
Annex 1:
IoT-NGIN Open Call #2
June 2022

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List of Abbreviations and Acronyms

AGV	Automated Guided Vehicles
AGLV	Automated Guided Land Vehicles
AR	Augmented Reality
AWU	Annual Work Unit
CET	Central European Time
DLT	Distributed Ledger Technology
DT	Digital Twin
EC	European Commission
EU	European Union
KPI	Key performance Indicator
M2M	Machine to Machine
MCM	Machine Cloud Machine
ML	Machine Learning
NGI	Next Generation Internet
RTD	Research and Technological Development
SME	Small and Medium-sized enterprises
TRL	Technology Readiness Level
VAT	Value Added Tax

1 Introduction

The IoT-NGIN (Next Generation IoT as part of Next Generation Internet) is a project funded under the H2020 framework. Its strategic objective is to unleash the power of Next Generation IoT as an essential dimension of the Next Generation Internet (NGI) and become the “IoT Engine” that fuels that transition to an Intelligent Internet of Everything.

To enhance the public awareness and increase the IoT-NGIN community ecosystem, IoT-NGIN will organize 2 open calls. The objectives of the open calls are:

- a) to enhance IoT-NGIN with additional (HW/SW) solutions contributing in IoT-NGIN technology validation and User Acceptance evaluation with innovative Use Cases,
- b) to increase awareness and interest on IoT-NGIN technology and solutions,
- c) to motivate DIHs and clusters to promote and adopt IoT-NGIN technologies and
- d) to engage IoT device manufacturers and applications developers, stakeholders, decision makers to enter and make sustainable the IoT-NGIN ecosystem.

This is the implementation of the 2nd Open Call. IoT-NGIN invites SMEs active in IoT applications development to implement innovative IoT applications that use heterogeneous IoT to offer new services and validate the IoT-NGIN components.

The total amount of funding that each SME may receive is up to €70.000, while the top#1 SME will receive in total €75.000. It is expected that 10 applicants will be selected via this open call to enter the process and demonstrate the IoT-NGIN functionality.

1.1 Background information on IoT-NGIN project

It is well known that the Internet of Things (IoT) has been identified as one of the next big concepts to support societal changes and economic growth, and one of the fastest growing ICT segments. A whole new range of applications that leverage data and metadata from connected “things” provide novel human-centric services in areas such as smart city and urban mobility, human-centric industry 4.0, smart agriculture, and smart energy management. Within the IoT-NGIN (read as “IoT Engine”) project, we consider a “thing” as *any kind of sensor, actuator, wearable device, smart phone or autonomous system, such as autonomous guided vehicles (AGVs), robots or drones with networking capabilities*. We can consider as a “thing” even a group or swarm of things that behave as an autonomous, self-organised system.

In the evolving next generation IoT era, we consider that the biggest challenges are:

- a) to research towards **federated on-device intelligence**, so that the “things” react as self-aware, and when applicable user-aware/ human-centric, semi-autonomous entities, even when their resources are constrained or network connectivity is not reliable,
- b) to enforce **interoperability and data sovereignty**, overcoming scalability and fragmentation of vertically oriented, closed systems,
- c) to ensure **trust, cybersecurity and privacy** and
- d) to introduce **novel human-centric interaction** based on Augmented Reality (AR).

However, replacing or “integrating” existing IoT architectures and platforms with a new, “super-architecture” or “super middleware”, located at the edge cloud or at a logically higher level and translating or interpreting applications’ requests to existing platforms’ queries has significant functional and non-functional limitations. Instead, we believe that it is more than important not to “reinvent the wheel”, but to base our research on mature results and leverage on existing technologies, such as 5G communications, edge cloud computing,

inter-DLTs and federated AI, in order to go beyond today's state of the art, perform research and create innovation that can be sustainable. **The strategic goal of IOT-NGIN is unleash the power of Next Generation IoT as an essential dimension of the Next Generation Internet (NGI) and become the “IoT Engine”.**

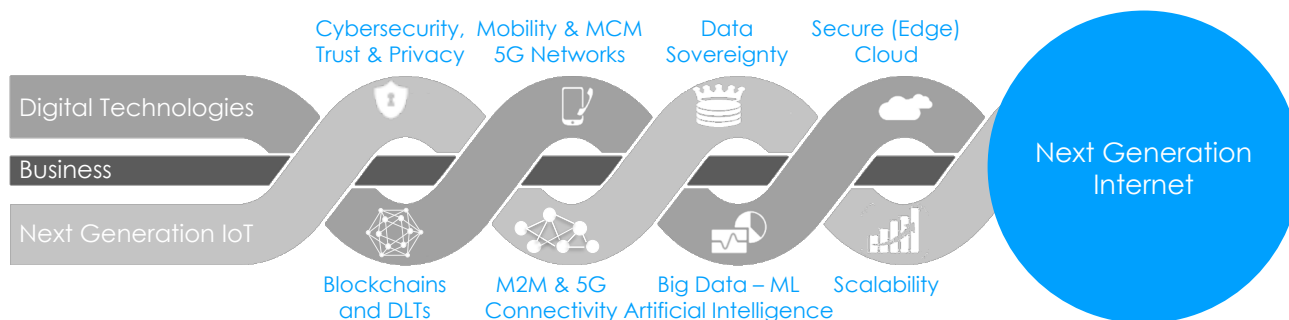


Figure 1: Next Generation IoT in the path towards Next Generation Internet

As shown in Figure 1, the main idea behind IoT-NGIN is **to research and create sustainable innovation towards NGI by introducing key digital technologies such as blockchains/inter-DLTs traceability, Machine to Machine (M2M) and (standalone) 5G Machine Cloud Machine (MCM) communications, AI and secure (edge) cloud at “things” level**, so that it will be able to interact in an open and (semi-) autonomous way with any existing and forthcoming “thing” or IoT platform in a scalable and federated rather than integrated approach.

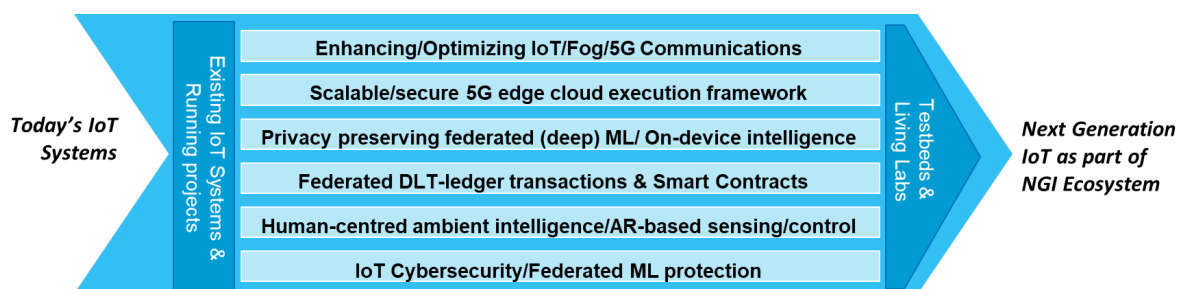


Figure 2: IoT-NGIN focus

Beyond networking, data sovereignty has recently emerged as a critical issue of personal, national and regional economic importance, as the ability to control the use of data is continually being eroded by global industries, such as social media platforms, and the data itself is becoming a product. Current IoT systems generate enormous volumes of data but they lack an association between the data and the identity or the role of those who have the authority to decide how the data is to be used. New techniques are required to store and process the data securely and ensure that the relevant data owners are able to control IoT data utilization in a secure, trusted and privacy preserving way. IoT-NGIN focuses on various IoT related technologies including

- 5G New Radio & Edge Cloud connectivity
- Resource Self-Awareness & Dynamic Connectivity
- Cross Blockchains/DLT data sovereignty and Smart Contracts
- Federated ML/ Edge Cloud ML Aggregation
- Trained ML model sharing (e.g. AGV)
- Human Centric Ambient Intelligence/Augmented Reality based sensing/control
- IoT Cybersecurity/Attacks on Privacy preserving ML
- Privacy preserving Cross-Trial/ borders Federation

The IoT-NGIN outcomes will be validated across a multitude of real-life use cases through 7 trials, involving 5 living labs and 1 IoT/5G lab. The IoT-NGIN pilots and living labs are:

- Trial #1: IoT-NGIN Integration Infrastructure Technology Lab
- Trial #2: Human-Centred Twin Smart Cities Living Lab
- Trial #3: Smart Agriculture IoT Living Lab
- Trial #4 & Trial#5: Industry 4.0 Use Cases & Living Lab
- Trial #6: Smart Energy Grid Active Monitoring/Control Living Lab
- Trial #7: IoT-NGIN Technology and Living Labs Federation

Moreover, Open Call #2 projects are invited to test and validate the IoT-NGIN Open Call #1 Technology and developments. More information is available at <https://iot-ngin.eu/>.

1.2 Origin of the funds

Any selected proposer will be associated with IoT-NGIN consortium via a sub-project contract, signed directly with the IoT-NGIN project coordinator.

The funds to the selected applicants come directly from the funds of the European Project IoT-NGIN funded itself by the Directorate-General for Communications Networks, Content and Technology, and remain therefore, property of the EU until the payment of the balance, whose management rights have been transferred to the project partners in IoT-NGIN via European Commission Grant Agreement Number 957246.

This relation between the new partners and the European Commission through IoT-NGIN project carries a set of obligations with the European Commission¹.



1.3 IoT-NGIN approach & Funding Scheme

Sub-projects selected via Open Call #2 will start at IoT-NGIN month M28 (January 2023) and will allow applicants to validate IoT-NGIN technology via innovative IoT applications that use heterogeneous IoT and IoT-NGIN components to offer new services for 9 months (1/1/2023 – 30/9/2023). The competitive IoT-based application proposals will be selected to start a “DESIGN- EXPERIMENT- GROWTH” stages’ programme as shown in the next table.

Table 1 IoT-NGIN Open Call #2 stages

Stage	Overview
<p>DESIGN</p> 	<ul style="list-style-type: none"> • <i>Duration:</i> 2-months • <i>Number of SMEs:</i> Top 10 projects selected via the Open Call. • <i>Activities:</i> SMEs will fine-tune their application concept, prepare a detailed design deliverable (potentially including a mock-up) and tech-business presentation • <i>Funding:</i> €10.000 (lump sum) per SME, attached to successful completion of the DESIGN phase, assessed by external reviewers. • <i>Evaluation to Stage EXPERIMENT:</i> Evaluate the idea, the technology, the design and the business potential via a technical interview (physical or virtual). The top 6 SMEs will be selected to enter the EXPERIMENT stage.

¹ More information available at https://ec.europa.eu/research/participants/docs/h2020-funding-guide/index_en.htm

<p>EXPERIMENT</p> 	<ul style="list-style-type: none"> • <i>Duration:</i> 6 months, SMEs work remotely and occasionally participate in testing at the IoT-NGIN Pilots • <i>Number of SMEs:</i> Top 6 projects. • <i>Activities:</i> SMEs will be developing the proposed IoT application. Each SME will develop a MVP (Minimum Viable Product) and validate it ideally at the IoT-NGIN pilots. • <i>Funding:</i> €55.000 per SME, being attached with accomplishing 2 milestones (MVP sub-phase and testing/validation sub-phase) assessed by external reviewers. • <i>Evaluation to Stage GROWTH:</i> Analysis of the MVP/ demonstrator technology and stage of development (TRL); business potential of the solution; initial traction or early adopters. The top 3 solutions will be selected to enter the GROWTH phase.
<p>GROWTH</p> 	<ul style="list-style-type: none"> • <i>Duration:</i> 1 month, SMEs work remotely and participate in several meetings and events where they can promote their projects goals and outcomes • <i>Number of SMEs:</i> Top 3 projects. • <i>Activities:</i> SMEs will develop activities associated with the promotion and exploitation of their project, aiming to engage new customers and/or partners and/or investors. • <i>Funding:</i> €5.000 per SME, attached to the participation in the final pitch event and planned promotion/ commercial activities of this stage. The top #1 SME will receive additionally €5.000.

As shown in Figure 3, the Open Call #2 selection will follow a **funnel approach**, which will help the IoT-NGIN consortium to focus on the top projects along the programme.

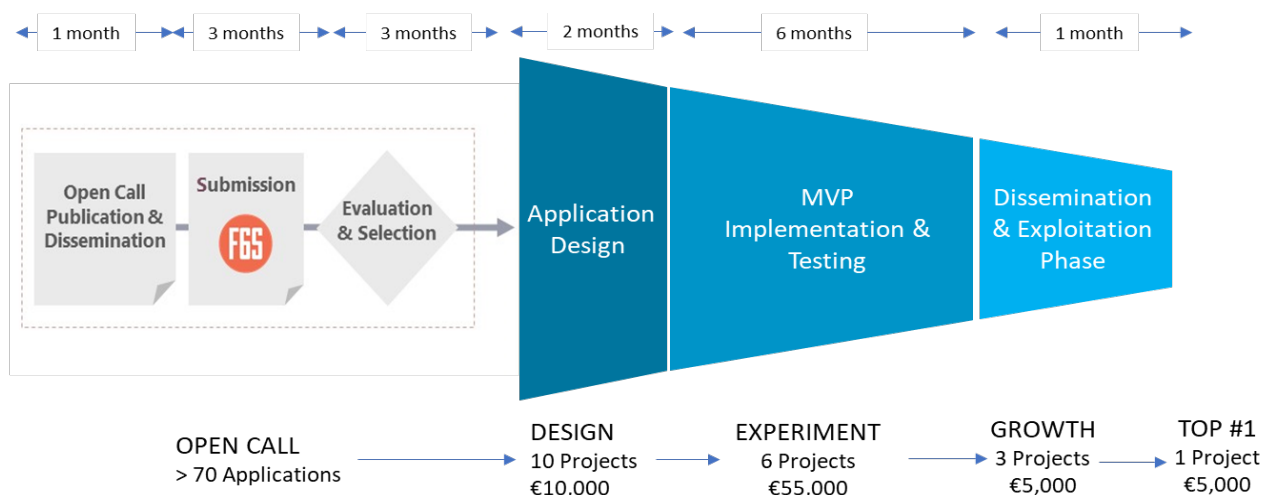


Figure 3: IoT-NGIN Overall process

The selected 10 SMEs are first challenged to create the application design, a mock-up and a sound business plan that are presented at the end of the **DESIGN phase**. These are filtered and the top 6 move on to the **EXPERIMENT phase**. They will end up with a validated MVP prototype (TRL 4-6) and a business plan, which are used to evaluate/select the top-3 applications towards the **GROWTH phase**. At the end the **Top #1** will be selected to receive the maximum funding. This structured approach allows the best and most promising concepts and IoT applications to achieve growth and market uptake.

1.4 Timeline – Open Call #2

Submission to the Open Call #2 will be enabled on the 1st of July 2022 and will end on the 30th of September 2022 at 17:00CET time (Brussels time). Below are presented the dates for the different phases. The opening and closing dates of each phase can be subject to change in case of any modifications in the project's schedule.

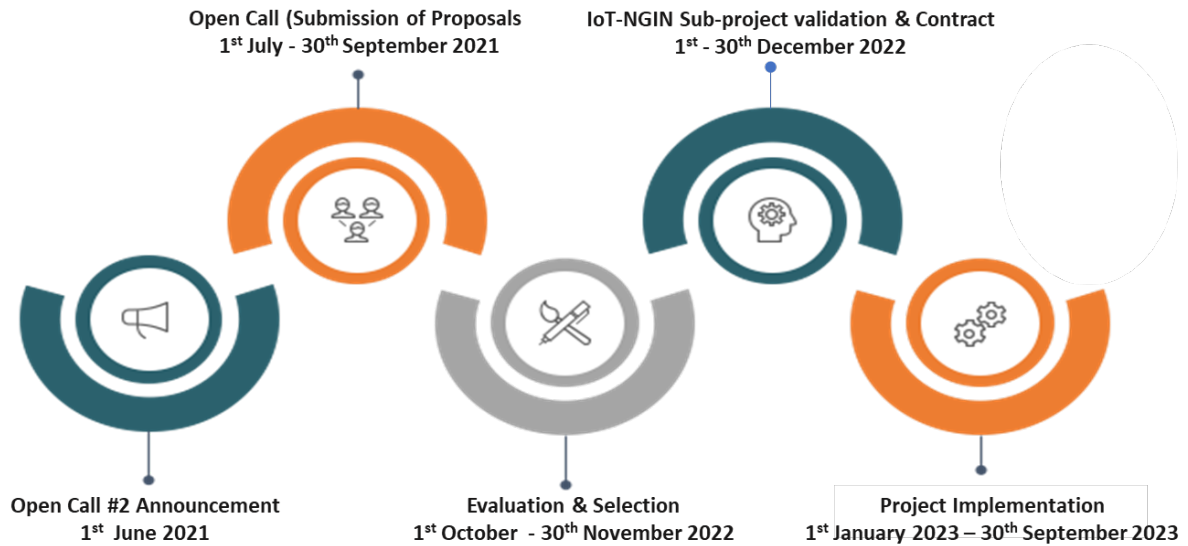


Figure 4: IoT-NGIN Open Call #1 timeline

2 Open call overview

Table 2 provides a summary of the IoT-NGIN Open Call #2.

Table 2: Details of the IoT-NGIN Open Call #2

Open Call item Information	Open Call item Information
Call title:	IoT-NGIN – Open Call #2
Full name of the EU funded project:	Next Generation IoT as part of Next Generation Internet
Project acronym:	IoT-NGIN
Grant agreement number:	H2020 – 957246
Call publication date:	1 st June 2022
Call deadline:	30 th September 2022
Expected duration of participation:	9 months (1 st January 2023 – 30 th September 2023)
Total EU funding available (Open Call #2):	€ 450.000
Submission & evaluation process:	<p>The objective of the IoT-NGIN – Open Call #2 is to validate the IoT-NGIN components/technology by EU based SMEs active in IoT applications' development.</p> <p>The open call will have three phases: DESIGN (where 10 proposals will be selected), EXPERIMENT (where the 6 top projects from the DESIGN phase will enter this phase), GROWTH (where the 3 top projects from the EXPERIMENT phase will enter).</p> <p>The total amount of funding that each SME will receive is up to €70.000, while the top#1 SME will receive in total €75.000.</p> <p>Submissions are available via https://www.f6s.com/iot-ngin-2nd-open-call/apply</p>
Further information:	Details available at https://iot-ngin.eu/index.php/open-calls/

3 Contacts

The IoT-NGIN consortium will provide information to the applicants only via the F6S blog, so that the information (question and answer) will be visible to all participants.

No binding information will be provided via any other means (e.g. telephone or email).

More info at: <https://iot-ngin.eu/>

Apply via: <https://www.f6s.com/iot-ngin-2nd-open-call/apply>

F6S support team: support@f6s.com

Online Q&A: <https://www.f6s.com/iot-ngin-2nd-open-call/discuss>

Other support²: opencalls@iot-ngin.eu

² For non-binding information

4 References

- [1] Digital Innovation Initiatives based on European Networks of Competence Centres in H2020, available online at <https://smartanythingeverywhere.eu/smart-anything-everywhere/>
- [2] REGULATION (EU) No 1290/2013 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 11 December 2013 laying down the rules for participation and dissemination in "Horizon 2020 - the Framework Programme for Research and Innovation (2014-2020)" and repealing Regulation (EC) No 1906/2006
- [3] EUROPEAN COMMISSION, Directorate-General for Communications Networks, Content and Technology, "Guidance note on financial support to third parties under H2020", Annex K. "Actions involving financial support to third parties", http://ec.europa.eu/research/participants/data/ref/h2020/other/wp/2016_2017/annexes/h2020-wp1617-annex-k-fs3p_en.pdf
- [4] H2020 Call Objective ICT-04-2017 TOPIC: Smart Anything Everywhere Initiative, <https://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/ict-04-2017.html>
- [5] Annex 2: Guide for applicants, <https://iot-ngin.eu/index.php/open-calls/>