frail ♡ safe

This issue

"Citizen empowerment with digital tools for user feedback and person-centred care - using digital tools to empower people to look after their health, stimulate prevention and enable feedback and interaction between users and healthcare providers."

This is one of three priorities of the European Commission in regards of the Digital Single Market and its Transformation of Health and Care. EU FrailSafe addresses the very heart of this priority in one specific area: a technological solution to support older people in detecting frailty symptoms at an early stage and intervene individually and with the support of health professionals.

New developments have been made since the last newsletter, check them out in the following pages.

FrailSafe Medical News

## FrailSafe from a Health and Social Care Perspective

Three different stakeholders were interviewed about the potential of the FrailSafe solution from a health and social care perspective: **Materia Groups**, a healthcare provider, **Gerti Wewerka**, Head of Geriatrics Network of Physio Austria and **Ingrid Eyers**, involved in the care of older people for almost 40 years as a practitioner and latterly an academic.

Materia Groups: « From a healthcare perspective EU FrailSafe system has many benefits. Firstly, the early detection of frailty is a key in the prevention and management of the syndrome. Also, as deterioration can be detected early on, the costs of acute treatments for falls, fractures and hospitalizations can be reduced drastically. Furthermore, EU FrailSafe system promotes mobility, engagement and cognitive training keeping older adults active and technologically competent, increases autonomy and limits dependence on caregivers. Through a multilevel approach, EU FrailSafe can, also, prevent social isolation by detecting differentiations in patient's social patterns. In addition, the system offers assistance to caregivers and family members in managing and monitoring the patient's health care status, limiting their burden, as well as, a way for efficient and real-time monitoring for the healthcare professionals. Finally, EU FrailSafe system takes place in the patient's environment, is adaptable to everyday life and the collected data are protected and encrypted. This allows EU FrailSafe project to improve older adults' quality of life and the quality of healthcare services, in a cost-effective and age-friendly manner. »

Gerti Wewerka,: « When working with older persons as a physiotherapist, it is essential to be aware of a person's frailty level, because it is important to treat frailty in the beginning: this is a stage where muscles can be trained more easily to increase their mass and function than in advanced stages of frailty. [...] I am impressed when I look at the website of the EU FrailSafe project by the ideas discussed there. The new technologies lead to possibilities I have not considered previously! »
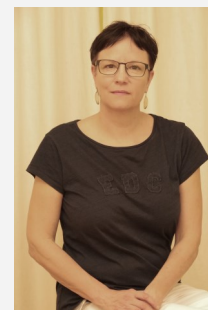
Ingrid Eyers: « The changes in family structures and demands on both men and women in the work place mean it can no longer be taken for granted that adult children are able to look after frail older parents, much as they may want to. It is also difficult for families to assess what help, support and guidance their parent(s) need and they can become over protective, often causing problems within families. FrailSafe can potentially ease that situation. »
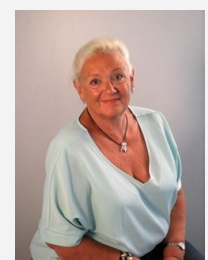
FrailSafe Technical Outcomes

Link between Frailty and Text Analysis?
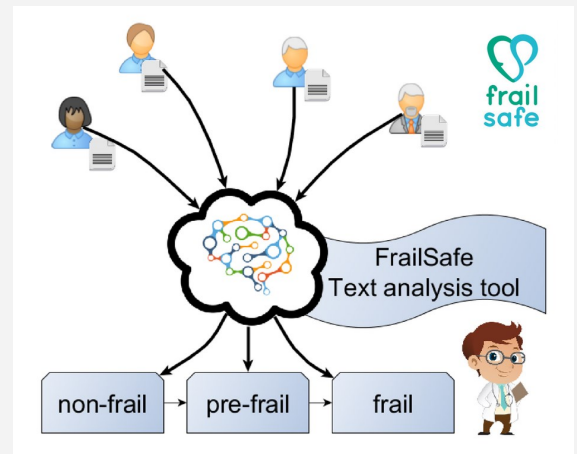
Within the FrailSafe project, researchers from the University of Patras have developed a frailty detection model that takes texts of older people into account. This happens in the framework of developing new metrics for frailty considering not only physical, but also cognitive, behavioural, social and psychological domains. Even text analysis by itself shows very promising results. A frailty text analysis model is a complex statistical model derived by elaborate Artificial Intelligence (AI) - Machine Learning (ML) methods that give computers the ability to learn automatically from text. The model aims to detect a person's frailty status (i.e. non-frail, pre-frail, frail) based on written text and help doctors in their diagnosis and treatment of frailty.

An important component of this frailty model comes from the analysis and processing of the participants' typed text in order to classify their behaviour according to the levels of frailty. The construction of this statistical model is made possible by a series of standard analysis steps that are generally performed in machine learning.

The test results revealed that our frailty text analysis model is capable of predicting the three frailty conditions (non-frail, pre-frail, frail) by an average accuracy of 64%. This means that we can use an older person's written text for our text analysis model to predict the person's frailty status, and have a 64% chance our prediction of frailty status to be true, which is way better than a random guess with a probability of 33.33% (since we can have three different frailty conditions). To further increase the model prediction accuracy, we investigated the use of a simplified model that reduces the possible predictions to only non-frail and frail. The accuracy achieved in this case was at 84%, nearly a 20% increase. These results are quite encouraging given that these models are based only on text. Higher levels of prediction accuracy are achieved when combining data from other domains including physical, cognitive, behavioural, social and psychological.

For further information regarding the applied methodology, please contact Vasilis Megalooikonomou

FrailSafe Technical Outcomes

Newcomers to the Serious Games List

Two new serious games were developed during the first half of the year by Brainstorm Multimedia and CERTH, the **Simon 2.0** and **Reflex**. Volunteers from the three pilots sites in Nancy, Nicosia and Patras are able to play them and train certain cognitive skills.

Simon 2.0 consists in four buttons in the form of trees (four colors) that the user must press when the tree lights up and sounds. The game proposes sequences that the user must repeat and the game becomes gradually more complicated. The length and number of trees increase as you play! The sollicited cognitive skills for this game are the visual and memory.
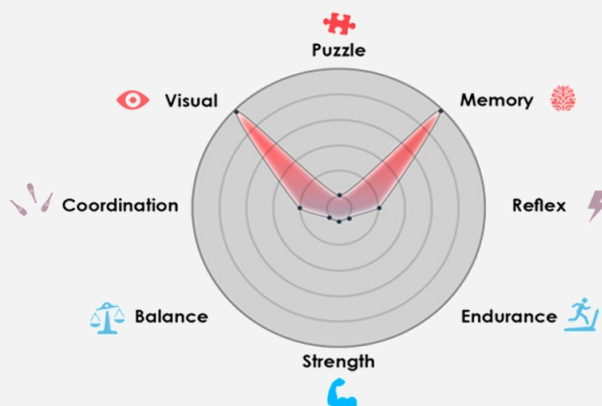
The second game, Reflex, has been designed for patients in advanced stages of frailty. As the name announces it, everything is a matter of reflexes. The objective of the game is to collect the pine cones before they hit the ground. The more you play, the faster the cones will fall off the tree. The score depends on the number of cones pulsed by the patient.
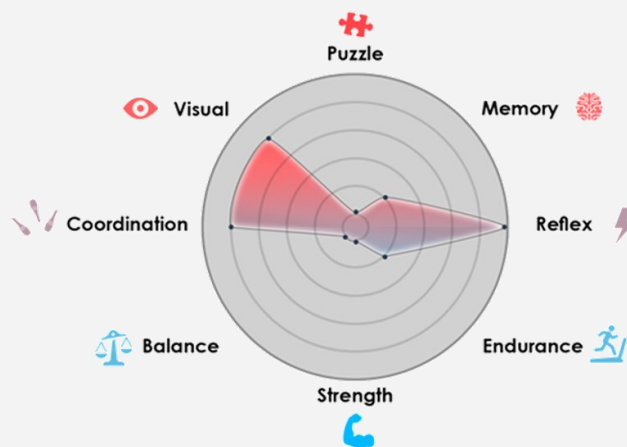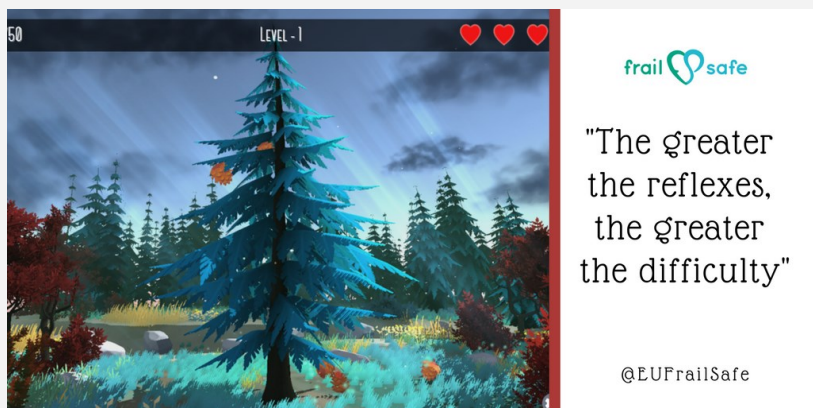
FrailSafe Information and Communication Activities

EIP AHA Workshop: Solutions taking up the digital shift in healthcare

Coordinator Vasilis Megalooikonomou presented FrailSafe on an European Innovation Partnership on Active and Healthy Ageing Conference of Partners Side Event

Three H2020 EU-funded projects, ICT4Life, I-Prognosis and FrailSafe jointly organised an exploitation workshop back to back with the EIP AHA Conference of partners.

The exploitation plan and business scenarios were presented to potential investors. The moderator, Sergio Ferreira, coordinator of the INNOLABS project and working for Norway Health Tech, raised interesting questions to Vasilis on the data validation and on the cost-benefit analysis of the solution. Following the workshop, a Q&A section was uploaded to the website.

Game Changer in Frailty Prevention Webinar

On 18 April 2018, a webinar was organized for the members of the EIP AHA A3 action group dealing with functional decline and frailty. After exposing the technological innovation of the FrailSafe solution at one of their meetings in January 2018, the

A3 members showed great interest in leaerning more on the medical and clinical methodology applied for the project. A webinar was thus a great opportunity to have a discussion with the A3 members and FrailSafe project medical partners. The University of Patras, University Hospital of Nancy and Materia were there to present the FrailSafe concept, the clinical studies and the validation processes. It is possible to listen to the webinar again here.
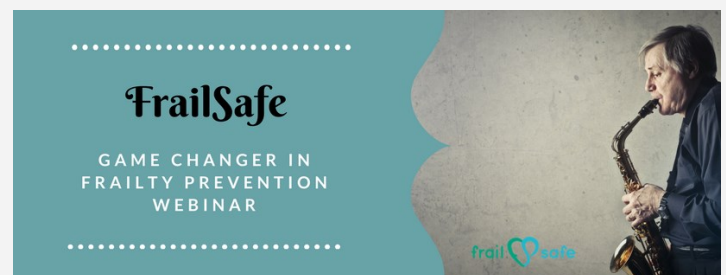
FrailSafe Information and Communication Activities

French Congress on Frailty
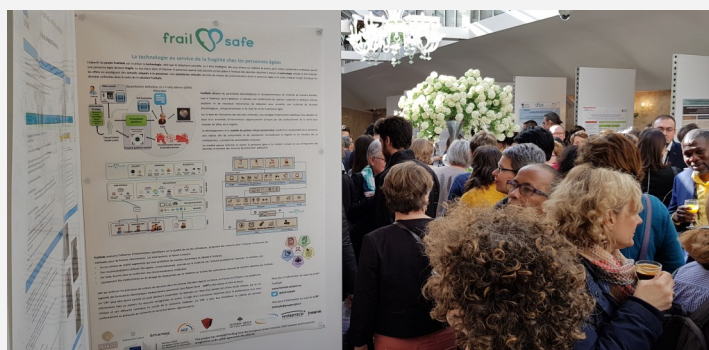
Our French partner, INSERM, represented Frail-Safe at a Congress on frailty among older people in Paris on 5 and 6 April 2018. It was a great opportunity to make FrailSafe known among French General Practitioners and nurses working on frailty among older people. The poster is available here.

Exposanitá Fair, 18—21April 2018

Smartex, supported by Gruppo Sigla, were present at the Exposanità, a fair dedicated to medical devices and services, held every 2 year in Bologna, Italy. It is the most important one at national level and one of the most important at the EU level.

The FrailSafe exhibition booth was visited by physicians, nurses, professionals involved in rehabilitation and first responders, suppliers of several components/materials for medical devices and brokers.

FrailSafe User Forum, 8 June 2018

A user forum was organised in Brussels with AGE Platform Europe member associations to raise awareness about frailty and its impact among older people. The University of Patras, Gruppo Sigla and Hypertech presented the FrailSafe solution and supervised a lively and interactive manipulation of certain devices. The members greatly discussed with the speakers on improvements to bring, such as the lack of human interaction, the affordability of the system, the collection of health data, the design of the smart vest. The session was then reported back by AGE President in the plenary session. A full report is available here.

Call for Volunteers in Nancy, France

The French partner of FrailSafe, University Hospital of Nancy, has launched a call for volonteers to implement its second wave of clinical trials. The French team is looking for 120 older people aged 70 and more to join the group of volonteers that will be divided into two different groups (A and B).

The group A will test the whole FrailSafe system, with the different technological devices (smart vest, dynamometer, serious games, geo-localisation…) and participants of group B will benefit from a frailty screening from two standardised gerontological assessments and a follow-up by phone calls for 6 months.

If interested, please contact: secretariat.geriatrie@chru-nancy.fr

Future Events

AAL Forum — 24 to 26 September 2018 in Bilbao, Spain

Do you work in the active and healthy ageing sector and you want to participate in the European discussion driving the future of digital transformation of health and social inclusion of our ageing population? The Forum 2018 we aim at bringing together the local actors, such as municipalities, provinces, regions and health and social care providers to meet and engage with the SMEs and the industry that are currently conceiving the digital technology that will be used tomorrow. https://www.aalforum.eu/

ICT 2018 — 4 to 6 December 2018, Vienna, Austria

This research and innovation event will focus on the European Union's priorities in the digital transformation of society and industry. It will present an opportunity for the people involved in this transformation to share their experience and vision of Europe in the digital age. http://bit.ly/2Ksrni6

Twitter: @EUFrailSafe

Facebook: /frailsafe

For further information
Prof. Vasilis Megalooikonomou
vasilis@ceid.upatras.gr

www.frailsafe-project.eu