



NEXT GENERATION EUROPEAN IOT A LOOK INTO THE FUTURE

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EU-IoT AT WORK TO BUILD A STRONG EUROPEAN IoT AND EDGE ECOSYSTEM

fortiss



BluSpecs



INTRASOFT
INTERNATIONAL



AARHUS UNIVERSITY

A VALUE CHAIN APPROACH TO IMPROVE EUROPEAN LEADERSHIP IN THE GLOBAL DATA ECONOMY

- Ecosystem building is one of the key components of the EC R&I Strategy
- Closing the gap between supply and demand - matching digital innovation and vertical legacy
- Allowing smaller companies and start-ups to engage with large projects



DIRECTIONS OF TRAVEL



- The importance of Openness
 - European values can be upheld while engaging in global, open initiatives
 - Open Source, Open Data, Open Standards, Open Hardware
 - A level playing field can be achieved through an Open Ecosystem
- Blend and evolve the relevant European Communities
 - Harmonise the landscape views from IoT-centric and Cloud-centric actors
 - Bring forward the work of all relevant EC initiatives in a sustainable way
- Reconsider and shape the vision for intelligent and resilient infrastructure
 - Progress and innovation needed from a conceptual, technical, and business perspective



HOW TO GET THERE?

A RATHER ARTICULATED CONTEXT



COMPLEXITY FACTORS

- COVID19 crises
- Transition from Horizon 2020 to Horizon Europe
- Growing set of projects including planned third-party participants
- A diverse and still rather fragmented ecosystem
 - AIoT, ARTEMIS-IA, BDVA/AIRO, GAIA-X, 5G IA, SNS JU, ...
 - Eclipse, ETSI, FIWARE, etc.

MAJOR CHALLENGES AND PRIORITIES

- Convergence of technologies – IoT/Edge/Cloud/AI/5G...
- Proliferation and fragmentation of standardisation efforts
- Improving economic performance - accelerate digital transformation
- Reducing carbon emissions – digital must green and be green



CONTRIBUTION & ACTIONS – WHERE WE ARE!



TECH	HUMAN/IOT INTERFACE	FAR EDGE	NEAR EDGE	INFRASTRUCTURE	DATA SPACES
	INTELLIGENCE Explainable AI	INTELLIGENCE AT THE FAR EDGE Explainable AI, Distributed intelligence (swarm intelligence), Deep learning on device, Self-adapting models.	INTELLIGENCE AT THE NEAR EDGE Machine Learning, Explainable AI, Deep learning, Distributed AI, Federated learning	IMPROVING PROCESSING Microservers, Network virtualisation	EFFICIENT AND SECURE DATA SPACES Plug & play models for autonomous applications, DLT-enabled trust for models, Zero-knowledge proofs, Digital Twins, Orchestrated ML pipeline
	DIGITAL INTERFACES Augmented Reality, Mixed Reality, Virtual Reality	IMPROVING PROCESSING Accelerator, Low power devices, GPU mapping, Unikernels, Microkernels, Security-by-default computer architectures	IMPROVING PROCESSING Virtualisation – Digital Twins, Mobile edge cloud, Microservers, Unikernels	EFFICIENT NETWORKS Software Defined Networks, Time Sensitive Networking, Resource allocation, 5G, Intelligent orchestrated networks, Satellites, Flexible radio	MANAGING DATA SPACES Self-contained networks, Data virtualisation layer, Data Governance
	SENSING DIGITAL Tactile internet, Haptic devices	CONTEXT AWARENESS	INTEROPERABILITY Smart IoT gateway		
	ROBOTICS Cobots, Human teaching	SECURE COMMUNICATION End-to-end security via remote attestation, verifiable software updates, and integrated Root-of-Trust			

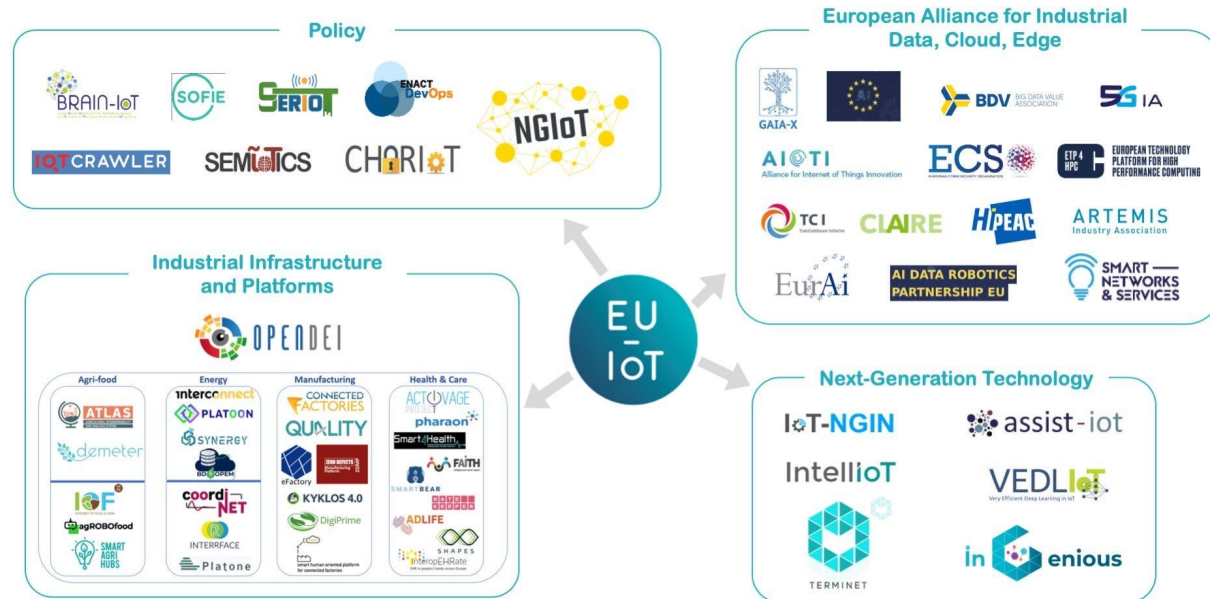
“STRATEGY ACROSS NGIOT ECOSYSTEM”
EU-IoT GUIDE

Coordination and Advisory Board strategic discussions

Experts Groups engagement

Map IoT research landscape, Research & Innovation priorities

Towards a vibrant European IoT ecosystem – strategy white paper



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“COMMUNITY BUILDING AND INNOVATION STRATEGIES”

EU-IoT CATALYST

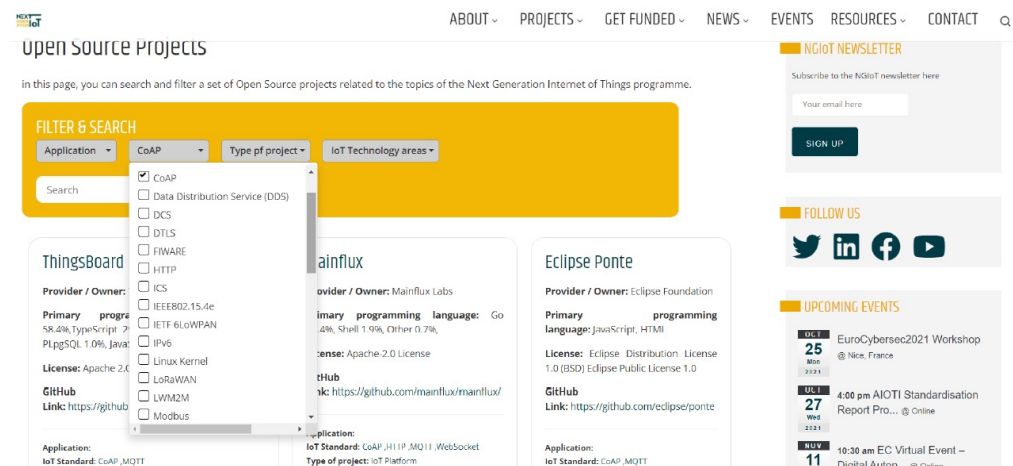
Organisation of several webinars and events

IoT Next Club, reaching over 500 SMEs in Europe

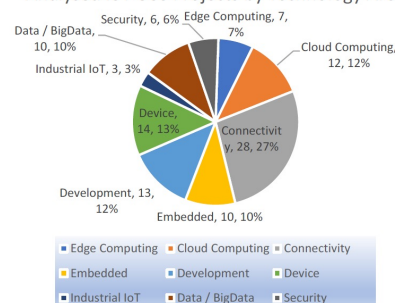
NGIoT Open Calls support and engagement

Online standardisation initiatives list and open source projects catalogue

White papers and recommendations published in open source and standardisation



Analysed IoT OSS Projects by Technology Area



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“POSITIONING AND STRENGTHENING IOT AS A DRIVER”

EU-IoT COACH

Collection of 25 use cases from the community

Identify and publish “success stories”

Training seminars and online training catalogue

Skills survey and taxonomy framework

The screenshot displays the Next Generation IoT website interface. At the top, there is a navigation menu with links for ABOUT, PROJECTS, GET FUNDED, NEWS, EVENTS, RESOURCES, and CONTACT. The main content area is divided into several sections:

- Internet of Things Trainings:** A section for finding training opportunities. It includes a search bar with filters for Instructor/Institution, Provider, and Type. A dropdown menu for providers lists options like COURSEERA, edX, EU-IoT, southampton, stanford, training, UDEMY, University of Bradford, and University of West London. Below the search bar, there are cards for "EU-IoT Training Workshops" and "Introduction to the Internet of Things".
- NGIoT NEWSLETTER:** A sign-up form for the newsletter.
- FOLLOW US:** Social media icons for Twitter, LinkedIn, Facebook, and YouTube.
- UPCOMING EVENTS:** A list of events including an NGIoT Webinar on Feb 23, MWC Barcelona 2022 on Feb 28, and a Digital maturity event on Mar 3.
- Use Case Catalogue:** A section highlighting best practices from IoT developments. It features a grid of use cases with images and labels like "Quadbile", "Emotion", and "Awake AI".

At the bottom of the page, there are four promotional banners for training workshops:

- Training Workshop:** Decentralizing IoT Intelligence using Distributed Ledger Technologies (7 FEBRUARY 2022 | 9:00 CET)
- EU-IoT Training Workshops Series:** Next Generation IoT Architectures (9 NOVEMBER 2021 | 12:00 -14:40 CET)
- Training Workshop:** Enabling the Tactile Internet with IoT (8 JULY 2021 | 12:00 -14:30 CEST)
- EU-IoT Training Workshops Series:** AIoT and Edge Machine Learning (21 MAY 2021 | 9:30 -12:00 CEST)

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“OUTREACH AND
IMPACT CREATION”
EU-IoT AMPLIFIER

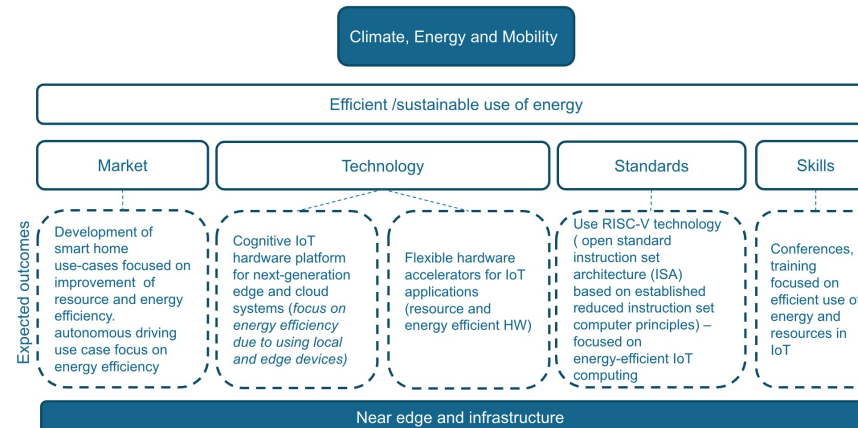
Establish NGIoT
identity

Promote EC and Open
Calls funding
opportunities in NGIoT

Establish NGIoT
Communication Task
Force

Promote and support
community events &
key achievements

Impact assessment
methodology and tools



CONTRIBUTION & ACTIONS – WHERE WE GO!



“STRATEGY ACROSS NGLoT ECOSYSTEM”

EU-IoT GUIDE

NGIoT Roadmap and policy recommendations

Broad and open strategic dialogue within NGLoT community

“COMMUNITY BUILDING AND INNOVATION STRATEGIES”

EU-IoT CATALYST

Wide, open and sustainable NGLoT community

Recommendations on research priorities and innovation strategies to standardization

“POSITIONING AND STRENGTHENING IOT AS A DRIVER”

EU-IoT COACH

30 use cases and success stories

IoT training programmes recommendations, certification & learning paths

IoT business model innovation patterns and acceleration support activities

“OUTREACH AND IMPACT CREATION”

EU-IoT AMPLIFIER

A live, dynamic and interactive online community

Guidelines for IoT collaboration sustainability

Impact of NGLoT initiatives

COMING SOON!

00:00:00

NEXT GENERATION IoT IDEathon/Hackathon 2021/22
Mobile Sustainable IoT solutions
27TH-29TH JUNE 2022 | MUNICH, GERMANY

IoTWeek

Next Generation IoT Skills Surveys

NGIoT designed four surveys which aim at identifying the most important and high in-demand technical, development, management and other soft skills for Internet of Things (IoT) professionals, for users of industrial IoT systems (including Operator 4.0 skills).

IMPORTANT: Please fill in all four surveys which should take no more than 10 minutes of your time.

Thank you for your participation and valued insights which will be shared in our upcoming report!

NEXT GENERATION IoT SKILLS SURVEY
Skills for IoT Developers and Solution Integrators
Have your say in the NGLoT survey!

NEXT GENERATION IoT SKILLS SURVEY
IoT Business, Marketing, Management and Regulatory Skills
Have your say in the NGLoT survey!

[NGIoT Survey – Skills for IoT Developers and Solution Integrators](#)

[NGIoT Survey – IoT Business, Marketing, Management and Regulatory Skills](#)

NEXT GENERATION IoT SKILLS SURVEY
IoT End-Users and Operator 4.0 Skills
Have your say in the NGLoT survey!

NEXT GENERATION IoT SKILLS SURVEY
Social, Management and Other Soft Skills for IoT Professionals
Have your say in the NGLoT survey!



<https://www.ngiot.eu/next-generation-iot-skills-surveys/>

LOOKING AHEAD

THE MOVE TOWARDS THE EDGE IN NGIOT



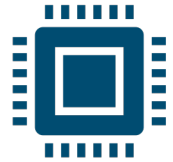
TECH

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	<p>ROBOTICS Cobots Human teaching</p>	<p>SECURE COMMUNICATION End-to-end security via remote attestation, verifiable software updates, and integrated Root-of-Trust</p>			

AN INTELLIGENT EDGE – A COORDINATED IOT



SHIFTING TECH



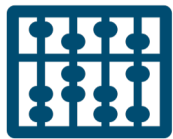
Hardware accelerators on device
Intelligence on chip



Decentralised architectures
Multi-access and flexible



Transfer learning approaches
Federated data models



Context-dependent IoT
Edge platforms

PULL FACTORS



Low power
Reduced traffic



Reduced latency
Real-time decisions



Privacy
Security



Efficiencies:
Cost and Sustainability



- **Collaboration and more collaboration**
 - Unifying ecosystems and networks to deliver together and bridge the gaps.
- **Intelligence across the board from TinyML to HPC**
 - New machine learning approaches (federated, embedded and small data learning).
- **Open source and open standards**
 - Defining the interoperability on the edge-cloud, with an end-to-end perspective.
- **New skills and new specialists**
 - Keeping up with the change in technologies to ensure adoption, combining skillsets.
- **Underpinning the green transition through digital**

GROWING A SUSTAINABLE AND COMPREHENSIVE NEXT GENERATION IoT ECOSYSTEM

Ultimate ambition

- Connect the dots and foster synergies among all relevant stakeholders
- Boost industrial competitiveness and sustain the economic recovery and growth
- Promote sustainable and inclusive development of our society
- Ensure EU digital autonomy and technological sovereignty

What does it take to get there...

- Overcome diversity and fragmentation
- Leverage on success stories and best practices – provide the means
- Develop adequate business models and instruments – reskilling-upskilling is necessary
- Align on standardization efforts
- Dedicated investments, both public and private!



THANK YOU FOR YOUR ATTENTION

