NEXT GENERATION INTERNET OF THINGS

Scoping research priorities and challenges ahead

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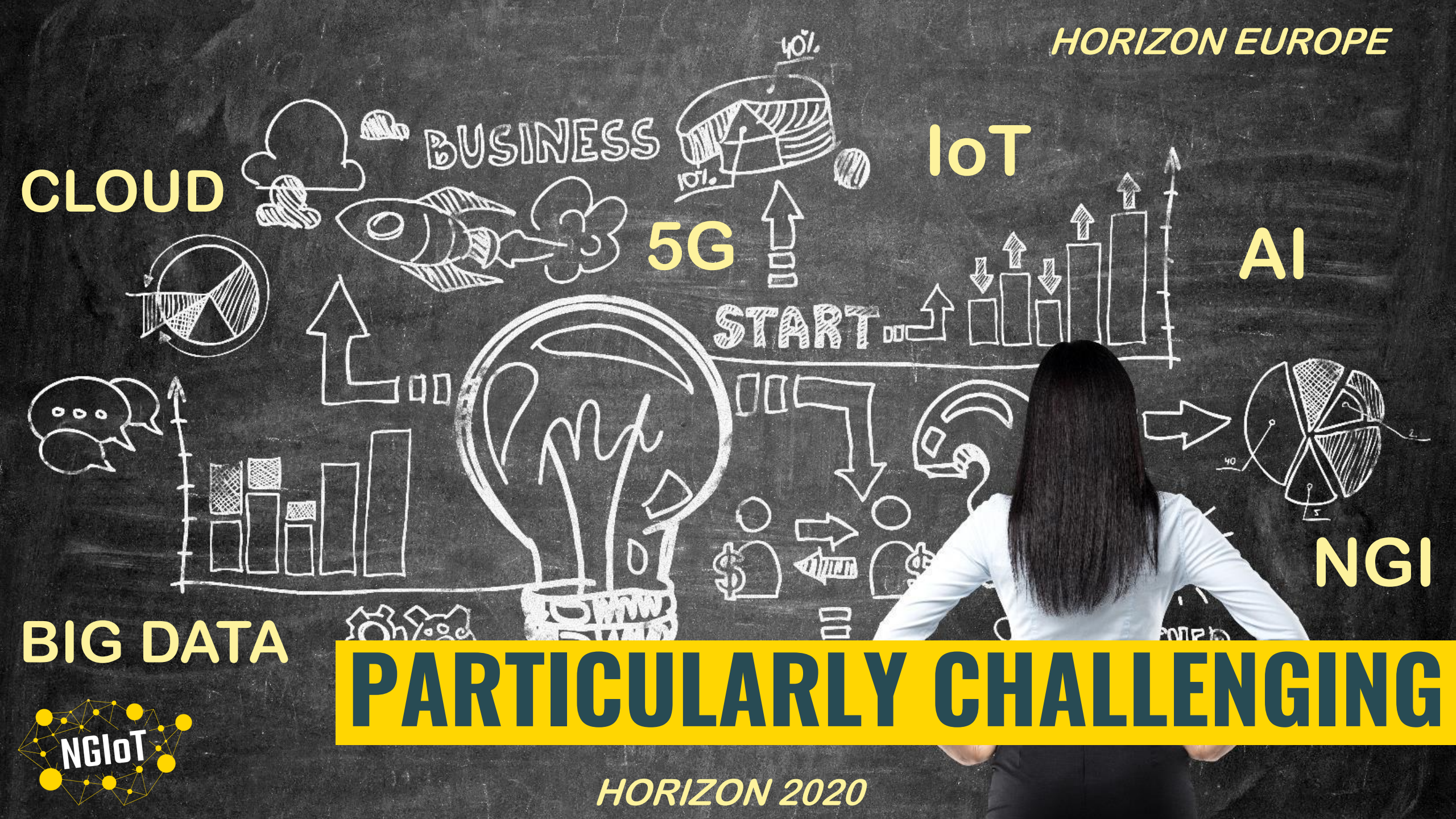
SETTING THE SCENE

NGIOT.EU

THE PROPOSED APPROACH

BACK TO THE ROOTS

- Ongoing work on NGIOT scoping paper
- Setting up the process and scope for the development of a comprehensive and forward looking research agenda
- Extract key policy recommendations
- We are not alone doing this exercise!
  - IoT-LSP projects
  - AIOTI / IoT Forum
  - 5G PPP / 5G IA
  - BDVA / AI4EU
  - NGI projects


HORIZON EUROPE
CLOUD
BUSINESS
IoT
5G
AI
START
NGI
BIG DATA
PARTICULARLY CHALLENGING
NGIoT
HORIZON 2020

ADDITIONAL COMPLEXITY ELEMENTS

WE ARE IN A TRANSITION PHASE

- New Commission must be set – various changes might influence the way in which some synergies will realise
- Future alliances and partnerships are being discussed and negotiated, not always openly and collaboratively
- Priorities and challenges rather diverse, when considering a very large population of researchers / innovators
- Budgets are still unclear

BUT CONVERGING IT IS THE ONLY OPTION TO ENSURE EUROPEAN COMPETITIVENESS AT GLOBAL LEVEL

SOME FACTS AND FIGURES

THE IOT PROMISES

- There are expected to be more than **64B IoT devices** worldwide by 2025
- **127 new IoT devices** connect to the internet every second
- IoT has the potential to generate **$4T to $11T** in economic value by **2025**
- The main revenue driver for 54% of enterprise IoT projects is **cost savings**

Take a look at the IoT-LSP ebook: https://european-iot-pilots.eu/create-iot-e-book/

IOT SPANNING ACROSS MANY DOMAINS

IOT EVERYWHERE

- ENERGY MANAGEMENT
- MANUFACTURING / INDUSTRY 4.0
- TRANSPORTATION / MOBILITY
- SMART CITIES
- HEALTH CARE
- AGRICULTURE / FOOD
- MEDIA
- INSURANCE
- SAFETY AND DEFENSE

SMART MOBILITY, SMART ENERGY, SMART CITIES AND COMMUNITIES, ENVIRONMENT MONITORING, SECURITY AND PUBLIC SAFETY

UNLEASHING THE POWER OF IOT

NGIoT

SMART CONNECTIVITY

SECURE DATA

DISRUPTIVE TECHNOLOGIES

MAJOR PRESSING NEEDS

- **Volume of data is humongous**
  - Transport
  - Storage
  - Processing
- **Real-time needs are increasing**
  - Super computing
  - Ultra-fast and reliable connectivity
- **Interoperability** as a pre-condition
- **Human-centricity** is the core driver

MAJOR RESEARCH AREAS

- Distributed Ledgers
- Edge Computing
- Artificial Intelligence
- Digital twin technologies / AR / VR
- 5G / 6G technology

PRIORITY RESEARCH CHALLENGES

FOUNDATIONAL

- Next Generation IoT Data Processing Architectures
- Reliable low-cost, sustainable and scalable sensor networks
- Future proof trust and security by design
- IoT and Data Semi-Automated Interoperability
- Privacy and ethics

WHAT'S NOT EASY…

- **Real-time decision making**
  - Computing power
  - Data Availability
  - Hyper connectivity
- **Humans in the loop**
  - Automation versus autonomy
  - Delegation and liability
- **IoT data sharing and monetisation**
  - New business models
  - Market roles and responsibilities
  - Pricing and contracting

IoT security, IoT privacy and data protection, IoT interoperability, APIs and standards, IoT and Artificial Intelligence, IoT and Society

RECOMMENDATIONS

ON THE WAY…

- It’s all about data?
- Smart insights – data is not oil
- Sustain and scale up or you die
- Interoperability, openness vs complexity and security
- Trust me baby trust me
- Leverage across related efforts / communities / domains
- Facilitate involvement of all players
- Multidisciplinary as a must

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THANK YOU FOR YOUR ATTENTION

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