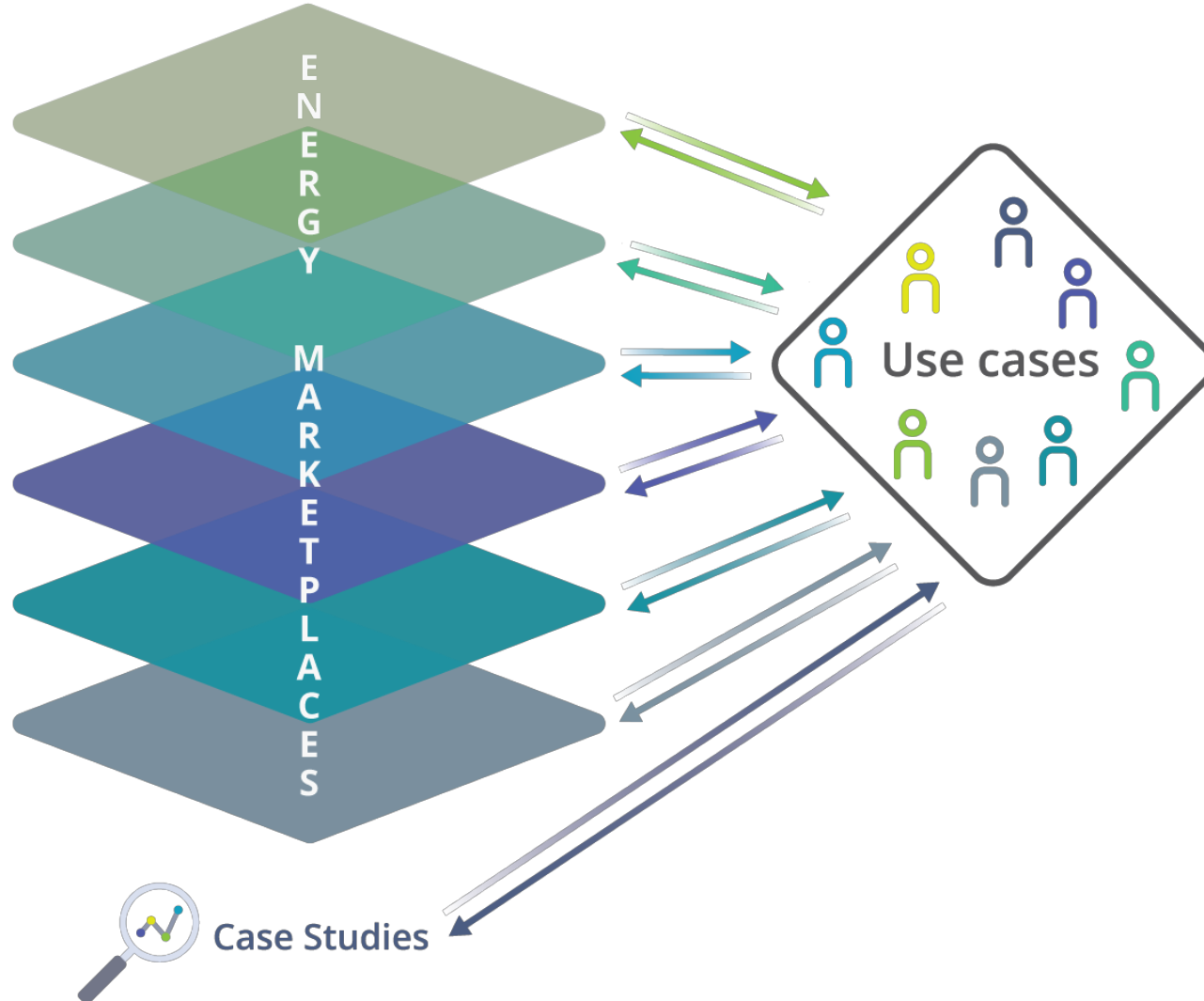
Policy & Regulations

Power System  
Infrastructures

Data Services  
and Architectures

Connectivity

Market Design



# Value chains

- ④ The convergence of technologies such as 5G,
- ④ Internet of Things/Industrial Internet of Things (IoT/IloT),
- ④ Edge computing and Artificial Intelligence (AI) including at the edge
- ④ Cloud infrastructures
- ④ Human-Centric Internet
- ④ Next Generation Internet (NGI)
- ④ Energy-efficient and high-performance infrastructure on which a multi-service Next Generation Internet (NGI) and other digital services can be developed and deployed

# Can we achieve greater impact within IoT data-driven marketplaces that are enabled by:

- ⦿ Vertical application domains for cross learning and integral solutions, e.g. mobility, energy, water and food coming together in a smart city
- ⦿ Networks linking with multiple application domains, securing interoperability
- ⦿ The application of common legal frameworks that determine liability across multiple domains

# IOT Innovation Summit



Natalie\_Sam



Natalie Samovich



n.samovich@enercoutim.eu



# Alliance for Internet of Things Innovation

@aioti\_eu  
[www.aioti.eu](http://www.aioti.eu)

# IOT Innovation Summit



Next speaker

Irene Lopez De Vallejo  
DEX Europe



# IOT Innovation Summit



Next speaker

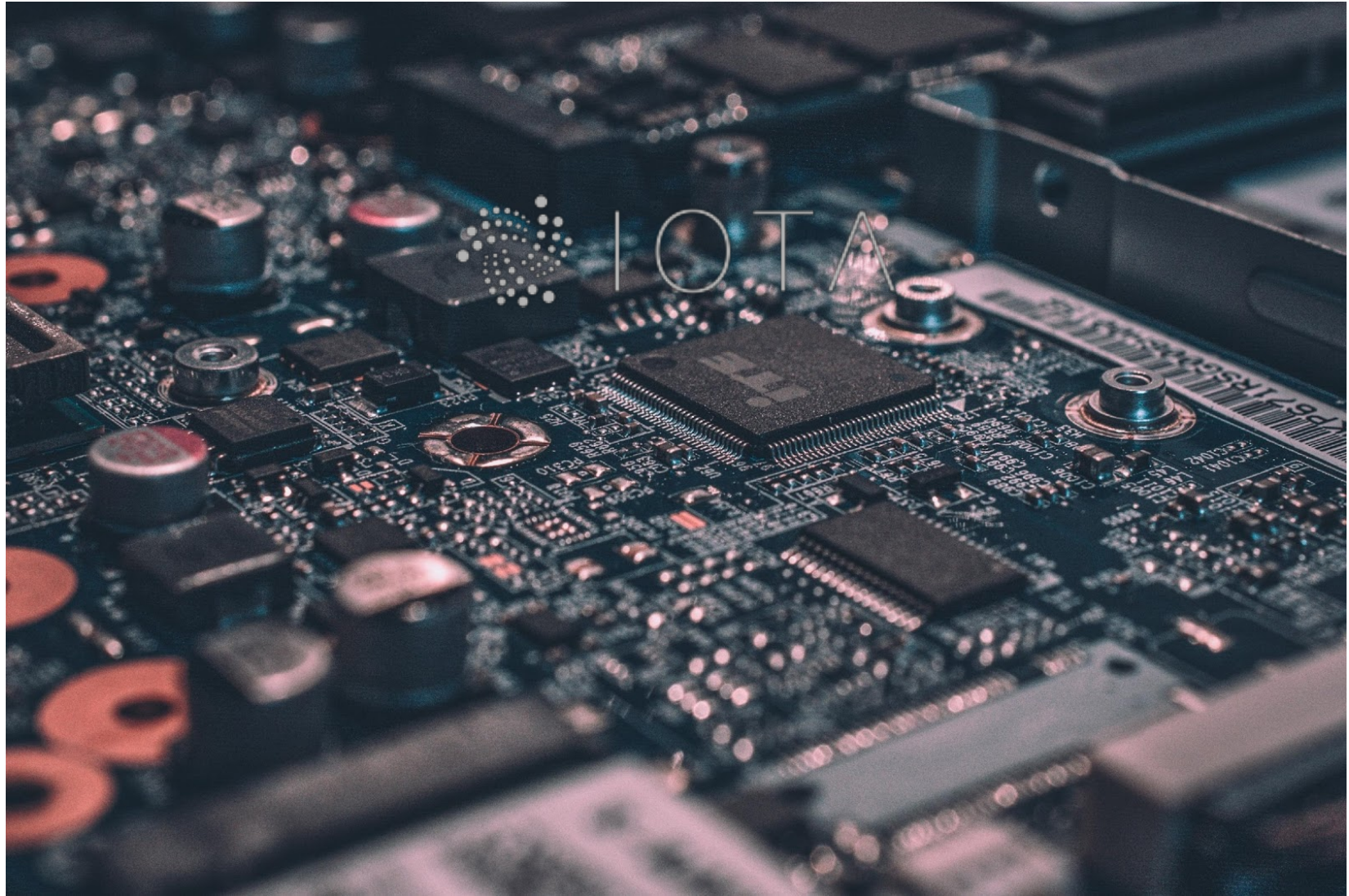
Wilfried Pimenta  
IOTA





IOT  
Innovation  
Summit

# Co-creating Open & Transparent Data Marketplaces



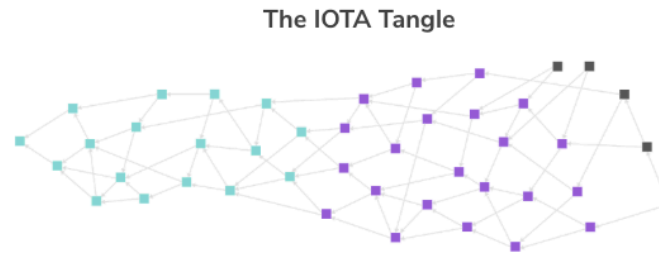
## What is IOTA?

A Global Team



- Non-Profit Foundation registered in Berlin, Germany
- 100+ employees in 25+ countries
- To research, develop and grow real-world market adoption of the IOTA Tangle and accelerate its ecosystem
- Funded through donations, public grants and consultancy services

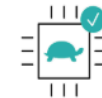
An Opensource DLT for the IoT



Highly Scalable



Zero-fee transactions



Low resource requirements



Secure data transfer



Offline transactions



Quantum resistant

A Cross-industry ecosystem



- A global community of developers, startups, enterprises, academia.
- Opensource documentation, Blueprints
- Co-creation initiatives from ideation, development to pilot demonstrators
- An Ecosystem Development Fund (EDF) to catalyse opensource development

# IOTA addresses key challenges of the IoT Economy

## DIGITAL TRUST



Data Integrity  
CyberSecurity  
e-Privacy

## DATA MONETISATION



Zero fee  
Real time  
IoT / Machine ready

## BUSINESS MODELS



Data Driven  
Cross Verticals  
Interoperable



# Enabling new solutions and business models in a broad range of cross vertical application domains

## Decentralised ID Personal Data



Digital ID, Personal Data  
Management & Human  
Centric Innovation

## Smart cities



Open & Transparent  
Digital Infrastructure for  
Digital Services

## Industrial IoT & Supply Chains



Digital Twins  
Track & Trace

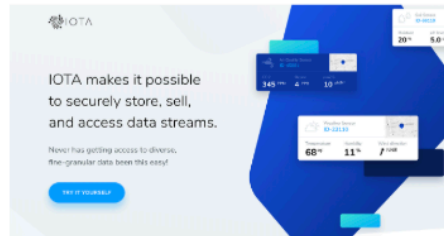
## Climate & Environment



Internalise externalities  
thanks to  
single source of truth

# Co-developing opensource marketplaces & Blueprints

## DATA MARKETPLACE



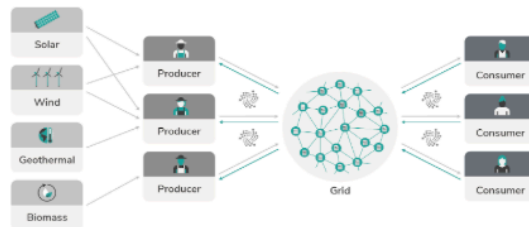
## INDUSTRY M2M MARKETPLACE



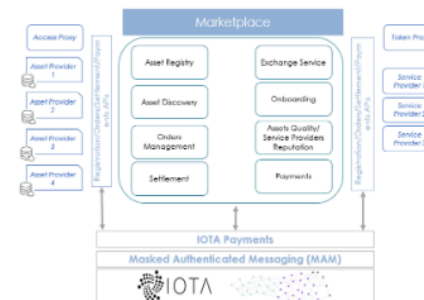
## DOC/CERTIFICATE AUTHENTICATION



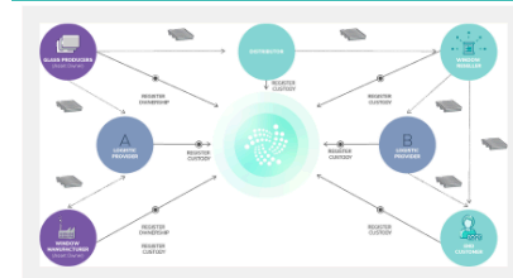
## P2P ENERGY GRID/MARKET



## TELCO MARKETPLACE **tmforum**



## SUPPLY CHAIN TRACK & TRACE

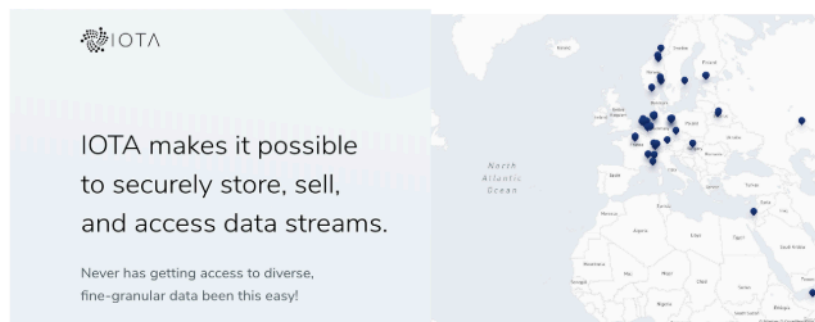


# IOTA Data marketplace launched in Nov 2017

*IOTA enables connected devices to be paid for sharing secure data streams*

Feeless Data stream monetisation

80+ participants across industries and regions



opensource PoC

*Connected devices and sensors can now get paid through zero fee micropayment for sharing securely their data streams*

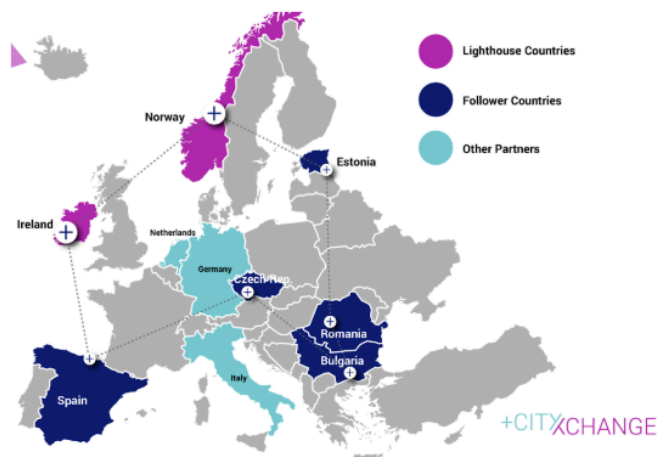
<http://data.iota.org>



Since Nov 17, IOTA develops a Data Marketplace PoC

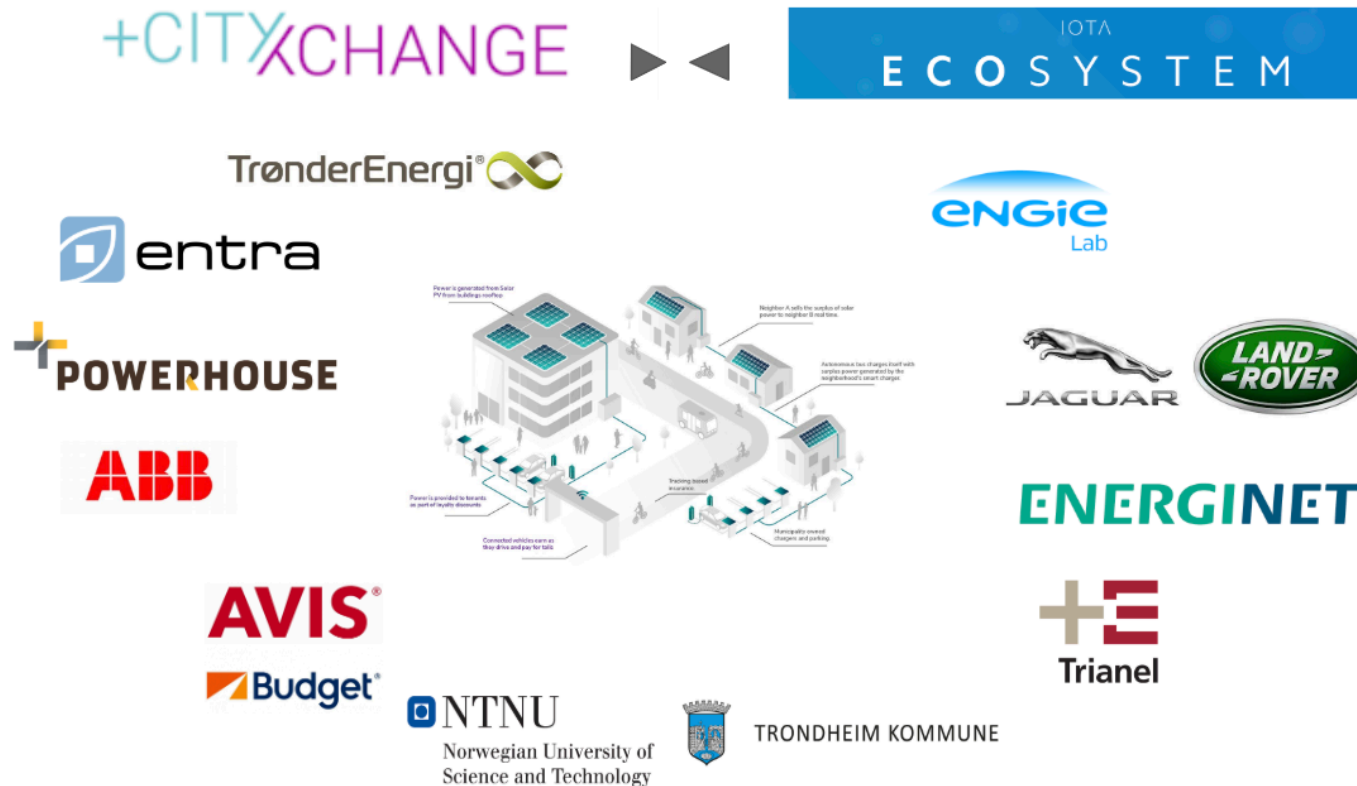


30MEUR EU Horizon 2020 | 32  
partners | 11 testbeds across Europe



# Ex: Towards Open & Transparent cities in Trondheim, Norway

## IoT/Digital Infrastructure + Future Digital Services



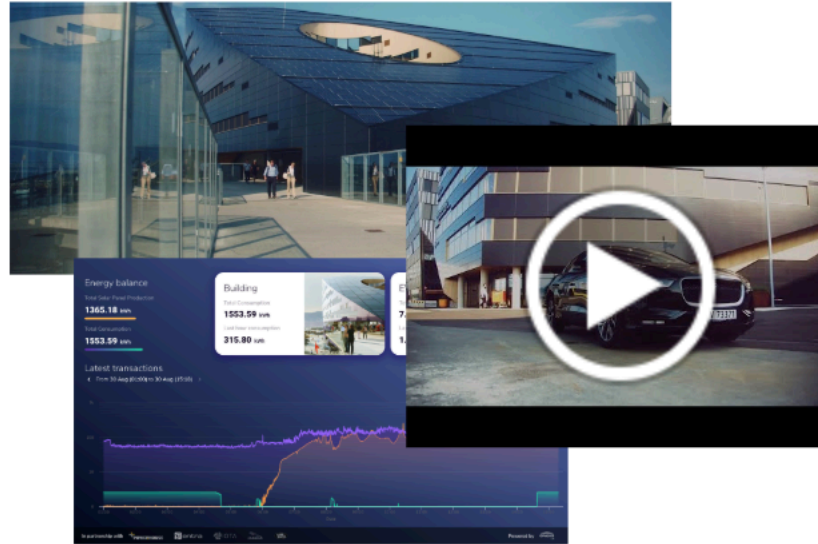
## Lessons learned for Data Marketplaces

### FROM IDEATION



Co-creation workshop in Trondheim  
on Smart Energy Districts

### TO REAL WORLD DEMONSTRATION



Sustainable Energy Traceability showcase at the opening of  
the Powerhouse building 30th august 2019

- Anchor common purpose at ecosystem level
- Focus on citizen centric problems and use cases
- Set up regulatory sandboxes
- Define physical testbed as playground
- Aggregate ecosystem of open innovation partners
- Learn and fail fast through agile experiments





INDUSTRY  
MARKETPLACE

The world's first autonomous and decentralized

# INDUSTRY MARKETPLACE

[industry.iota.org](https://industry.iota.org)



IOTA  
FOUNDATION



HELMUT SCHMIDT  
UNIVERSITÄT  
Universität der Bundeswehr Hamburg



Thank you!

<http://www.iota.org/>

<http://blog.iota.org/>

<http://data.iota.org/>

<http://ecosystem.iota.org/>

<http://docs.iota.org/>

Wilfried Pimenta  
Business Dev Director  
will@iota.org  
+47 92202918  
@wilfriedpimenta

# IOT Innovation Summit

## Next speakers

Moderator :  
Tanya Suarez  
(BluSpecs)



Participants :  
Omar Elloumi  
(Nokia)  
Arthur van der Wees  
(Arthur's Legal)  
Cristobal Irazoqui  
(European  
Commission )





# Key enablers of IoT in the future : ICT and OT Converge

Third session



# IOT Innovation Summit



Next speaker

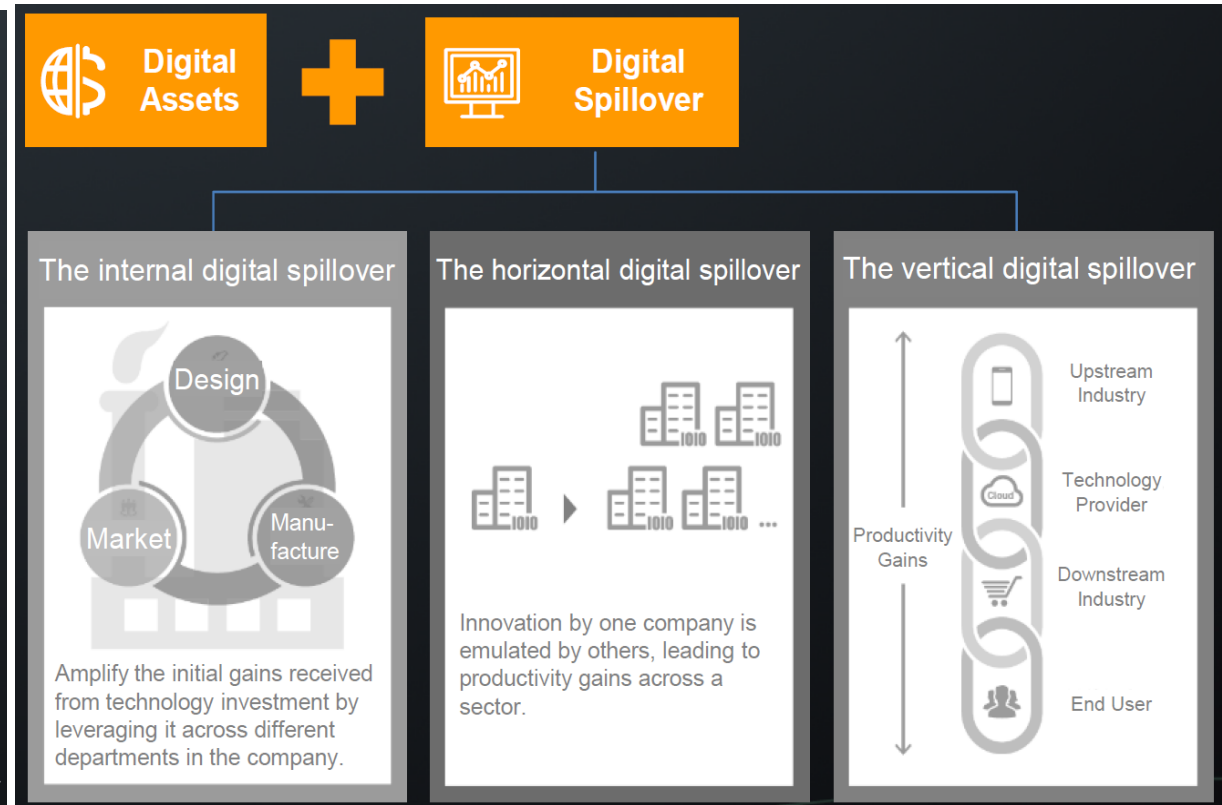
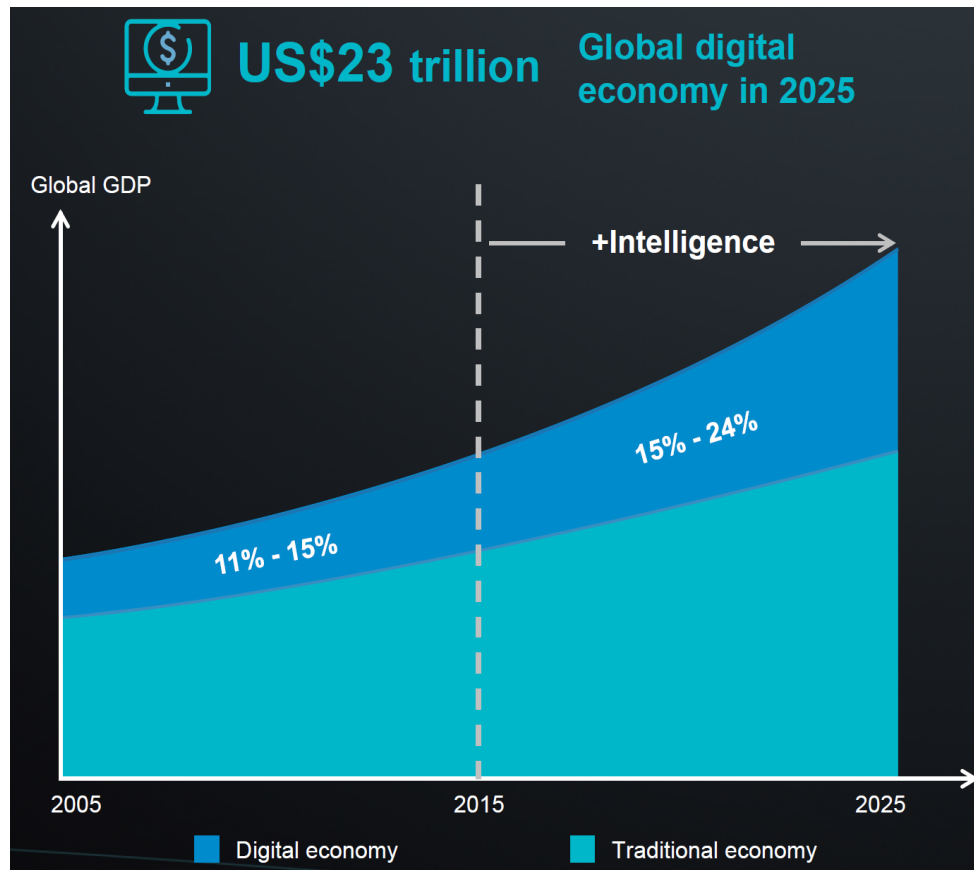
Georgios Karagiannis  
Huawei



# Information and Communication Technology (ICT) and Operational Technology (OT) convergence driven by Digital Transformation

## Session 3: ICT and OT Convergence

## Digital Economy Worth US\$23 Trillion per 2025 Returns on ICT Investment 6.7x Higher than other sectors



# Vertical Industries Play an Important role in Digital Transformation

- Most, if not all, vertical industries are driven by a digital transformation that enforces an strengthen competitive position, enriched customer experience, new innovative products/services, and an more cost effective operations:
  - Enabling technologies like 5G, Internet of Things/Industrial Internet of Things (IoT/IIoT), edge computing and Artificial Intelligence (AI) included at the edge, support the digital transformation:
    - relying, on robust connectivity of trillions of devices and open sharing of data is new engine for economic growth and social development
- Digital transformation can be considered as a new engine for economic growth and social development
- Digital transformation will require the interest and involvement of many actors including both vertical and horizontal industries for the development of sustainable networking solutions that are scalable, flexible and interoperable

# Cooperation between Horizontal and Vertical Industry Players

- Success of vertical industries depend on how well horizontal and vertical industry players are cooperating and partnership with each other





# ICT & OT Convergence driven by Digital Transformation

Most, if not all, vertical industries are driven by a digital transformation that enforces an strengthen competitive position, enriched customer experience, new innovative products/services, and an more cost effective operations

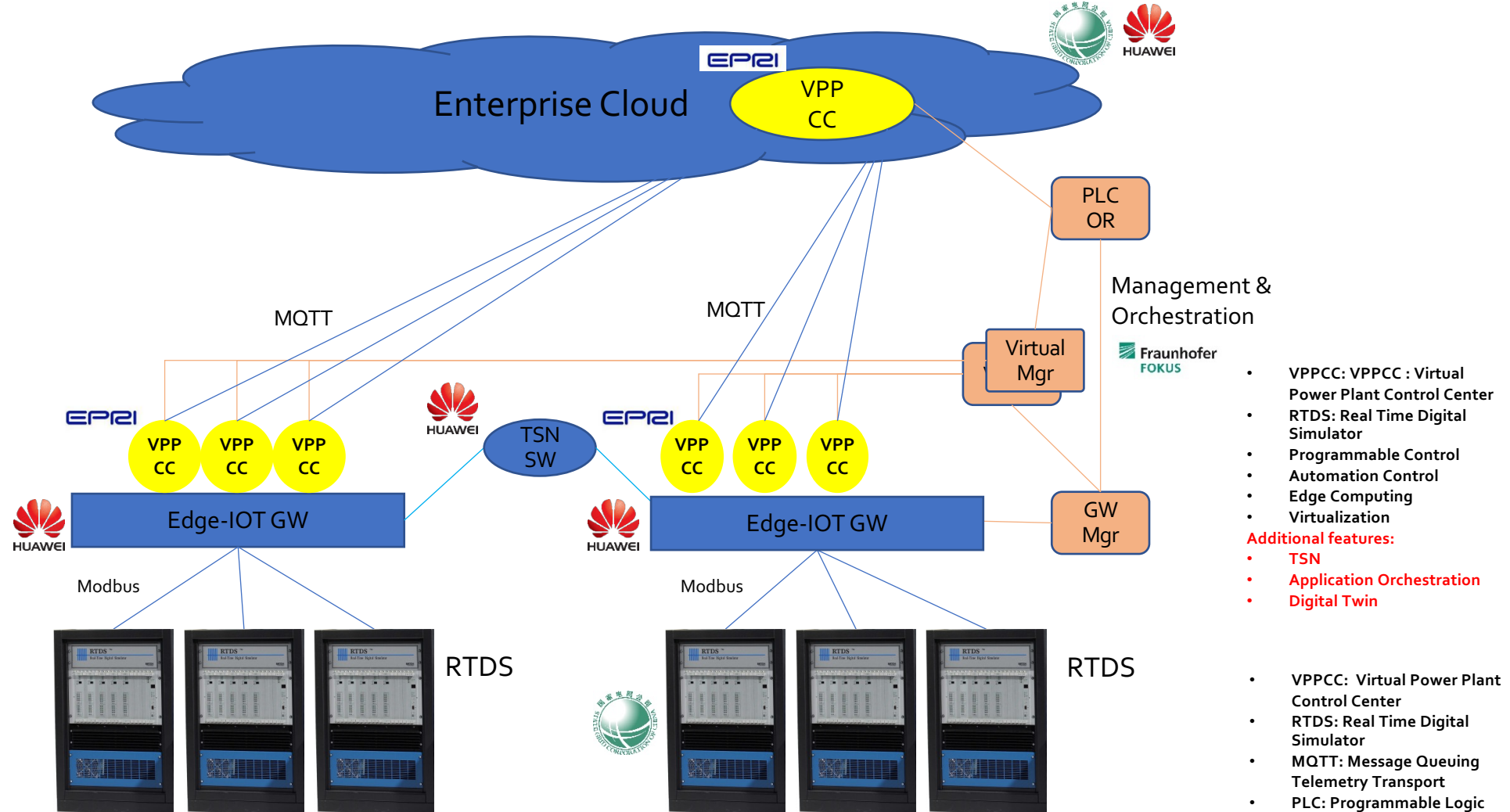
The success of Digital Transformation depends on the convergence of ICT and OT to be applied in vertical industry enabled smart networks, such as smart energy, smart healthcare, smart transportation and smart manufacturing

The new ICT technologies may bring value to the current OT technologies, such as 5G communication, Internet of Things/Industrial Internet of Things (IoT/IIoT), edge computing and Artificial Intelligence (AI) included at the edge

The convergence of ICT and OT will accelerate new platform driven innovations, build new ecosystems and will support the data driven business models and economies



# Example of Use Case for Convergence ICT and OT: Virtual Power Plant (VPP)



Source: IEC Test Bed activities Phase II, Shanghai 2019 (Virtual Power Plant)

# IOT Innovation Summit

## Next speakers

Moderator :

Georgios Karagiannis  
(Huawei)

Participants :

Parm Raeewal (Vodafone)

Pierre-Yves Danet  
(Orange)

Klaus Beetz (Siemens)

Nikolaos Isaris  
(Acting Head of European  
Commission DG Connect,  
IoT Unit)



## Session 3: ICT and OT Convergence

### Questions:

- Q1: Is the convergence of technologies such as 5G, Internet of Things/Industrial Internet of Things (IoT/IIoT), edge computing and Artificial Intelligence (AI) included at the edge, enabling to more efficiently support the digital transformation in Europe and accelerate the uptake of vertical industry enabled smart networks?
- Q2: Currently, there is a strict division on technical solutions and standardization focusing on ICT (Information and Communication Technologies), used by e.g., 5G communications, virtualisation, edge computing, IoT/IIoT, AI, and the ones focusing on OT (Operational Technology), used in e.g., Shop Floor:
  - What are the new technological, standardization, business and regulatory & policy challenges that are brought by the convergence of ICT and OT technologies?
- Q3: Can you give examples of business drivers that stimulate the convergence of ICT and OT technologies?
- Q4: What are success factors that can stimulate regulators, telecommunication and vertical industry stakeholders (demand and supply) to cooperate on enabling the convergence of ICT and OT technologies?
- Q5: To what extent does EU legislation support the convergence of ICT and OT technologies? Are there further steps needed?
- Q6: To what extent does standardization support the convergence of ICT and OT technologies? Are there further steps needed?

IOT  
Innovation  
Summit

Thank you!



# IOT Innovation Summit

October 8 2019  
Brussels



Alliance for  
Internet of Things  
Innovation

