



# **CXC FESTIVAL IOT AND EDGE COMPUTING IN THE GREEN-DIGITAL TRANSFORMATION: A ROADMAP FOR IOT IN EUROPE**

**IoT and Edge research, innovation and deployment  
priorities in the EU**

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**MARKET  
RESEARCH AND  
BUSINESS  
MODELLING**

# MARKET DIMENSIONS



## PROJECTIONS FOR IOT AND EDGE

- IoT devices duplicate from 2020 to 2025 at ~15% CAGR
- IoT connections surpassed Non-IoT in 2020
- All projections position APAC, North America and Europe in order of volume.

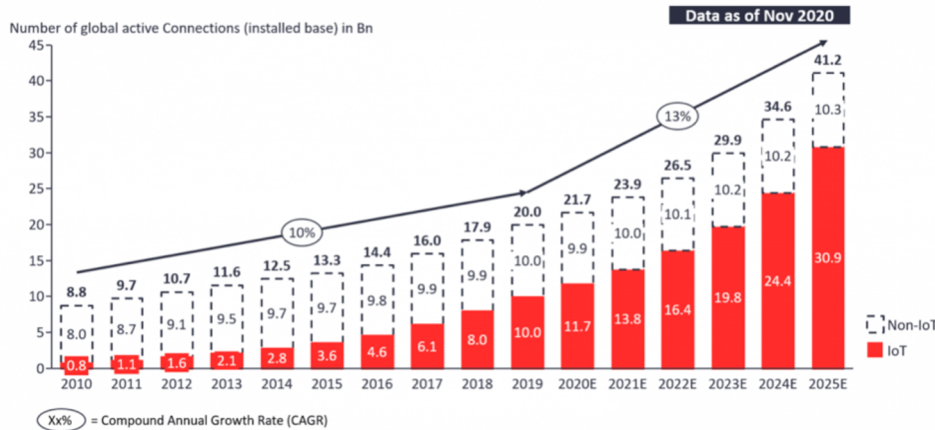
- Operators are leading adoption with cloud providers most likely to provide platform environments in the future
- Europe at 31% of investments by 2028, with multinational network operators in western Europe as largest customers



Insights that empower you to understand IoT markets

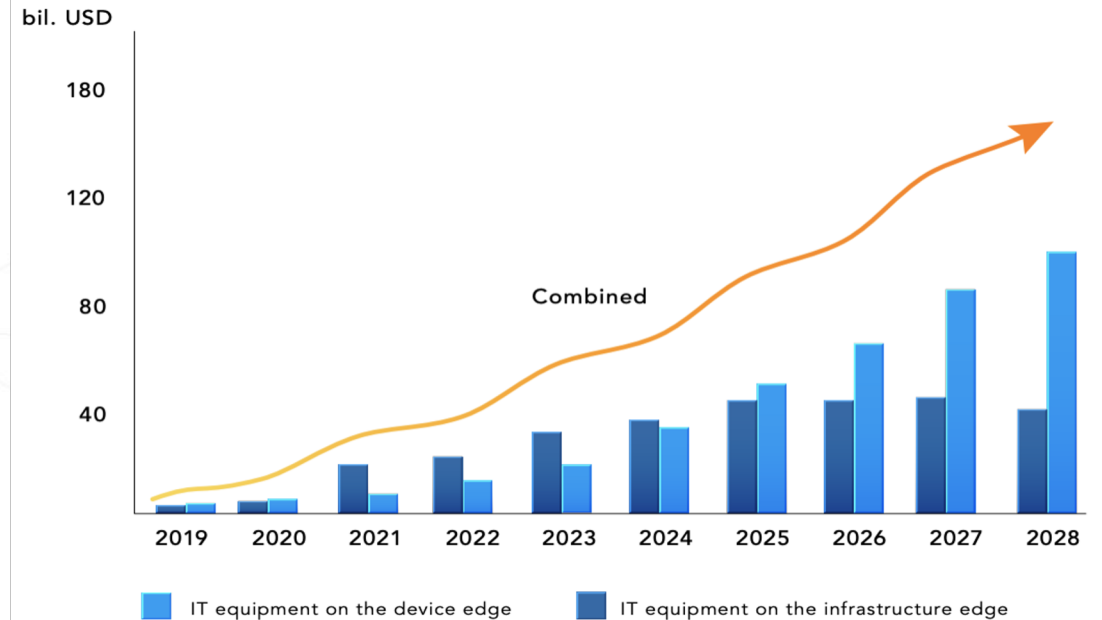
### Total number of device connections (incl. Non-IoT)

20.0Bn in 2019– expected to grow 13% to 41.2Bn in 2025



Note: Non-IoT includes all mobile phones, tablets, PCs, laptops, and fixed line phones. IoT includes all consumer and B2B devices connected – see IoT break-down for further details  
 Source(s): IoT Analytics - Cellular IoT & LPWA Connectivity Market Tracker 2010-25

Number of devices projection <sup>1</sup>



Regional and Domain Potential <sup>2</sup>  
 Global annual CAPEX on Edge <sup>3</sup>

1. <https://iot-analytics.com/state-of-the-iot-2020-12-billion-iot-connections-surpassing-non-iot-for-the-first-time/>

2. <https://artemis-ia.eu/news/whitepaper-from-iot-to-sos.html>

# EDGE COMPUTING LANDSCAPE

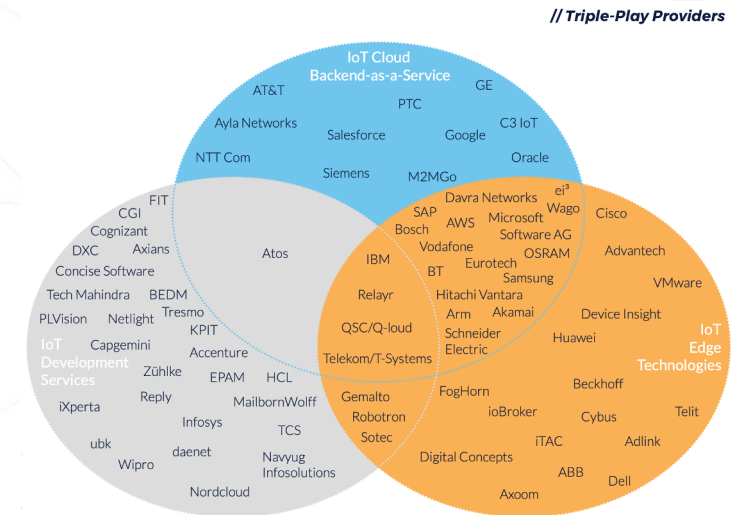
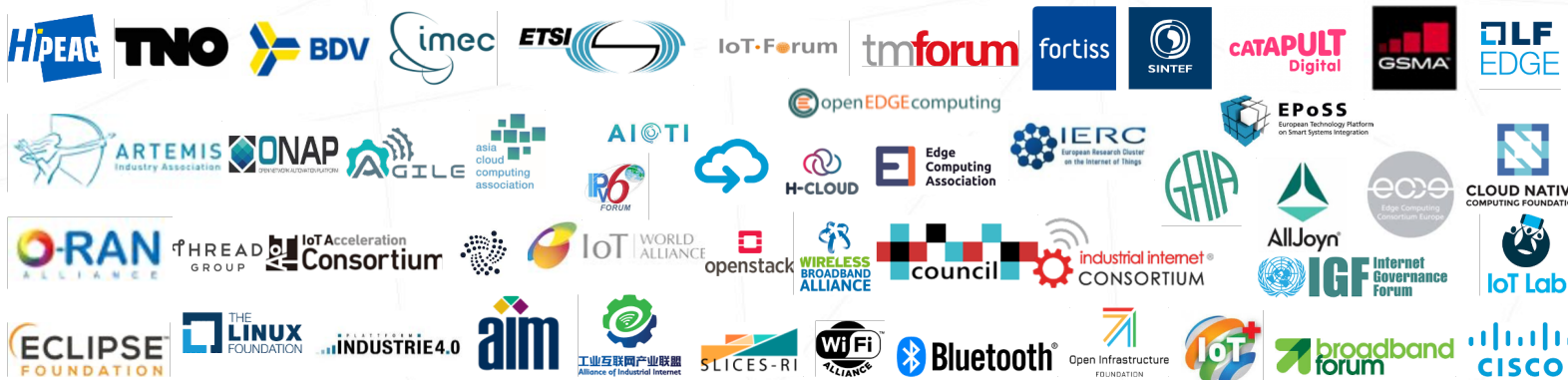


## European front runners in Edge-IoT



- **Network operators** are front-runners in edge computing investments
- Europe has strong players in **hardware and service providers.**
- Moving **from use cases towards platform-centric environments** leaders are non-european AWS, Microsoft
- Blurring lines between cloud & edge

## Main Alliances, Fora & Organisations active in Cloud-Edge-IoT



10. [https://www.reply.com/Documents/Report\\_CVU\\_IoT\\_licensed\\_for\\_Reply.pdf](https://www.reply.com/Documents/Report_CVU_IoT_licensed_for_Reply.pdf) 6. [https://www.reply.com/Documents/Report\\_CVU\\_IoT\\_licensed\\_for\\_Reply.pdf](https://www.reply.com/Documents/Report_CVU_IoT_licensed_for_Reply.pdf)



# **NGIOT KEY PRIORITIES**

# [ Domain Specific Priorities - SCC ]



- **Current state, trends & opportunities**

Edge as post cloud, personalized solutions for citizens

Edge moving towards predictive/real time traffic optimization by enhanced connectivity of users, assets, vehicles and infrastructures

European ambition to deploy "10,000 climate- neutral and secure edge nodes" across the EU, open and distributed in a way (Digital Decade)

- **Priorities & Actions**

Embedding edge in cloud strategies

Shift to edge computing as pathway to the green digital transformation of cities and communities

Partnerships across demand and supply (EIP-SCC)

Open source adoption

- **Challenges & Barriers**

Trust (by end-users)

Security and privacy

Lack of interoperability • V endor lock-in

Scalability

Inclusiveness

- **Key Organisations**

OASC

EUROCITIES

ENoLL

Artemis Industry Association • EPOMM

ELTIS

UTA

IoT Forum

Fiware

Relevant Movements: Living-in.eu

Relevant H2020 Projects: AURORAL, dRural

# [ Economic & Policy Priorities ]



- **E1. Support for SMEs and start-ups**

Capital barriers vs. Strong Brands, Lack of VCs

- **E2. Data as critical assets**

Clarifying data ownership

- **E3. Increase digital skills and competencies**

Especially true for rural areas and farming industry

Close the gap between possibility and market availability

- **E4. Build Trust**

Trust among current and potential IoT users, policy makers and citizens. Lack of business cases for trust

- **E5. Identification of Key Regulatory and Legal Issues**

Regulation at the right time. Law complexity across countries

- **E6. Interoperability and Replicability**

Minimal Interoperability Mechanisms (MIMs)

- **E7. Innovation Procurement**

Dependency on non EU cloud provider

- **E6. Sovereignty**

Align public procurement with the dynamics of IoT

# R&D&I Priorities



## IoT

### • R1- IoT: Autonomous IoT solutions

Large IoT & digital infrastructures, Autonomous IoT infrastructures

### • R2-IoT: Human & sustainable developments in the loop IoT

Sustainable IoT by design, Augmented IoT, Tactile Internet, IoT for sustainability

## 5G-6G Networks

### • R-NET1: Reliable, low-cost, sustainable and scalable IoT networks

Low-cost, high-volume connectivity, Low-power connectivity schemes

## Data Management, AI & ML

### • R-DATA1: IoT data processing architectures

### • R-DATA2: Decentralised machine learning

### • R-DATA3: Trusted and effective decisions for IoT

### • R-DATA4: Processes and data interoperability

### • R-DATA5: Monetisation models & technologies

## Cloud Architectures

### • R-CLOUD1: Self-\* for edge computing

### • R-CLOUD2: Collaborative orchestration

### • R-CLOUD3: Energy aware cloud-to-edge infrastructures

## Advanced Electronics

### • R-ELET1: Sustainable and biocompatible devices

### • R-ELET2: High performance computing devices for the edge

## Cybersecurity

### • R-SEC1: Futureproof security and trust

### • R-SEC2: Privacy-by-design



# **NGIOT KEY RECOMENDATIONS**

# [ RECOMENDATIONS ]



- **Recommendations for the Horizon Europe programme**
  - Data Value, IoT Networks, Foster cost-efficiency of solutions, Data Management, IoT / Edge Operating Systems, IoT integration with other technologies, Machine-human interaction, IoT Trials, Research future-proof security and privacy by design, Green and sustainable IoT, IPR protection and patent promotion, Project impact promotion and assessment. Cascade Funding
- **Recommendations for the Horizon Europe programme**
  - Secure and Ethical IoT, Data models for interoperability and replicability, Innovation transfer, Scalability, Sustainability, Independence and sovereignty, IoT Skills Development, Open Innovation, Cooperation and standardization, Large-scale research infrastructure
- **Recommendations for the Horizon Europe programme**
  - Large band connectivity across digital infrastructures



[ THANK YOU FOR YOUR  
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