IEoT

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GOHM Electronics, Turkey

Electronic Media Services Ltd., UK

Instituto de Telecomunicações, Portugal

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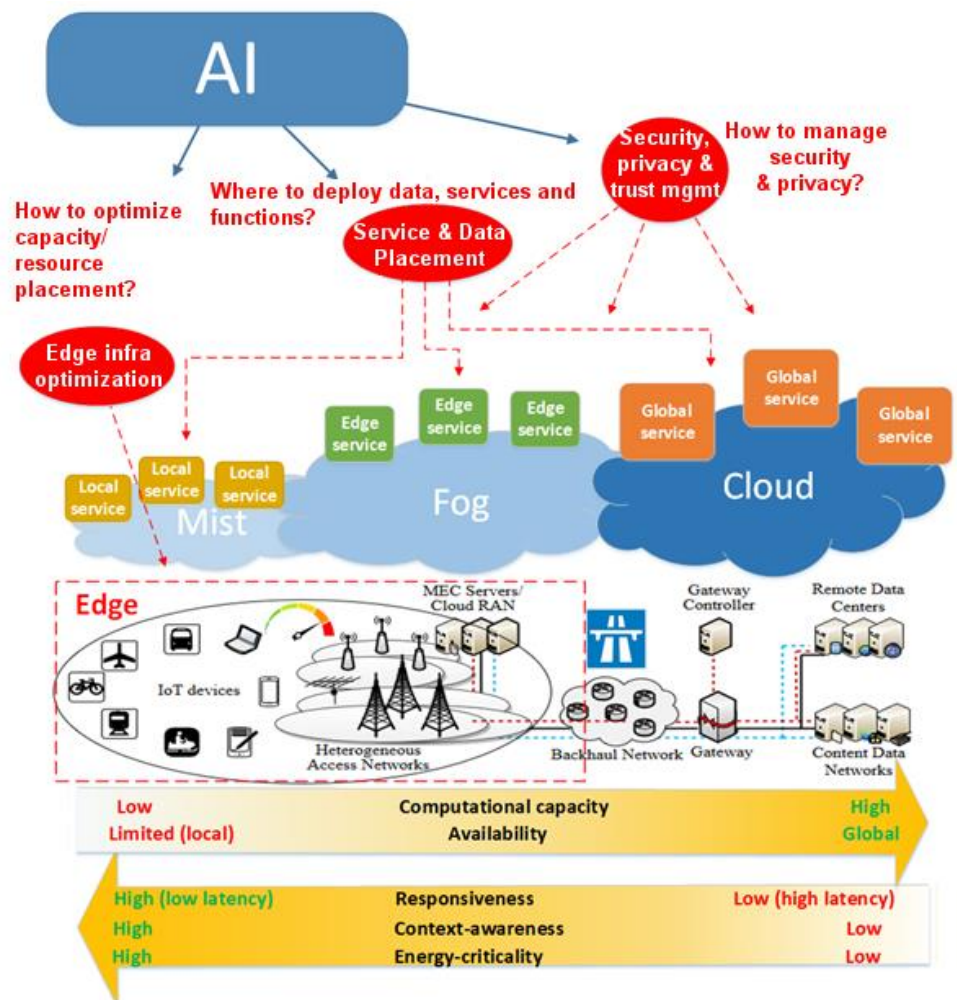Luis Miguel Campos

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Project Websites

www.celticnext.eu/project-ieot

https://ieot.eu

INTELLIGENT EDGE of THINGS

The evolution from local towards virtualized data storage, computation, network management, applications and workspaces has changed the way we use our digital services and brought some clear benefits over traditional systems, such as easy management, universal availability and decreased hardware requirements for devices. We are witnessing a change from separate person-to-person, person-to-

machine and machine-to-machine (IoT) computing towards the Internet of Everything (IoE) computing.

Edge computing is a key technology to unleash the full potential of 5G technologies, since it enables deploying computational tasks near the end-devices and therefore opens novel business opportunities around real-time cloud services for wirelessly connected mobile and IoT nodes. It provides computational capacity near the source of the data, allowing various data pre-processing, refining and analysis functions to reduce the amount of data to be sent to cloud servers and therefore reducing the load inflicted to core networks and data centers.

On the other hand, Artificial intelligence (AI) has until now been utilised for optimising the functionality of applications, services and different parts of communication systems. As such, in this project we will have a broader focus on AI utilisation.

This project will take the concept of edge computing to a new level by introducing the third, local, tier in addition to the data center and MEC tiers. We will utilize Artificial intelligence to unleash the full potential of each Edge architectural tier to meet different application requirements.

Main focus

This project focuses in developing intelligent technology solutions and business cases around three major areas of intelligent edge IoT computing:

- ♦ Intelligent adaptive wireless mobile IoT edge platform,
- ♦ Intelligent three-tier Edge-IoT data and service architecture,
- ♦ Intelligent, secure and privacy-preserving Edge-IoT technologies.

The common denominator for each of these areas is the use of distributed artificial intelligence (AI), including machine learning (ML) and deep learning (DL), algorithms to optimise the operation of different technologies covered by these three areas to achieve 1) real-time performance, 2) high level of security and privacy, 3) improved cost, resource-and energy-efficiency, and 4) scalability and manageability.

Approach

The developing of novel AI-enabled technologies on various levels of Edge IoT systems to achieve a high level of QoE perceived by user, security and privacy, improved costs, resource and energy-efficiency, and manageability. Real-life examples include:

- ♦ Real-time analysis & decision-making deployed on the edge;
- ♦ Keeping sensitive data as local as possible;
- ♦ Ensuring the operation of most critical functions in any situation;
- ♦ Promoting sustainability and business efficiency by optimising resource-, cost-, and energy-efficiency

Main result

Ensure the functions: ensure the operation of the most critical functions in any situation

Sustainability: Promote sustainability and business efficiency by optimizing resources, cost, and energy-efficiency on system level.

Implement use-cases: Implement use-cases that demonstrate the concepts developed by the project.

Develop technologies: Develop AI-enabled technologies on various levels of Edge IoT systems.

Develop analysis: Develop AI-based real-time analysis and decision-making deployed on the edge.

Confidential data saved: Find ways to keep sensitive data as local as possible.

Austria

Portugal

Turkey

About CELTIC–NEXT

CELTIC-NEXT is the EUREKA Cluster for next-generation communications enabling the digital society. CELTIC-NEXT stimulates and orchestrates international collaborative projects in the Information and Communications Technology (ICT) domain.

The CELTIC-NEXT programme includes a wide scope of ICT topics based on new high-performance communications networks supporting data-rich applications and advanced services, both in the ICT sector and across all vertical sectors.

CELTIC-NEXT is an industry-driven initiative, involving all the major ICT industry players as well as many SMEs, service providers, and research institutions. The CELTIC-NEXT activities are open to all organisations that share the CELTIC-NEXT vision of an inclusive digital society and are willing to collaborate to their own benefit, aligned with their national priorities, to advance the development and uptake of advanced ICT solutions.

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