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IoT-NGIN

EU H2020

Next Generation IoT as part of Next Generation Internet



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About IoT-NGIN

IoT-NGIN is an EU funded, collaborative project aiming at acting as the “IoT Engine” which will **unleash the power of Next Generation IoT as an essential dimension of the Next Generation Internet (NGI)**. The major challenge in the evolving IoT world is the fragmentation of vertically oriented, closed systems where interoperability is still only a dream. The IoT-NGIN strategy is to achieve **interoperability** through technology-agnostic, secure, open federation.

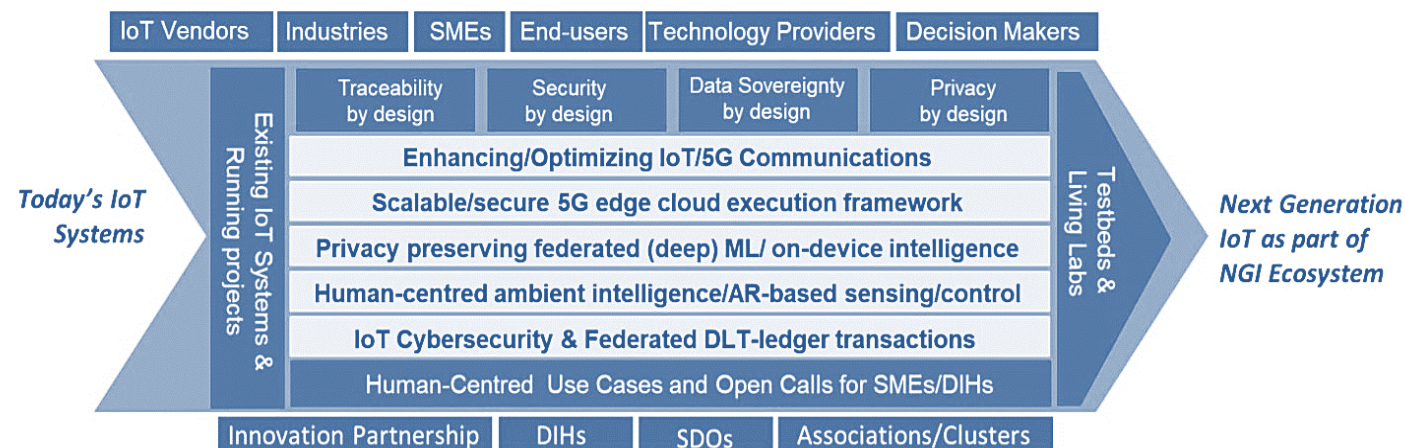
IoT-NGIN federation approach:

- on-the-fly adaptation and interpretation of heterogenous data and control messages
- privacy preserving federated ML training – Distributed AI
- keeping the data in their original locations
- Inter-DLT technologies for secure and trusted data sharing
- Zero knowledge techniques for ML models verification

IoT-NGIN: extension for optimization and integration

IoT-NGIN starts from existing IoT systems, 5G and AI based projects. It **will focus on a number of technological improvements**, provide **enhancements to the optimization of IoT/M2M** and **5G/MCM integration** and **extend edge cloud computing via:**

- “secure-by-design” micro-services execution framework
- implementing innovative “by design” confidentiality-preserving on-device federated ML and deep learning/reinforcement learning techniques
- enhancing IoT Tactile & Contextual Sensing/Actuating via novel AI-based IoT devices discovery/sensing and AR-based control
- building new AR components and share them via a IoT-AR assets repository
- researching towards distributed cybersecurity against poisoning attacks in on-device federated ML and adversarial access early attack detection
- introducing federated DLT-ledger transactions, privacy preserving Self-Sovereign Identities and DLT-enabled ST

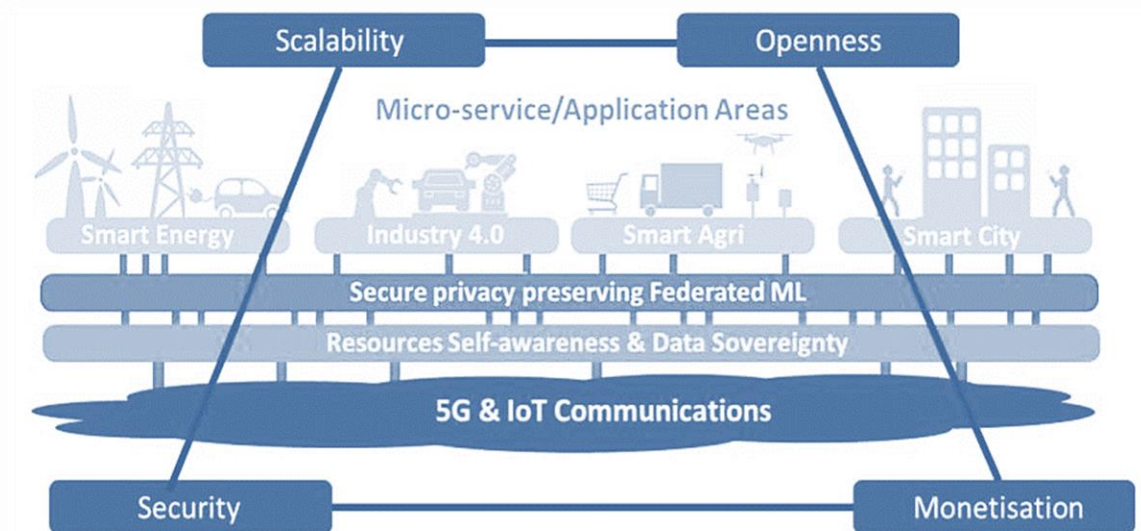


IoT-NGIN Concept and Methodology

IoT-NGIN aims to drive IoT to the next generation through **scalability, openness, security** and support for **monetisation**.

The four IoT-NGIN keywords mean:

- **Scalability: secured-by-design federation approach**, keeping siloed IoT platforms internally intact and data localized, offering (standalone) **5G optimization for IoT** and a **secure edge cloud micro-services platform**.
- **Openness:** From the business point of view, **anyone can join** an open system. At the technical level, virtually any IoT platform can be joined to the federation. From IoT-NGIN view, this will be achieved by **utilizing innovative Self-Sovereign Identities (SSI)**.
- **Security:** research towards “**security-by-design**”, introducing **inter-DLT traceability and attested novel DLT-based Semantic Twin (ST)** at the edge clouds. The new security and privacy features ensure **better protection** against cyber-attacks and give all the stakeholders **better control of their data**.
- **Monetisation:** Based on data sovereignty, within IoT-NGIN, **data is shared in a controlled way**, within the bounds of security and privacy policies defined by the stakeholders of the data.



IoT-NGIN Clusters & Associations Activities

IoT-NGIN with its goal of becoming the “IoT Engine” that will fuel the Next Generation of IoT as a part of the European Next Generation Internet, joined the Next Generation IoT initiative (**NGIoT**), and participated in **#EUIoT Week** activities (**training, workshops, seminars**). IoT-NGIN members are active in various alliances and associations trying to contribute to the IoT ecosystem (**AIOTI**). IoT-NGIN supports also the vision of **LIVING-IN.EU** which is aligned to the IoT-NGIN vision of realizing innovative IoT scenarios across application domains. The consortium is willing to attract awareness, build trust and engage in further development by approaching existing and new clusters of EU projects like the European Institute of Innovation & Technology (**EIT**) and its IoT **Large Scale Pilot Programme (LSP)** cluster.