Smart5Grid project

5G empowering the energy sector

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The 5G Infrastructure Public Private Partnership

Demonstration of **5G** solutions for
SMART energy **GRID**s of the future

This project has received funding from the European Union's *Horizon 2020 research and innovation programme* under grant agreement n° 101016912

Smart5Grid roadshow

Agenda:

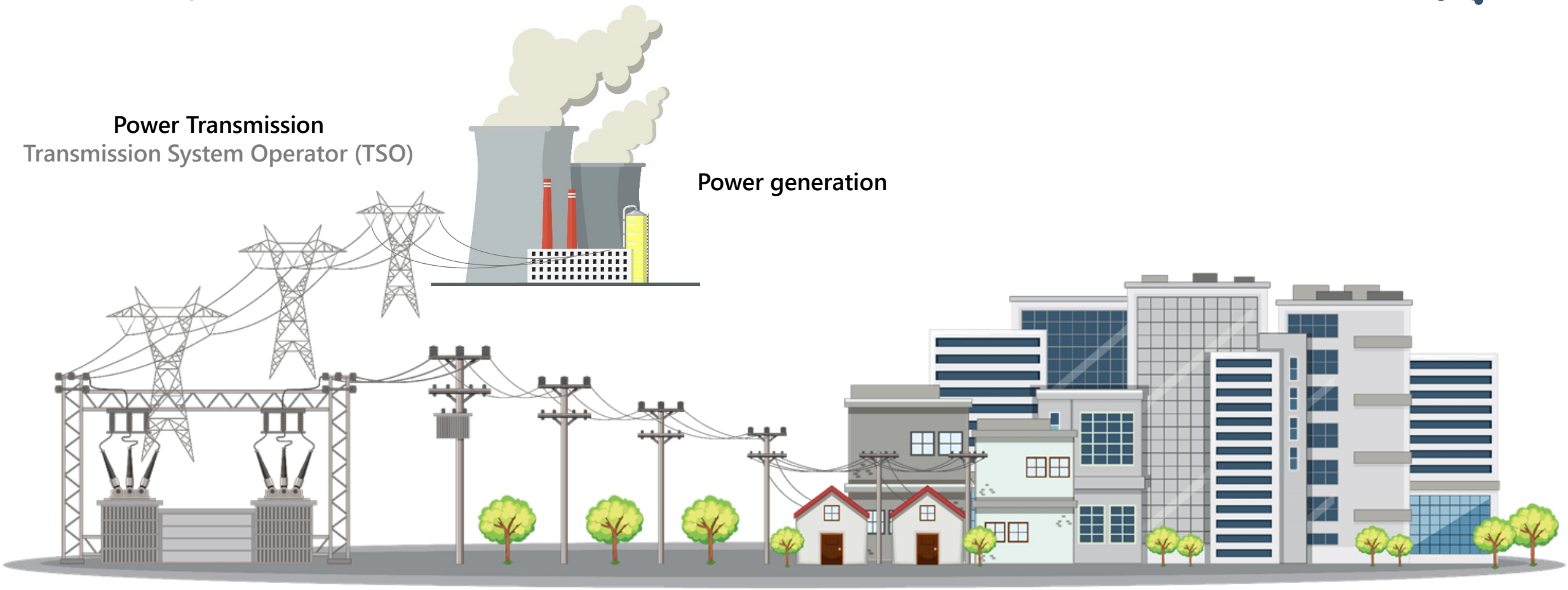
Start time	Theme	Presenter	Duration
09:30	Event Registration		
09:45	Introduction 5G Network programmability Business opportunity for serving industry verticals Questions & Answers	8BELLS	30 min
10:15	Smart5Grid project overview Real-time wide area monitoring of cross-border power exchange use case Precise distributed generation monitoring at msec-level use case Questions & Answers	UoA ΑΔΜΗΕ OTE	10 min 20 min 20 min 10 min
11:15	Coffee break		15 min
11:30	Developing a Network Application for "Remote Inspection of Automatically Delimited Working Areas at Distribution Level" NetApp development on the Smart5Grid platform Questions & Answers	Sidroco	30 min
	Communication & Dissemination channels available to experimenters	INFOLYSiS	10 min
12:15	Light lunch		

Energy Vertical

Traditional grid

Power Transmission
Transmission System Operator (TSO)

Power generation

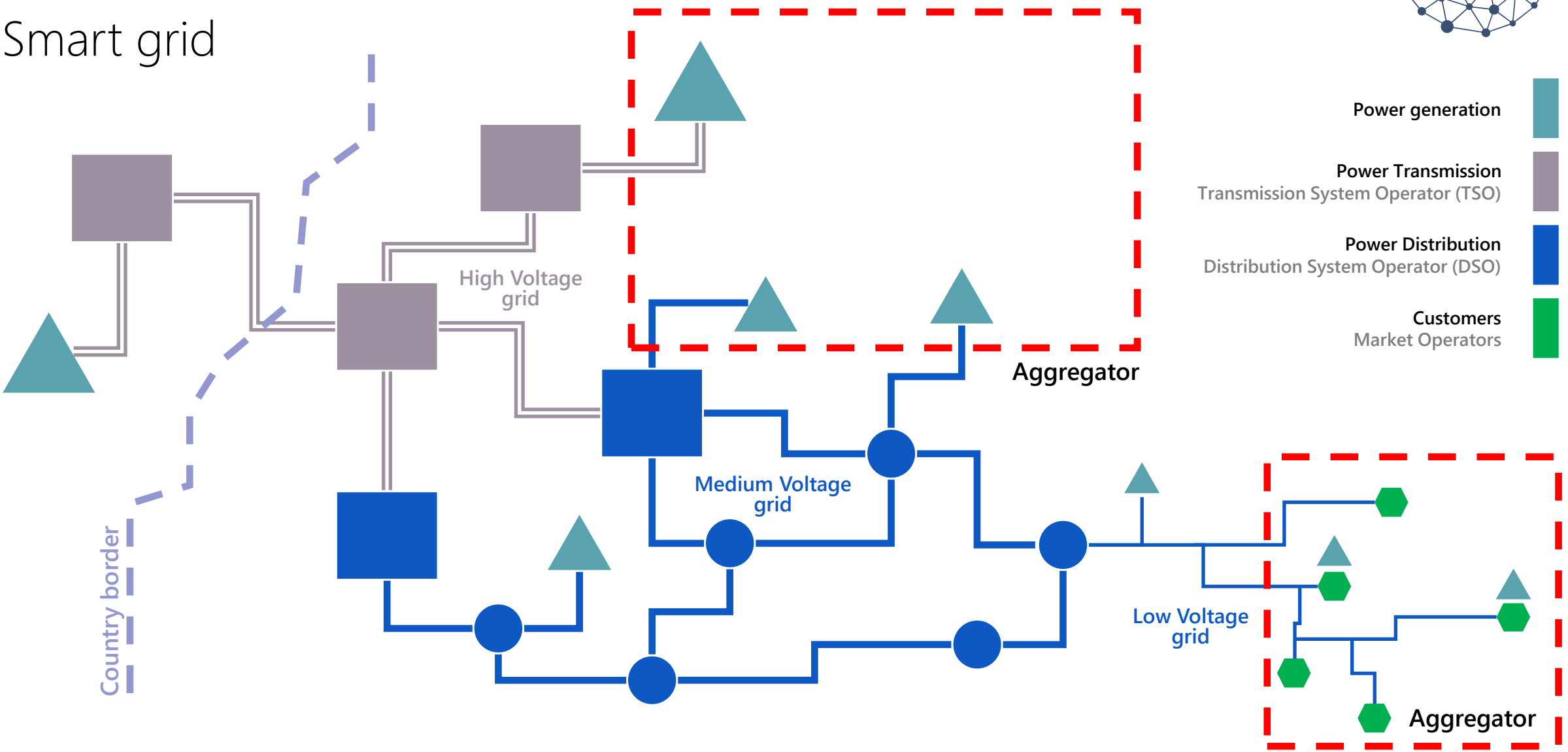


Power Distribution
Distribution System Operator (DSO)

Customers
Market Operators

Energy Vertical

Smart grid



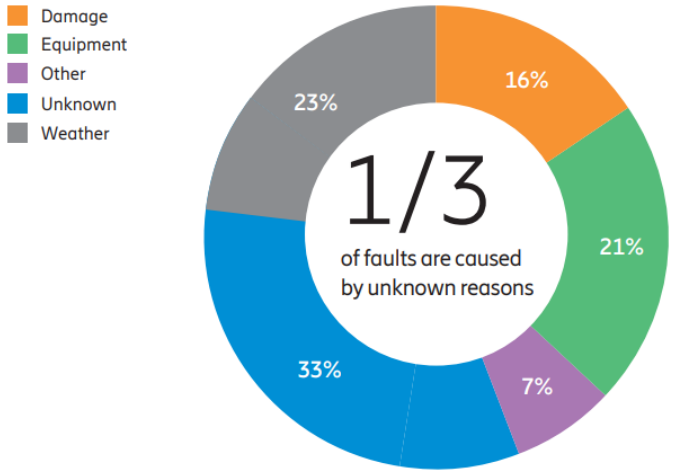
Energy industry challenges

Growing demand due to increased electrification: 2% compounded annual growth rate (CAGR) over the next two decades

Changing energy production mix and growing renewable sources: from 2020 through 2040, renewables are expected to grow from 29% of energy generation to 45%

Generation from renewables, due to their volatile nature, is stressing the stability of energy grids

Increasing numbers of faults: one-third of faults are caused by unknown reasons. This is due to a lack of information and measurement.



Source: Swedenergy (2018)

How to address these challenges?

Digitalization

5G wireless technology

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5G advantages

Smart5Grid

standards based

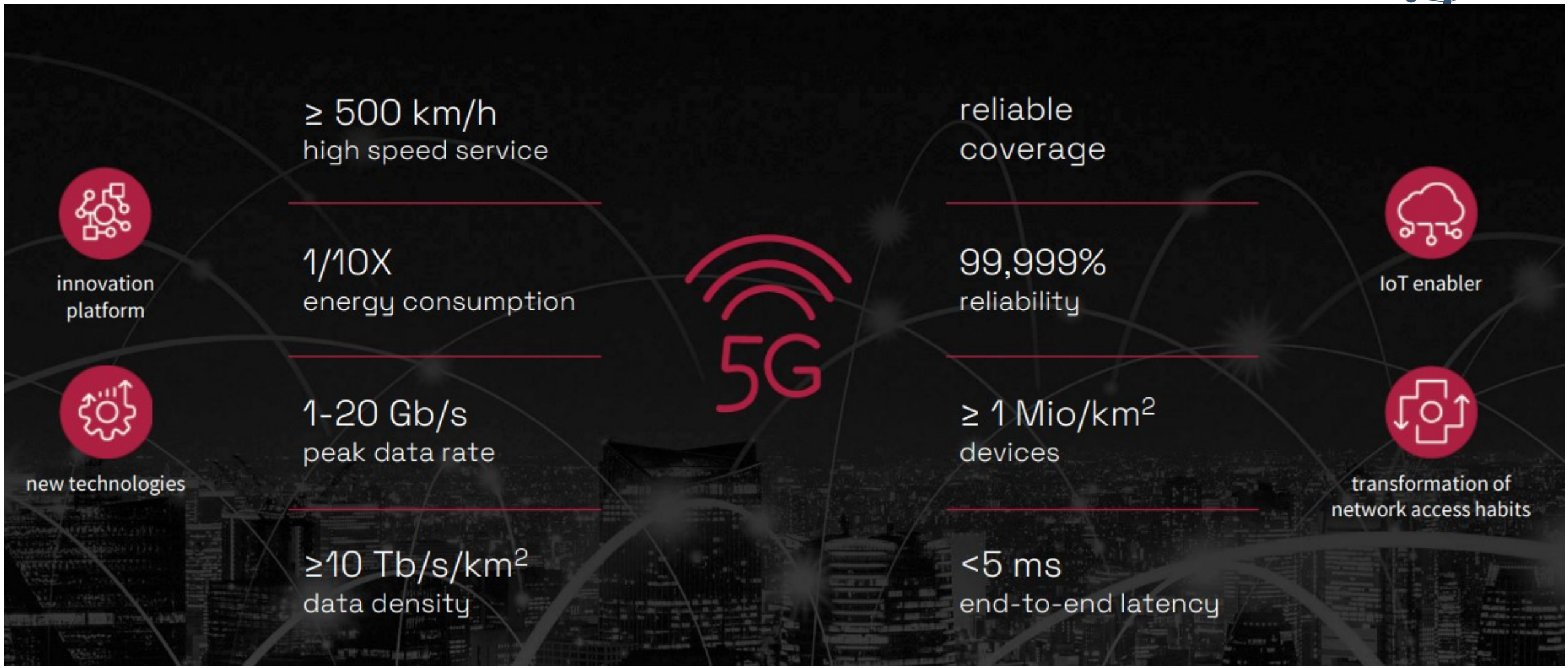
coverage over any geographic area

built-in security and reliability mechanisms

improved performance KPIs (low latency, high throughput)

scalable able to reach any network size

5G performance target



5G serving various industry verticals

Guaranteed QoS

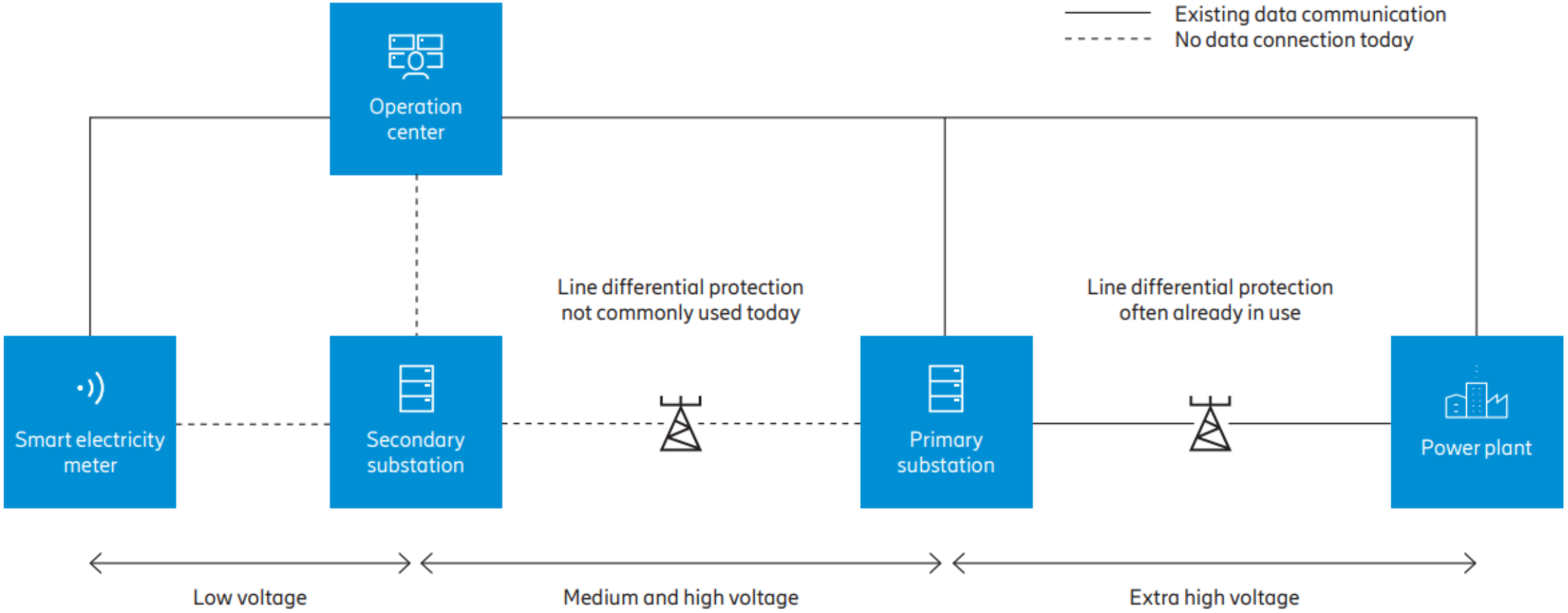
Low Latency

Mobility

Customization

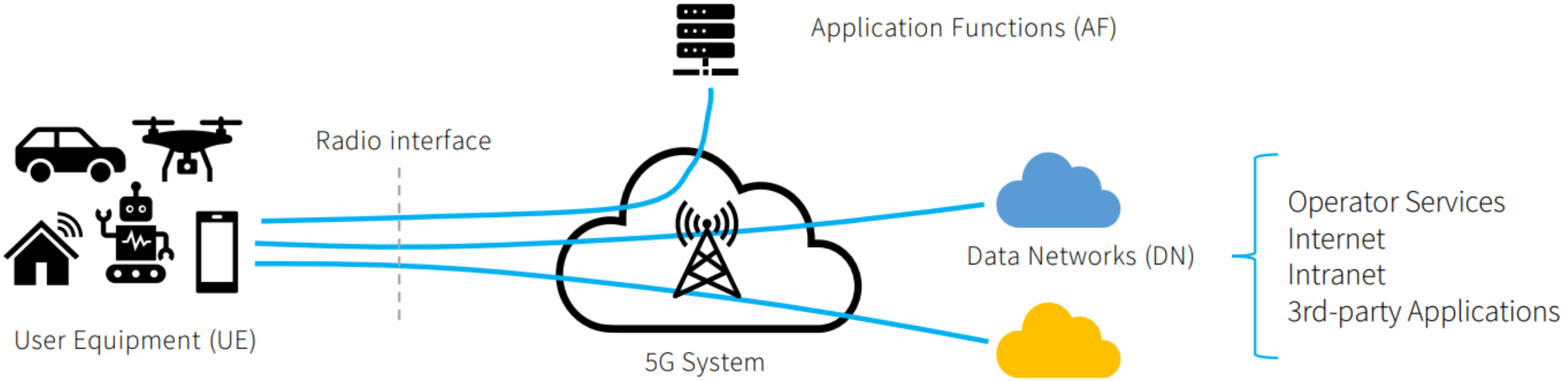
New communications needed for lower voltage distribution network

To enable differential protection



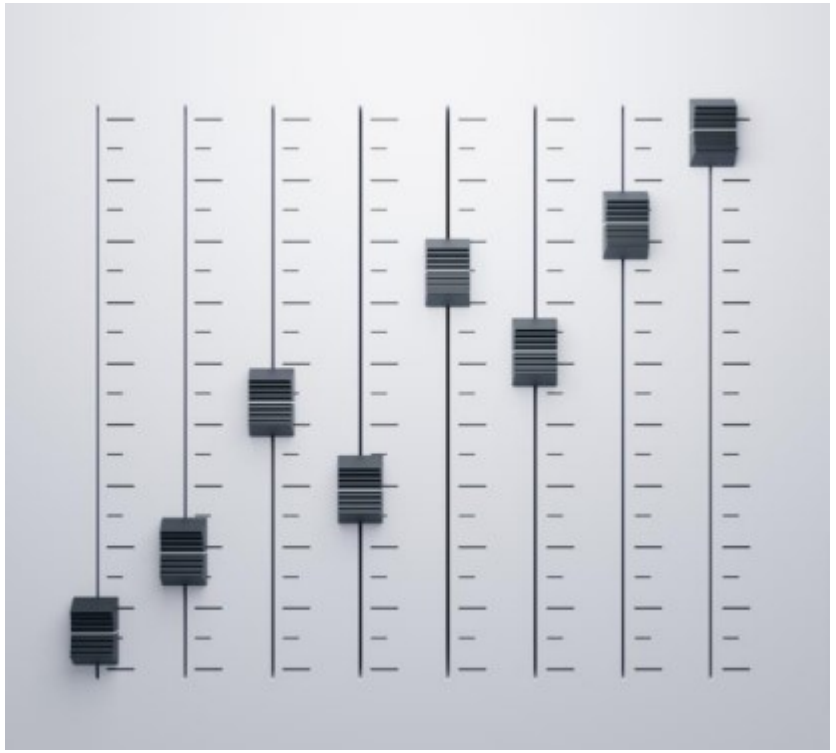
The 5G System

A 5G system provides data connectivity services to transfer data packets between User Equipment and Data Networks or Application Functions over a radio link.



5G capability exposure!

Network Applications have control capabilities over the 5G network

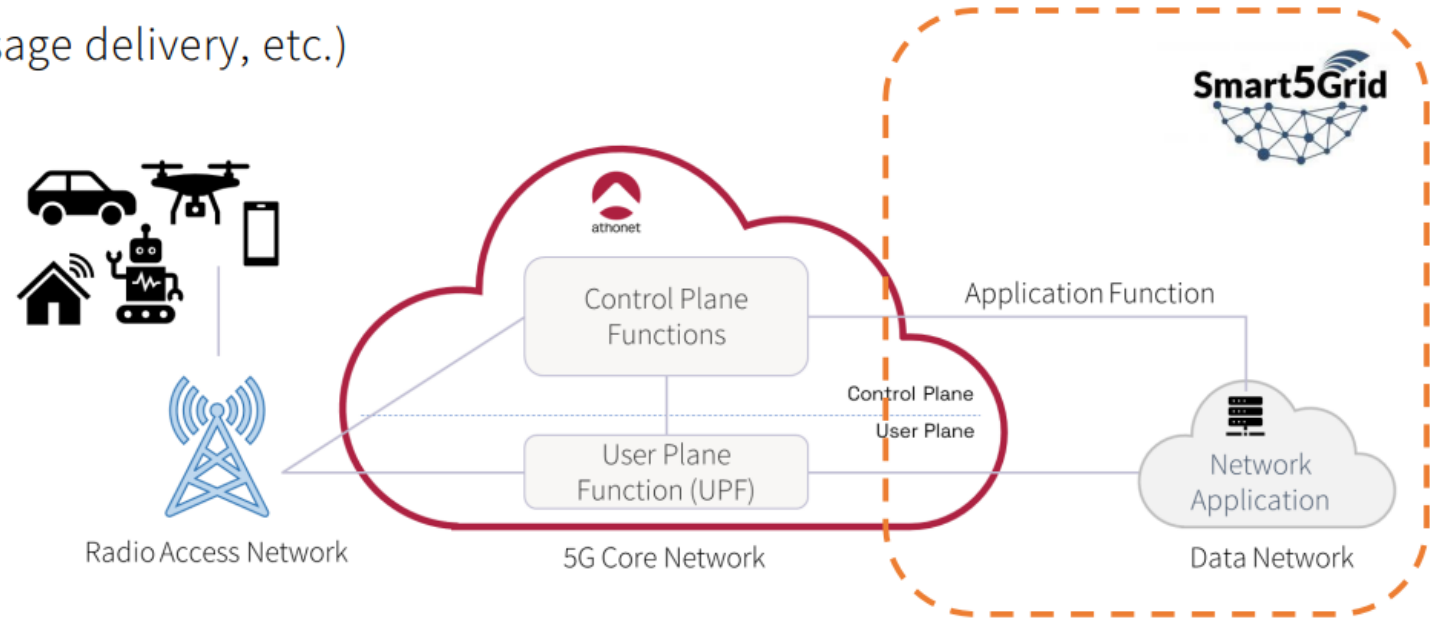


The 5G core capability exposure

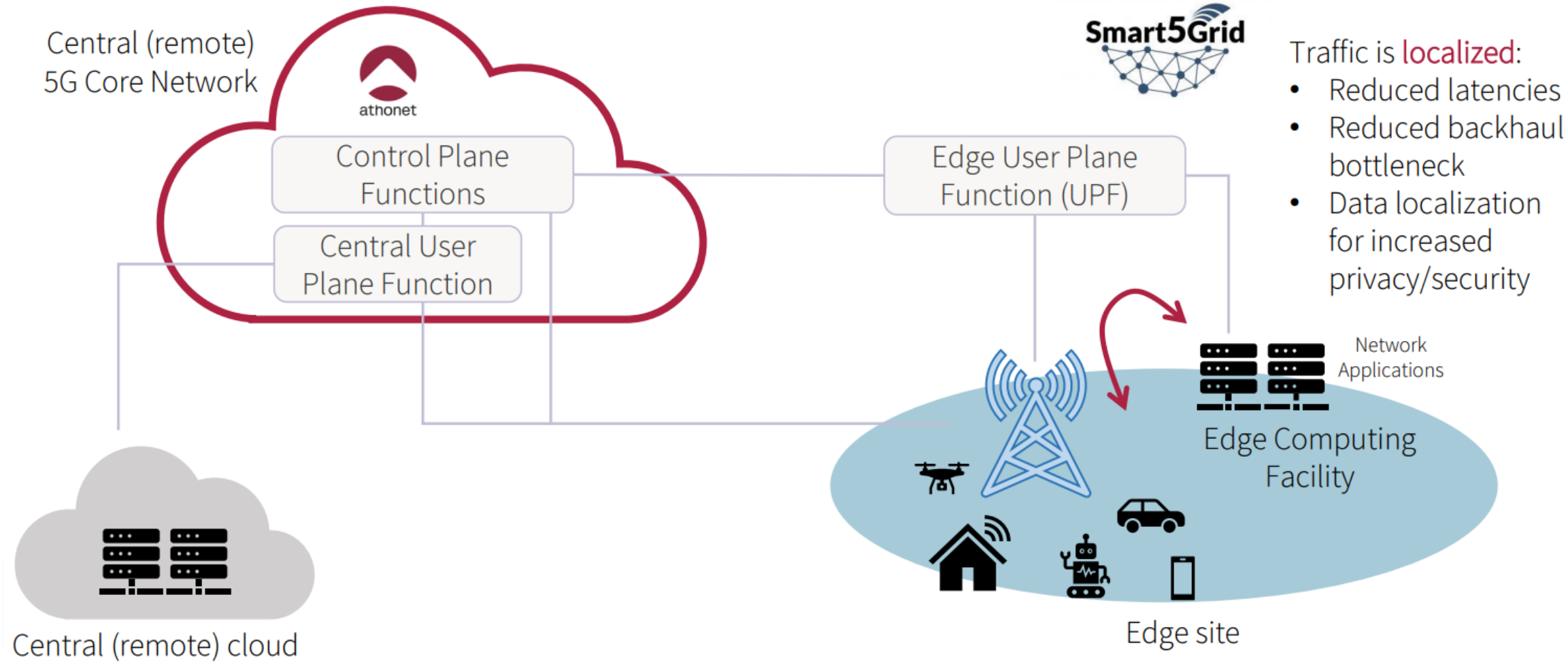
Certain control-plane 5GC functionalities are accessible to third parties (e.g., Network Applications) via "Application Functions" and exposed interfaces.

External Network Applications can:

- Retrieve event notification
  (loss of UE connectivity, UE mobility, message delivery, etc.)
- Trigger UE actions
  (UE activation, feedback message, etc.)
- Retrieve network analytics
- Configure network parameters
  (routing, QoS, etc.)



Hybrid deployment and Edge computing



Traffic is localized:

- Reduced latencies
- Reduced backhaul bottleneck
- Data localization for increased privacy/security

Why engage in the experimentation process?

- Exposure to the Network Applications ecosystem using the 5G network programmability to address various vertical use cases
- Support & advisory services from developers from Smart5Grid consortium
- Access to app testing tools that can be used to validate applications (V&V framework)
- Visibility of the novel developed Network Applications through the Open Service Repository (OSR)
- Lifecycle of the applications extended after the end of the project (OSR & project tools)
- Certification badge offered to the third-parties that successfully develop applications and pass the certification process
- Promotion through the project's social media channels

Consortium Composition

24 partners, 2 Linked Third-parties, 13 SMEs

Smart5Grid

Coordinator

enel

TELCOs

WINDTRE

OTE GROUP OF COMPANIES

NETISSAT

Tech Companies

ENGINEERING

Atos

Universities/Research institutions

i2cat

HELLENIC REPUBLIC
National and Kapodistrian University of Athens
EST. 1837

University of Cyprus
KOIOS
Research and Innovation Center of Excellence

DSOs

e-distribuzione
e-distribución

TSOs

ECO ЕАД

ադμηε

SMEs

EIGHTBELLS
Independent Research & Consultancy

INFOLYSIS

SC

NBYCOMP
NearbyComputing

axon logic

ubiwhere
SUITING THE FUTURE

ATHONET

SETECHCO

SIDROCO

ENTRA ENERGY

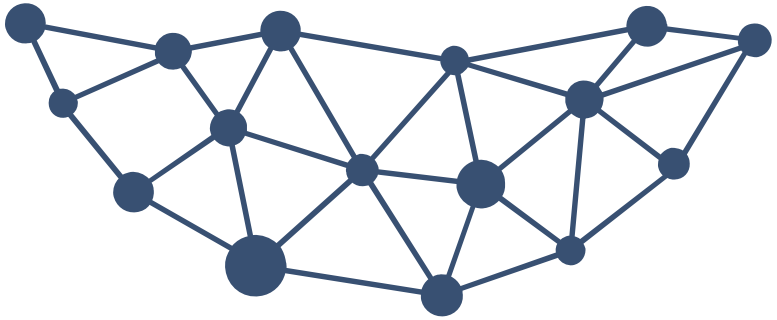
UBITECH
digitizing energy

nosia
- SEÑALIZACIÓN INDUSTRIAL
- EQUIPAMIENTO PARA LA INDUSTRIA

STAM
MASTERING EXCELLENCE

(Linked third-parties of Enel GI&N)

Smart5Grid



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Thank you

Wishing all the best for our common success!