INNO4HEALTH

Continuous, unobtrusive monitoring for patients and athletes

Remote monitoring can benefit both surgical patients and athletes in their preparation and recovery. The ITEA project INNO4HEALTH (Stimulate continuous monitoring in personal and physical health) will foster innovations in sensing, IoT communication and AI in order to improve health outcomes for each group.

Addressing the challenge

Surgery leads to significant homeostatic disturbances, yet more surgeries are being performed with greater risks of complications and comorbidities due to ageing populations. Improved preparation and rehabilitation can therefore lead to better outcomes not only for patients but also clinicians (due to optimised workloads) and payers (in cost savings). Additionally, the challenges of physical preparation and recovery are more similar for patients and top athletes than was once realised. As INNO4HEALTH will demonstrate, both groups can benefit enormously from continuous, unobtrusive monitoring in daily life.

Proposed solutions

Parameters such as vital signs, sleep, exercise and disease are valuable to clinicians and coaches when designing personalised programmes that avoid health complications. INNO4HEALTH will therefore focus on continuous health and fitness monitoring via wearable, user-friendly sensors and products (in-soles, shirts, plasters) in a device ecosystem to enable data collection. This will adapt existing and upcoming communication protocols for data transmission and storage while creating innovative Application Programming Interfaces (APIs) to enable data-sharing between different device ecosystems for a comprehensive repository of monitoring data. For performance, fitness and health assessments, AI algorithms will be developed that can be optimised locally or scaled up to wider populations;

domain-dependent dashboards and AI-centred applications will ultimately support the summarisation and visualisation of large data volumes and generate guidance for programmes. As a result, INNO4HEALTH will pioneer data capturing and interpretation outside of hospitals or training grounds.

a 50% error reduction when estimating physiological parameters based on localised AI, 20% quicker healing times for diabetic foot patients and 90% reported user satisfaction. INNO4HEALTH will also demonstrate the value of creating a Europe-wide ecosystem of products and services, which could enable future innovations in fast-growing markets. The wearable medical device market, for instance, was worth USD 10.3 billion worldwide in 2018 and a compound annual growth rate of 26.1% is expected over the coming years. With the promise of better care at lower costs
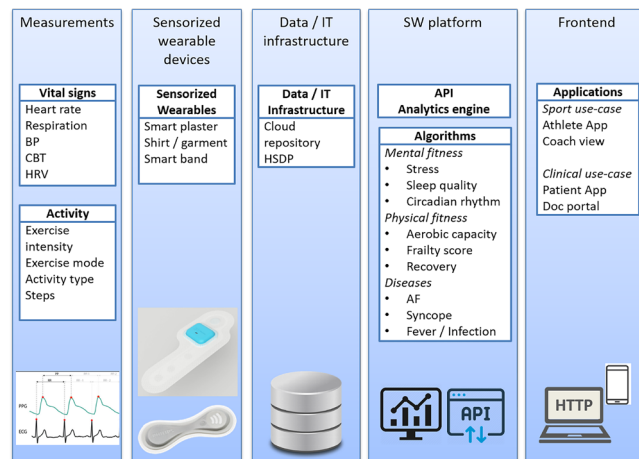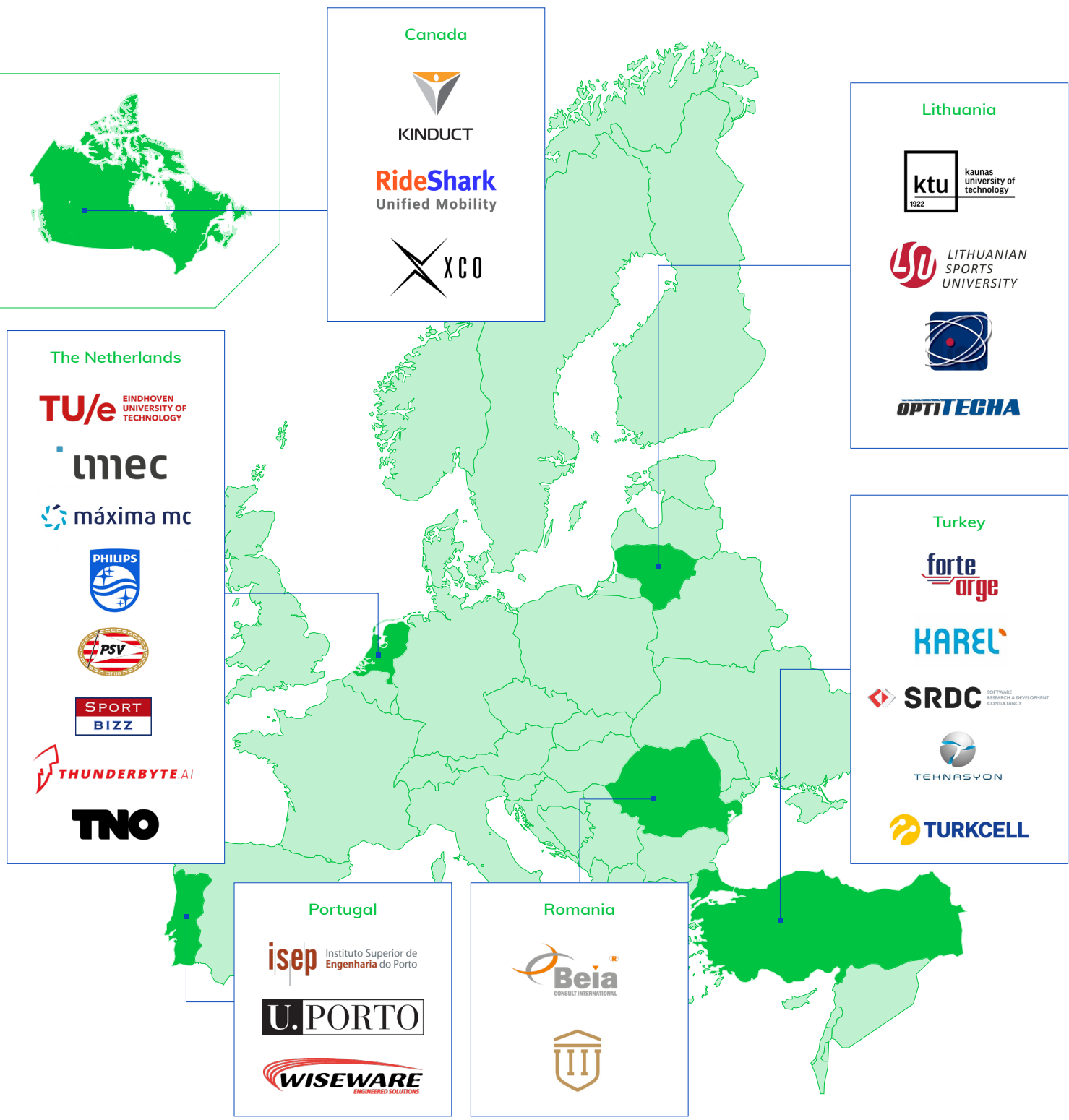

^ INNO4HEALTH architecture

Projected results and impact

There is currently no solution for patient and athlete monitoring with a unified ecosystem of devices and interpretation algorithms, so INNO4HEALTH's technology platform for data collection, management and interpretation will enable new use-cases in healthcare and sports. The goal is to reach a proof-of-concept that connected wearable devices are accurate and user-friendly enough to track temporal changes in aerobic fitness, functional ability and frailty, which will be measured via KPIs such as

and increased athletic performance with fewer risks, INNO4HEALTH represents solutions to major global challenges in safe and sustainable healthcare and sports.

Project partners

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