Smart solutions for relief from Musculoskeletal Non-Communicable Diseases (MSK-NCDs)

Funded by the European Union

New project "SmILE" to develop groundbreaking innovation in the domain of musculoskeletal non-communicable diseases (MSK-NCDs)

The new project "SmILE" begins its journey to provide smart solutions reducing the burden of musculoskeletal non-communicable diseases (MSK-NCDs) in the elderly by means of preventive measures and early interventions.

Lübeck, February 13, 2025– Western societies are experiencing an ageing population, driven by the post-war baby boom generation. This demographic shift has brought musculoskeletal non-communicable diseases (MSK-NCDs) into sharper focus, as they disproportionately affect older individuals through conditions such as osteoarthritis, rheumatoid arthritis, osteoporosis, and fragility fractures. "These diseases impact bones, joints, muscles, and connective tissues, leading to chronic pain, reduced mobility," indicates project coordinator Arndt-Peter Schulz. Ultimately, these functional impairments have a significant impact on the quality of life.

As the proportion of older adults continues to grow, MSK-NCDs have become a pressing global health challenge. In response, the SmILE project has been launched under the Horizon Europe initiative to drive groundbreaking innovation in this field. The project's mission is to develop smart solutions for early prevention and intervention in MSK-NCDs, empowering patients to take charge of their health while alleviating the burden on healthcare systems.

Transforming healthcare through innovation

At the heart of the SmILE project is the development of a **universal chip platform** that can be integrated into a wide range of medical devices. This transformative technology turns existing devices into active data generators, enabling faster and more accurate diagnoses while supporting the rollout of innovative treatments.

The collected data will be processed through an **integrated patient-centred health platform**, designed to meet the specific needs of elderly users. This platform will enable patients to access a comprehensive overview of their health status, receive tailored recommendations, and actively monitor their condition. By empowering individuals to manage their own health, the platform promotes autonomy and helps prevent potential complications.

Additionally, the platform will be supported by an **AI-driven data system**, which combines personal patient information with inputs from various sources such as implants, wearables, and health questionnaires. This creates a robust and comprehensive data ecosystem, offering actionable insights for both patients and healthcare providers.

Empowering patients and revolutionizing care

The SmILE project aims to address MSK-NCDs through continuous monitoring and targeted recommendations, reducing preventable complications and easing the burden put on healthcare systems. By leveraging cutting-edge digital tools, the project enhances autonomy and independence for older adults, offering new ways to track key health factors like osteoporosis, fractures, falls, osteoarthritis, and ligament ruptures.

Beyond its health benefits, the project contributes to social inclusion by placing elderly populations at the heart of digital innovation in health. In addition, by encouraging the use of digital health platforms, the project challenges stereotypes about older adults' digital savviness and combats social isolation.

"Through the SmILE project, we aim to address the pressing challenges posed by MSK-NCDs. In the long run, we aspire to have a lasting impact on health equity in Europe and ensure that future generations of older adults are better equipped to manage their health," says Schulz.

A collaborative European effort

SmILE builds on the success of the EU-funded REACH project, which developed modular systems for sensing, prevention, and intervention in home, clinical, and nursing environments. Following a similar vision, SmILE aims to create flexible and autonomous data ecosystems tailored to patient needs.

Supported by the European Union's Horizon Europe programme and the Swiss State Secretariat for Education, Research and Innovation (SERI) with a budget of € 20.7 million, the project spans 60 months and brings together 25 renowned institutions from 12 European countries. It is coordinated by the Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung e.V..

Project Key Facts

Title
Smart Implants for Life Enrichment (SmILE)

Start
1 January 2025

Duration
60 months (01/01/25 – 31/12/29)

Budget
€ 19,9Mil (+ SERI: € 760K)

Coordinator
Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung e.V.

Website
http://www.horizon-smile.eu

Social Media
LinkedIn

Project Partners

Austria
- MINDS & SPARKS GmbH

Belgium
- Interuniversitair Micro-Electronica Centrum

Czech Republic
- Betthera s.r.o.

Germany
- IMTE – Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung e.V.
- BGKH – BG Klinikum Hamburg gGmbH
- AESC – AESCULAP AG
- BST – Bosch Sensortec GmbH
- EURICE – European Research and Project Office GmbH
- INNO – Innoproof GmbH
- MOC – ONCARE GmbH
- SIGE – Swemac Innovation (Germany) GmbH (affiliated entity)
- UKSH – Universitätsklinikum Schleswig-Holstein
- UzL – Universität zu Lübeck (affiliated entity)
- UMR – Universitätsmedizin Rostock
- UdS – Universität des Saarlandes
- UROS – Universität Rostock
- ZeMA – Zentrum für Mechatronik und Automatisierungstechnik gGmbH

Croatia

- RISE – Research and Innovation Services d.o.o. za usluge (affiliated entity)

Italy

- UNIBS – Università degli Studi di Brescia

Luxemburg

- LIH – Luxembourg Institute of Health

Portugal

- FhP – Associação Fraunhofer Portugal Research

Spain

- CIBER – Consorcio Centro de Investigacion Biomedica En Red M.P.
- EUT – Fundación Eurecat

Sweden

- SIAB – Swemac Innovation AB
- RBSW – Robert Bosch Aktiebolag (affiliated entity)

Switzerland

- CSEM – Centre Suisse d'Electronique et de Microtechnique SA (associated partner)

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