

CEATEC 5G/6G Special Day I, Local 5G International Workshop | 16 October 2024

Industrial 5G – State of the Union

Masakazu Shirota
5G-ACIA Japan Ambassador
(Qualcomm)

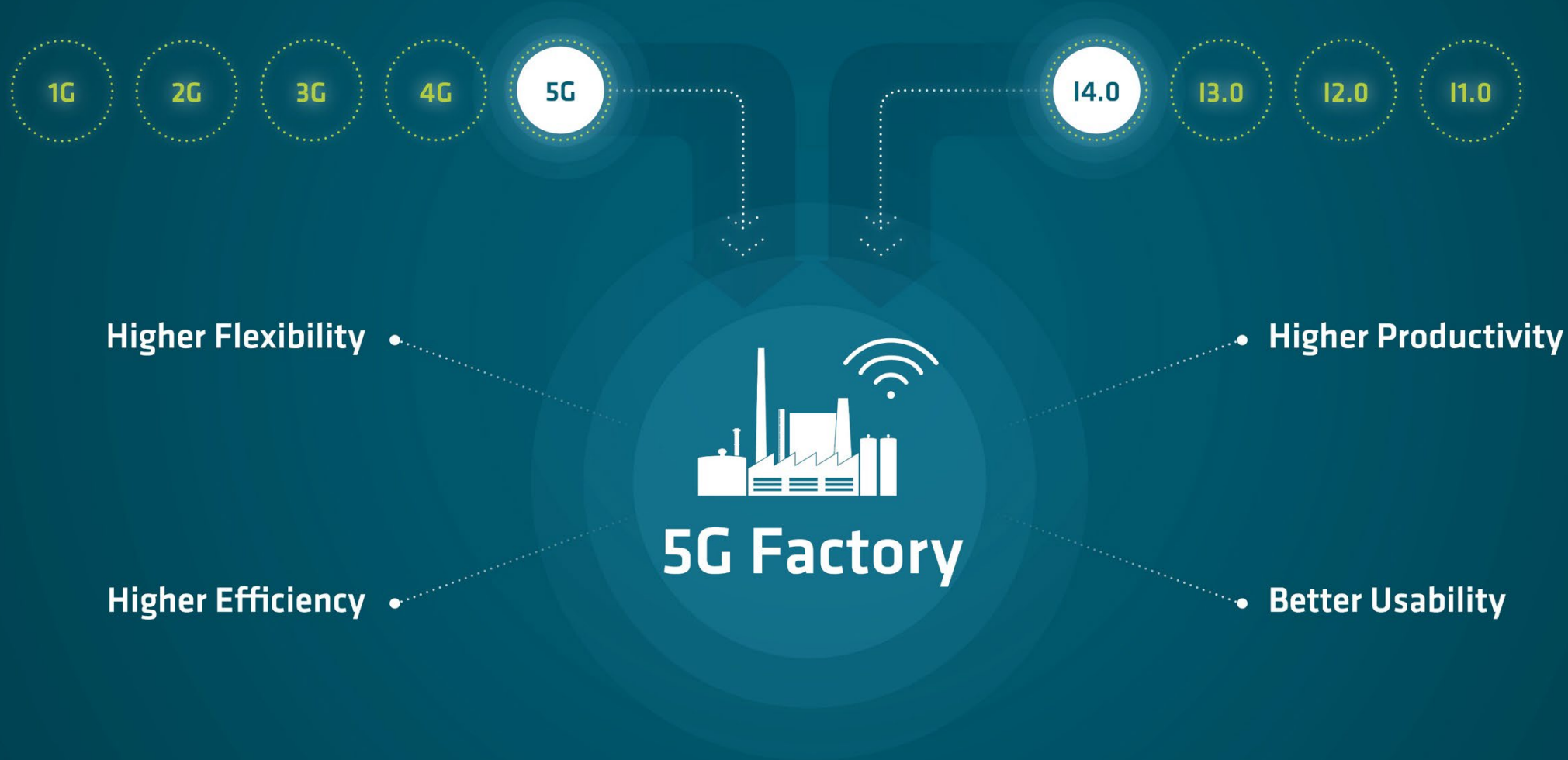
Part I

Looking Back



The Evolution of Mobile Communications

The Four Industrial Revolutions



The Vision

5G-ACIA | Key Enablers for the Digital Transformation



Connectivity



Edge & Cloud



Digital Twins



AI / ML

5G as a future-proof enablement platform for the digital transformation of different vertical sectors

5G-ACIA | Major Objectives of 5G-ACIA



OT Industry



ICT Industry



- 1 Establish a common language btw. ICT & OT
- 2 Reflect OT needs in standardization & regulation
- 3 Analyze how 5G may enhance the Industrial IoT
- 4 Identify relevant certification & testing needs
- 5 Develop a sustainable Industrial 5G ecosystem
- 6 Promote Industrial 5G worldwide

5G-ACIA as the globally leading organization for driving and shaping Industrial 5G

5G-ACIA | Exemplary Industrial 5G Use Cases



Intralogistics



Wireless Sensors & Actuators



Human-Machine-Interaction



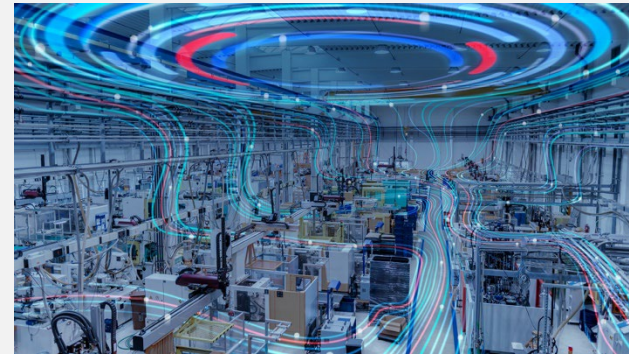
Smart Tools



Modular Production



Retrofitting



Find-My-Something

...
(and many more)

5G-ACIA | The Evolution



Kick-off at Hannover Messe, Apr 2018



5G-ACIA Meeting in Beijing, Sep 2024



5G-ACIA | Member Overview



Status: August 2024

5G-ACIA Global Network of Partners



5G-ACIA engagement with external organisations globally

+ UKTIN (To be confirmed)

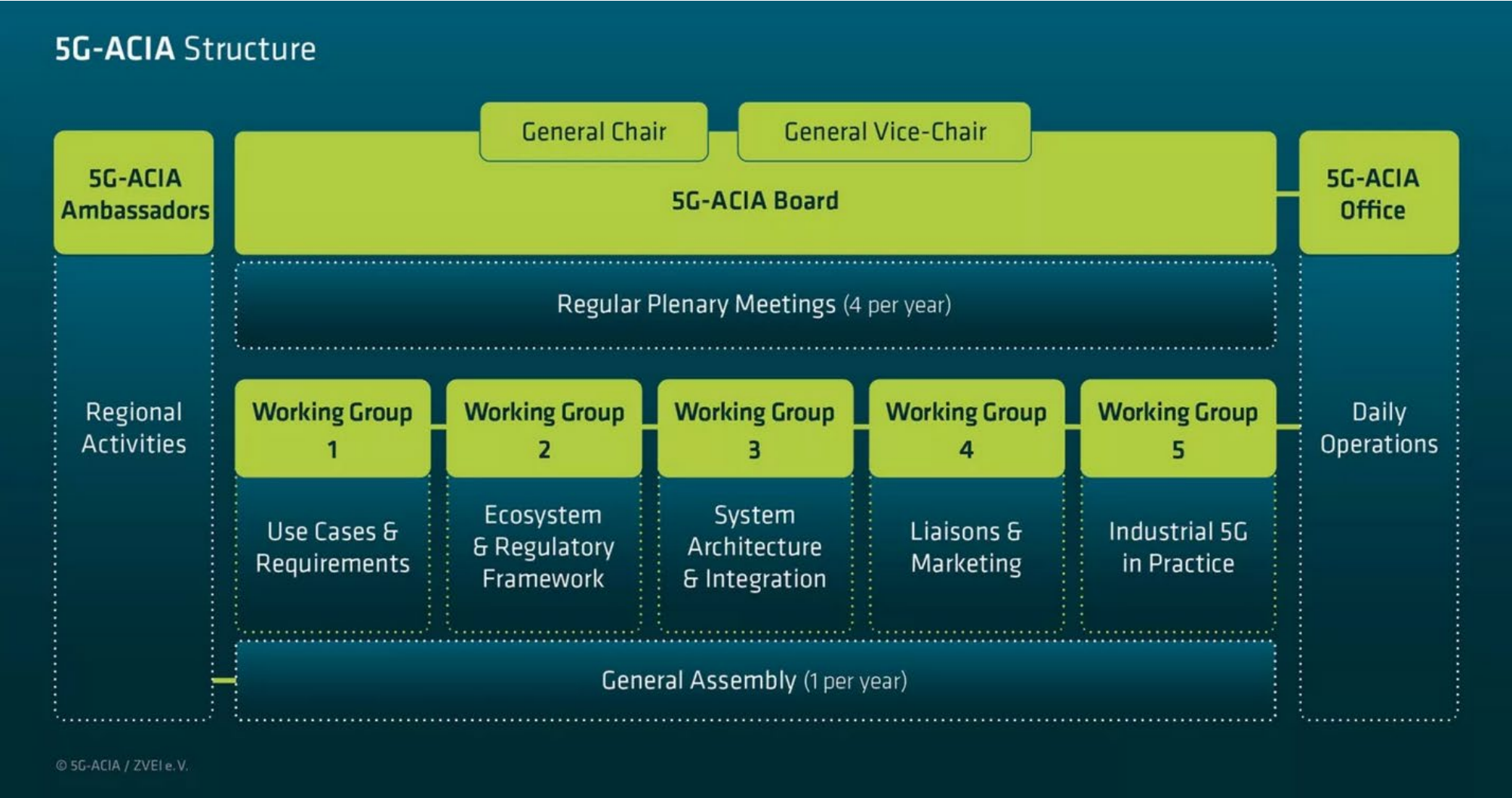


Close collaborations with Japanese industry organizations

Collaboration | Dialogue | Engagement

● Established Partnership

5G-ACIA | Structure



Major Achievements So Far



ICT / OT Collaboration

To speak the same language



Shopfloor Integration

Interworking with TSN, OPC UA, etc.



Use Cases & Requirements

What is needed / desired?



IT Integration

Seamless integration in enterprise IT



Standardization

Many key features specified



Testbeds & PoCs

Solid learnings in real-world scenarios



Private Networks

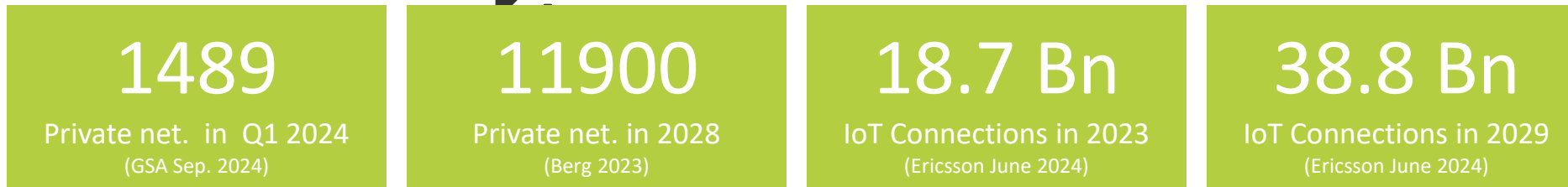
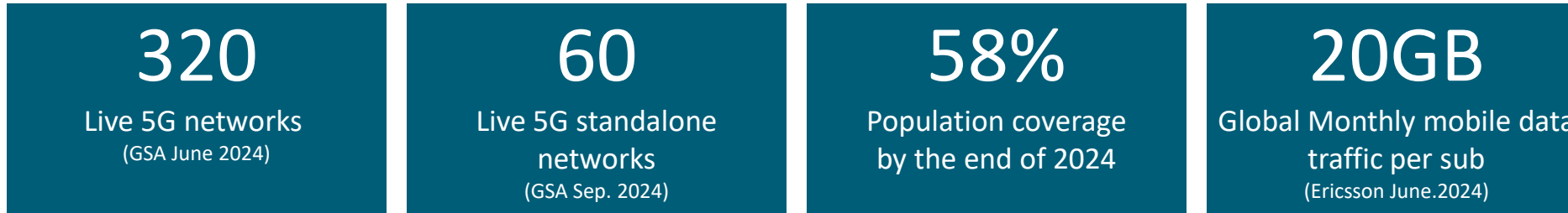
Addressing industrial needs

...

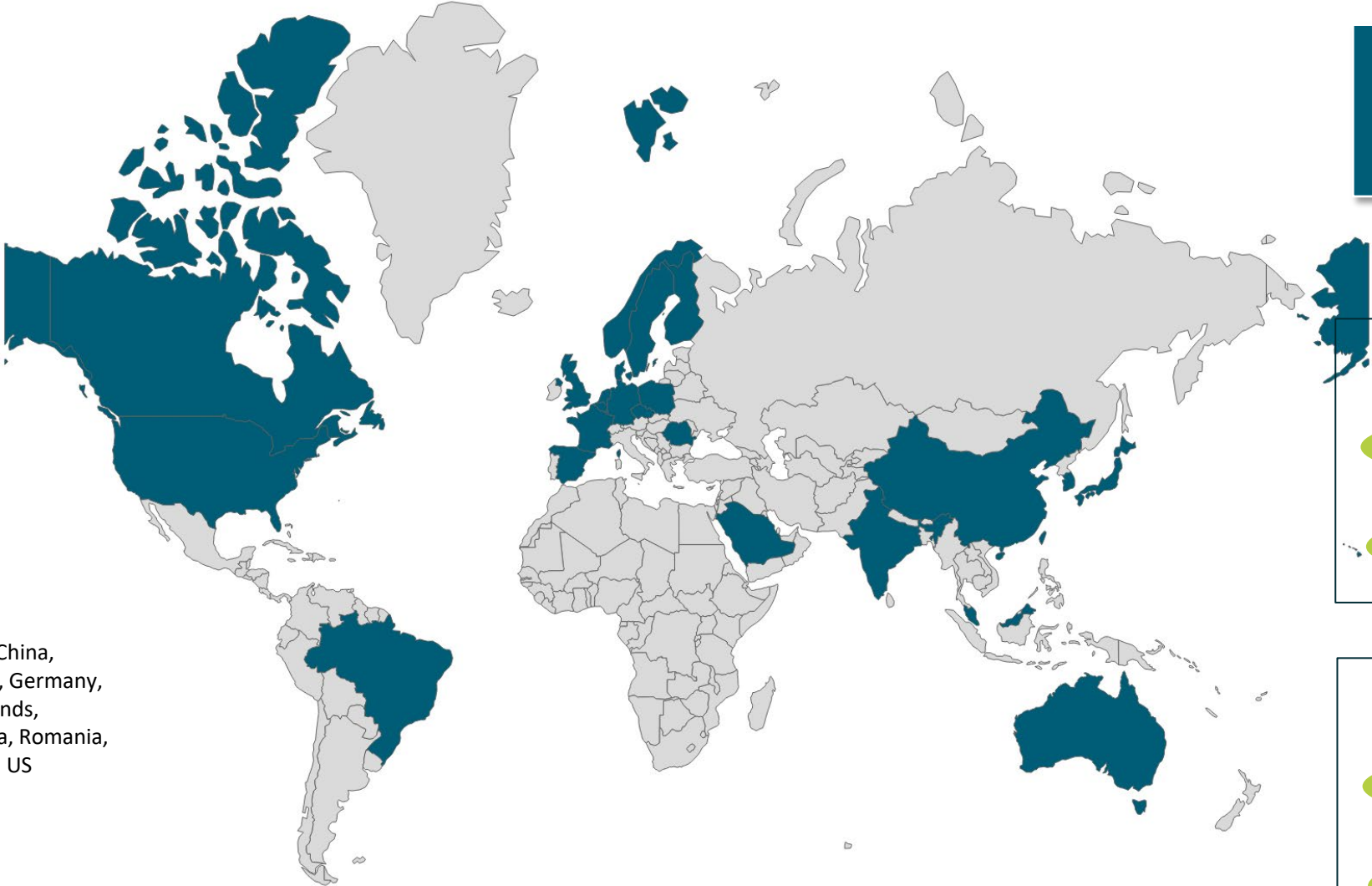
Part II
(Industrial) 5G Today




5G in numbers



5G-ACIA | Global 5G Spectrum Overview (May be incomplete)




Overview of countries with local 5G spectrum
(independent of which band)

 **Status Quo in Germany¹**

~412 Granted licenses in 3.7 – 3.8 GHz band

22 Granted licenses in 26 GHz band

¹Status: Sep. 2024

 **Status Quo in Japan²**

~152 Granted licenses in 4.6 – 4.9 GHz band

27 Granted licenses in 28 GHz band

14

¹Status: Apl. 2024

High band
Australia, Brazil, Canada, China, Denmark, Finland, France, Germany, Japan, Malaysia, Netherlands, Norway, Republic of Korea, Romania, Saudi, Spain, Sweden, UK, US

Part III

Industrial 5G Shopfloor Integration in Detail

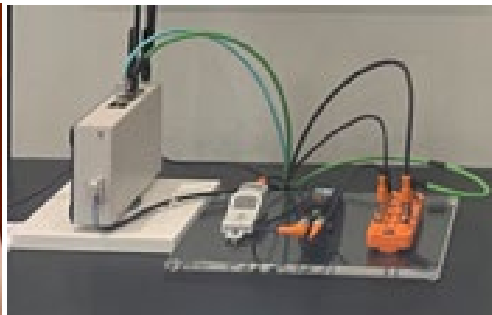


Industrial 5G Devices | Examples

Gateway for IP67 sensor
[Weidmuller]



I/O Device [ifm]



Controller [Wago]



Mobile Panels [ABB]



Gateway for brownfield
[Endress+Hauser]



Level Sensor
[Endress+Hauser]



Router [Phoenix Contact]

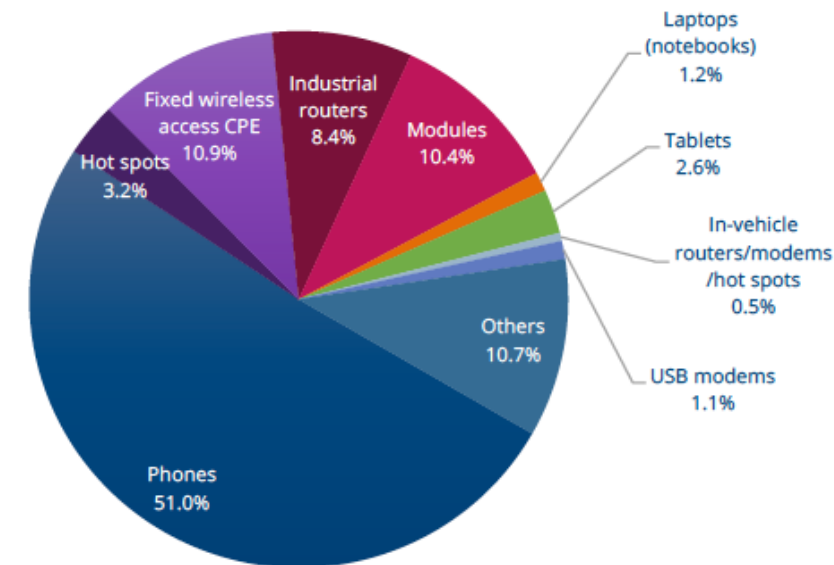


Router [MOXA]



Drones [ABB]

230 Industrial 5G Routers (8.4% of 5G devices)



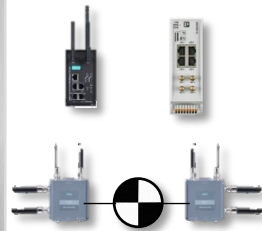
Announced 5G device models by type
(GSA, July 2024)

New

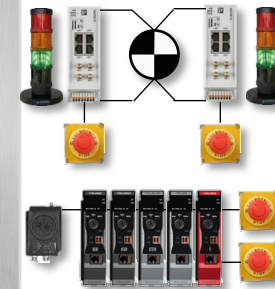
Industrial 5G routers



Fieldbus comm.



Safety over 5G



Industrial 5G Radio



5G-ACIA Demo Wall

Making Industrial 5G happen

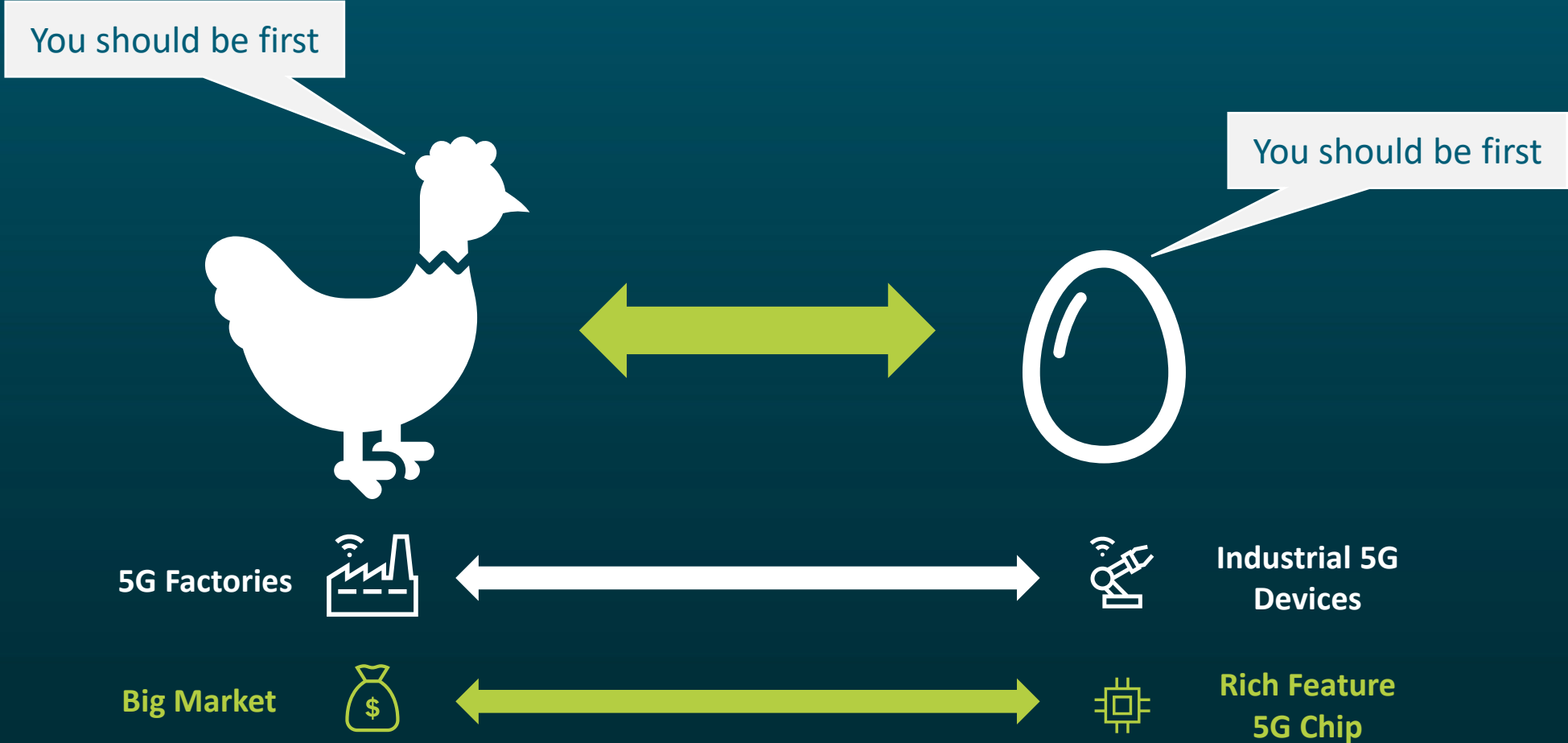
Visit us at IAS in Shanghai next week

Part VI

Quo Vadis, Industrial 5G?



Industrial 5G – The Chicken-Egg Challenge



Is Industrial 5G Special?

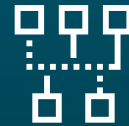
5G

Delayed Ramp-Up
of Industrial 5G



In good
company
😊

It's a conservative and relatively slow industry
compared to the mobile consumer business 😊!



Slow introduction of wired TSN



Slow adoption of AAS¹ / digital twins



Long journey towards Industry 4.0





**Private 5G
Ramp-Up**



**Growing Feature
Support**



**Ecosystem
Development**



**Deployments
Beyond PoCs**



**Significant
Investments**

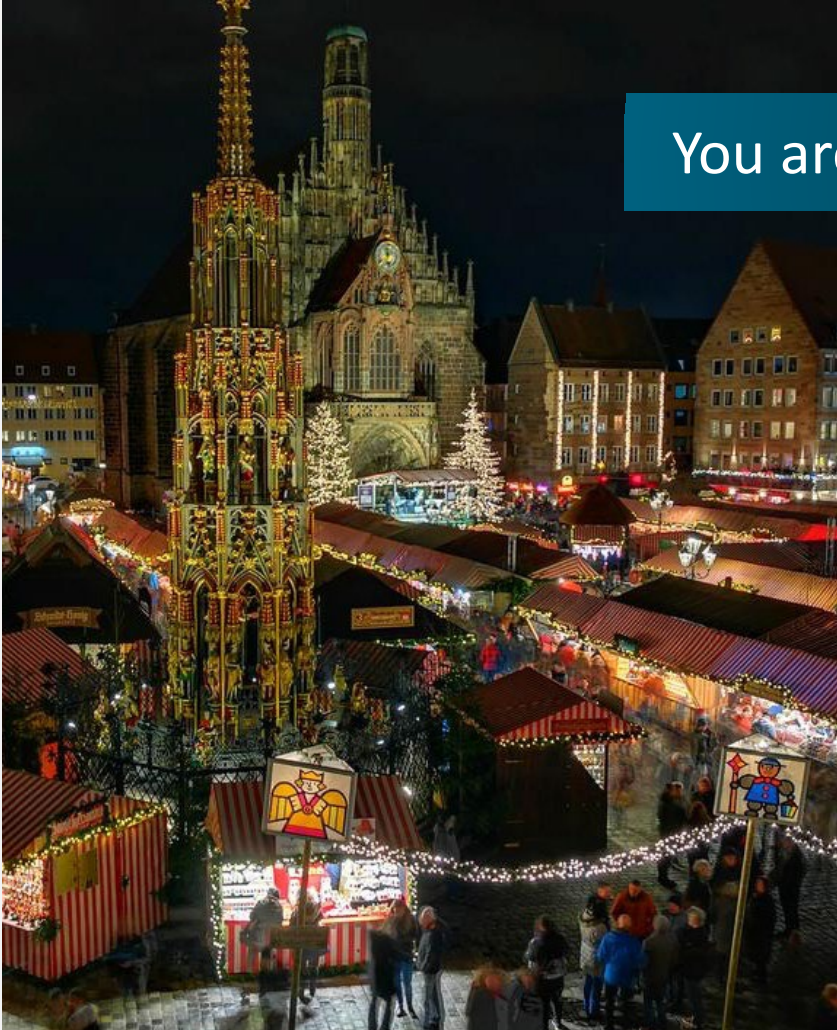


**Industrial 5G is coming a bit later than
originally expected, but it is coming!**

5G-ACIA | Next Major Meetings



You are always welcome to join us as a guest



December 2024 | Nuremberg

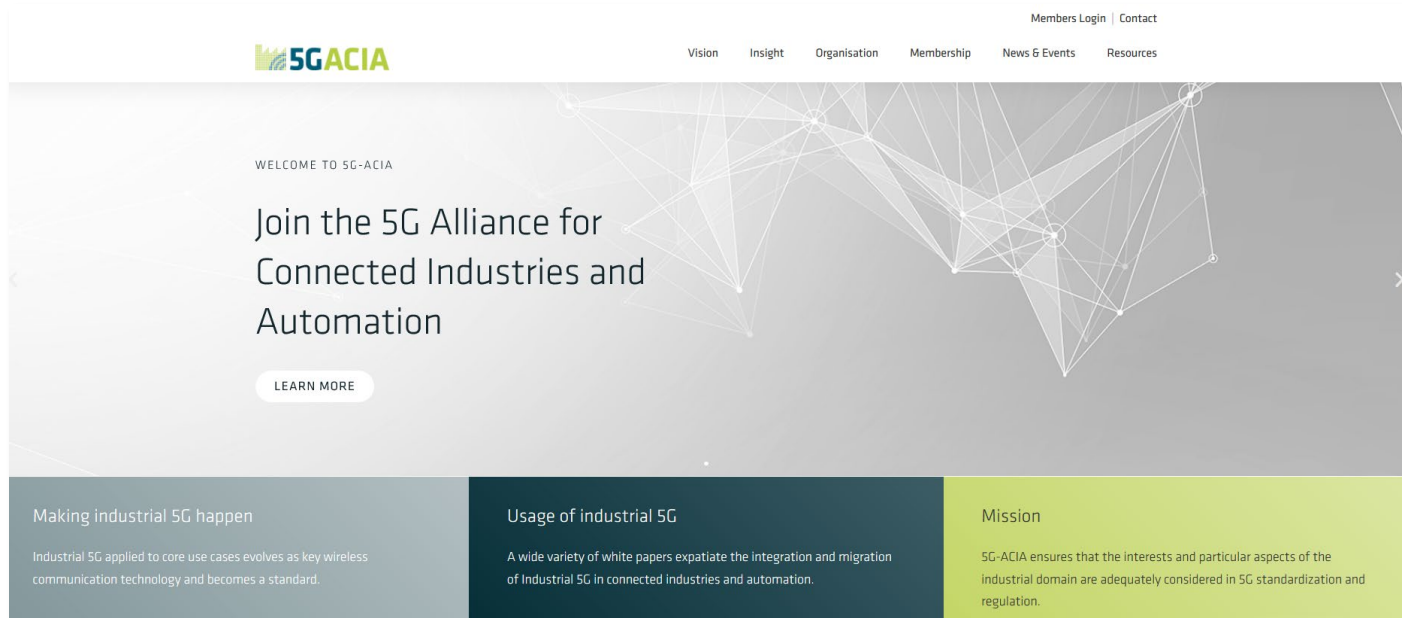


March 2025 | Online



June 2025 | Helsinki

5G-ACIA | Further Information



www.5g-acia.org



Free white papers

Join us today to unlock the full potential of Industrial 5G and to pave the way for its further evolution towards 6G in future!

Thank you!

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