AICOM4HEALTH
AI-powered communication for Health

AICom4Health

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Partners:

Bewell Technology Industry & Trade Inc., Türkiye

ECITelecom, Israel

ETIYA, Türkiye

Luda Partners S.A., Spain

NETAS Telecommunications A.S., Türkiye

NETCHECK S.A., Spain

SII Group Spain S. L., Spain

Turk Telekom, Türkiye

Co–ordinator:

Maria del Pilar Aranda Sanchez

SII Group Spain S.L.

E-mail: pilar.aranda@siigroup-spain.com

Project Website

www.celticnext.eu/project-aicom4health

AI-Powered Communication for Health Crisis Management

AICom4Health is a European project that integrates artificial intelligence (AI), 5G, edge computing, and the Internet of Things (IoT) to improve health crisis management. Its objective is to create an intelligent platform that enables effective monitoring, forecasting, and response to critical situations in the field of public health, especially in urban settings.

Main focus

The project addresses three key challenges:

♦ The need for remote health solutions that reduce workload in hospitals.

♦ Early detection and management of crowds in public spaces to minimize infections.

♦ Air quality monitoring to reduce exposure to pollutants that aggravate respiratory diseases.

To this end, AICom4Health has developed a network architecture based on network slicing and virtualization, which enables the deployment of personalized and secure services in real time. This technology is expected to increase the resilience and efficiency of healthcare systems, improve urban quality of life, and generate new business opportunities for the European digital ecosystem.

AICom4Health stands at the forefront of **transformative healthcare solutions**, spearheading a paradigm shift in the way it approaches health crisis management. By seamlessly integrating **Artificial Intelligence (AI)** with **cutting-edge 5G** and beyond technologies, we are dedicated to providing **unprecedented access to healthcare** and ushering in a new era of **remote monitoring**.

Objectives

1. **Enhance Healthcare Access:** Develop an innovative AI and 5G solution for improved healthcare access and remote monitoring.

2. **Integrate Advanced Technologies:** Create a sophisticated infrastructure integrating IoT, communications, AI, and data analysis for smart cities.

3. **Cross-Disciplinary Collaboration:** Foster collaboration across industry disciplines for an effective health crisis response.

4. **Optimize Health Monitoring Infrastructure:** Utilize technologies like network slicing, edge computing, and machine learning for continuous health monitoring.

AICom4Health Use Cases
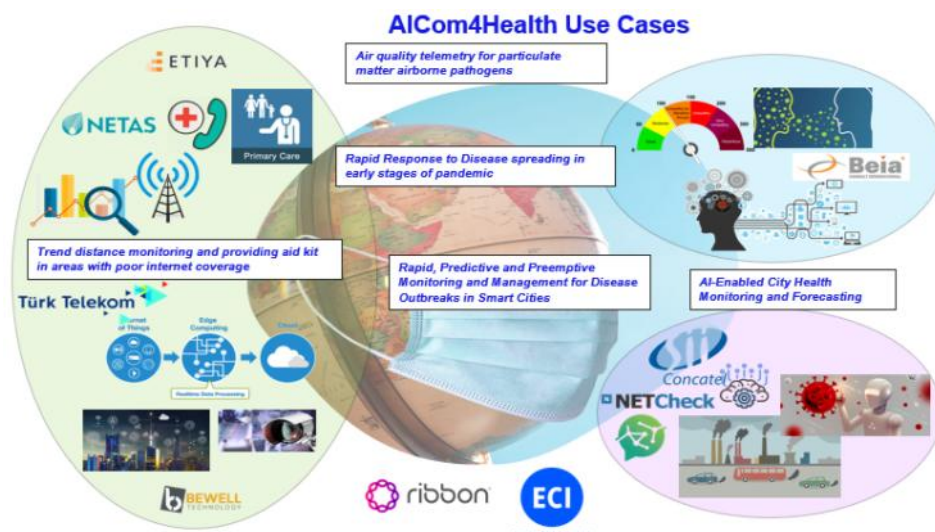
Goals

- **Market Impact and Recovery:** Penetrate the health market with a comprehensive, high-speed AI solution, aiding socio-economic recovery.

- **Innovate Privacy–Friendly AI:** Implement GDPR-compliant, privacy-friendly AI, ensuring security while advancing AI models for smart healthy cities.

- **Advance AI Models and Collective Intelligence:** Implement new AI models for smart healthy cities, creating a collective intelligence framework and optimized decision making.

- **Optimize Network Slicing:** Research solutions for advanced 5G use cases, emphasizing multiple slicing and dynamic management.

Approach

The project methodology combines:

- Distributed AI platforms operating at the edge of the network for real-time decision-making.

- Integration of IoT sensors in buildings, public spaces, and healthcare facilities to capture data on air quality, crowd concentration, and physiological parameters.

- Federated learning algorithms and differential privacy guarantee the protection of personal data in compliance with the GDPR.

- Deployment of pilots in real-world environments, with technical, operational, and user satisfaction validation. D2.4 Pilot Site Description.

- These solutions have been tested in three major use cases: air quality monitoring, crowd management, and urban health prediction.

Achieved results

AICom4Health has delivered several key outcomes:

- **Deployment of a multi-service AI platform** with three distinct network slices: air quality monitoring, smart crowd management, and citizen health forecasting.

- **Development of an intelligent alarm system** that detects potential health risks and issues alerts in real time.

- **Implementation of explainable AI (XAI) and knowledge graph models**, enabling context-aware decision-making and personalized recommendations.

- **Integration with 5G and cloud infrastructure**, ensuring scalability, low latency, and secure data transmission.

- **Contribution to scientific publications and standardization activities**, influencing future eHealth, 6G, and smart city frameworks.

Impact

AICom4Health empowers public health authorities, city managers, and healthcare providers with:

- **Enhanced readiness and response** to epidemics and environmental health hazards.

- **Improved resource allocation**, reducing strain on hospitals through early detection and remote monitoring.

- **Data-driven policymaking and citizen engagement**, thanks to transparent, privacy-respecting AI insights.

- **New business models and innovation opportunities** for telecoms, tech companies, and smart city operators.

The project's outcomes are expected to foster a more resilient, sustainable, and intelligent digital health ecosystem across Europe and beyond.

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.

CELTIC Office

c/o Eurescom, Wieblinger Weg 19/4

69123 Heidelberg, Germany

Phone: +49 6221 989 0

E-mail: office@celticnext.eu

www.celticnext.eu

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