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Editorial

Many health specialists often compare frailty to a popular game called Jenga. The aim is to pull out one block at a time from the tower until the structure is too fragile to remain standing. As we grow older, our body does not recover as quickly as before and each infection, fall or hospital admission can be represented by one missing block on the Jenga tower, weakening the whole structure until it eventually collapses. As each and everyone of us age differently, with different genes and lifestyles, detecting the point of no return becomes extremely difficult.

In order to better understand where this point lies and how to delay it, FrailSafe medical and technical partners have been working hard since January to select the technology that will help them collect relevant data and, in the future, detect some patterns that will help physicians, practitioners and carers prevent frailty through early intervention.

Important news and steps about FrailSafe will be communicated through our biannual newsletters. We thank you for subscribing to our newsletter and we hope you will enjoy reading it.



FrailSafe Medical News

From Greece and Beyond for Frailty



The world population is ageing. It is estimated that the people aged 65 and over will increase from 461 million people (in 2004) to 2 billion by 2050. Key physiological body systems, for some reasons, start failing with ageing, leading older people to a vulnerable state called **frailty**. Frail individuals are more likely to have reduced mobility and balance, to fall, to be hospitalised and/or institutionalized, and ultimately, are more likely to pass away earlier. This condition does not only affect older people and their families, but will have an increasing impact on the planning and delivery of health and social care.

The need to find out more about frailty and the mechanisms that underline the frailty process is thus crucial. If you can better define and describe the frailty process, together with other important factors that may affect frailty, such as co-morbidities, disabilities, mental impairment, mood and lack of social contacts, we may be in a better position to delay or revert frailty in some cases. During the three-year FrailSafe study, our goal is to come up with new measures of quantitative assessment leading to a model which will be able to better detect and predict frailty. It will allow clinicians to intervene with people who are at higher risk of adverse effects due to frailty. The duration of the study will also allow for more research on the topic, with the implementation of brand new ideas and innovative technologies using the FrailSafe Platform, and hopefully, generate more opportunities for older people to remain active and healthy as long as possible.

Unfortunately, specialised medical care for older people is not the priority in certain countries, such as Greece. However, Greek citizens and Geriatric and Gerontology Societies are striving to bring the issue to the public attention, feeling that systematic work will also make fellow medical colleagues of other medical specialities more aware of the needs of the older people. Therefore, the University of Patras (Greece) decided to bring together European partners to set up the **FrailSafe Project** by bridging the medical and technological knowledge at the service of the older people.

The University of Patras hopes that the outcomes of the FrailSafe study will act as a catalyst in uniting forces in Greece and beyond and make the public authorities finally recognise the need for organised and integrated care for older people, which in the long run, will decrease the burden from older people and their informal carers and allow them to remain as active and healthy as long as possible in society.

FrailSafe Medical News

FrailSafe Volunteer Recruitment in Nancy, France



On Friday 22 of April 2016, [INSERM](#), the French research team located in Nancy, presented the FrailSafe study for the first time to the public. The audience consisted of about 60 members of the [ONPA](#) (Office Nancéien des Personnes Âgées), a French association dedicated to the promotion of various activities for older adults, mainly informative and entertaining.

Professor Benetos and his collaborators presented the key points of the European project FrailSafe and its importance for the detection and management of frailty in older subjects, to an audience consisting of potential volunteers for the FrailSafe study. Interested individuals were given the opportunity to have a first look at the innovative tools and technological devices which are going to be used during the process of the **FrailSafe study**. They tried on the Wearable Wellness System (WWS), a fully integrated wearable system specifically designed to continuously monitor a cluster of physiological parameters while moving. They also tested virtual games on a tablet, destined to evaluate and train cognitive functions. At the end of this public meeting and the following days, a few dozens of eligible subjects stated their interest in participating in the FrailSafe study and become the first French volunteers that will contribute to the development of innovative frailty prevention technologies.

The President and the executive members of the ONPA association expressed their desire and enthusiasm to establish a longstanding collaboration with the French clinical partners in Nancy, with the purpose of promoting frailty prevention strategies built upon the FrailSafe project outcomes. Moreover, through the regular information spreading activities organised by the association (leaflet distribution, internet site announcement), a wide range of older people will be informed about the possibility of participating in the FrailSafe project and thus drastically contribute to the improvement of the technology with their feedback.

The Nancy research team planned several other informative and participants' recruitment public meetings in various associations of older individuals. Public presentations of the project FrailSafe in the city of Nancy and its surroundings were scheduled on 25 May and 6, 7, 16 and 29 June.

For further information about the French public presentation, please contact Professor BENETOS Athanasios secretariat.geriatrie@chu-nancy.fr

FrailSafe Technical News

When Technology Supports the Clinicians

The main objective of FrailSafe project is to better understand **frailty**. With the help of technological innovations, data will be collected and help draw patterns that will determine when a person will go from being active to being dependent, in other words, becoming frail. Based on the data, clinicians will be able to detect frailty at an early stage and design recommendations to delay frailty among older people, thus enabling them to remain active and healthy for as long as possible.

However, to achieve that overarching goal, these technological innovations still need to be made available and put together by the FrailSafe technical partners with the medical team guidance. The FrailSafe colleagues have decided to use technological devices that monitor specific signals relevant to FrailSafe medical partners, such as the heart and respiration rate. The devices will then be tested by volunteers in Greece, Cyprus and France. Finally, thanks to their feedback and comments, the devices will be constantly improved until reaching their final shape. Here are some selected technologies that will be used for the FrailSafe protocol and summarized in picture 1:

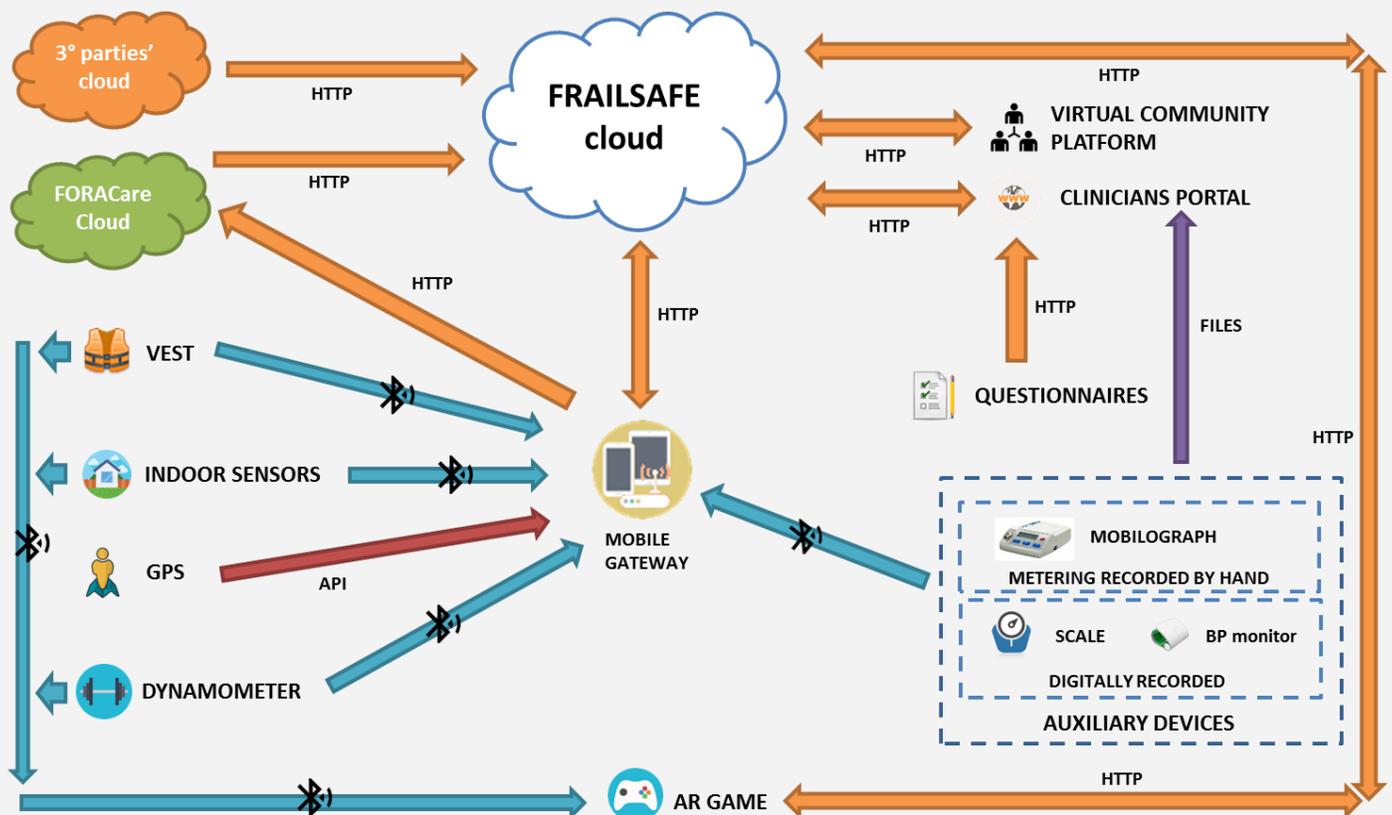
- ◆ Hardware Components: a **wearable vest** with sensors will be designed by FrailSafe to collect data about the older person's heart rate, respiration rate and posture. Some already existing hardware components will be used as well to acquire additional data about the volunteers: **dynamometers** for strength evaluation, **beacons** and **smartphones** to identify indoor behavioural patterns, **blood pressure devices**, impedance **scales** and others.
- ◆ Innovative Games: personalised and highly innovative games including augmented reality (AR) games will be developed, using cutting-edge interfaces like the AR glasses. The senior will be exposed to a series of different scenarios that will take place in the real world. The game will be used to evaluate the behavioural, cognitive and physical status of the older person through the hardware devices, while implementing various intervention strategies.

[...]

[...]

- ◆ Virtual Patient Model: each patient will receive a virtual model, based on his/her medical record, and will be updated constantly by the data analysis results collected through the hardware components. The model will help the clinician to assess the frailty level of the patient and design preventive intervention strategies in case of frailty worsening. It will also provide alerts to the clinician in case of detected risks.
- ◆ Data analysis algorithms: All data collected during the social, behavioural, cognitive and physical activities of frail older people will be analysed offline using novel methods. The result of this analysis will offer advanced decision making capabilities to medical professionals. In addition, a real-time data management and analysis will be performed and used to detect risks and triggering alarms in case of emergency situations (e.g., fall, loss of orientation, incoherent utterances or suicidal manifestations in electronic written text).

FrailSafe aim is to better understand frailty and determine a protocol that will delay frailty among older people. Therefore, IT experts and clinicians joined forces to put together different innovative technologies that will enable them to correlate frailty with other conditions, introduce new metrics for frailty and better understand frailty in general. The protocol is still under progress and will evolve with time and volunteers' feedback. In the meantime, FrailSafe technical and medical partners are working hand in hand to have the best chances to succeed.



Picture 1 — Technologies used for FrailSafe Protocol

The graph is subject to change due to future input

FrailSafe Technical News

FrailSafe at an International Conference

During the [IARIA](#) Conference on Digital Healthy Living on 24 to 28 April 2016 in Venice, Gruppo Sigla and the University of Patras, represented by Dr. Vasilis Megalooikonomou, were at the international conference to present FrailSafe.

IARIA (International Academy, Research and Industry Association) is a non-for-profit non-government organization whose goal is to promote scientific and industrial interchanges between members of existing associations, standardization bodies and enterprises. It seeks to establish bridges between different scientific, academic and industrial cultures from young scientists to well-known experts. It was thus an excellent opportunity for FrailSafe partners to be present and explain the objectives and methodology of the project to an audience interested in advanced technologies and tomorrow's products and inventions.

Gruppo SIGLA srl was part of the organising committee and chaired the [MATH Symposium](#) (Mobile and Assistive Technology for Healthcare) with "ICT applied for mobile healthcare and wellbeing" as main topic. The aim was to focus on different scientific works dealing with four main components: patient safety, prevention and health management and wellbeing.

Gruppo SIGLA srl and other FrailSafe partners will be back next year at the next MATH 2017 Symposium in Nice (France) to present the findings and results of Frailsafe during the upcoming year.

For further information about the conference, please contact

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Synergies between European Projects

I-Prognosis

i-PROGNOSIS is a 4-year research project funded by the Horizon 2020 Framework Programme of the European Union. 11 EU organisations, from academia to businesses, led by Aristotle University of Thessaloniki, Greece, joined forces in order to provide technology-based solutions against Parkinson's, as well as raise awareness on the disease and self-health management. i-PROGNOSIS will employ latest technology (smartphones, fitness bands, smart connected everyday objects and serious games) and the vast experience of i-PROGNOSIS medical partners to build its **Parkinson's disease early detection tests** and **supportive interventions**.

i-PROGNOSIS aims at (1) **building early detection tests** for Parkinson's disease based on users' interaction with everyday technology; (2) **designing interventions** to sustain the quality of Parkinson's patients' life over the course of the disease; (3) **empowering people** to affect health-related policies, (4) **raise awareness** on proactive health care and self-health-management, and (5) **reduce** the need for hospitalization.

As the two projects share similar motivation, synergies between i-PROGNOSIS and FrailSafe are possible. These could be applied both to medical and technological developmental phases, as both projects successfully combine the medical with the technological knowledge domains. Behavioural models that come from both projects could be tested and validated in the corresponding participants, showing the modelling potentiality for generalization under the cases of the older adults with co-morbidities (such as Parkinson's disease). Moreover, both projects target the same population and tackle issues that relate to the older population (FrailSafe focuses on the 70+ and I-Prognosis on the 50+). Overall, various levels of communication between the two projects could definitely contribute to the active and healthy ageing endeavour.

Further information [here](#) or contact Prof. Leontios Hadjileontiadis leontios@auth.gr, i-PROGNOSIS Coordinator



Information

The White Book on Frailty

The International Association on Gerontology and Geriatrics (IAGG) and the Global Aging Research Network (GARN) endorsed the **White book on Frailty** last February.

The guide provides the reader with current knowledge on the assessment of frail old adults, interventions against frailty and information on how to integrate frailty into clinical practice. The guide is available in [English](#), [French](#) and [Chinese](#). Moreover, an awareness raising 40-second film on the autonomy of older people is also available in [English](#), [French](#), [Italian](#), [Spanish](#), [Portuguese](#), [German](#).

Events

Transforming the Future of Health and Care in Europe

The European Commission organises the second edition of the European Summit on Innovation for Active and Healthy Ageing on 5-8 December 2016 in Brussels. This year's theme will see how digital innovation will transform the future of health and care in Europe. Further information [here](#).



Twitter: @EUFrailSafe



Facebook: /frailsafe

Did you know?

Keep your mind active, your attitude optimistic.

According to Johns Hopkins University, staying socially connected with others and continuing to learn may help lower the risk of frailty. In other words, keeping your mind active and adopting a positive attitude could help you delay frailty. Further information [here](#).

Don't miss it!

Strategies for Successful Ageing

The social aspect of one's life influence drastically how a person will age. Therefore, the Future Learn is providing a 5-week free online course on Strategies for Successful Ageing. The Discussions will be about how to maintain your health, increase your well-being, maintain friendship and navigate life's challenges. The course will start on 26 September. More information [here](#).

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www.frailsafe-project.eu



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