Next Generation Internet of Things

The scope is to develop and demonstrate novel IoT concepts and solutions to underpin the NGI vision and make provision for predicting future events, trigger actions and moving decisions to the point of interest in order to better serve the end-user.

a) Research and Innovation Actions (RIA)

Proposals must provide reference implementations in terms of a dynamically configured infrastructure and integration schemes for smart devices into self-adaptive, robust, safe, intuitive, secure and interconnected smart network and service platforms. Reference implementations should include proof-of-concept, demonstrations and validation, driven by realistic use cases with advanced needs in areas such as wearables, transportation, agriculture homes, health, energy, and manufacturing.

Proposals should clearly explain how access to the necessary infrastructure for leveraging key technologies such as 5G, edge computing and distributed AI will be ensured. The action may involve cascading calls through financial support to third parties in line with the conditions set out in Part K of the General Annexes, duly justified as a means to achieving the overall objectives. The consortium will define the selection process of additional users and suppliers for which financial support will be granted (typically in the order of EUR 50,000 to 150,000)[[In line with Article 23 (7) of the Rules for Participation the amounts referred to in Article 137 of the Financial Regulation may be exceeded when this is necessary to achieve the objectives of the action.]] per party but smaller amounts may also be justified). Maximum 30% of the requested EU contribution requested by the proposal should be allocated to this purpose.

Proposals must address all the following challenges (sub-topics):
• **Next generation IoT architectures** with a focus on user-aware, self-aware and semi-autonomous IoT systems. This should also address new real-time capable solutions, which solve performance challenges such as streaming and filtering at the edge, latency and network constraints. A further challenge is to make use of distributed AI, address security, privacy and trust requirements by design and allow for new de-centralised topologies and governance.

• **Interoperability** to cope with the increased complexity of connecting vast numbers of heterogeneous devices with increasing demands for data sharing, protection of privacy, data monetization and **contractual arrangements** (e.g. blockchains/DLTs) for secure and trusted interaction.

• **Intelligent IoT devices supporting the proposed use cases and** drawing from applicable results in micro-nano-bio technologies, including resource-aware hardware/software concepts, low power processor platforms integrating computing, networking, storage and acceleration elements, new communication schemes and topologies that range from the cloud continuum towards mesh, and securing computing and communication at device level with constrained resources.

• **Tactile/contextual Internet of Things** based on human-centric sensing/actuating, augmented/virtual reality and new IoT service capabilities such as integration with parallel and opportunistic computing capabilities, neuromorphic and contextual computing.

The Commission considers that proposals requesting a contribution from the EU of between EUR 5 and 8 million would allow this area to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

**b) Coordination and Support Action (CSA)**

A support action will support measures for further development of IoT ecosystems, partnerships, stakeholders networking, contribution to pre-normative activities and to standardisation, development of business models, innovation activities and skills building.

It will liaise also with NGI and other initiatives of the work programme that are relevant to IoT related research and innovation activities.

The Commission considers that proposals requesting a contribution from the EU of EUR 2 million would allow this area to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.

Internet of Things (IoT) technologies and applications are bringing fundamental changes to all sectors of society and economy and constitute an essential element of the Next Generation Internet (NGI). The challenge is to leverage EU technological
strength to develop the next generation of IoT devices and systems which leverage progress in enabling technologies such as 5G, cyber-security, distributed computing, artificial intelligence (AI), Augmented Reality and tactile internet. In addition it is important to build and sustain a competitive ecosystem of European technology and system providers in IoT as well as ensuring end-user trust, adequate security and privacy by design.

- Contribution to human-centred IoT evolution improving usability and user acceptance, notably through strengthened security and user control.
- Contribution to emerging or future standards and pre-normative activities
- Long-term evolution of next-generation IoT infrastructures and service platforms technologies and contribution to scientific progress enabling novel, future semi-autonomous IoT applications.
- Propose novel and disruptive business models
- Mobilise key IoT players in security and privacy
- Maintain an active ecosystem of all relevant IoT stakeholders[[Building on existing networks such as AIOTI, BDVA, 5GPPP]]

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