ADA Project

ADA

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Project Website

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Remote Healthcare Monitoring powered by Network Intelligence and Automation

ADA focuses on the digital transformation of healthcare using 5G and AI, de-risking the adoption of remote healthcare monitoring. The ADA project develops and demonstrates 5G-based AI-powered digital healthcare monitoring technologies for respiratory condition diagnosis, physiotherapy, and complex care management. We will deliver an ADA healthcare API platform for the patient-centred care continuum focusing on community and home care with demonstrations in the UK, South Korea, and Türkiye.

Main focus

Remote health monitoring with 5G and AI is already widely demonstrated and started to be adopted in the healthcare industry to enhance clinical pathways. However, many existing technologies remain highly fragmented, leading to significant discrepancies and cumbersome operational overheads for healthcare delivery organisations. This means not only increased workloads for healthcare professionals, causing the so-called "app/system fatigue", but also makes it difficult to materialize the collective benefits of these technological advancements at scale.

The main focus of ADA is to develop a loosely coupled digital healthcare API platform to work with various digital health data modalities collected from mobiles and IoTs to Augmented Reality (AR) glasses, which is rapidly becoming a reality in the real-world clinical and operational healthcare context. It will advance the state-of-the-art integrated support for AI and AR applications at the edge of the network and demonstrate the platform's practical usage for real-world remote healthcare monitoring applications.

Approach

The steps that the ADA project will take are comprised of three prominent technology development areas, which we will embark on in sequence: a) an integrated platform design covering the patient care continuum; b) 5G and AI service development on the edge; and c) integration and demonstration at selected private 5G Stand-Alone (5GSA) test/trial sites with selected partners.

In addition to enabling the flexible linking of medical devices and healthcare services across the care continuum, the classic service-oriented architecture will be

Home: including care homes as well as homebased care
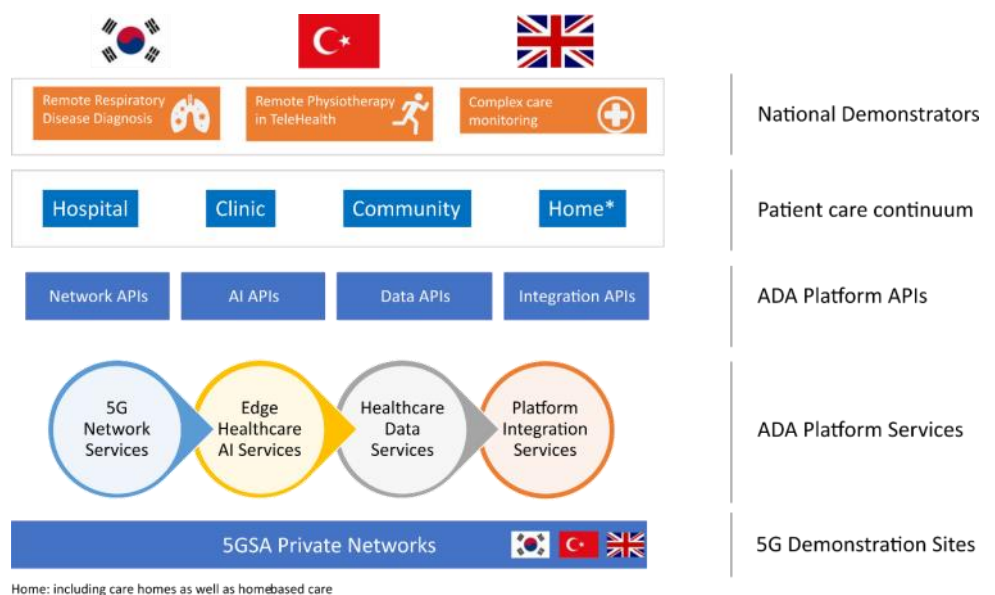
extended to accommodate the automated interactions between application-layer healthcare services and network-layered 5G services. This flexible service integration approach will provide the much-needed on-demand adaptive network quality-of-service guarantee whilst satisfying the loose coupling requirements between the applications and the network.

The overall ADA platform APIs include services for adaptive network optimization, flexible healthcare service integration, and an ADA data store. The set of 5G-enabled healthcare services built upon the platform will focus on improving patient outcomes, enhancing workforce productivity, and reducing administrative burdens in use cases. The trial demonstrators will centre around using the platform services for remote health monitoring applications, covering voice-based respiratory disease diagnosis, multi-party physiotherapy treatment, and complex care coordination. The emphasis of the innovation is the platform's capabilities to handle a variety of hybrid healthcare data patterns and use cases involving conventional low-traffic IoT sensing data, voice streams, and high-resolution video streams involving time-sensitive interactions, which are popular in emerging AI-powered AR/XR applications.

Main results

The ADA project is anticipated to produce the following main achievements. Firstly, it will be the first-of-its-kind integrated 5G-enabled AI-powered platform for digital healthcare continuum monitoring, demonstrating the benefits and advantages of 5G in accommodating advanced healthcare applications with diverse traffic patterns and bandwidth requirements going beyond simply faster network connectivity. Secondly, it will deliver a set of healthcare-oriented platform APIs suitable for a wide range of third-party application use cases, including healthcare and non-healthcare use cases. Some services, for example, those designed for real-time interactive remote consultation and collaborations, have applications in other domains as well, including transport, utilities, and call centres. Finally, the project will produce three remote healthcare monitoring demonstrators in the following clinical care areas: remote respiratory disease diagnosis, remote physiotherapy for rehabilitation, and complex care for patients with chronic conditions that require multidisciplinary team-based interventions. These demonstrators will greatly accelerate the development and testing processes of these clinical solutions, demonstrating technology feasibilities and ultimately advancing patient-centred care.

Impact

The ADA project will produce high-profile and impactful demonstrations globally at different nations involving partners directly from the project and collaborators from further afield. These will attract and further commercial opportunities for the partners, accelerating their global partnerships and commercialization journey.

From day one, new (and improved) products and services from partners have been envisioned. These include network-adaptive healthcare applications, new medical devices for diagnosis and treatment, and new technology products and platforms for complex care coordination. All these will enhance the partners' export capabilities, allowing them to improve or advance their export readiness and product competitiveness in a global market.

A range of new IPs is envisaged to be generated through the project partnerships, leading to, for example, the launching of a new healthcare brand, patent application and new copyright-protected software products. Further, the project is anticipated to build a solid grounding for further collaborations and partnerships in new R&D initiatives and commercial partnerships, in joint communication, dissemination, and commercial exploitation from the project outputs.

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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