HORIZON EUROPE 2021 CALL

FROM CLOUD TO EDGE TO IoT FOR EUROPEAN DATA

7 July 2021 | 09:30 - 13:30 CEST

Organised by

EU IoT

Supported by

European Commission

HORIZON EUROPE 2021 CALL From Cloud to Edge to IoT for European Data

7 July 2021 | 09:30 - 13:30 CEST

Monique Calisti

CEO Martel Innovate, Coordinator EU-IoT

Welcome

HOUSEKEEPING RULES

- **The Plenary Sessions will be recorded and published on NGIoT channels**
- Feel free to **post your questions and comments** in the **Live Discussion Chat** of your session
- Join the discussion online by using the hashtag **#IoTBrokerageEvent** and tagging **@DigitalEU @NetTechEU @NGIoT4eu**
- If you have any technical issue, please **ask your questions in the chat** or send us an e-mail at **info@ngiot.eu**

HORIZON EUROPE 2021 CALL From Cloud to Edge to IoT for European Data

9:30
10:30

OPENINNG SESSION

Rolf Riemenschneider

Head of Sector IoT, European Commission

Haydn Thompson

Founder and managing director of the THHINK Group

Monique Calisti

CEO Martel Innovate, Coordinator EU-IoT

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Opening Session

10:30
10:45

COFFEE BREAK

HORIZON EUROPE 2021 CALL From Cloud to Edge to IoT for European Data

10:45
12:00

CLOUD-EDGE-IoT Pitch Session

- Proposal Pitch Block

- Organisation Pitch Block

Moderator
Verena Wottrich
Communication Specialist, Martel Innovate

HORIZON EUROPE 2021 CALL From Cloud to Edge to IoT for European Data

10:45
12:00

PROPOSAL PITCH BLOCK

10:50 – 10:55 Computing in the Edge-Cloud Continuum, *University of Oulu, Finland*

10:55 – 11:00 Processing at the Edge, *ZHAW Zurich University of Applied Science, Switzerland*

11:00 – 11:05 Artificial Intelligence – Risk Management Framework, *MET Communications GmbH, Germany*

11:05 – 11:10 Assessing the State of the Art and supporting an evidence-based Uptake and Evolution of Open Service Platforms in the Active and Healthy Ageing Domain, *PlatformUptake.eu, Austria*

11:10 – 11:15 Autonomous Decentralised Cloud Technology, *Threefold, Belgium*

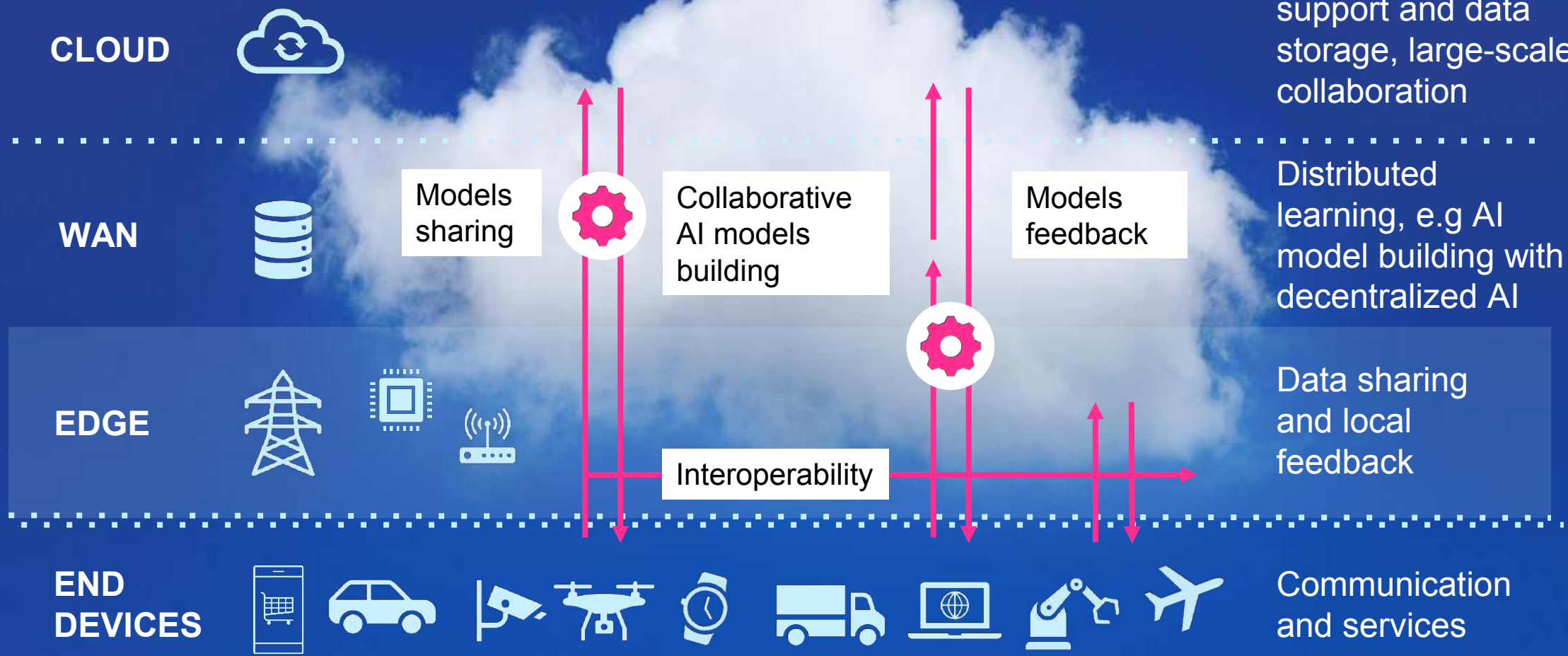
11:15 – 11:20 Zero Trust: Data Sovereignty and Safe Data Communication, *pi-lar, Germany*

11:20 – 11:25 Network on High-Performance Embedded Architecture and Compilation, *Ghent University, Belgium*

Computing in the Edge-Cloud Continuum

Susanna Pirttikangas, Lauri Lovén, Jukka Riekki
Interactive Edge RG / Center for Ubiquitous Computing
University of Oulu
7.7.2021

Computing in the edge-cloud continuum



Distributed Computing

EdgeAI Research Topics

Distributed, local, edge-native, self-aware

Open source Edge
Edge server placement
Mobility analysis
Predictive orchestration

Platform

Theory

App verticals

Security & privacy

Federated, transfer & decentralized learning
Distributed prediction & inference
Decentralized decision making

XR
Autonomous vehicles & drones
Retail, ITS
Well-being

Secure IoT connectivity
Micro-operator security
AI-based Edge security
Consent management

Analytics & Computation

Near device, user

Zero touch

Maximal responsiveness

Large-scale sensoring

Ownership of data

Better Services

Novel apps

Safer, more reliable, resilient sustainable, trusted computing

Selected recent publications:

Mämmelä, A.and Riekki, J. (2021): Subsidiarity and Weak Coupling in Wireless Networks, Proc. 2021 Joint EuCNC & 6G summit

Lähderanta, T., Lovén, L., Leppänen, T., Ruha, L., Harjula, E., Ylianttila, M., Riekki, J., Sillanpää, MJ. (2021): Edge computing server placement with capacitated location allocation, J. Parall Distrib Comp, 152, 130-149, Elsevier

Lovén, L., Peltonen, E., Harjula, E., Pirttikangas, S. (2021): Weathering the Reallocation Storm: Large-Scale Analysis of Edge Server Workload, 2021 Joint EuCNC & 6G Summit

Leppänen, T., Savaglio, C., & Fortino, G. (2020). Service modeling for opportunistic edge computing systems with feature engineering. Computer Communications, 157, 308–319.

Sattari, A., Ehsani, R., Leppänen, T., Pirttikangas, S., Riekki, J. (2020): Edge-supported Microservice-based Resource Discovery for Mist Computing, 2020 IEEE Intl Conf on Dependable, Autonomic and Secure Computing, Intl Conf on Pervasive Intelligence and Computing, Intl Conf on Cloud and Big Data Computing, Intl Conf on Cyber Science and Technology Congress (DASC/PiCom/CBDCom/CyberSciTech), 462-468, IEEE

Contact iEdge:

https://www.data-infrastructure.eu/GAIAX
https://www.fractal-project.eu/

Director Susanna Pirttikangas
susanna.pirttikangas@oulu.fi

Scientific project manager Lauri Lovén
lauri.loven@oulu.fi

Professor Jukka Riekki
jukka.riekki@oulu.fi

Interactive Edge Research group with 3 professors, 1 univ. lecturer, 3 postdocs, 12 doctoral researchers, 5 assistants
Research Unit of **Center for Ubiquitous Computing (UBICOMP)** https://ubicomp.oulu.fi/
Faculty of ITEE https://www.oulu.fi/en/university/faculties-and-units/faculty-information-technology-and-electrical-engineering
UNIVERSITY OF OULU https://www.oulu.fi/en

6G flagship program https://www.oulu.fi/6gflagship/

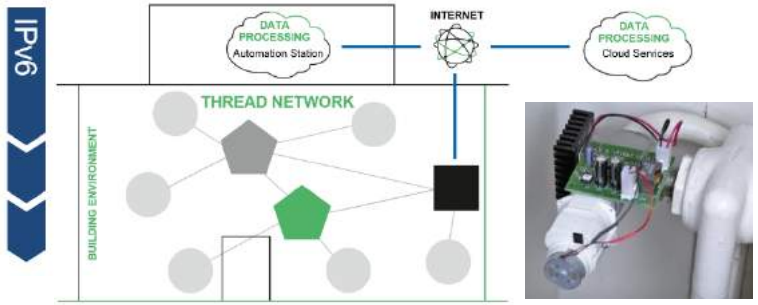
ZHAW – Zurich University of Applied Science Inst. of Embedded Systems

Capability & Application experience

- Located in Winterthur
- Founded in 2003
- ~60 Employees

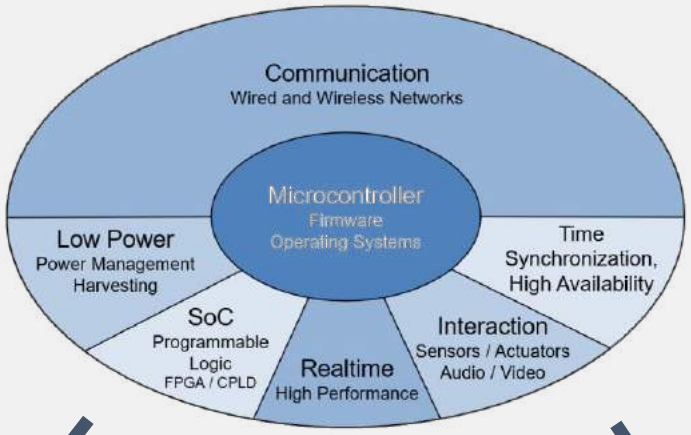
School of Engineering
InES Institute of Embedded Systems

Smart Commercial Buildings



Industrial Automation / Industrie 4.0

Infrastructure Smart Cities



Processing at the Edge

Logistics / Supply Chain / Retail

Healthcare

Bluetooth with Energy Harvesting

Agriculture

Image sources: different ZHAW-InES research areas

Application example (1): Low Power Wireless for Building Automation

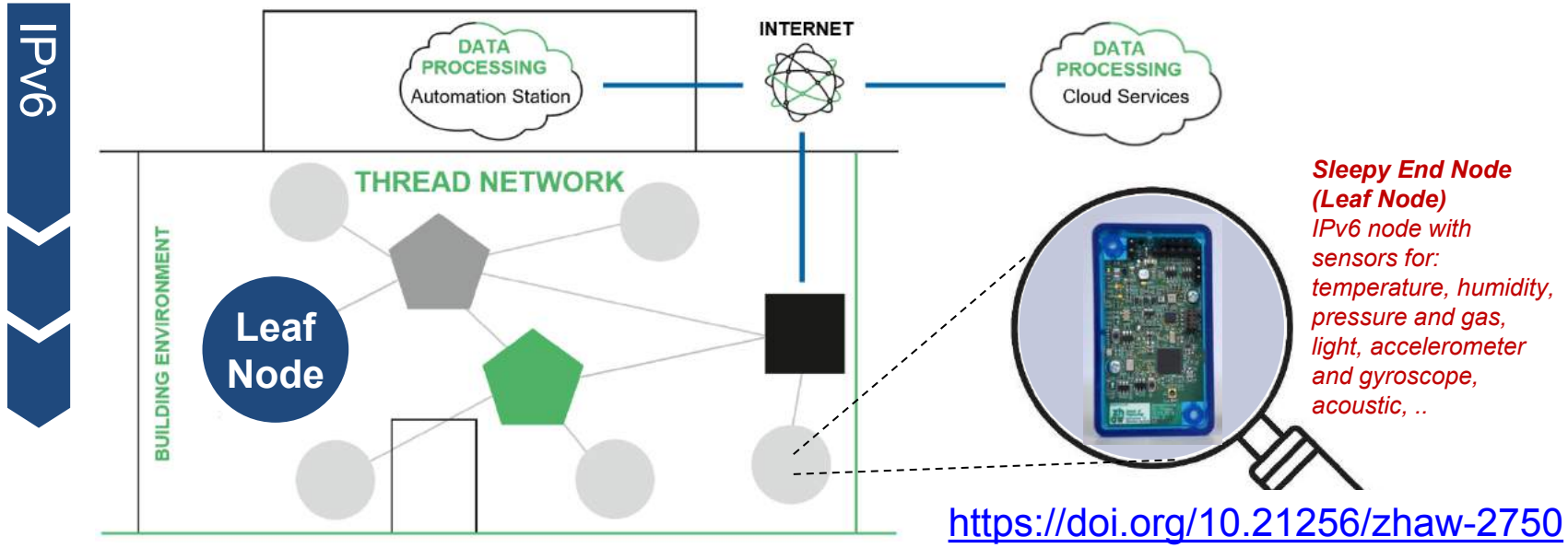
School of Engineering
InES Institute of Embedded Systems

Completed work: Thread Group IPv6 stack

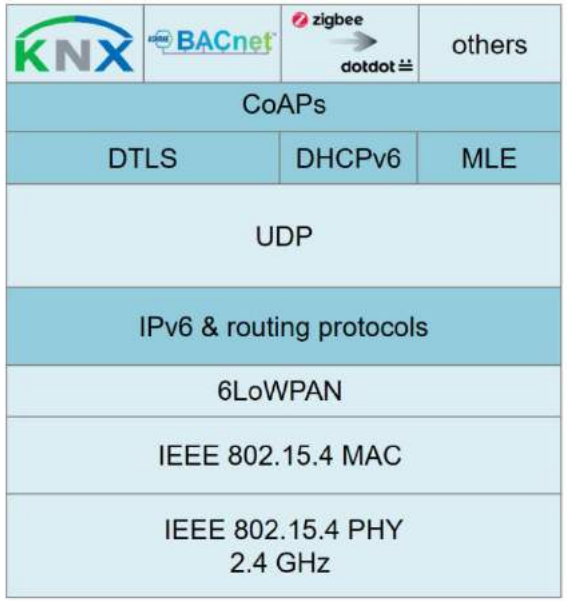
- IPv6 access for battery operated Sleepy End Nodes
- Miniaturized routers (always on) in lamps / mains outlets
- Zephyr RTOS, OpenThread, mbedTLS
- Secure elements for tamper proof memory & crypto func.
- 'Fairhair / IETF BRSKI' enrollment / bootstrap
- RESTful access of resources with CoAPs application layer
- Interaction with PKI (Public Key Infrastructure)

Current research activities

- Web of Things
  - Resource and service discovery
  - Information models / dictionaries / ontologies
  - Semantic interoperability / semantic searches
- Security for resource-constrained devices
  - Energy and performance aspects with chip vendors
  - Promotion of Secure-by-Design methodology
  - Lightweight IoT security protocols



Sleepy End Node (Leaf Node)
IPv6 node with sensors for: temperature, humidity, pressure and gas, light, accelerometer and gyroscope, acoustic, ..

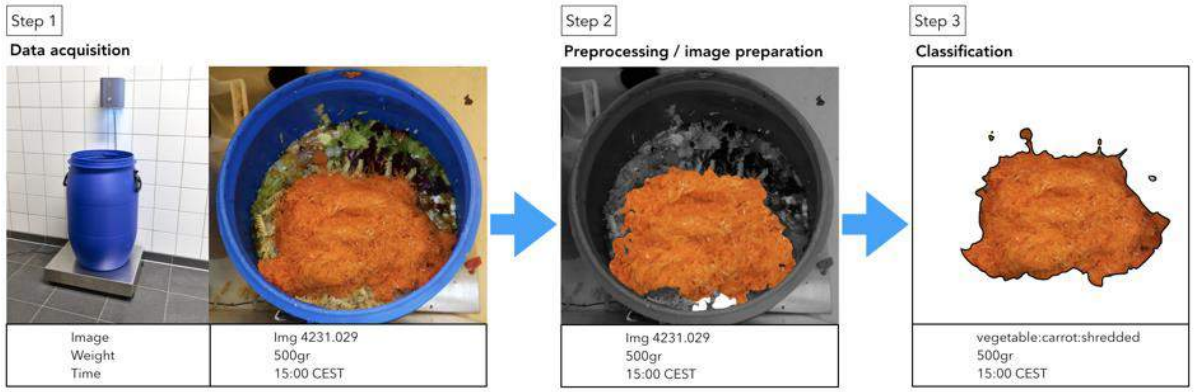


https://doi.org/10.21256/zhaw-2750

Application example (2): Food Waste Analysis by Edge processing

School of Engineering
InES Institute of Embedded Systems

- **Automatic detection of kitchen waste in restaurants**
- **Embedded Machine Learning for waste classification**
  - Hardware platform: Nvidia Jetson Nano
  - Analysis done at the camera
- **Savings potential**
  - At least CHF 2,500 per month of food that is not thrown away.



Industry partner

KITRO

www.kitro.ch

Who we are

- Researching SME located in Bad Homburg, Germany
- Management and Technology Consulting
- Knowledge management, innovation management, and software engineering
- Artificial Intelligence
- www.metcommunications.de

Focus and activities in Artificial Intelligence

- **Data quality and sovereignty**

  e.g. Jastroch, N.: Trusted Artificial Intelligence: On the Use of Private Data. Proceedings of PLM2020, Rapperswil/Switzerland, July 2020 Springer Nature IFIP AICT 594, Cham https://doi.org/10.1007/978-3-030-62807-9_52

- **Risk management and mitigation**

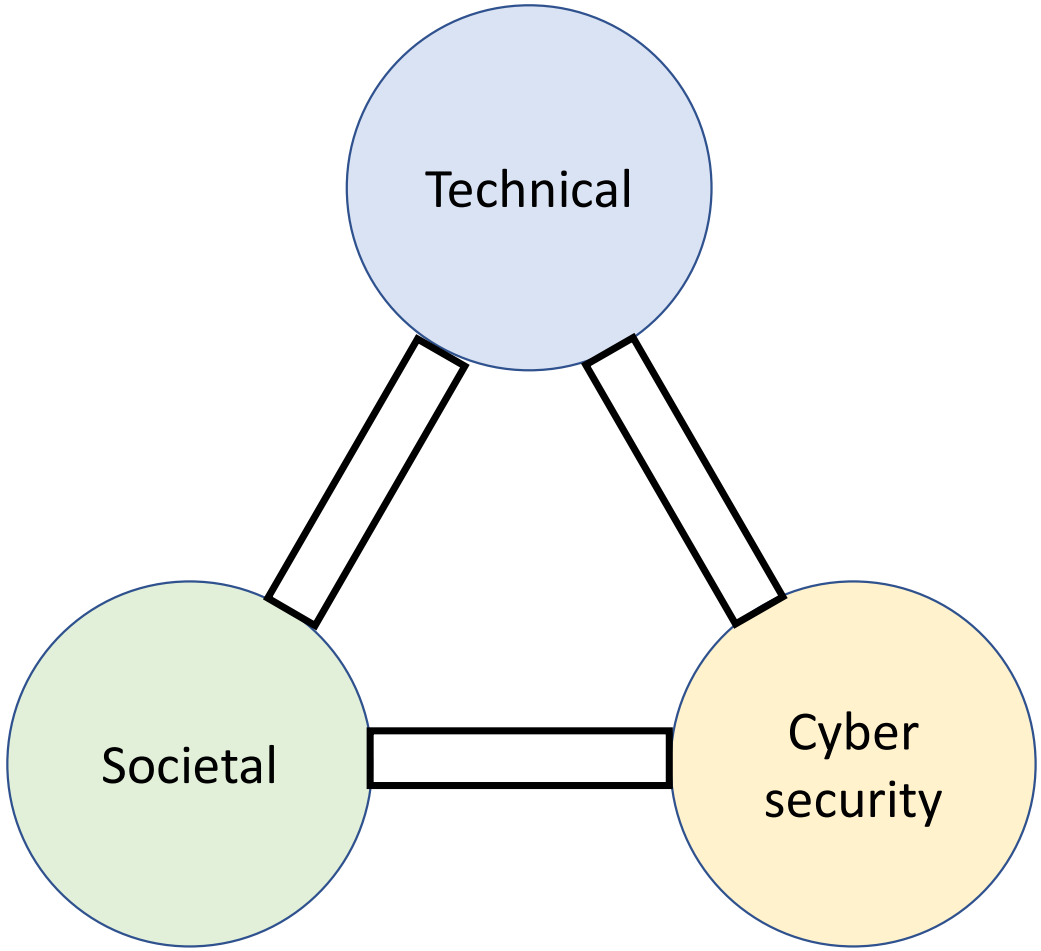
  e.g. Jastroch, N.: Applied Artificial Intelligence: Risk Mitigation Matters (Proceedings of PLM2021, Curitiba/Brasil - forthcoming)

- **European AI Alliance platform**

Artificial Intelligence – Risk Management Framework

Risk categories

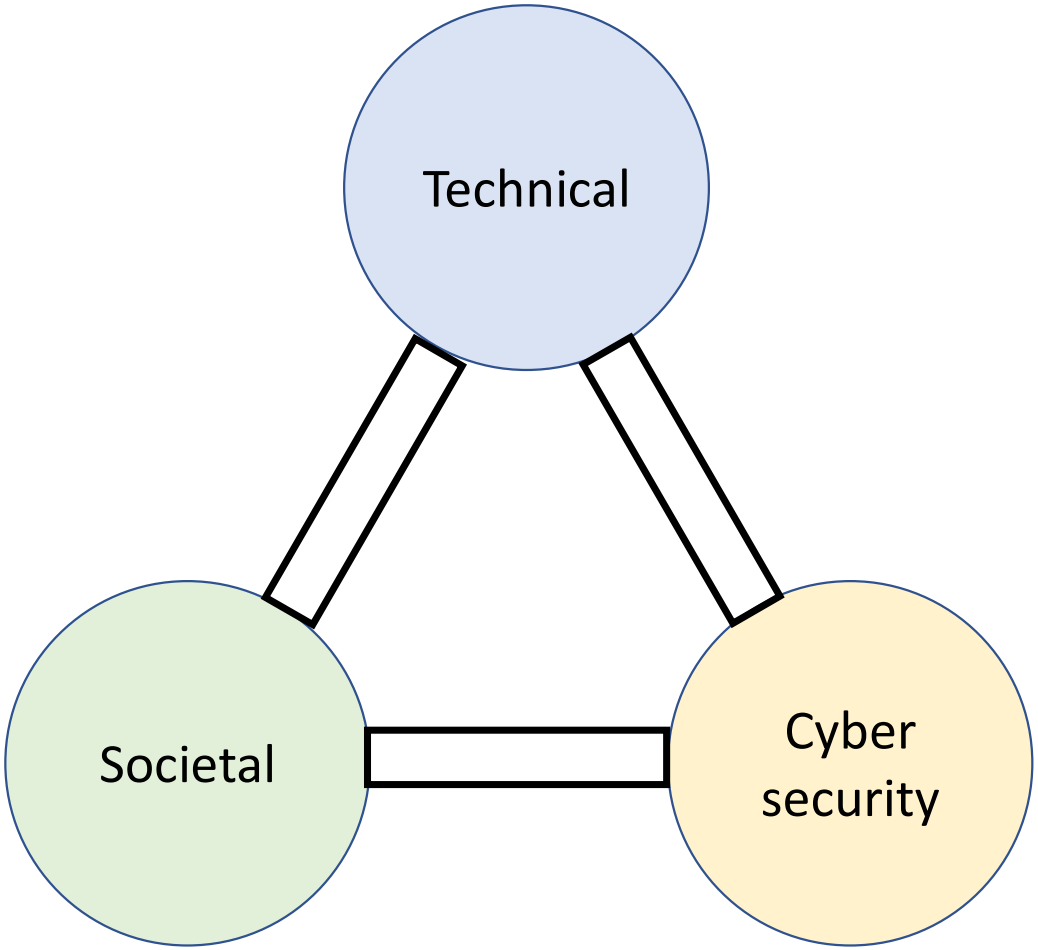
- Technical:
  - malfunction
  - misfunction
  - emerging phenomena
- Societal:
  - regulation
  - undesired implications
  - flaw propagation
  - ethical dilemma
- Cybersecurity:
  - attack
  - accident
  - outage



Artificial Intelligence – Risk Management Framework

Methodology

- Risk identification
- Generic response
- Maturity
- Tailored response



Artificial Intelligence – Risk Management Framework

Contact:

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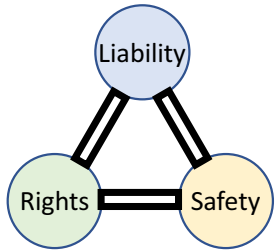
61352 Bad Homburg
Germany

www.metcommunications.de



PlatformUptake.eu

PlatformUptake.eu

Assessing the State of the Art and supporting an evidence-based Uptake and Evolution of Open Service Platforms in the Active and Healthy Ageing Domain

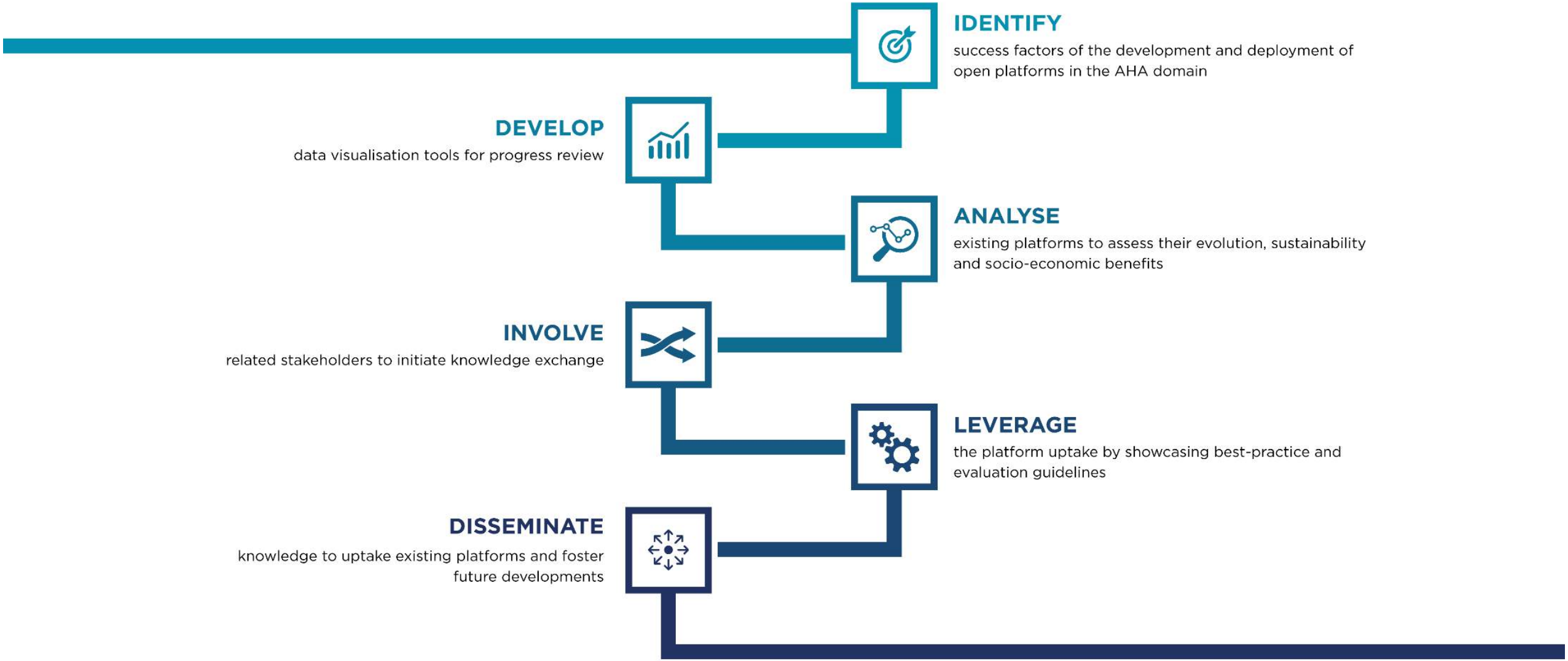
SYNYO GmbH

Alexander Nikolov

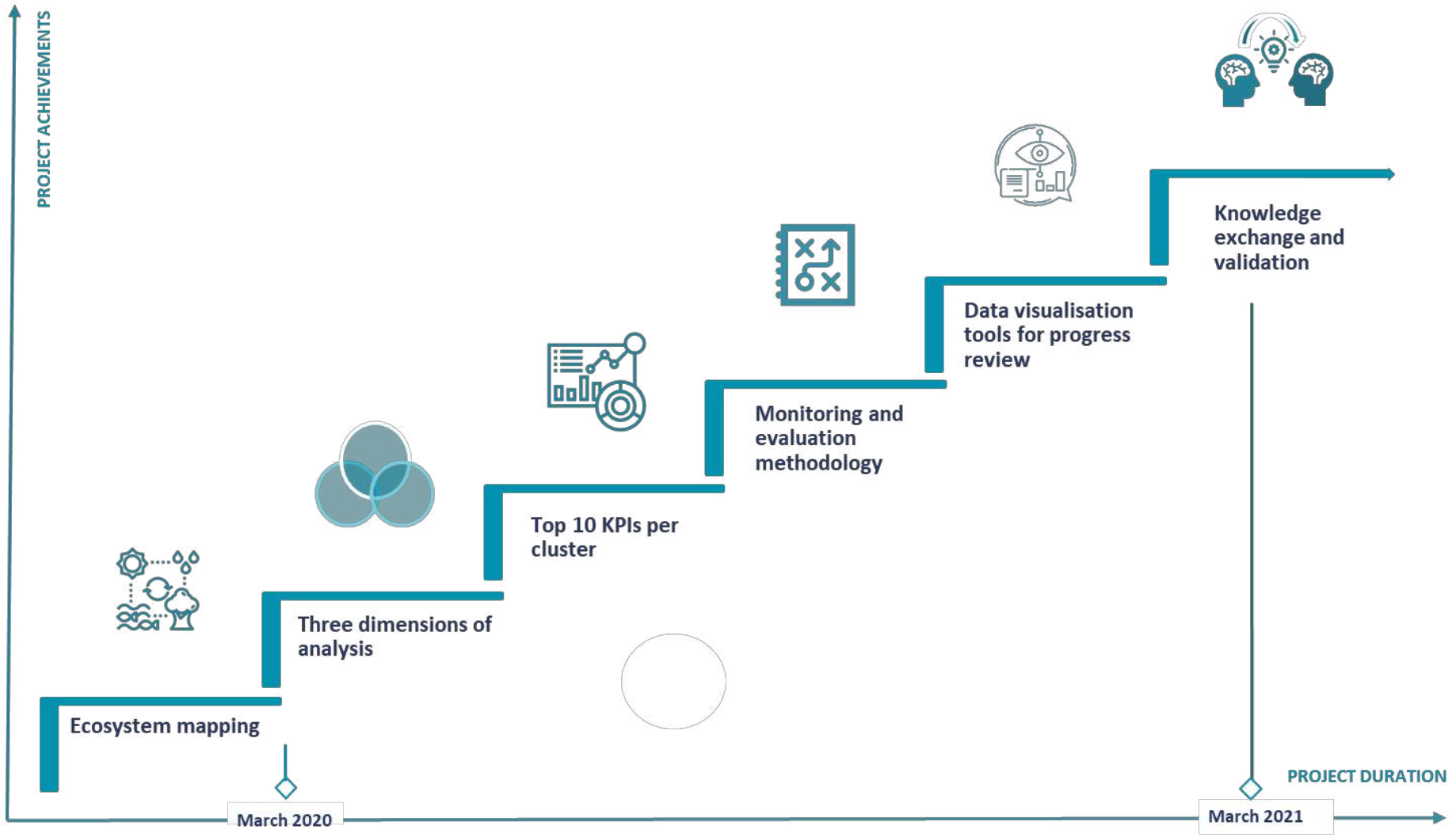
This project has received funding from the European Union's Horizon 2020 Research and Innovation Action under Grant Agreement No 875452.

Objectives

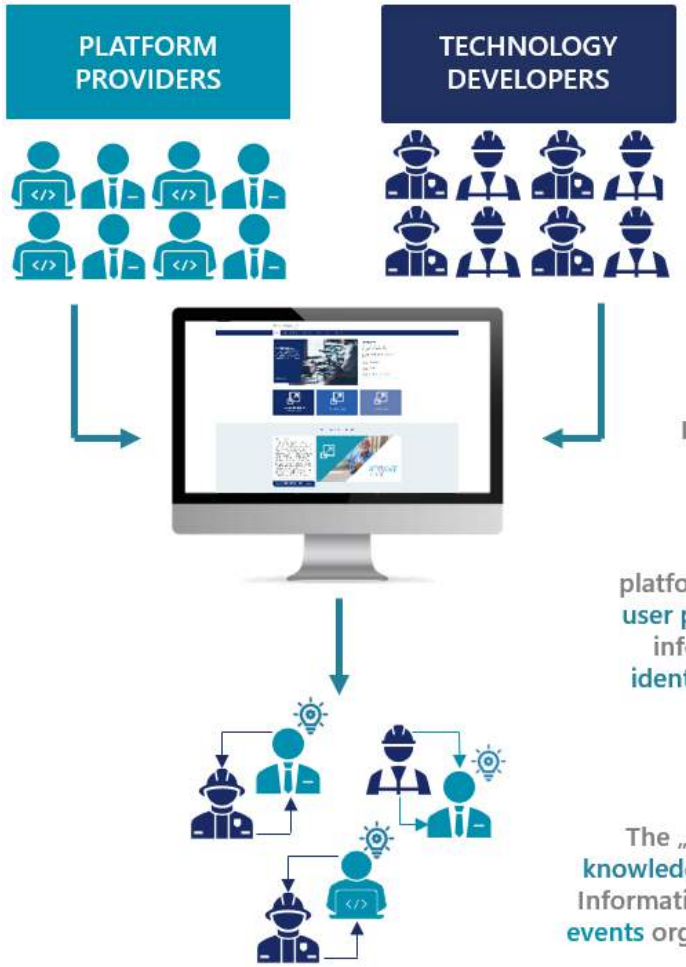
PlatformUptake.eu



Objectives


PROJECT ACHIEVEMENTS
Ecosystem mapping
Three dimensions of analysis
Top 10 KPIs per cluster
Monitoring and evaluation methodology
Data visualisation tools for progress review
Knowledge exchange and validation
March 2020
March 2021
PROJECT DURATION

Matchmaking



Organisations from the **suppliers** and **users** sides get involved in the **matchmaking process.**

INVOLVEMENT 01

Interested SMEs and platform providers **register** on the Open Information Hub **to create profiles.**

REGISTRATION & PROFILE SET-UP Sign Up 02

The registered SMEs and platform providers **extend their user profiles** through addtional information. A smart advisor **identifies which needs are met by which offers.**

SYSTEM MATCHING 03

The „couples" participate in the **knowledge exhange** over the Open Information Hub as well as the user **events** organised by the consortium.

KNOWLEDGE EXCHANGE AND EVENTS 04

Thank you for your attention!

Contact us, get involved, stay updated:

office@platformuptake.eu

www.platformuptake.eu

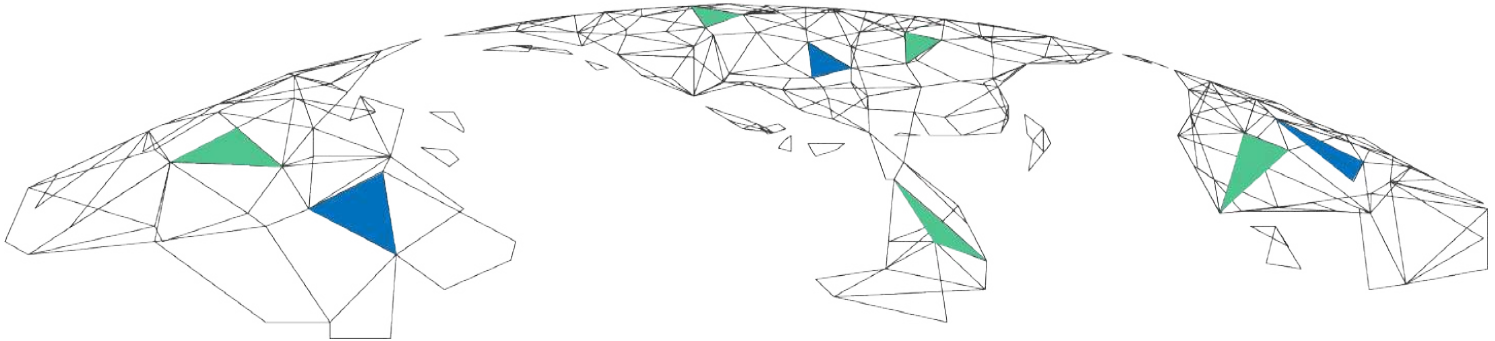
@PlatformUptake

AUTONOMOUS DECENTRALISED CLOUD TECHNOLOGY

MEETING THE DEMAND FOR DECENTRALISATION IN THE DATA ECONOMY

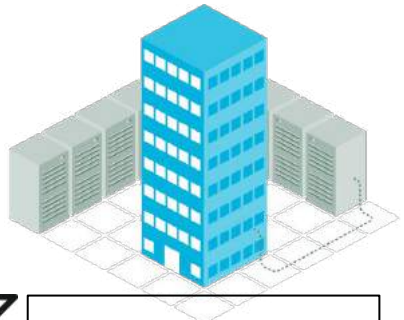
From Cloud to Edge to IoT for European Data

July 7, 2021



FROM CENTRALIZED TO PEER2PEER

WHAT SOLAR PANELS DID FOR THE ENERGY INDUSTRY - WE DO FOR INTERNET CAPACITY ... BRINGING CLOUD ITSELF TO THE EDGE

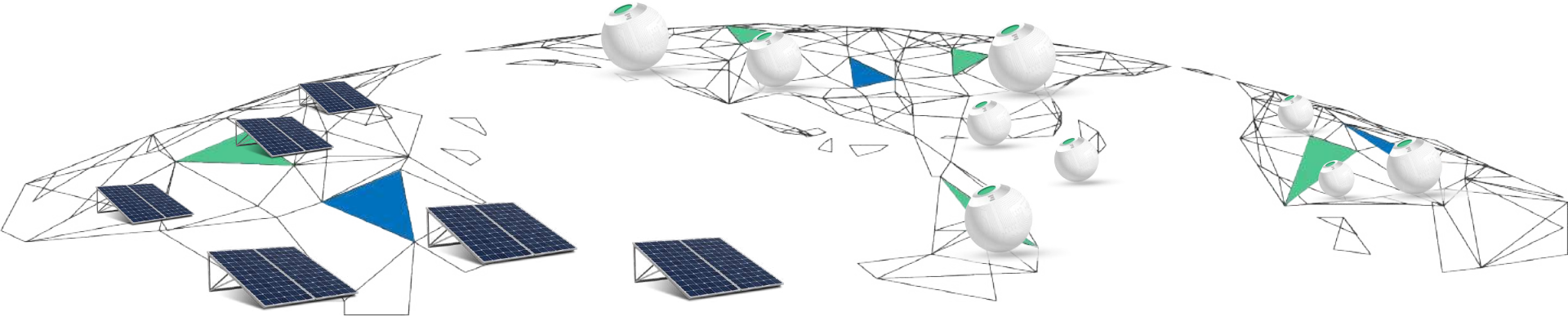


POWER PLANT

SOLAR PANEL

3NODE

DATACENTER



… MEETING THE REQUIREMENTS FOR AN EDGE CLOUD ARCHITECTURE (1)

- Operating System, able to access hardware resources
  - Combine Storage, Compute & Network
- Compatible
  - Ex. Linux-based
  - Containers (Docker, Kubernetes)
  - IPv6
  - Can run on existing cable network / internet hardware infrastructure
  - OS can run on any existing hardware, allowing secure boot (server hardware & ARM)
- Scalable
  - Able to run in a grid of millions of nodes connected
  - Need for a stateless and lightweight system
  - No limits in network (peer to peer connections, IPv6)
- Reliable
- Secure by design / Hackerproof and Privacy by design
  - Encrypted network
  - Quantum-safe = non-hackable, even using a quantum computer

… MEETING THE REQUIREMENTS FOR AN EDGE CLOUD ARCHITECTURE (2)

- Capable for the Edge
  - Self-healing, to compensate for
    - absence of human operators
    - devices going out of service
  - Lightweight OS, so it can run on ARM infrastructure
  - Energy efficient : no need for extra power plants, can run on current electricity grid
  - Low latency ⇒ direct peer-to-peer connections
    (emerging need with AR/VR, Smart Cities, 5G, self-driving cars, …)
- Incentive for local hardware owners to keep their resources connected
- Identity for each device
  - IPv6 address (3.4 x 10^38 addresses available)
  - Decentralized (1 identity per device, using PKI)
  - Built-in trust
- Low capital requirements
  - Rely on a very big number of participants to build the infrastructure
- Low operational and logistic requirements
  - High automation needed to compensate for
    - Unavailability of system operators
    - Devices going out-of-service
  - Plug&Play

DECENTRALIZED CLOUD SOFTWARE TECHNOLOGY

ZERO OS

OUR UNIQUE OPERATING SYSTEM IS THE MOST EFFICIENT UTILIZATION OF HARDWARE

Efficient and scalable operating system that eliminates multiple layers of complexity and delivers compute and storage capacity everywhere, much closer to the source of the hardware. Its lightweight architecture makes it cost and energy efficient.

ZERO PEOPLE

AUTONOMOUS IT - SELF-DRIVING / HEALING SOFTWARE

A major efficiency gain comes from removing the human requirement for deploying and operating IT infrastructure and services. It is truly self healing IT has never been achieved before.

ZERO CHAIN

DECENTRALIZED CONSENSUS BLOCKCHAIN PLATFORM

More Scalable, Private Blockchain Technology
Blockchain Dilemma Resolved
Scale & Security
Supercharge any other blockchain technology.
Our own BCDB (Blockchain Database) is 50x more efficient for storing data compared to others.

THREEFOLD PEER-TO-PEER CLOUD

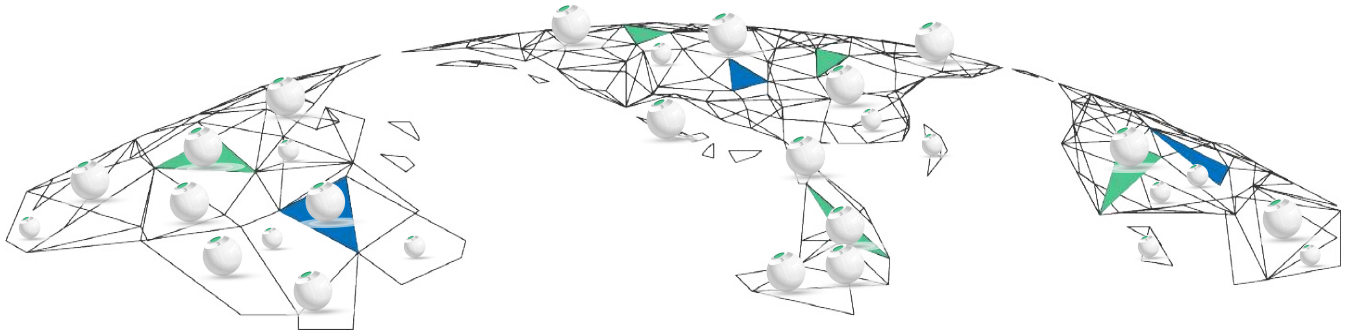
A 100% re-invented technology stack delivers true change.

	THREEFOLD P2P CLOUD	CURRENT IOT WORLD	TRADITIONAL CENTRALISED CLOUD
Can run any IT workload, easily updatable (cloud agility)	Yes	No	Yes
Close the edges of the internet (to where workloads are)	Yes	Yes, but limited connectivity	No
Cloud Agility	Yes	No	Yes
Full Cloud Connectivity	Yes	No	Yes
Quantum Secure	Yes, by design	No	No
Zero People and Self-Healing (autonomy & automation)	Yes, 3Bot Virtual System Admin	No	No
Incentive for keeping infrastructure connected	Yes, TFT farming	No	N/A (centralised)
Privacy respecting	Yes, by design	No	Requires complex setup
Investment Cost	Low	Low	High
Operational Cost	Low	Low	High
Energy efficient and Green	Yes	+/-	No
Scalable	Yes	No	Has reached its limits

THANK YOU!

for more information

www.threefold.tech
www.threefold.io
wiki.threefold.io



Network on High-Performance Embedded Architecture and Compilation

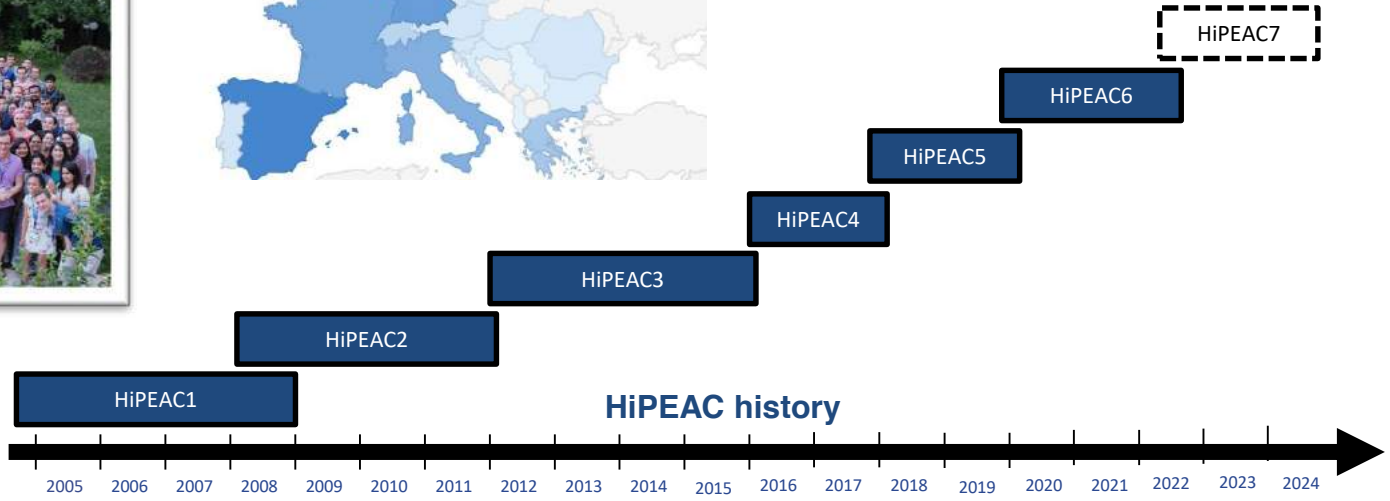
Koen De Bosschere

HiPEAC coordinator
Ghent University

www.HiPEAC.net

HiPEAC Ecosystem

755 members
1484 affiliated researchers
1050 affiliated PhD students
130 associated members
485 institutions
50 countries
Membership is free of charge



HiPEAC Communications and Talent management

Innovation Europe

A single-board computer made in Europe

Cyber-physical systems meet supercomputing

In April, we saw another indicator of the booming popularity of the DIY electronics scene, when the Kickstarter campaign for the UDOO X86 board smashed its €100,000 target overnight. Thanks to the EU-funded AXIOM (www.axiom-project.eu) and Mont-Blanc (www.montblanc-project.eu) projects, a new and improved version of Barcelona Supercomputing Center's OmpSs parallel programming model can be run on a cluster of UDOO X86, allowing hobbyists and professionals to craft their own supercomputer. The AXIOM team aims to create a single-board computer – a complete computer comprising microprocessor(s), memory, input/output and other features on one circuit board – which is designed and manufactured in Europe.

HiPEAC caught up with UDOO co-founder Maurizio Caporali (MC) of the University of Siena and Xavier Martorell (XM) of Barcelona Supercomputing Center to find out more.

What's so special about this new board?

MC: UDOO X86 is a unique single-board computer. It's both the world's most powerful maker board and a fully fledged Arduino 101. As a computer, UDOO X86 is a quantum leap forward compared to regular single-board computers for makers, and its performance is comparable to most notebooks. It can drive up to three 4k screens – that is, screens with a horizontal resolution of around 4,000 pixels – simultaneously and runs Windows (including Windows 10), Android and Linux. It is 10 times more powerful than the Raspberry Pi 3. Despite this incredible power, its Intel Quad Core 14nm 64-bit processors consume as little as 5-6W in energy, depending on the UDOO X86 model.

UDOO X86 has the same pinout as an Arduino 101 and is 100% compatible with Arduino shields, sensors and actuators. It can even run the Arduino integrated development environment directly from the main Intel quad core processor. The Arduino 101-compatible microcontroller is based on Intel Curie, which integrates 32-bit Quark SE system-on-chip, six-axis motion sensors and Bluetooth low energy. Last but not least, UDOO X86 is open source and open hardware.

UDOO X86: Vital statistics

- Processor up to 2.56GHz
- Up to 8GB of RAM
- Drives up to three 4K monitors simultaneously
- Completely Arduino 101-integrated
- Runs any X86 Linux distribution, Windows and Android
- Multiple options for mass storage
- Ability to start up processor through on-board microcontroller

Why are do-it-yourself (DIY) electronics so popular? What are the benefits of making things open source?

MC: Hardware is becoming less expensive year by year, and people have started realizing that they can build their own stuff instead of buying it. Recently there's also been more focus on STEAM (science, technology, engineering, arts and mathematics) fields. What we are witnessing is not just a bunch of hobbyists; it's a new industrial revolution, embodied by makers.

HiPEAC
@hipeac

Take a look at EUROSERVER's film on 'Scale-out architecture for energy efficient servers & micro-servers' youtube.com/watch?v=2EnEKo...

7:32pm · 15 Feb 2017 · TweetDeck

OPEN TWITTER ANALYTICS

3 LIKES

The Register®
Biting the hand that feeds IT

DATA CENTRE SOFTWARE SECURITY TRANSFORMATION DEVOPS BUSINESS PERSONAL TECH

Data Centre ▸ HPC

European Commission dangles €374m for low-power exascale research

Processors are going to be everywhere, so they shouldn't be energy hogs

14 Nov 2016 at 07:28, Richard Chirgwin

Europe is trying to plant a flag in future chip development, slinging money towards low-power server silicon.

Through its Horizon 2020 research collaboration, the European Commission pus published a solicitation for the project.

There's nearly €375m on offer for the project, which looks to push more digitisation "outside the traditional 'high-tech sectors'"; and develop better software development environments and tools targeting "parallel and heterogeneous architectures".

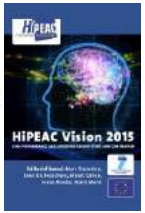
HiPEAC Vision

2008

2009

2011

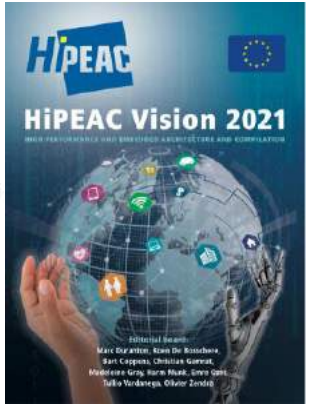
2013



2015

2017

2019

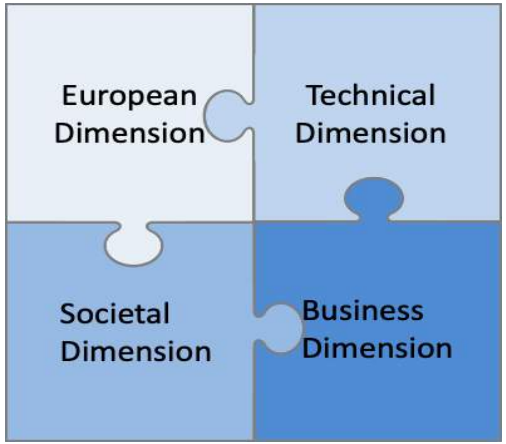


2021

Recommendations

- Technical recommendations
- Policy recommendations
- Societal recommendations

www.hipeac.net/vision



Want more information?
Want to contribute?
Want to join?

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www.hipeac.net

HORIZON EUROPE 2021 CALL From Cloud to Edge to IoT for European Data

10:45
12:00

ORGANISATION PITCH BLOCK

11:30 – 11:33 **RISE Research Institutes of Sweden**, ICE datacenter, *Sweden*

11:33 – 11:36 **Fundación Cibervoluntarios**, *Spain*

11:36 – 11:39 **Digital Catapult**, *United Kingdom*

11:39 – 11:42 **Green Communications**, *France*

11:42 – 11:45 **OpenNebula**, *Spain*

11.45 – 11:48 **Instituto Pedro Nunes**, *Portugal*

11:48 – 11:51 **F6S Network**, *Ireland*

11:51 – 11:54 **pi-lar**, *Germany*

11:54 – 11:57 **South-East Asia IP SME Helpdesk**, *Vietnam*

ICE Datacenter

at RISE Research Institutes of Sweden

A full-scale datacenter testbed for R&I, contributing to a digitalized, smart and sustainable society

- Award winning open testbed, leading in Europe
  - Datacenter Facilities
  - Cloud and Edge HW & SW
- R&I Partnerships, from ground to cloud
  - Datacenter Systems
  - Applied Data Sciences

ICE IN NUMBERS

More than 25 projects
250 kW, 200 TB RAM
> 2k servers, 50k cores
240 GPUs,
1 100k cuda cores
OpenStack ECC, Kubernetes
… and more

EXAMPLE PROJECTS

SENDATE (Eureka, Celtic-Plus)
DC Innovation Region (ERUF)
Boden Type Datacenter (H2020)
Swedish Space Data Lab (Nat.)
DC Farming (Nat.)
Edge Testbed (Nat.)

Horizon Europe

7 July2021

The network of Tech Volunteer

Digital Transformation with Social Impact

Ángel Sola, Head of international programs

Fundación Cibervoluntarios is a pioneering organization in technological volunteering. In 2021 we celebrate our 20th anniversary working towards to help thousands of people to use technology as a means to improve their lives

vision

- **To expand the rights, opportunities and capacities of thousands in situation of digital vulnerability.**

- **Technology and Digital Skills as a tool that helps citizens generating impact and social transformation.**

- **To facilitate Alliances and collaborate in National and European projects to build replicable and scalable IMPACT.**

- **To act as social living lab: 60.000 people reached**

CIBER VOLUNTARIOS.org

How we work to achieve these goals

CIBER VOLUNTARIOS.org

Trajectory and Acknowledgements

Technology sector + Add to myFT

Europe's 100 digital champions

Explore the people and companies leading Europe's growth in five categories

- Leading individuals
- Corporate digital transformations
- New technologies and business models
- Technology training
- Using technology for social challenges

FT
FINANCIAL TIMES

CIBER VOLUNTARIOS.org

EUROPEAN IMPACT - WORKING WITH 83 PARTNERS

SIC-SPAIN
((2.0))


CIBER
VOLUNTARIOS.org
STAY CONNECTED
www.cibervoluntarios.org
angel.sola@cibervoluntarios.org
Ángel Sola, Head of international programs

Digital Catapult

The UK's leading advanced digital technology innovation centre

2021

Summary of Capabilities and Focus Areas

Organisation's core capabilities

- **Innovation/Design/Product:** Service design, user experience design and research, new business models, commercial roadmap, innovation sprints management, acceleration programmes, ecosystem mapping, product management and return on digital investment
- **IoT:** Asset tracking, condition monitoring and asset health, device testing and benchmarking, connectivity for IoT, industrial IoT, IoT security and IoT interoperability and smart manufacturing
- **5G:** 5G testbeds, deployment of 5G private networks and pop up networks, network orchestration, network slicing, OpenRan and Cellular IoT
- **AI**: Data assessment, predictive modelling, computer vision, federated learning, responsible AI and applied AI Ethics, deep reinforcement learning and generative networks.
- **Distributed Systems:** DLT Field Labs, legal smart contracts, decentralised operations, distributed file systems and file exchange, self-sovereign identity, privacy preserving data sharing and asset tokenisation
- **Immersive:** VR/AR design, virtual production, immersive lab, volumetric capture studio, XR interoperability, remote operations and training
- **Cross technology:** **Edge computing**, digital twins, factory automation

Focus areas in Horizon Europe

Circular economy, resilient production and supply chains, construction and building efficiency, industrial decarbonisation, AI and big data, energy efficiency, digital manufacturing, communication networks and connectivity, enabling digital technologies, creative industries, cultural heritage, logistics, management of waste, digital agri-food

Flagship innovation & acceleration programmes

DLT Field Labs

A collaboration initiative that explores how distributed ledger technologies can be applied to solve challenges within a specific industry

Machine Intelligence Garage

Helps businesses access the computation power and expertise they need to develop and build machine learning and artificial intelligence solutions.

IoT and 5G Accelerators

Programme providing early stage businesses the opportunity to develop innovative products and services using new network technologies.

Augmentor & Creative XR

programmes designed for small businesses, creative innovators, and arts & culture organisations capable of producing immersive content and eXtended reality tec

Made Smarter Tech Accelerator

The programmes works with manufacturers and digital technology innovators to develop cutting-edge technology solutions to manufacturing challenges.

600+

small businesses: working hand in hand with entrepreneurs

120+

industrial collaborations

+£100m

total investment raised by 90 companies after engaging with Digital Catapult in the last year

3,000

companies used our nationwide network of testbeds and labs

For further info please contact us at:

andreas.alexiou@digicatapult.org.uk
or
collaborativeresearch@digicatapult.org.uk

Green PI

by Green Communications

Distributed Internet & Edge Cloud Platform

FAST – AUTONOMOUS – SCALABLE – LOW CARBON IMPACT
MOBILITY – DATA SOVEREIGNTY

Technology

Edge Network (Ad Hoc/Mesh)
Edge Cloud
Distributed Services

Company

French SME specialized in:
- ✓ Wireless Networks
- ✓ Distributed Systems
- ✓ Embedded Systems

Application Areas

IoT – Robotics - V2X - Healthcare – Transports - Logistics – Public Safety – Public Internet - 5G – Blockchain …

Some Projects

WORKINGAGE

HOSMARTAI

WIZARD

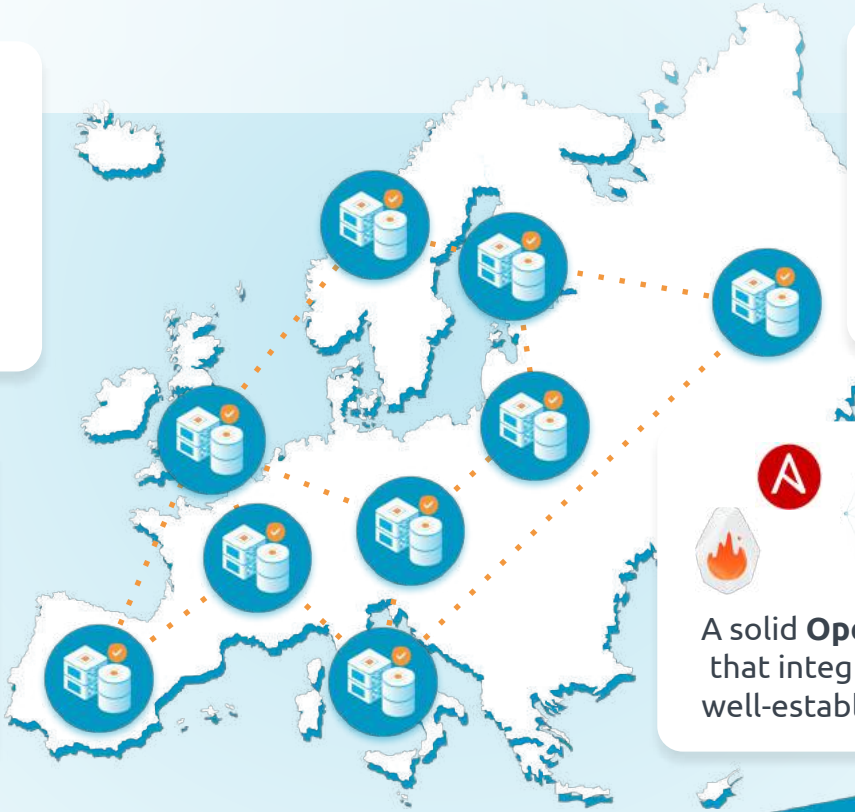
InDiD
Infrastructure Digitale de Demain

ONEedge.io

Building an open source Edge Computing platform for Europe

Backward compatibility with existing VM, container & serverless appliances

Multi-Cloud architecture with interoperability and workload portability across providers

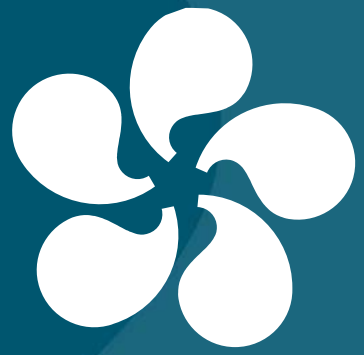


Avoid vendor lock-in using resources from 5G operators, EU cloud providers, and GAIA-X

A solid **Open Source solution** that integrates and supports well-established technologies

research@opennebula.io

This work has received funding from the EU Horizon 2020 research and innovation programme under grant agreement **ONEedge 880412**



IPN lis

Profile – Cloud, Edge & IoT

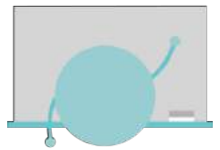
Horizon Europe Cloud, Edge, IoT Information and Virtual Brokerage Session

Instituto Pedro Nunes

- RTO created in 1991 through University of Coimbra
- Promotes innovation
- Establishes the connection between the academic ecosystem and the business sector
- Brings together 41 associates

RESEARCH AND TECHNOLOGICAL DEVELOPMENT

BUSINESS INCUBATION AND ACCELERATION



HIGHLY SPECIALISED TRAINING

R&I Expertise highlights

- Big Data & AI
- Cybersecurity
- Fixed & Mobile Communications
- Software Engineering

- Agriculture
- Health
- Utilities / Smart Grids
- Public Protection & Disaster Recovery
- Telecom
- Transportation & Mobility

Previous related work:

- **Orchestration** addressing the Internet of Things (IoT) to Fog to Cloud continuum, focused on minimisation of **latency** (by decreasing response times) (e.g., link1, link2) and **resilience** (e.g., link3) improvement (by applying smart service replication mechanisms)
- **Optimisation techniques** including Integer Linear Programming (ILP), evolutionary algorithms, and heuristics based on graph partitions
- Validation experiments using **Fog-based simulators** such as Yet Another Fog Simulator (YAFS)
- **Data Privacy** in cloud environments (e.g., link4)

What we can offer

- Design of cost-effective solutions for both operators of wireless cellular communication networks and service providers ("verticals"), incorporating **intelligence and autonomous adaptability into network management and orchestration**
- Automate and optimise network management of evolved virtualised and programmable networks in dense and complex environments through evolved **Self-Organising Networks (SON)** and **Intent-Based Networking (IBN)** approaches
- **Distributed Trust and Reputation Management Systems / DTRMS** (e.g., relying on Blockchain or technologies such as BigChainDB)
- **Remote attestation mechanisms** (e.g., based on IETF's RATS) for ensuring integrity of IoT applications, services and data required for their functioning
- **Federated-AI** mechanisms for services and devices (e.g., empowering attestation procedures, reputation management or privacy-assuring services)

Related R&I Projects

ARCADIAN-IoT

H2020 | 2021-2023

Development of an innovative, advanced, solid framework for trust, security and privacy management for IoT systems, accelerating the development of IoT systems towards decentralized, transparent and user controllable privacy

OREOS

P2020 | 2021-2023

Design and implementation of an end-to-end orchestration platform for provisioning and managing critical services (vehicle communications, electrical distribution networks) based on 5G communications

SMART 5GRID

P2020 | 2021 - 2023

Exploit 5G networks by energy operators (TSO and DSO) through three pillars: 1) a 5G network management platform enabling Non-Public Networks (NPNs); 2) a security system to ensure the protection of grid's control processes and M2M communications; 3) a monitoring platform enabling the visualization and analysis of the energy quality.


IPN lis

@Horizon Europe

F6S:www.f6s.com

What is F6S?

F6S is one of Europe's largest ‘transversal’ accelerator platforms and is an active beneficiary (coordinator & partner) in +30 EU funded actions. Over 1.600.000 tech startups/ SMEs and 4,0000 Corporates leverage the F6S Innovation Framework to power their innovation strategies and drive positive outcomes ranging from partnerships to investments and M&A.

Networking	Strategic & value-add introductions to experts, VCs & corporates
Integration	We help test, pilot & scale innovation projects
Sourcing & DD	We discover, conduct DD & engage the right companies for you
Intelligence	We deliver to you industry trends & custom research
Innovation Portal	Collaborate across your scouted companies

F6S Innovation

F6S is a global innovation leader, with our digital first approach to corporate innovation where we allow corporates to connect and innovate with companies all over Europe and the world.

F6S is the **#1 Corporate Innovation Community** with over **4** million SMEs/start-up founders on F6S and our network of scout analysts our reach is unparalleled.

300+

Sectors tracked

Dedicated Analyst & Research teams

15K

Partners on F6S

Accelerators, VC's, Corporates & Universities

200K

Companies <> Corporates

Connections made

FERRERO vodafone xylem PHILIPS

+ 4 million companies use F6S for Innovation



Deutsche Bank


F6S:Our Key Roles in Horizon Europe

01
Key Impact Pathways

F6S:Your Vehicle for "Impact'

F6S is the ideal vehicle for 'Key Impact Pathways' in Horizon Europe. Successful evaluation under HEU hinges on the necessity to demonstrate the 'real – world' 'impact' of R&I EU funding to citizens, SMEs, fellow researchers and all relevant stakeholders across Europe. F6S as an accelerator platform is well equipped to manage this 'transversal' role.

02
Cascade Funding Experts

Financial Support to Third Parties (FSTP)

An EC mechanism in HEU to distribute funds to SMEs and/or mid-cap companies, to scale – up or in the adoption or development of innovation. F6S has a vast experience in dozens of 'cascade funding' calls under H2020 and has a tried, trusted and tailored CRM system to manage the entire process from application, to evaluation, to approval: Link

03
Communication, Dissemination, Exploitation & Engagement

Communication & Dissemination Experts

Horizon Europe places an even greater emphasis on Dissemination, Communication & Exploitation activities to ensure the concrete use and uptake of valuable research results post - project. F6S maximises the 'effects' and 'impact' the research has on the topic and the wider world via the unrivalled reach of the F6S Network.

F6S - Expertise through Experience

- ✓ Coordination
- ✓ Proposal Development
- ✓ Cascade Funding/Financial Support to Third Parties (FSTP) - Open Calls Management
- ✓ Communication
- ✓ Dissemination
- ✓ Exploitation
- ✓ Outreach
- ✓ Community Building
- ✓ Key Impact Pathways
- ✓ Third Party exploitation of results

+ 30 EU Projects

+ 120 employees

+ 16 EU Project Managers

+ 4 million platform users

H2020 Reference Projects

Contact me:

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39 Fitzwilliam Place, Dublin 2, D02 ND61, Rep of Ireland

European Commission

SOUTH-EAST ASIA IP SME HELPDESK

Free South-east Asia IP advice for European SMEs

#knowbeforeyougo!

- free first-line confidential advice on intellectual property: *question@southeastasia-iprhelpdesk.eu*
- awareness-raising about IP matters in South-East Asia affecting EU SMEs
- help to EU SMEs to make informed IP decisions

Available to all EU SMEs, the Helpdesk co-operates with European SME networks, chambers of commerce and industry associations to offer these services free of charge

https://ec.europa.eu/ip-helpdesk

European Commission

SOUTH-EAST ASIA IP SME HELPDESK

Snapshot: Helpdesk Free Services

Enquiry Helpline

Website & Newsletter

Training Workshops & Live Webinars

E-learning & Business Tools

Publications

https://ec.europa.eu/ip-helpdesk

HORIZON EUROPE 2021 CALL From Cloud to Edge to IoT for European Data

12:00
13:15

BROKERING AND NETWORKING MEETINGS

1x1 meetings

13:15
13:30

WRAP-UP AND CLOSING SESSION

Plenary Session

HORIZON EUROPE 2021 CALL From Cloud to Edge to IoT for European Data

13:30
20:00

MEETINGS TO BUILD HORIZON EUROPE CONSORTIA

1x1 meetings

THANK YOU !