CELTIC-NEXT
∑eureka Cluster

Project Achievements

iCare4NextG

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Partners:

ARDIC, Turkiye

Budapest University of Technology & Economics (BUTE), Hungary

Glintt S.L., Portugal

Globepoint, South Korea

Instituto politécnico do Porto, Portugal

Instituto Superior de Engenharia do Porto (ISEP/GECAD), Portugal

IRM Inc., South Korea

Life Friend, South Korea

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Project Website

www.celticnext.eu/project-icare4nextg

Integrated care for next generation

iCare4NextG project presents a healthcare platform and a service framework including solutions for improved health & wellness tracking and care at home which are directed by data-driven methods and AR/VR supported trainings for healthcare professionals. A combined strategy of healthcare platform, services and solutions has been drawn and built within the project that is ready to comprehend further services and use case solutions in the future.

Main focus

The growing and evolving demand for remote monitoring, home-based care and development of customized e-health services are indisputable. iCare4NextG project offers a solution for this demand through the integration of various remote health solutions in a flexible architecture offering multiple services tailored for different stages and needs of life in the smart health perspective. In this respect the project covers 5 different use cases that can fit into one open framework including; “Pandemic:Symptom monitoring”, “Pandemic: care@home”, “Monitoring of dementia and alzheimer's at home”, “Physical home rehabilitation” and “Educational platform for care development”. The iCare4NextG framework introduces abstraction layers between data capture, data management and data utilization, gathering data from diverse sources and presented in different ways depending on the user demands. The project offers an easily maintained platform and service framework equipped with cloud computing, removing complexities in the creation or modification of any smart health infrastructure. It gives the healthcare ecosystem the opportunity to realize digital transformation using a single platform and reduces the time, effort and resources required for transformation.

Approach

iCare4NextG platform is modular, standardized, flexible and adaptable to provide personalized support for health care and well-being. In addition to addressing the needs of patients and healthcare professionals in clinical settings, the project maintains a focus on the home care approach. The offered platform is also able to integrate to educational services for the training of the healthcare professionals. Utilizing AI/ML techniques, cloud computing and edge computing, the system is empowered to process data in real-time and near real-time, enhancing decision-making and prediction systems for improved accuracy and performance. AR/VR technologies are closely used in the project to enrich the platform by offering educational services for health care students and professionals. The security and privacy concerns are highly represented in the project by following the worldwide health standards for sensitive data & records and threat modelling analysis. The project collaborates with end users, patients, clinicians, caregivers and health care students covering pilot runs in several stages for validation, verification and usability.

Achieved Results

iCare4NextG project has built an integrated, secure, modular, standardized, flexible and adaptable health care platform. This enables the users to reach to customized, data driven digital health care services and framework. In this way, the project is

a pillar of the transformation and digitalization of the health domain diverging from the traditional, standard based, planned based model.

The project has acted actively in the creation of services for health care and wellness purposes in line with the concepts of prediction, prevention, personalization and participation (4P medicine approach) with the solutions in the fields of: “Symptom monitoring in pandemic situations”; “Care at home” facilities for elderly people and their care givers”; “Monitoring of dementia and alzheimer's at home”; “Monitoring of the patients recovered from pulmonary diseases who are in rehabilitation stage” and “Tracking the exercise and the health routines of the patients who are in cardiac rehabilitation stage”.

iCare4NextG has achieved an integrated care framework coordinating day-to-day care activities with data driven, real time or near real time processes of information by providing a multi-use platform ensuring efficiency. In this aspect the project promises a viable, healthy living and the best quality of life for citizens by using big data analytics to prevent or delay the progress of diseases.

The project has provided a new educational platform by combining the virtual world and the real world. This platform utilizes immersive content, contributing to the expansion and improvement of hands-on education, and has offered solutions in the following areas: “Core Nursing Skills realistic content”; “Physical therapy special examination realistic content” and “Caregiver content”.

iCare4NextG has proposed a new machine learning based method for malware analysis in edge and fog computing environment and an encryption scheme for secure data exchange for IoT based Healthcare Service Framework.

Through the lifespan of the project, the team has published 22 articles, contributed to 7 master theses & 2 doctorate theses and made 2 patent applications. With these activities the Project has supported RD activities in the ecosystem and contributed to open science.

Impact

The iCare4NextG project provides standardized healthcare services by establishing a comprehensive, meticulously managed, data-centric, secure and effective cloud-based platform.

Comprising partners ranging from small to medium enterprises to large industries, as well as universities and research institutes, the consortium of the iCare4NextG project has committed to addressing business, innovation and technical needs along with crucial end-user processes. This collective effort resulted as building an end to end framework equipped with technological advancements and delivering business impact in smart health sector.

The iCare4NextG project fosters business opportunities across three key dimensions: firstly, by establishing a technical platform where different stakeholders may integrate to or use on prem, and secondly, by developing a variety of user applications applicable to healthcare and wellness contexts. Last but not the least, the AR/VR supported educational platform accommodates many opportunities for businesses focusing on the training and learning activities of medical students, care givers and clinicians. Through this multifaceted approach, the project develops versatile and sustainable business models that can support healthcare initiatives on a global scale for all the involved partners.

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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