RIOT-ES

Project ID: C2019/1-5

Start Date: 1 October 2020

Closure date: 30 June 2023

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www.celticnext.eu/project-riot-es

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Resource-Efficient IoT-Edge Systems

Riot-ES carries out the research and development of new methods, technologies and systems for maximising energy efficiency and increased performance in IoT systems, with a focus on IoT devices and processing at the edge of wireless networks.

Main focus

The project will research and develop new methods, technologies and systems for maximising energy efficiency and increase performance in IoT systems, with a focus on IoT devices and processing at the edge of wireless networks. Energy efficiency and performance are often at odds with each other, and the project will investigate fundamental trade-offs between the two leading to understanding about how to optimise energy efficiency given performance constraints and conversely, how to optimise performance given energy constraints. The findings will be used in a number of use cases of specific commercial interest to the partner organizations, where they will generate commercial advantage in their respective market segments.

Approach

IoT systems consume a significant amount of energy, making energy efficiency one of the most important issues to address.

As Energy efficiency and performance are often at odds with each other, the project's main focus will be investigating solutions to optimise energy efficiency given performance constraints and conversely, optimise performance given energy constraints.

The findings will be used in two different use cases: Smart Cities and Smart Home.

The project will investigate a mix of sensor devices as well as computational and data management platforms where the complementary expertise of the project partners will create strong synergy and thorough understanding of IoT edge systems.

Main results

The project aims at taking fundamental steps from today's vertical IoT solutions to enter a new horizontal and much more distributed and scalable architecture and business model for IoT that supports a heterogeneously integrated smart society. Each partner will contribute with compe-
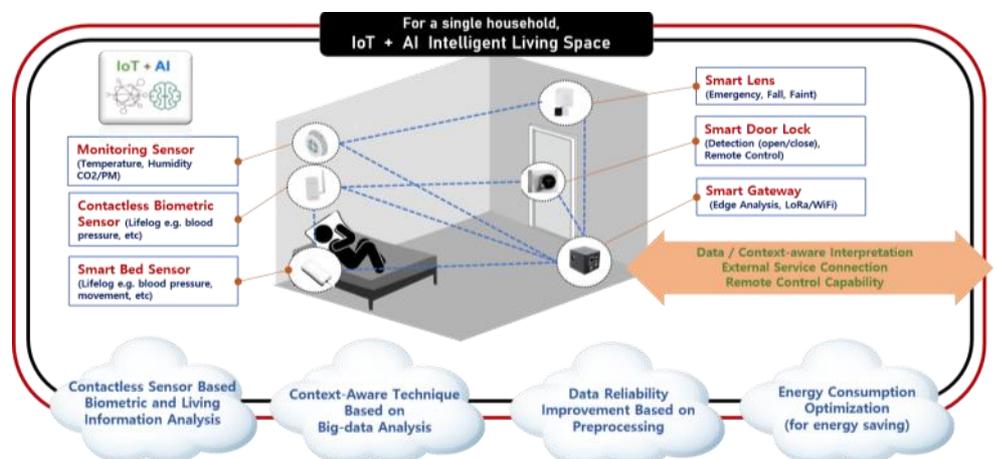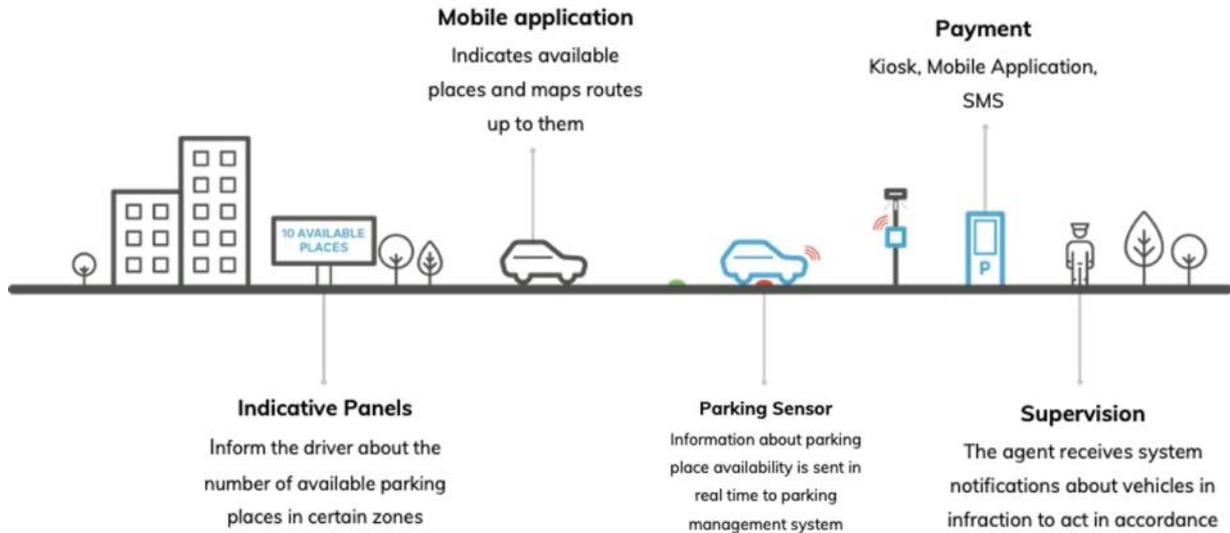

Figure 1: Smart Home use case

Figure 2: Smart Parking use case

tence and products in its own domain of expertise. The result will be a fully working distributed horizontal IoT network where all parties can benefit. Each partner will also be able to use this project as a driver for the transformation from centralized vertical IoT services to become a competitive supplier of products, infrastructure and applications in the emerging horizontal market arena.

A number of new or improved products is expected from the project, such as:

♦ A horizontal and distributed data broker for massive IoT;

♦ Smart home for elderly welfare;

♦ Smart Parking.

Impact

IoT has for a long time been the new technology, and the industry has launched numerous smart devices connected to an app. While this has created a number of very successful products categories such as smartwatches and smart appliances, we are still waiting for the real breakthrough of massive IoT.

In the meantime, we can see that the on-going digitalization in society will require an efficient and much more integrated infrastructure for IoT that municipalities, real-estate companies, enterprises, traffic as well as consumers can benefit from.

The project includes industrial partners focusing on IoT devices, the IoT middleware (infrastructure)

as well as IoT service applications to cover the complete delivery chain.

The project will improve the competitiveness of all individual components, but more importantly, the project will create strong partnerships between the participants leading to new system solutions and business opportunities based on combinations of each partner's components and applications in new distributed and/or horizontal business models that we expect as an outcome of the project.

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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