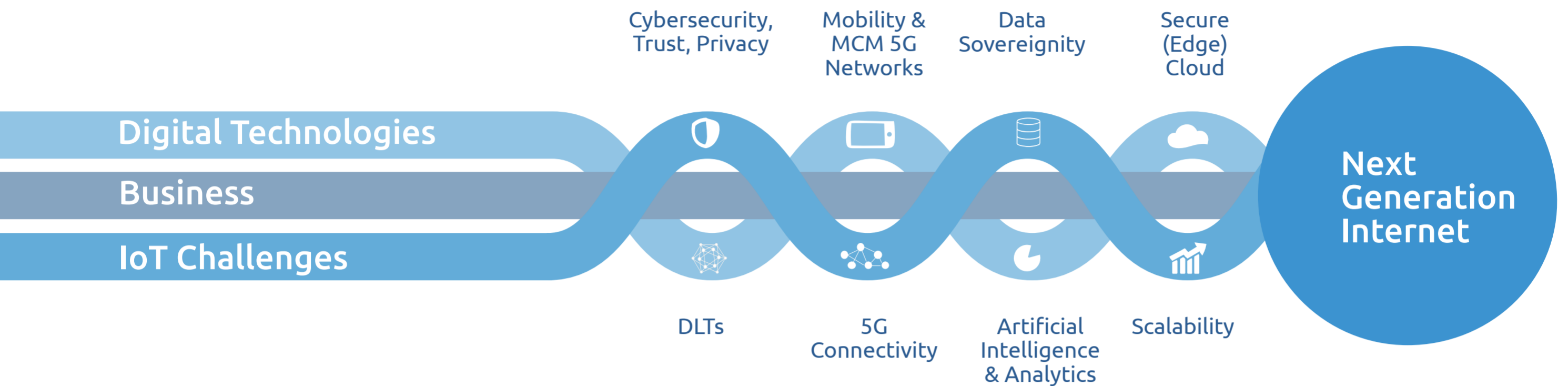


## Next Generation IoT

in the path towards Next Generation Internet



### IoT-NGIN tools to build the Next-Generation IoT



**Patterns-based IoT meta-architecture**  
defining a design language for legacy and next generation IoT architectures



**Optimized IoT/M2M and 5G/MCM communications**  
via enhanced spectrum allocation and QoS in M2M communications and exploiting TSN in 5G networks as well as a 5G Management API, which combined with a RUST based edge cloud execution platform, will support secure-by-design micro-services to extend the edge cloud paradigm



**Versatile Machine Learning as a Service platform**  
simplifying machine learning (ML) model training and sharing, supporting privacy-preserving FL, innovative deep learning/reinforcement learning techniques, polyglot model serving and zero knowledge proof techniques for ML models verification without disclosing any data



**Augmented Reality (AR) enhanced personalized IoT sensing and actuating**  
relying on both computer vision and classical visual device recognition, pervasive security and ambient intelligence based access control, as well as AR and Mixed reality methods, towards enhanced tactile IoT applications



**Enhanced IoT Cybersecurity & Data Privacy**  
via ML-based cybersecurity auditing and active protection, as well as Self-Sovereign Identities' based authenticated and securely logged access to Interconnected DLTs and meta-level digital twins



### Living Lab Trials

- **LLT1 (IoT-NGIN Integration Infrastructure Technology Lab)**
  - Comprehensive integration and evaluation throughout the development of the IoT-NGIN technologies.
- **LLT2 (Human-Centred Twin Smart Cities Living Lab)**
  - Adopt an innovative cross-border-by-default twin city context
  - Collaboration and open innovation via cities' common data models for AI data
- **LLT3 (Smart Agriculture IoT Living Lab)**
  - Enhancing the efficiency of irrigation, spraying and harvesting processes
  - Exploitation of IoT, AI, edge computing, digital twins and DLTs' technologies
- **LLT4 (Industry 4.0 Use Cases & Living Lab #1)**
  - Safe operation of Automated Guided Vehicles
  - Experimentation in assembly and subassembly processes
- **LLT5 (Industry 4.0 Living Lab #2)**
  - Monitor sub-assembly location and movement, and to optimize production workflow
  - Use of AR technology to support employees' training in the assembly process
- **LLT6 (Smart Energy Grid Active Monitoring/Control Living Lab)**
  - Demonstrate the capability of smart grid asset performance management
  - Demonstrate creating human-centred smart micro-contracts and micro-payments in a fully distributed energy marketplace
- **LLT7 (IoT-NGIN Technology and Living Labs Federation)**
  - IoT-NGIN pilots will be federated to enable cross-IoT-NGIN services deployment
  - Extension via new partners joining through Open Calls
  - Several technologies to be the enablers for the federation

Consortium Partners:



Learn more at: <https://IoT-Ngin.eu/> • [info@iot-ngin.eu](mailto:info@iot-ngin.eu)

Duration

October 2020  
– September 2023

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