ProFouND: Prevention of Falls Network for Dissemination

DELIVERABLE D7.2

Promotion of at least one reference site and technology

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Contents

1. Introduction

This report presents the current status of PRoFouND Deliverable D7.2: Promotion of at least one reference site and technology (scheduled to be delivered by month 25).

The Online Marketplace and Innovation Factory (OIF) platform developed as part of Deliverable 7.1 is to be used to achieve both this Deliverable (D7.2) and that of Deliverable 7.3: Networking event to encourage partnership between stakeholders.

The public area of the ProFouND website acts as the face of the project providing information to the community and the general public about the project. It is primarily directed at falls-related healthcare professionals and practitioners and also aims to inform members of the public (older people and their formal and informal carers) as well as European Institutions, health and social care organisations and policy makers.

A wide range of stakeholders across Europe with an interest in falls prevention (including industry, academic researchers, healthcare professionals and practitioners) must be able to scope out the need for ICT based technologies for prevention and monitoring of falls in specific regions and circumstances, to identify the most suitable technologies for falls prevention and monitoring and to develop plans for implementation. It would be impossible for such a wide range of stakeholders, covering a diverse range of geographical areas, to discuss and develop interventions via face to face interaction. An on-line platform is therefore needed to enable stakeholders to collaborate, giving them opportunity to learn about the benefits and barriers faced when utilising a new technology. To enable this collaboration the OIF has been implemented on the PRoFouND website.

Best practice reference sites are one of the resources which will be made available through the OIF. This resource will enable health professionals to see examples of technologies which have been shown to be effective in practice. This deliverable outlines how reference sites have been utilised so far as part of the OIF and outlines the plans for future developments.

2. Identifying reference sites / technologies

A number of falls prevention technologies both on the market and in development have now been identified and are listed on the ENOFALLS ICT Forum with descriptions. It was not appropriate to duplicate this work within the ProFouND OIF.

Instead the role of the OIF is to signpost the community of stakeholders interested in technologies for falls prevention and monitoring to the best practice in using ICT technologies for prevention and monitoring of falls.

The OIF provides an ideal vehicle for promoting such "reference sites and/or technologies" and it was recognised that it was essential to select the best practice reference sites and/or technologies that have been subject to objective assessment by experts in the field of Active & Healthy Ageing.

It was decided, in discussion with ProFouND partners, that the most reliable way to identify best practice and suitable reference site(s) that have already been successfully implemented was to consider the work of the European Innovation Partnership Active & Healthy Ageing (EIP-AHA) and the ICT-AGE project.

Both the EIP-AHA and ICT-AGE project have produced reports that provide an excellent source of best practice exemplars. However only those which used ICT based technologies and focused on falls prevention and monitoring would be appropriate for the OIF.

2.1 Criteria for identifying reference sites

The EIP-AHA report "Reference Sites: Excellent innovation for ageing - European Guide" aims to provide inspiring real-life examples of active and healthy ageing. Selection of Reference Sites for the report was mainly done by EIP-AHA partners themselves through a peer reviewed self-assessment based on key criteria such as EIP-AHA relevance, scale, number of specific EIP actions to which they are committed, evidence and replication potential. On this basis, partners filled out questionnaires on their contribution to the different action areas of the European Innovation Partnership on Active and Healthy Ageing and on their overall strategy to tackle the demographic challenge in Europe and scored each other based on this information. After a one year evaluation process, 32 Reference Sites from 12 Member States were identified with a ranking from 1 to 4 stars. These aim to support older people in staying, active, independent and healthy for as long as possible, and illustrate how to innovate in the systems for health and social care in such a way that they cater to real needs in a more effective and efficient way.

The ICT-AGE project report "Mapping of Effective Technology-based Services for Independent Living for Older People at Home" was commissioned by the Directorate General for Employment, Social Affairs and Inclusion as part of the project entitled "Long-Term Care Strategies for Independent Living of Older People (ICT-AGE)". The report identified and mapped 14 good practices in technology-based services for independent living for older adults at home by assessing the evidence evaluating the effectiveness of these technology-based services in achieving:

- more independent living for older adults who had fewer falls at home and fewer hospitalisations as a result of falls, were more active when alone, had better walking ability, balance and speed were able to stay in their homes and felt safer at home.
- increased productivity of carers
- quality of care, for example reduction of medication non-adherence
- sustainability of care system (cost-effectiveness including reduction in total mean costs of care, faster discharge from hospitals, reduction of hospital admissions and avoiding nursing home admissions.

From the reference sites identified by EIP-AHA and the ICT-AGE project we identified four best practice reference sites/technologies which were based on ICT technologies **and** which impacted on falls prevention and monitoring, and are therefore considered suitable for promotion through the ProFouND OIF.

- T4H Technology and Human Help at Home after Hospitalisation (awarded 2 stars in the EIP-AHA report)
- PROFITER Prevention of falls initiative in Emilia-Romagna (awarded 2 stars in the EIP-AHA report)
- Departamento de Salud Valencia-La Fe (awarded 3 stars in the EIP-AHA report)
- Home Automation and Telecare Programme (ESOPPE Project), Corrèze Department, France (identified as meeting three of the four impact criteria used by the ICT-AGE project - more independent living, increased productivity of carers and cost-effectiveness).

3. Details of Reference sites/technologies

3.1 T4H (Technology and Human Help at Home after Hospitalisation)

This project fits the criteria for a reference site suitable to be promoted via the ProFouND OIF. It was designated as a reference site after objective assessment by the EIP-AHA , it is based on ICT technologies, **and** it impacts on falls prevention and monitoring. It aims to reduce falls and to improve the physical autonomy of frail elderly returning home after hospitalisation, maintaining their independence and deferring admittance in sheltered accommodation.

The best practice relies on rehabilitation after hospital discharge via e-learning and assistive technologies for both the elderly person and their family and carers who receive adapted training in assisting them at home.

The project included the development of an innovative business model, based on a rental system for the technology rather than individual acquisition. This, together with the use of the e-learning programmes that can be translated and adapted locally (for cultural differences), give T4H potential to be scaled up to cover a larger population.

T4H is one of two projects led by Assistance Publique-Hôpitaux de Paris, the grouping of Parisian hospitals, under the supervision of the Regional Health Agency.

The contact for T4H is Professeur Francois Piette
francois.piette@cfx.ap-hop-paris.fr

3.2 PROFITER (Prevention of falls initiative in Emilia-Romagna)

This project fits the criteria for a reference site suitable to be promoted via the ProFouND OIF. It was designated as a reference site after objective assessment by the EIP-AHA, it is based on ICT technologies, **and** it impacts on falls prevention and monitoring. The project included the deployment and evaluation of ICT solutions for detection and prevention of falls, exploiting novel ICT-based tools for fall detection many of which tools are already available on smartphone platforms. e.g. activity monitoring in daily life, instrumenting clinical scales.

PROFITER developed and validated a personalised fall risk model, integrating known fall risk factors, clinical balance measures, and parameters extracted from wearable inertial sensors. The model was then mapped into an operational programme for the prescription of personalised interventions and/or ICT-based assistive devices for falls prevention and rehabilitation in community dwelling older subjects.

Falls affect almost one third of the population aged 65 or older, equating to approximately 300,000 people in the Emilia-Romagna region. PROFITER aims to reach 10% of this target population through informative initiatives, preventive programmes, and direct screening through different levels of care (including the network of 3,134 general practitioners most of whom are already reached through the SOLE network), involving inpatients and outpatients

Presently, the network covers approximately 5,630 people aged 65+, in addition to some 2,580 care givers, health professionals, and clinicians.

The success of the network to date is evidenced by the participation and engagement of a number of partners; 7 out of the 11 Local Health Trusts in the Region, together with 3 out of 4 University Hospital Trusts, the Hospital Trust, and 2 out of 4 Research Hospitals, plus 50 clinical professionals and 15 R&D specialists.

The partnership has screened some 400 older persons and patients, as well developing 5 technological platforms for data collection, and delivering 10 training & education events.

Technologies used include FRAT-UP (a tool for computing the Fall Risk of people aged +65, on the basis of the known scientific results, and personal clinical data), and wearable sensors to estimate subjective risk of falling, together with instrumented assessment (Timed Up & Go, repeated chair rising, functional reach, and quiet standing), to monitor motor ability in geriatric populations.

The aim of the ICT solutions used in the PROFITER Project is to provide systems and services to support an evidence based healthcare decision system. They are based on a wearable inertial sensor unit and/or a Smartphone/Tablet to collect and process data captured by the sensor. The Smartphone/Tablet platform has been used because of its high-level processing and interaction units. The Smartphone, beyond a mere communication tool, will also become a transparent companion ultimately able to early detect changes in the fall risk profile of its users and to timely involve carers and family, as and when needed.

An ad hoc wearable monitoring unit has been also designed and will be validated on-field to assist high risk individuals in different settings and conditions. High risk patients with a high incidence of falls will include patients with advanced Parkinson's disease, dementia, epilepsy, stroke, multiple sclerosis, and also nursing home residents, rehabilitation inpatients who start to ambulate again.

The contact for PROFITER is: Professor Lorenzo Chiari
lorenzo.chiari@unibo.it

3.3 Departamento de Salud Valencia-La Fe (Integrated Care at Home Programme)

This project fits the criteria for a reference site suitable to be promoted via the ProFouND OIF. It was designated as a reference site after objective assessment by the EIP-AHA **and** it is based on ICT technologies **and** it impacts on falls prevention and monitoring.

The Hospital La Fe coordinates the Health Department of Valencia-La Fe, one of the 23 geographical areas defined within the Valencia Health Region. Together with the Hospital Clínica de Benidorm, it constitutes the reference site for Valencia Region.

A coalition of partners are involved, from the regional Ministries of Health and of Social Affairs, through to services which directly involve primary, secondary and tertiary and social care services. The programme also has the agreement with CARENA, one of the regional patients associations on the topic of social and psychological support to patients and care givers.

Furthermore, there is collaboration with the Spanish Society of Home Care (SEHAD) and support from the Public Health Research Centre of the region and by the two public universities of the city (Universitat de València and Universitat Politècnica de València). The programme also has the support of the National Network of Health Services and Chronic Conditions Research (REDISSEC) funded by the Ministry of Health, as well as industry support from a number of different companies who are involved in either funding, piloting, and developing, innovations (e.g. Fundación La Caixa, Encamina, TSB, Everis, IMEX, DextroMedica).

The Integrated Care at Home programme provides patients and informal care givers with comprehensive care at home, favouring transition from hospitalisation to home care, and contains a number of elements that are of particular relevance and value to an elderly population.

These include specific home based training for patients and caregivers to empower self-patient's management and increase adherence to treatment; a specific score for the stratification of the risk of falls and a set of intervention guidelines to prevent the occurrence of falls; mental health and cognitive decline assessment test for early diagnosis and prevention; multidisciplinary integrated care teams supporting patients and informal care givers at home.

The service includes specific IT support in the form of home monitoring devices, electronic health and social care records both in primary care and hospital settings, and mobility support for professionals whilst doing home visits.

Programme coverage extends to the 219,000 inhabitants of the region, and approximately 7,000 patients have been treated in the last 3 years through the Integrated Care at Home Programme.

In 2012, satisfaction with the service was at 92.7% (target: 90%), and it delivered savings on average of €154 per stay, with the length of stay at hospital being 30% less than average.

The experience acquired by the unit in the home care programme has supported the design and validation of technologies developed in various research projects in collaboration with research institutions and industry. The successful results of these research activities have been transferred to the industry and are in the process of being commercialised.

The contact for The Integrated Care at Home Programme is Dr. Bernardo Valdivieso VLCRefSite@upvnet.upv.es

3.4 Home Automation and Telecare Programme (ESOPPE Project, Limousin Region, Department de la Corrèze, France)

This project fits the criteria for a reference site suitable to be promoted via the ProFouND OIF. It was designated as a reference site after objective assessment by the EIP-AHA, it is based on ICT technologies **and** it impacts on falls prevention and monitoring.

The General Council, Corrèze Department, took an initiative to test the potential of the Advanced Telecare Home Automation solution for prevention of falls in older adults, a problem which costs some €2bn a year across France.

The main purpose of the ESOPPE study was to evaluate the efficacy of a simple home automation pack coupled to a teleassistance service for preventing falls at home among the frail elderly population losing autonomy. The second priority was to evaluate the service efficiency both in terms of reduced number of falls at home and associated admission to hospital emergency.

It runs across a diverse network of connected stakeholders – Limoges University Hospital, Limoges University, industrial partner LEGRAND, Regional Centres of expertise (Elopsys pole, Autonom'lab and "living lab"), and the Corrèze territorial administration (Conseil régional du Limousin, Départements de la Corrèze et de la Creuse).

The ESOPPE project is about providing a home automation system which helps to prevent elderly people falling especially when they get up during night, through automatic lighting devices adapted to home layout; and to control and monitor possible falls through fall captors with added-value telealarm environment (i.e. active captors). It is important to note that the ESOPPE project is one element of the Limousin regional strategy, which has defined coherent strategies to validate and generalise service offering as follows:

- Home care automation targeting 3,200 installations in the Creuse Department by 2014
- Training and support for 30 electrician shops to install and maintain home care automation device
- Social care offering distributed by Intervox, a SME recently acquired by Legrand.

Home security devices include lighting devices, smoke detection, gas leak detection, water leak detection, home intrusion, temperature control failure.

The system consists of an overall home care automation system with electrical devices and Local Area Network (LAN) technology for home applications. LAN may include wireless protocols. The ESOPPE programme is based on a series of home automation and e-health devices such as:

- fall control bracelets
- home automation lighting control
- cognitive behaviour analysis in case of calls from elderly people

A device called the "Quiatil+" terminal is connected to the house's telephone line and other peripherals to send out alarms that are sent to the control centre in case of emergency and to access services. The home automation package is linked to this remote intercom. The electronic bracelet or pendent also links to "Quiatil+" and when the button is pressed on the device an immediate connection is established with the telecare platform, which assesses the situation and responds appropriately (e.g. by reassuring the older person, calling the emergency contacts or the ambulance, or the fire brigade).

The telealarm centre is monitored in a R&D environment (University Hospital, Elopsys pole, Autonom'Lab geriatric expertise centre). The medical community is involved through the Limoges University Hospital Geriatrics Department.

The project has been running since 2010, and is a mixed funding model of user pays (up to €40 a month) plus public funding from Independent living budgets, tax receipts, pension insurance funds, social funds, General Council and regional funds, European Commission ERDF, and national funds for territorial development.

During the initial cohort study to evaluate functional status, mental and physical, and falls at home and hospitalisations during a period of 12 months (July 2009 – June 2010), 194 adults over the age of 65 years old took part. Results from the intervention group (96 adults with the home automation pack) compared to the control group (98 adults without the support package) showed 77 (40.5%) elderly falling at home in total, with 29 (30.9%) being in the intervention group compared to 48 (50.0%) in the control group.

The study found that:

- 30.9% of elderly people equipped and 50.0% of non-equipped fell at home in 12 months. This reduction was statistically associated with the use of the equipment.
- 9.6% of equipped elderly people and 25.0% of those non-equipped were hospitalised due to falls at home in 12 months. This reduction was statistically associated with the use of the equipment. This supposes a reduction in falls by a factor of 1.6 and reduction in hospitalisations by a factor of 2.6, respectively.
- There was a reduction of 26%of depressed elderly among equipped and of 10% among non-equipped
- Equipped elderly people received a 5% less care at home after 12 months, while non-equipped elderly people received 4% more care at home after the same period
- the package reportedly costs €1,700 the first year and €700/year the following years; while the average cost of a hospital stay per fall is € 8,000. The number of hospitalisations is reduced due to the reduction of the number of falls at home. There is therefore a saving of €6,300 per patient the first year and €7,300 per patient the following years, due to the number of falls prevented, because of the use of the system (see http://www.ncbi.nlm.nih.gov/pubmed/22743136)

The contact for the Advanced Telecare Programme is Florent Lachal lachal.florent@gmail.com

4. Promotion & raising awareness

4.1 Reference sites / technologies

Having identified suitable reference sites and technologies as outlined above, work has now started to promote these via the OIF, and through partners.

Discussion threads on the OIF will be initiated and relevant resources uploaded to highlight the work done in the reference sites and the reference technologies as being relevant to falls professionals and interested parties.

Each Reference site lead has been contacted to make them aware of the OIF and the resources available via Profound, together with the promotion of their reference site / technology via the OIF platform.

These early discussions have been initiated; see Annex A below for relevant screenshots of where reference sites and technologies outlined in this report have been uploaded to the OIF.

This complements offline discussions that have taken place with falls professionals and interested parties, with a view to further engagement and discussion via the OIF.

4.2 Engaging the Community

We have requested CHAIN (Contact, Help, Advice and Information Network), to share their experiences of using ICT based technologies for falls prediction, detection and prevention in practice (Annex A6).

CHAIN is an online mutual support network for people working in health and social care which gives people a simple and informal way of contacting each other to exchange ideas and share knowledge. The network covers almost 14,000 people across the whole of the UK and is also becoming international, with smaller satellites in Australia, Canada, Scandinavia, Italy, Spain and members in 40 other countries worldwide.

We have also requested such case studies from members of Profane Earth (profane.co), a resource for health professionals on falls prevention. Members are pre-dominantly health professionals drawn from across Europe as well as some academics.

We have encouraged members of CHAIN and Profane Earth to tell us about any technology which was useful – or indeed something which has not proven to be very helpful. We asked who has used the technology (e.g. care home residents, community dwelling, Parkinson's patients etc) and how older people have got on with using the technology. We will start initially with experiences from the U.K, but then will move to encourage contributions from across Europe. This will provide a resource for others on the OIF and also a platform for encouraging discussion about the use of technology in practice, identifying issues and solutions as well as providing interesting context to the use of these technologies across different countries and populations.

We have also encouraged the members of EIP-AHA Action Group 2 on Falls to help us to develop discussions on the scope, through initiating topics and uploading appropriate resource materials e.g. videos, factsheets, prediction modellers, case studies, and web links.

Delegates attending the EU Falls Festival (Stuttgart, 24th-25th March 2015) have been contacted and advised that the OIF (showcased at the event) is live, and that the reference sites / technologies, together with other discussions, are available for comment and discussion.

In keeping with the development and promotion of the OIF itself (D7.1), the Reference sites / technologies, will be promoted as above, plus via local and European level engagement:

a. focussed involvement with local organisations in one region (Greater Manchester – a WHO Age Friendly City) including:

    - Engagement with Age UK North West leads (e.g. Manchester Institute for Collaborative Research on Ageing (MICRA).
    - Working with Manchester City Council as an 'Age Friendly City' to promote the OIF as a tool for practitioners and interested parties
    - Connecting with the Directors of Adult Social Services within the 10 AGMA local authorities.
    - Meeting with Central Manchester Foundation Trust Falls Team (part of Central Manchester Intermediate Care Services)
    - Promotion through the Greater Manchester Connected Health Ecosystem.
    - Promotion through the Manchester European City of Science 2016 including Science to Business programme.

b. Broader engagement with the wider community at a European level of the technology industries, clinicians, health care practitioners, researchers and academics working on falls prevention and monitoring, through:

- Promotion of the OIF through the ECHAlliance network of Connected Health Ecosystems, with a view to running a co-delivered event in both Manchester and another similarly well-developed Ecosystem on the subject of Active Ageing / Health Living, in which the work of ProFouND and the OIF will be showcased and promoted.
- Working with Work Package 8 Leaders, to identify national and local partnership networks through which to disseminate best practice.
- Working with the EIP-AHA B3 Group members in NHS Scotland to build upon the work they have already undertaken in developing an ICT & Teleservices directory.
- Working with the EIP-AHA A2 Group members to promote the work they have done in identifying best practice reference sites for falls prevention and monitoring.
- Promotion at events to be attended by ProFouND consortium, for example the 16th International Falls and Postural Stability Conference (London, 11th September 2015)

5. Future Work

5.1 Privacy issues

In the promotion of the reference sites and the use of the OIF, privacy and confidentiality is an important consideration. The OIF areas of the website can be viewed as a public resource but the additional functionalities (including the ability to initiate topics, manage discussion on specific topics, contribute to other users topics and see comments) are only available to users logged in to the user login area of the PRoFouND website http://profound.eu.com/forums/forum/innovation-factory/.

Given the collaborative nature of the website, users are advised upon logging in to the user login area of the PRoFouND website that any information that they share on the website, either in the form of discussion content, uploaded research & briefing materials, or video sharing file formats, is, unless specifically stated, liable to be copied and redistributed by other users. Similarly, this principle will also apply to users of the on-line Innovation Factory. In many cases users will be sharing problems and issues that they are trying to solve, solutions that are already in the market or interventions that have been used successfully and will be sharing publicly available information.

However, in case companies wish to include solutions that they are researching and developing, it is important that they are aware that they should not post information of a commercially sensitive nature or that would breach their IPR.

5.2 Other Potential Reference Sites and Technologies

We have also looked at the Reference Sites identified by the work of Action Area 1 of the EIP-AHA Action Group 2 on falls prevention: “Implementing an integrated and person centred pathway, which is enhanced by ICT and other technologies.”

Reference sites identified by the EIP-AHA Action Group 2 include:

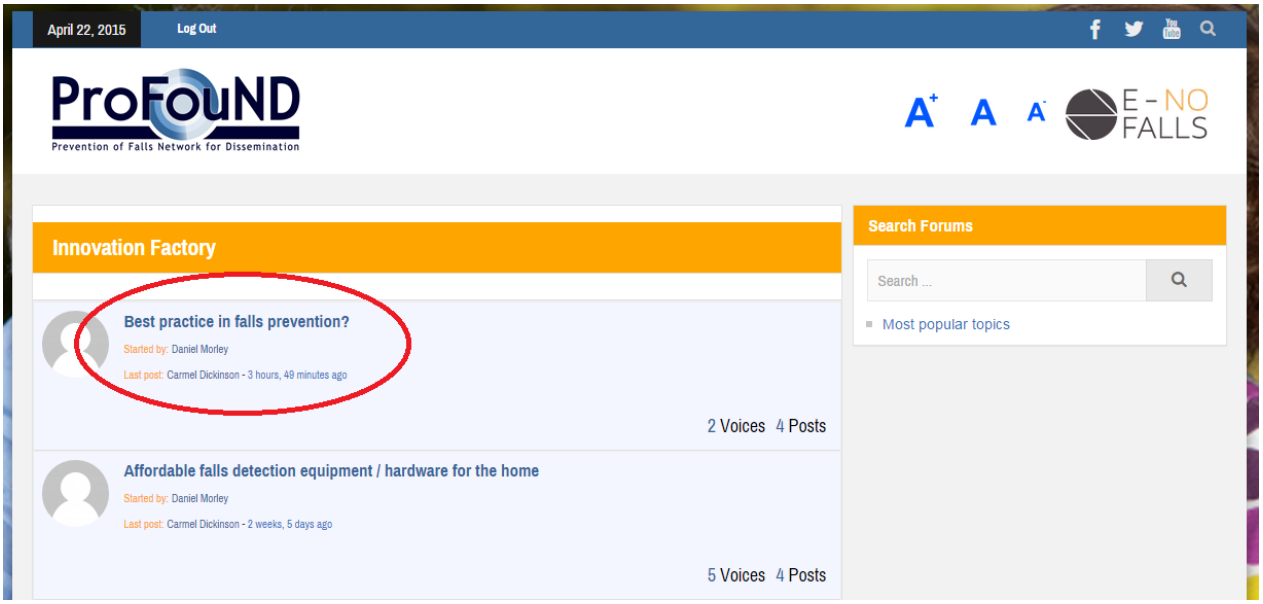
- Link Care Services which provides the video communication technology used by the Home Automation and Telecare programme reference site (see above)
- Fundacio Matia (Spain)
- The Falls Prevention element of the Skane reference site (Sweden)

Further information is being sought from EIP-AHA Action Group 2 on the detail of these reference sites and the criteria used in designating them as reference sites. If appropriate, these will also be promoted via the OIF as part of this Work Package deliverable.

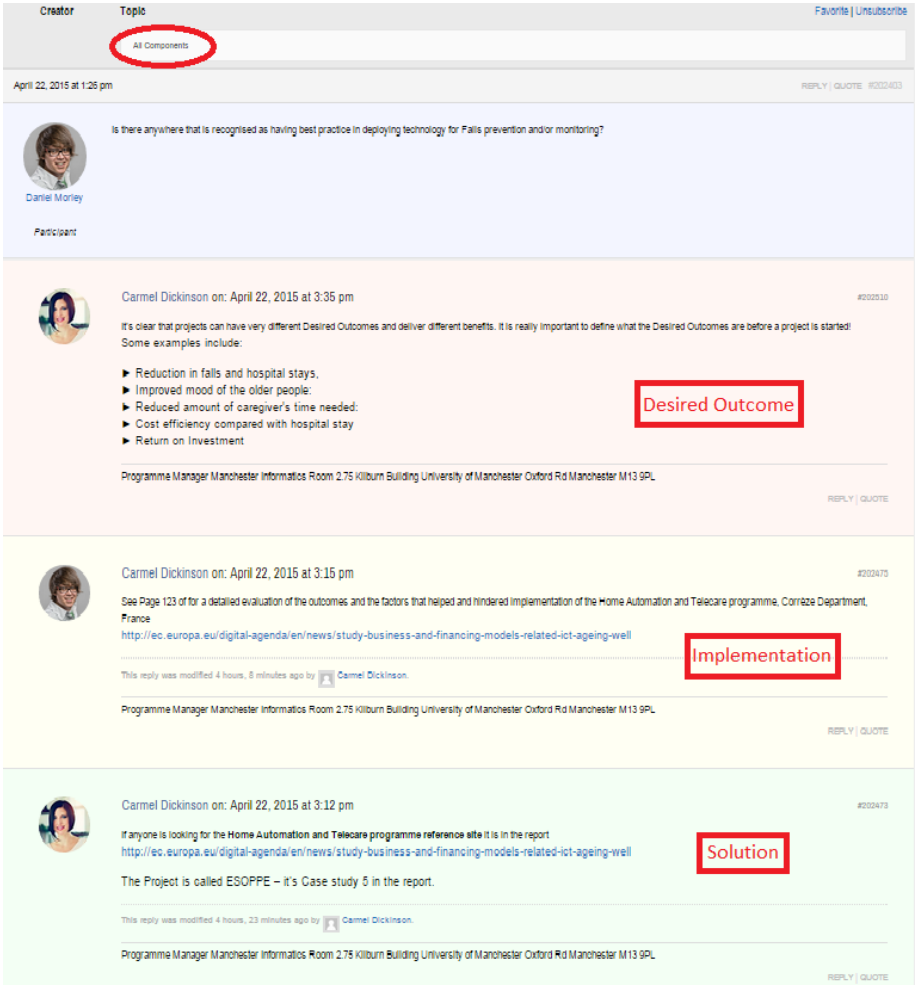
We are also in discussion with SMEs about the opportunity to feature them on the IOF even if they are not currently listed on the ENOFALLS directory.

Annex A – Screenshots

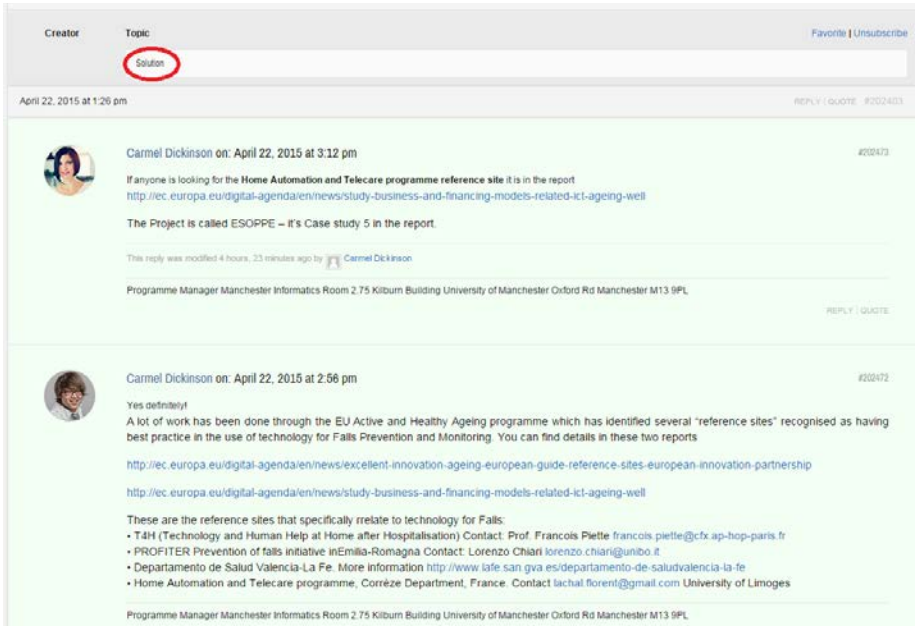
A1 – OIF Front Page: List of topics



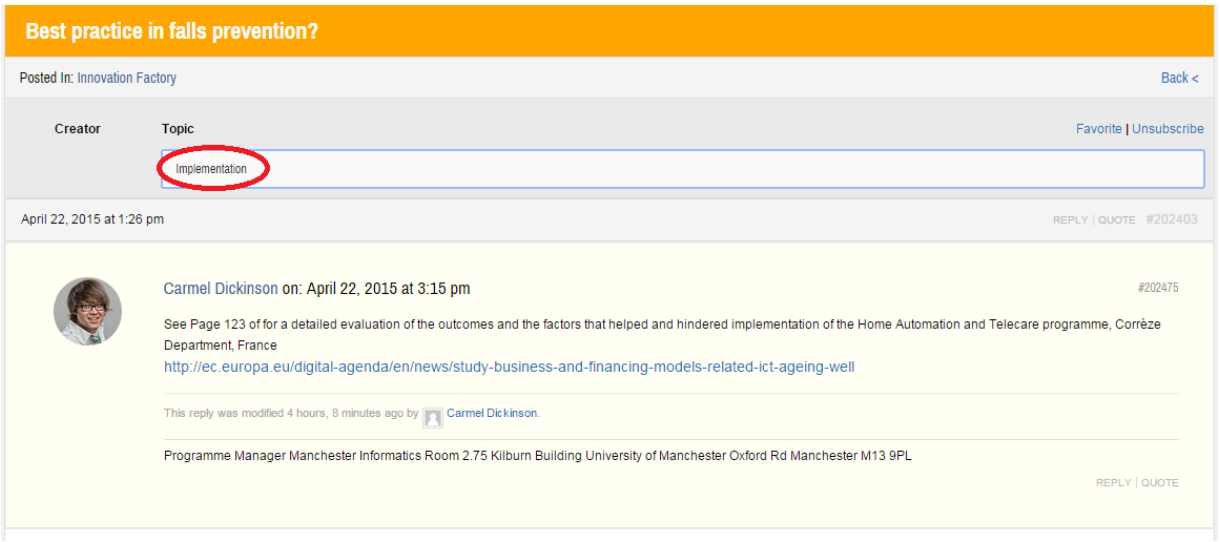
A2 – In topic thread displaying all components



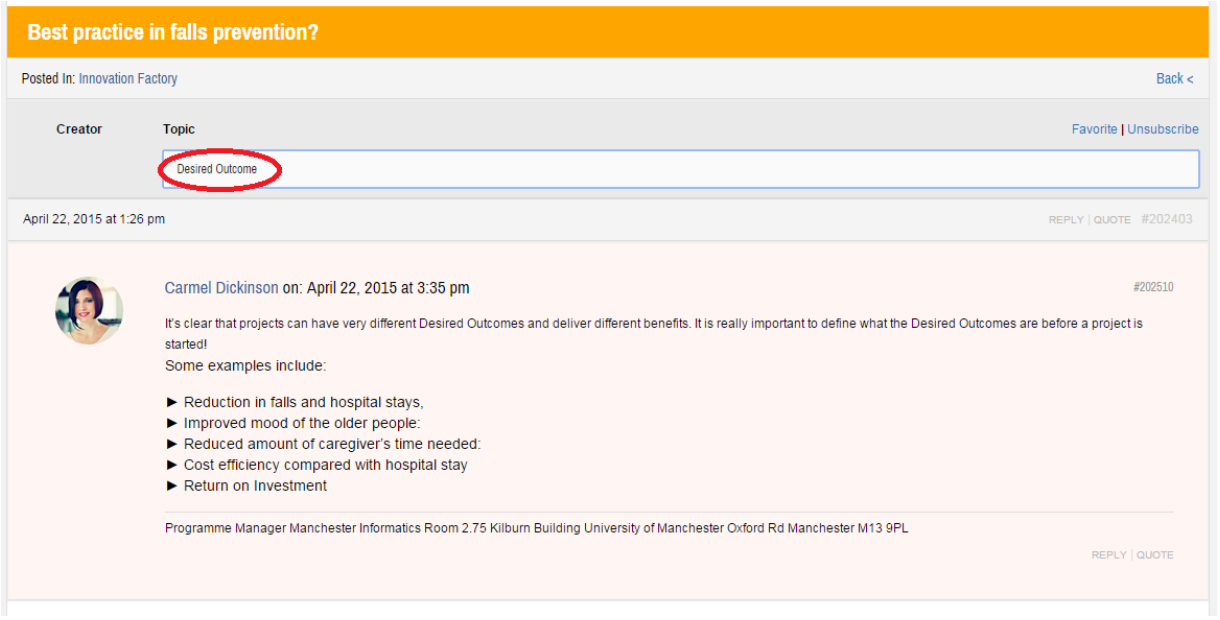
A3 – In topic thread displaying solutions



A4 – In topic thread displaying implementation



A5 – In topic thread displaying desired outcome



A6 – Text of email to CHAIN members

Dear Colleagues

The Prevention of Falls Network for Dissemination (ProFouND) is an EC funded initiative dedicated to bring about the dissemination and implementation of best practice in falls prevention across Europe. ProFouND comprises 21 partners from 12 countries, with associate members from a further 10 countries. ProFouND aims to influence policy and to increase awareness of falls and innovative prevention programmes amongst health and social care authorities, the commercial sector, NGOs and the general public. ProFouND's aim is to increase the delivery of evidence based practice in falls prevention and therefore reduce the numbers of falls and injurious falls experienced by older adults across Europe.

A core aspect of our work includes ICT interventions in relation to fall prediction, detection and prevention and as part of ProFouND we have created an online innovation factory (http://profound.eu.com/forums/forum/innovation-factory/), where we will bring together health and social care professionals, academics, engineers and industry partners to create new technological solutions to promote falls prevention, detection and monitoring. As part of this work we would like to provide 'real-life' case studies on the use of existing technologies, starting with the U.K. and then rolling out across Europe.

We need your help!

We are looking for case studies from across the U.K. We would like you to share your experiences of using information and ICT based technologies for falls prediction, detection and prevention in practice. Do you use a piece of kit or some technology which is really useful? Have you used something which has not proven to be very helpful? Who have you used it with (e.g. care home residents, community dwelling, Parkinson's patients etc)? How have your patients/older people got on with using the technology? Technology can range from call alarm systems, to bed alarms, to using the wii or kinnect games systems. Please tell us about the technologies you have used and who they are manufactured by.

For further information or to share your case studies please contact Dr Helen Hawley-Hague at Helen.Hawley-Hague@manchester.ac.uk or Dan Morley at daniel.morley@manchester.ac.uk. We are happy for the case studies to be *anonymous* if required. For more information about ProFouND, including access to a range of evidence based resources and details on how to register, please go to http://profound.eu.com/