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[1] R = Report, P = Prototype, D = Demonstrator, O = Other
[2] PU = Public, PP = Restricted to other programme participants (including the Commission Services), RE= Restricted to a group specified by the consortium (including the Commission Services), CO = Confidential, only for members of the consortium (including the Commission Services)

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Glossary

A2	Action plan on Specific Action on innovation in support of 'Personalized health management, starting with a Falls Prevention Initiative'
AAL	Ambient Assisted Living
ANOVA	Analysis of Variance
B2B	Business-to-business
CE mark	A mandatory conformity marking for certain products sold within the European Economic Area
CEN	Comité Européen de Normalisation
conhIT	Connecting Healthcare IT, annual congress and industrial trade show
EC	European Community
EIP-AHA	European Innovation Partnership on Active and Healthy Ageing
EU	European
HCPs	Healthcare Professionals
HSD	Honest Significant Difference
ICT	Information and Communications Technology
IPC	Innovatie Prestatie Contracten
ISO	International Organization for Standardization
KPIs	Key Performance Indicators
MEDICA	The world's largest medical marketplace annually organised in November in Düsseldorf, Germany
NHS	National Health System
PCP	Pre-Commercial Procurement
PPI	Public Procurement of Innovative solutions
R&D	Research and Development
SD	Standard Deviation
SME	Small Enterprise
TC	Technical Committee
TN	Thematic Network
TV	Television
WG1	Working Group on Information and Awareness raising activities
Wii Fit	An exercise game designed by Nintendo consisting of activities using the Wii Balance Board peripheral

1. Introduction

D1.3 is the outcome of the activities performed in WP1 (led by UL) and the framework of Task 1.3 "Recommendations on information and awareness activities and partnership enhancement", led by FORTH, that started at M8 and was completed at M18.

This task is oriented to generate recommendations – taking into account the results of the previous tasks reported in deliverables D1.1 and D1.2 – to facilitate a quicker and more intense uptake of falls prevention ICT-based solutions by coming up with:

- recommendations with regards to successful actions on information and awareness raising to be used in the falls ICT-based solutions domain;
- recommendations on actions for enhancing partnerships in the falls ICT-based solutions domain.

The recommendations have been developed taking into account different sources of evidence, including questionnaire responses from researchers and users including clinicians and elderly people, world cafés and workshops as well as literature review of best practices in the fields of communication and awareness actions.

1.1 Deliverable Objectives

The objectives of this deliverable are to present the recommendations to facilitate a quicker and more intense uptake of falls prevention ICT-based solutions.

In addition to presenting recommendations, this document also acts as a repository of information and data that belonged to D1.2 but were collected after the deliverable was submitted.

1.2 Summary

This deliverable reports on data gathered after the deliverable D1.2 was submitted. The data is reported and analysed. Additional data was gathered from all E-NO FALLS partners exploring their practices about communication, awareness and partnership enhancement. The deliverable provides recommendations based on the research information obtained through the different sources.

The deliverable is divided into a methodology section that describes the methods used to obtain the information reported in the deliverable as well as how recommendations have been derived. Then, there is a results section reporting the results of elderly questionnaires and case studies and expert discussions. In this deliverable, there is also a section describing the common activities conducted by E-NO FALLS and ProFouND networks in establishing a web space to engage a larger community of users. The deliverable concludes with providing recommendations for enhancing communication awareness and partnership activities in order to reach a wider and more diverse audience.

2. Methodology

This section describes the methodology used to identify recommendations from the various sources of data that were gathered in WP1.

Best practices are techniques or methodologies that, through experience and/or research, have proven to reliably lead to a desired result. In WP1, a bottom up approach is used to allow the emergence of criteria for best practice. Significant information is extracted from many different sources, analysed and interpreted based on the evidence allowing the establishment of a list of recommendations with the criteria associated.

Recommendations are based on the consistency and strength of the underlying evidence using an evidence-based approach. This approach includes three pillars of evidence, research evidence, practice expertise and patient values and preferences. The research evidence is derived through literature review and questionnaire based study, practice expertise is examined through results of the researcher, industry and clinician questionnaires world café events and case studies and user perspective is explored in both based on the literature and questionnaires with older people. This range of methods is an attempt to obtain information from a wide range of sources and to include the expertise of the consortium.

The recommendations contained in this document were determined based on a variety of information-gathering activities. Firstly, relevant literature was identified and key points on awareness, communication and partnership enhancement in falls and related technology was synthesised.

Next, the questionnaire data collected from key stakeholder groups and collated as described in D1.1 and D1.2 was further analysed and contextualised to create recommendations relating to these stakeholder groups.

Additional information from the collective consortium of E-NO FALLS was obtained through dedicated case studies that gathered information about the experience and actions of partners regarding communication methods and awareness actions. Partners were regarded as experts in their field and their practices provided a base for comparison between the results we received from the questionnaires and the results we received from the expert discussions in world cafes and workshops.

Finally, a number of expert discussions were carried out in a variety of countries. These discussions mainly took the form of World Café-style events. This is a format for facilitating large group discussions which aims to achieve open and creative dialogue in an environment which is respectful of all contributions, with the ultimate goal of producing findings which can be used to bring about tangible actions and change. The major design principles of the World Café format were taken into account when structuring these events, and then tailored to suit the specific context of each.

Based on these methods, the key criteria for defining a 'best practice' in the context of WP1 are:

1. Research evidence in support of the practice
2. Experience of use/implementation in real-world scenarios
3. Level of agreement regarding use and effectiveness

These criteria are determined in WP1 using the methods shown in Table 1.

Criteria	Methods
1. Research evidence in support of the practice	• Literature review using the best available evidence
2. Practice-based evidence and user preference and values **3. Experience of use/implementation in real-world scenarios**	• Questionnaires • World Cafes • Case Studies from E-NO FALLS partners
4. Level of agreement among the different sources regarding preferences, use and reported effectiveness	• Questionnaires • World Cafes • Case Studies from E-NO FALLS partners

Table 1. Criteria for identifying recommendations

WP1 engaged different sources of information in order to obtain data about communication, awareness and partnership enhancement methods. The methodologies used to gather the data are both quantitative as well as qualitative. The data is analysed looking for common as well as distinct themes that are prevalent in the information gathered using the criteria that are presented in Table 1. The next step in this methodology would have been to rate the recommendations based on a rating system that awards a highest rating (5 stars) where strong evidence, frequent experience and high levels of agreement regarding effectiveness are all reported for the practice in question; while the lowest rating (1 star) is given to practices which are only reported infrequently in either the Questionnaires, World Café data or Case Studies and, as such, represent the opinion of a limited sample only. However, during the analysis of the literature and the data gathered from different sources, it became apparent that such a rating system could not be used on our data because of the diversity of the sources of information as well as the diversity of the questions asked. Also, the data obtained is very rich with individual experiences from the experts as well as the individuals that were asked during the questionnaires. The richness of data needs to be maintained and not dismissed using a simple rule of frequency of responses. As a result, recommendations were derived using a holistic view of the entire data set as well as the literature that has been reported in D1.1.

These recommendations are reported in the last section of the deliverable and can be seen also as a summary of all the different opinions that were collected from the different stakeholders involved.

Communication, awareness and partnership enhancement in the field of Falls management is an evolving field that grows and changes as Falls management practices are recognized as a need at the policy level among the different European countries. Identifying the relevant networks of stakeholders involved and establishing the necessary information exchange channels through rich face to face interactions will be the key in brining state of the art practices to mainstream care in Europe.

The following sections provide the results and analysis of various data collection activities including questionnaire data that was gathered after the submission of Deliverable D1.2, case study data obtained from all E-NO FALLS partners and expert discussions data that was collected during the world cafes.

3. Results and Analysis of Questionnaires on Awareness, Information and Partnership Aspects for Researchers & Clinicians (Extension to D1.2)

This section provides additional questionnaire results and analysis that has not been reported in D1.2. Respondents of these questionnaires are researchers and clinicians and the results focus on responses for the awareness and partnership aspects of the questionnaires. For more information about the questionnaires and the respondents the reader can refer to Deliverables D1.1, and D1.2. The methodology of statistical analysis is described in Section 3.1. In Section 3.2, the results for each question are provided. Section 3.3 offers an overview and analysis of the results.

3.1 Methodology for Statistical Analysis

Mixed ANOVAs with subsequent Tukey's HSD tests or single univariate ANOVAs [1] were performed to compare clinical groups on the score they obtained on the questions tapping their aptitude both to keep informed about technological device and to disseminate technological advances. For these analyses only three groups were considered: medical doctors, occupational therapists and physiotherapists. This was made because the other samples (e.g., nurses) were composed by a very low number of subjects.

Therefore, in mixed ANOVAs the Clinical Group (medical doctors vs. occupational therapists vs. physiotherapists) was the between factor and the Response Items were the within factor for each question. For univariate ANOVAs, the dependent variable was the subjects' score on each individual response item. As the response choices for each response item are on an ordinal scale, for the purpose of the statistical analyses they were transposed in numeric scales ranging from 0 to 5 (Likert scale).

3.2 Results

This section provides the results for a series of questions concerning communication, awareness and partnership enhancement methods as an extension to the results that have been reported in deliverable D1.2. Each question is stated, followed by the results and a figure illustrating the results. All results are further analysed in Section 3.3.

Question: "How likely are you to gain information from the following sources about devices/technology solutions for falls management in older people?"

Average scores obtained by the subjects in the three groups are illustrated in Figure 1. The main effect of Clinical Group was not significant ($F(2,30)= 2.5$; $p>0.05$), whereas the interaction Clinical Group* Response Items reached the statistical significance ($F(7,210)=11.1$; $p<0.01$). Post-hoc analyses showed that occupational therapists are more likely to gain information than the other two groups by face-to-face contact ($p<0.05$) and contact over the telephone ($p<0.05$). Occupational therapists also obtained higher scores than medical doctors on the item Postal Information ($p<0.05$). Any other significant between groups difference was found (all p consistently >0.05).

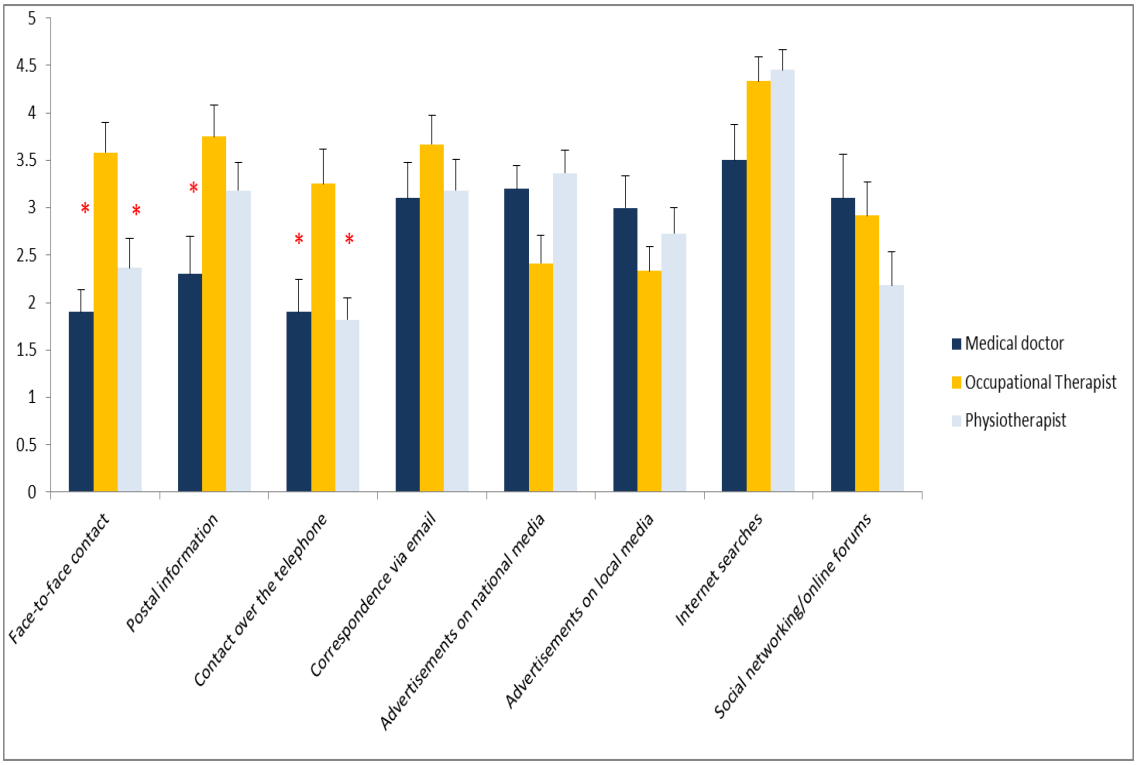

Figure 1. Sources for gaining information

Question: "Please indicate who you obtain this information from and how often"

Results of these analyses are reported in Figure 2. In this case the effect of Clinical Group ($F(2,30)=0.34$; $p>0.10$) and of the Clinical Group*Response Items interaction ($F(10,150)=1.44$; $p>0.10$) were not significant. However, the main effect of Response Items reached the statistical significance ($F(5,150)=21.7$; $p<0.01$), documenting that all subjects are less likely to obtain information from Health Insurance Company in respect to the other options.

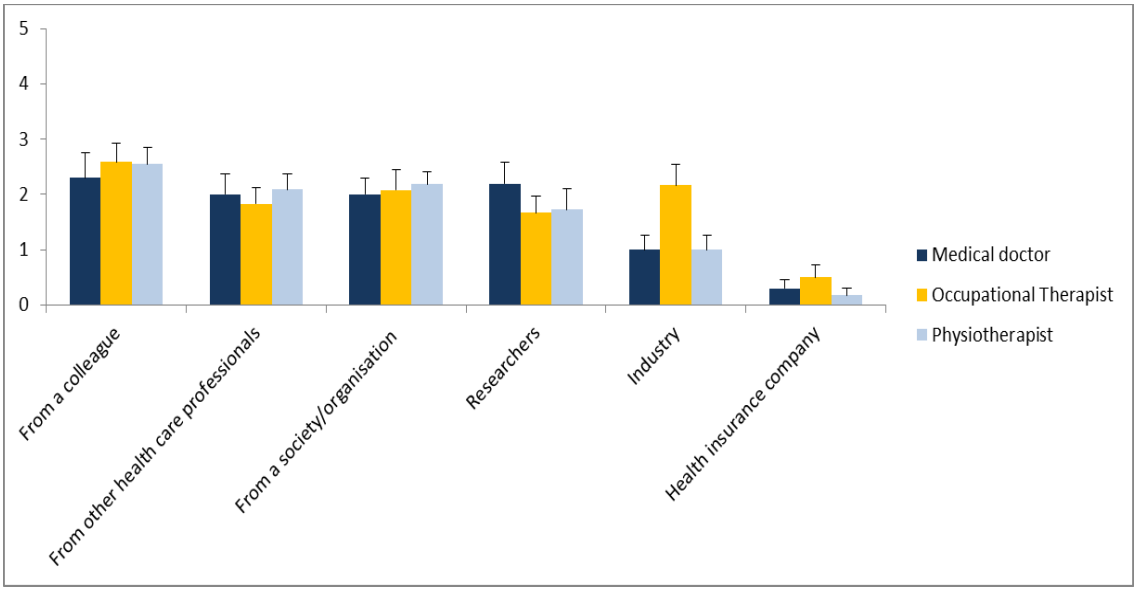

Figure 2. From and how information is obtained

Question: "Do you use devices/technology solutions as part of intervention for falls in older people at your workplace?"

Results are illustrated in Figure 3. In this case, a univariate ANOVA was performed with the subjects' response scores as dependent variable. Results do not show a significant effect ($F(2,30)=1.09$; $p>0.10$). This documents that the attitude of three groups to use technology solutions is substantially the same. Indeed, the average score of all subjects taken as a whole was 1.8 (SD=0.67) that corresponds to the responses "almost never/sometimes". This generally indicates a relatively low tendency to use devices/ technology solutions in these samples.

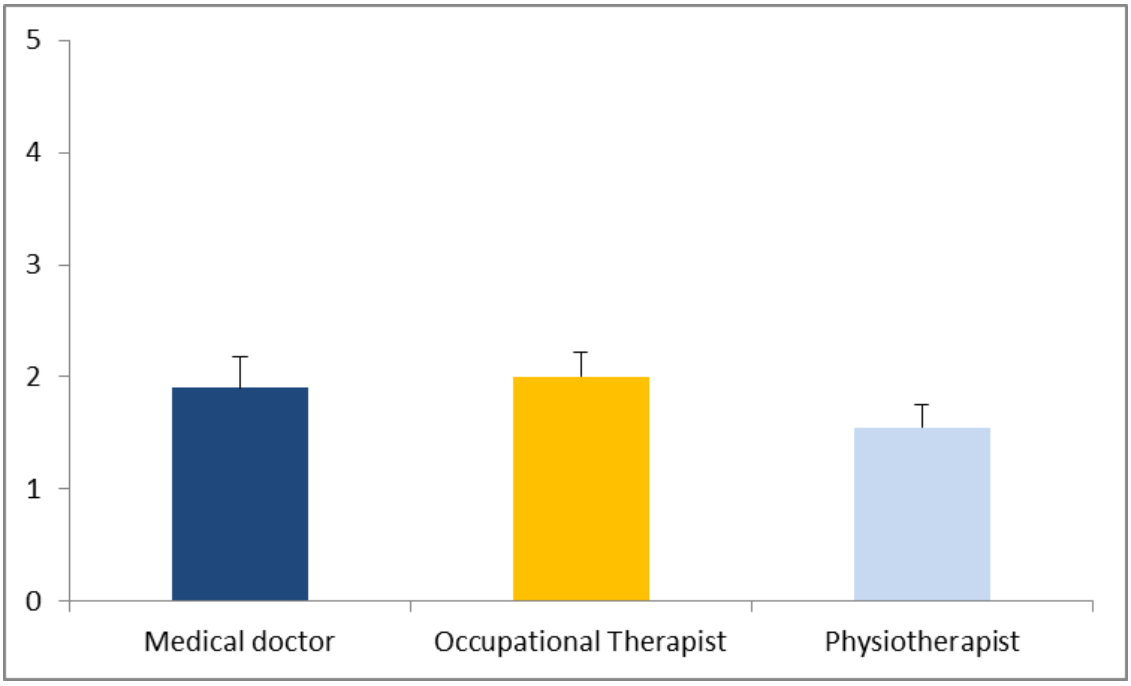

Figure 3. Use of devices/technology solutions

Question: "Please indicate how you provide information about the identified devices/technology solution and how you rate the level of success of the various methods".

In this case single univariate ANOVAs were performed for each response item. This was made because not all subjects responded to all items. In all cases, no significant effects were found (F ranges: 0.70-2.50; p consistently >0.10). These findings document that the way to provide information about technology solution do not differ between the three groups (see Figure 4).

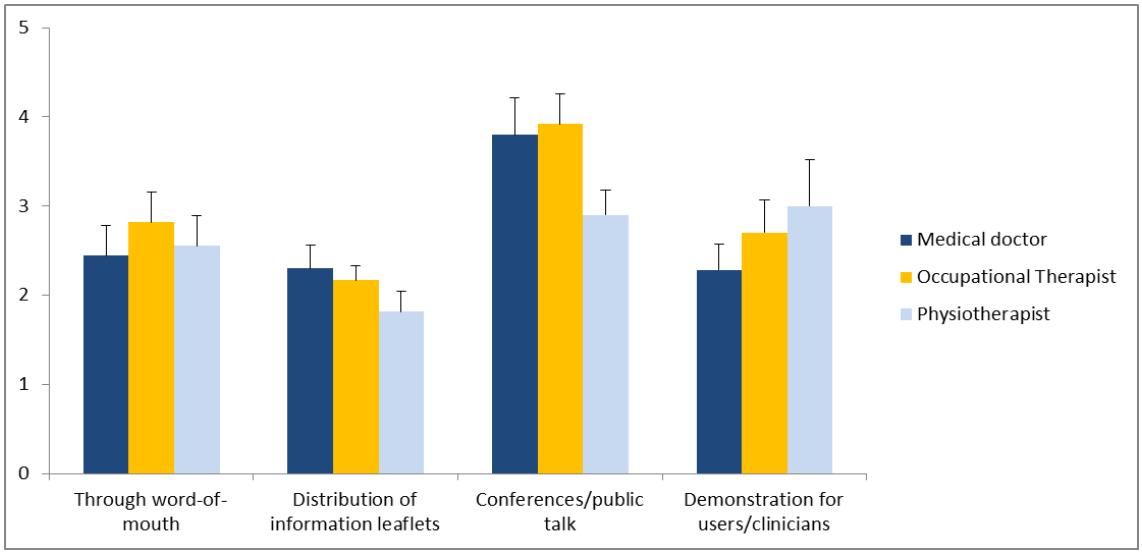

Figure 4. How ICT information is disseminated

3.3 Analysis

This section analyses the questionnaire responses of clinicians and researchers summarizing the responses on questions about communication and awareness actions and methods.

3.3.1 Clinicians

Clinicians mostly got information on fall-related technology through internet searches and from colleagues/other healthcare professionals, and did not cite industry as an important source of information. However, industry respondents stated that healthcare professionals and healthcare managers were two of the main groups they provided information to regarding their products. This discrepancy may have arisen due to the different countries in which the respondents from each group were primarily based. It could be the case that industries in Ireland and Spain in particular (the countries in which respondents to the clinicians' questionnaire were mainly based) need to communicate more often and more effectively with clinicians. Equally, these findings may reflect a lack of successful communication between these groups across many countries.

3.3.2 Researchers

Researchers reported that they disseminated their results mainly via traditional academic means, e.g. scientific publications and conferences. However, clinicians reported that they never or rarely accessed academic databases, while industry respondents often obtained information through conferences but not frequently through scientific publications. While publications and conferences are highly important to researchers as a means of quantifying their research output, it is clear that these are not the optimal methods of communicating their results to the relevant stakeholders in industry or in clinical practice. Previous research has highlighted the failure to effectively disseminate research findings as a key point of break-down in the translation of evidence to practice, and suggests a range of marketing strategies and new media techniques to address this issue [2].Questionnaire findings indicate that clinicians are highly receptive to

accessing online information about technology for falls; therefore a greater knowledge and use of such marketing strategies and techniques could offer less costly, more rapid, more effective methods of publicising research findings in relation to technology for falls.

As discussed in D1.2 (Section 5.2.1), clinicians mainly provided information on technology for falls to older clients, their families/carers and other healthcare professionals/colleagues. This was mostly achieved by word-of-mouth, demonstrations or public talks.

Funding was cited as the greatest barrier to effective communication and promotion of devices and technology solutions by all groups, closely followed by a lack of time and effort from clinicians' perspectives. Clinicians would be expected to have less time to devote to such activities due to their case load demands. However, there was no scope for respondents to state how exactly increased funding for all groups could be best used by them to improve communication of research findings and promotion of products. Perhaps different, more cost-effective marketing strategies and disseminate methods need to be explored to be more effective within current financial restraints. Results from the Older Adults' questionnaire will again be important here to determine if the needs of the end-user are being met in these marketing and communication strategies, since a user-centred approach such as this is recommended [3].

3.4 Summary

3.4.1 Strengths

- The clinicians' questionnaire received 57 responses from a variety of healthcare professionals working in clinical practice, management and policy-making settings.
- Responses to the researchers' questionnaire were received from 43 researchers based in a variety of research settings, working on falls-related ICT solutions in a range of different stages in the research and development process.

3.4.2 Limitations

- A large number of the respondents to the clinicians' questionnaire were based in Ireland and Spain, thus communication practices and partnerships that exist in other countries may not be well represented.
- Similarly, a large proportion of researcher respondents were from Spain (33%) and Germany (30%), thus some findings may be specific to these countries and less applicable to other countries.
- A low number of responses to the industry questionnaire were received, thus the sample cannot be considered to be representative of industry practices throughout Europe, and more extensive analysis was not possible.

3.4.3 Clinicians: Key Points

- Clinicians primarily gained information on falls-related ICT solutions from other healthcare professionals or via internet searches, and did not report gaining such information frequently from industry. However, both researchers and industry respondents reported frequently providing information to clinicians. This discrepancy suggests that current communication strategies used by stakeholders in research and industry are not effective in reaching healthcare professionals.
- Clinicians frequently provide information on falls-related ICT solutions to older adults, their families/carers and other healthcare professionals. Therefore, they are a vital stakeholder group in the process of raising awareness among potential end users of such solutions.

3.4.4 Researchers: Key Points

- The strongest partnerships reported by researchers were with other researchers.
- Strong collaborations with funding agencies and healthcare professionals (primarily in the areas of nursing and allied health) were also reported.
- Collaboration with industry and patient/user groups was reported by researchers, with varying effectiveness in their levels of cooperation.
- Researchers reported mainly disseminating information on ICT solutions to their research colleagues, but also frequently to older adults, their families/carers, healthcare professionals, and government agencies.
- However, researchers primarily disseminated information via scientific publications and conferences, and via press releases. Such methods were not listed as preferred sources of information by clinicians or older adults, and thus researchers may be underestimating the effectiveness with which they engage with these stakeholder groups.
- Demonstrations for users were also noted by researchers as being effective in providing information, although extensive time and resources would be required to reach a large target audience using this method.

3.4.5 Recommendations

- Healthcare professionals are a vital source of information on falls and related solutions for older adults and their families/carers. Therefore, stakeholders in research and industry should aim to develop strong collaborative partnerships with healthcare professionals, and those in healthcare management and policy-making positions, in order to ensure that up-to-date, reliable information on ICT solutions for falls is being effectively disseminated among potential end users of these solutions.
- Researchers and industry respondents appear to overestimate the effectiveness of their current communication practices in raising awareness of developments related to ICT solutions among other stakeholders outside of their own domains.
    - Researchers need to consider using methods other than scientific publications, conferences in order to raise awareness effectively among those outside of academia.
    - Industry stakeholders should consider more targeted or personal approaches to communicating with clinicians and older adults, as impersonal mass media approaches are not viewed favourably by these groups.

- Responses from both research and industry suggest that end-user involvement in the design and research and development processes is not consistently sought. Consultation with users throughout these processes should be considered to facilitate awareness-raising among potential users and to ensure that the ICT solutions being developed meet the users' needs.

4. Results and Analysis of the Questionnaire about Fall Prevention for Elderly People (Extension to D1.2)

The questionnaire to older people was distributed via workshops because of the low access of elderly people to the internet. UL piloted the older adults' questionnaire at a workshop with older people who were members of a community active retirement group in Ireland. This pilot provided a small sample of responses and informed future workshop-based delivery methods for the Older Adults' questionnaire in Norway and Greece. A small sample of Dutch older adults also completed the questionnaire. FORTH and SN translated the Older Adults' questionnaires and distributed to older people during workshops. The results and analysis of the responses are provided below.

The questionnaire was distributed among older adults from 4 countries as it was not deemed to be possible to carry out such workshops in all E-NO FALLS partner countries within the scope of WP1. The 4 countries selected provide information from regions at varying points on the spectrum of fall prevention service provision. In Greece, there is no established policy or strategy for prevention of falls for the elderly. In Ireland, there is a national strategy which is currently in the process of being implemented, but has not yet reached a standard level of implementation across all regions. In the Netherlands, clinical guidelines for fall risk screening and interventions have been adopted, and fall/mobility clinics adhere to these guidelines. Similarly, in Norway, there is an established pathway of care for older adults presenting to the health system and fall prevention services overall are well-established and integrated, and considered to be of high quality. It was therefore considered that selecting these 4 countries would provide data from older adults with varying experiences in countries with different levels of falls-related health service provision for older adults.

4.1 Greece

The questionnaire for the elderly people was translated in Greek and disseminated to the attendants of a workshop to raise awareness about fall prevention practices and technologies. Overall, 21 seniors (age >= 55 at the date of the interview) participated in the survey answering to the questionnaire about fall prevention for elderly people in Greece. The average age was 67.7 +/- 7.2. 16 of them were female, 4 were male, while one did not answer.

The living situations of these people revealed that the great majority of them were living with their spouse (81%) as shown in Figure 5.

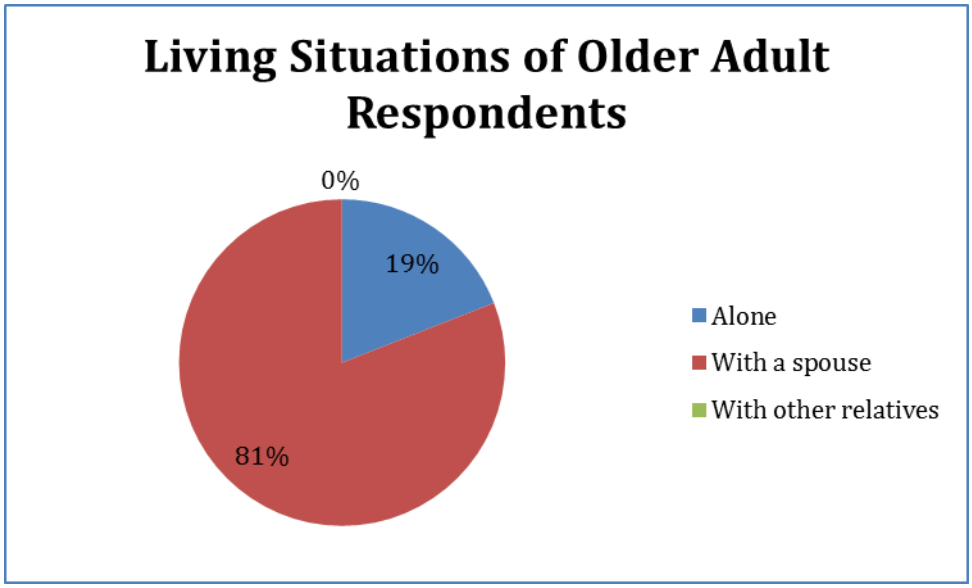

Figure 5. Living situations

The great majority were living either in a house all located at the ground level or in a two-storey house with stairs as shown in Figure 6.

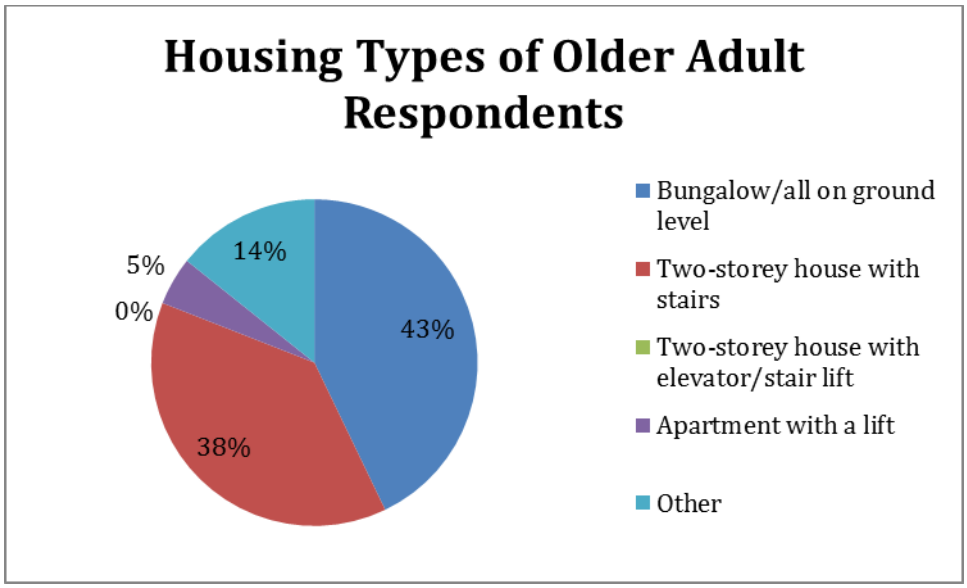

Figure 6. Housing types

An interesting result was that none of them used an emergency call system (like e.g. an alert button) at home and did not benefit of any home help service either from local authorities / government or from private companies / voluntaries.

That was even more surprising if we consider that one third of the participants declared they fell once during the past year and another third affirmed they fell twice or more during the same period as shown in Figure 7.

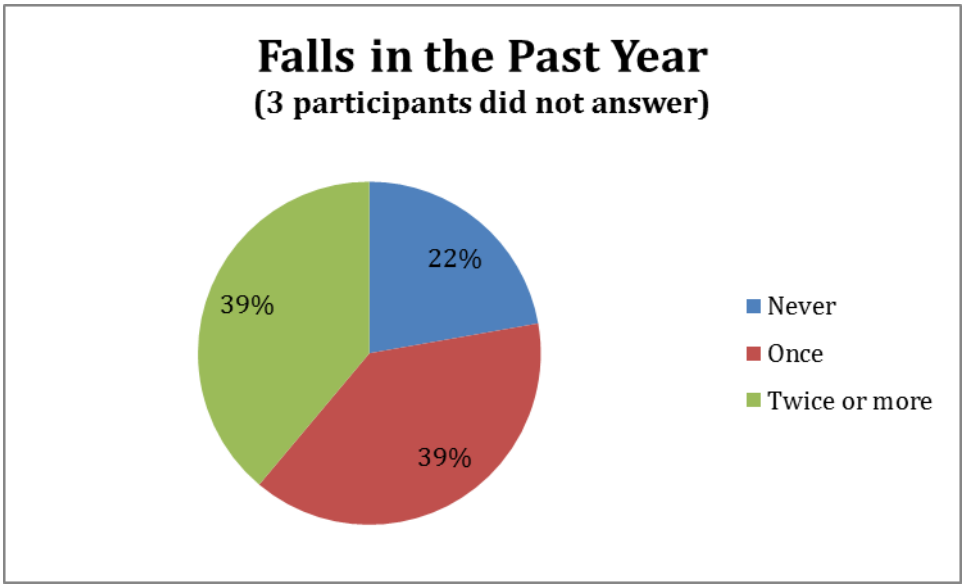

Figure 7. Falls in the past year

In some cases the consequences of these falls were serious with 1 case of losing consciousness, 5 cases of broken bones and 2 cases of dislocated joints.

Despite of these unpleasant events, no participants used any technology or device to help manage his falls and only one stated he planned to use technology / devices in the future as shown in Figure 8.

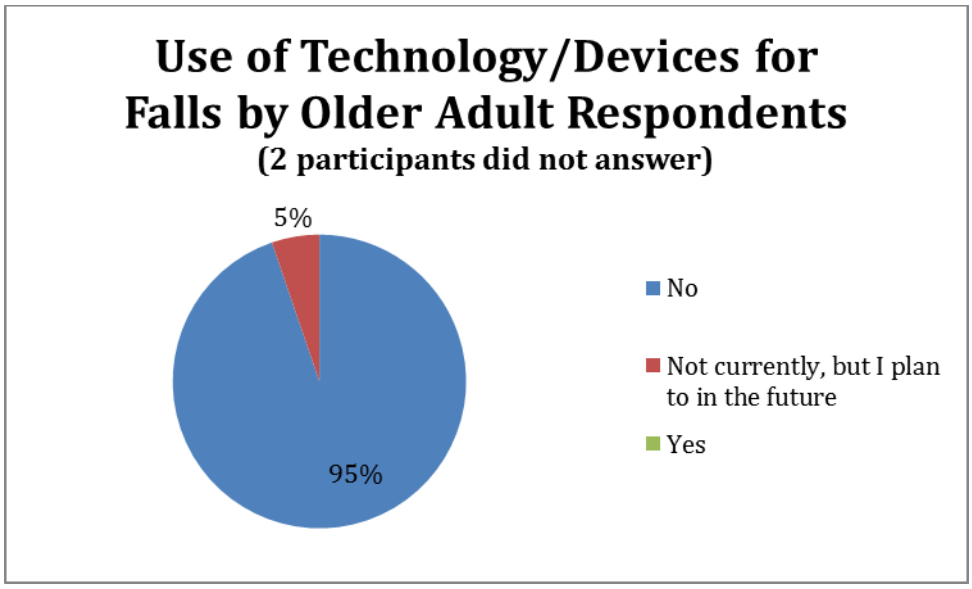

Figure 8. Use of technology/devices for falls

That shows the importance of actions in order to raise the awareness of these people and to motivate and encourage them to the use of technology and devices since the primary prevention phase. In fact, most people did not use or plan to use technology mostly because they were not aware of the existing solutions and the existing research on this domain.

This appears even more evident from the answers to the last three questions of the questionnaire.

The main barrier to uptake technology for falls resulted very clearly that people were unaware that something like this existed (see Figure 9), followed by some concerns about the upkeep of technology and its cost, while concerns about using technology and lack of interest were considered of moderate relevance.

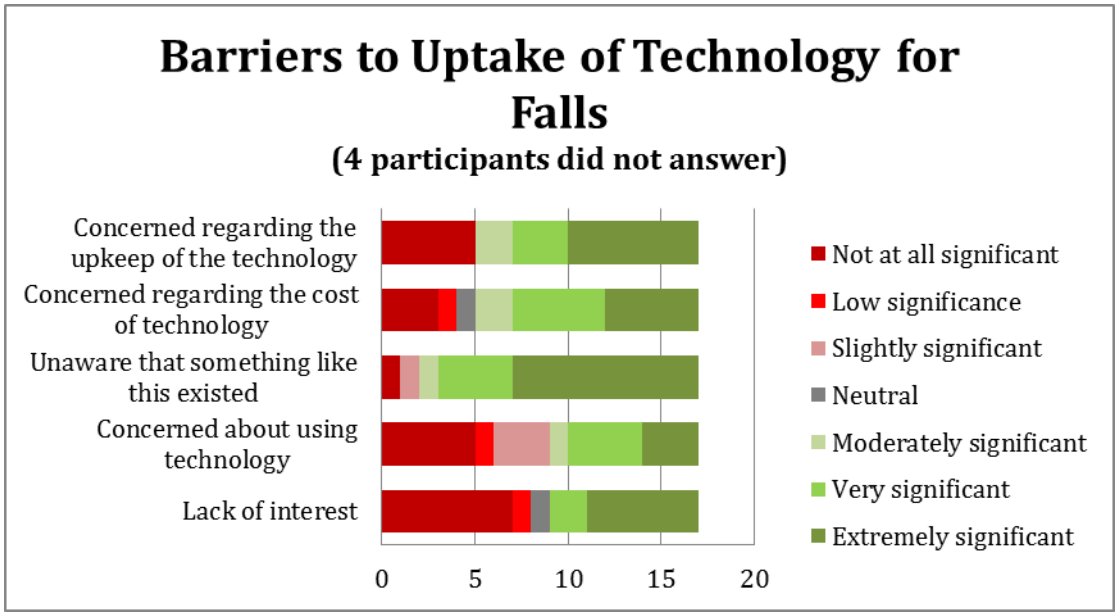

Figure 9. Barriers to uptake of technology for falls

The preferred methods for obtaining trustful information about technology were from a doctor, nurse or other healthcare worker, but also from family members or friends who use the same device. Instead Internet searches and email correspondence were not considered good methods giving the feeling that people need to speak directly with a trusted person to be convinced (see Figure 10).

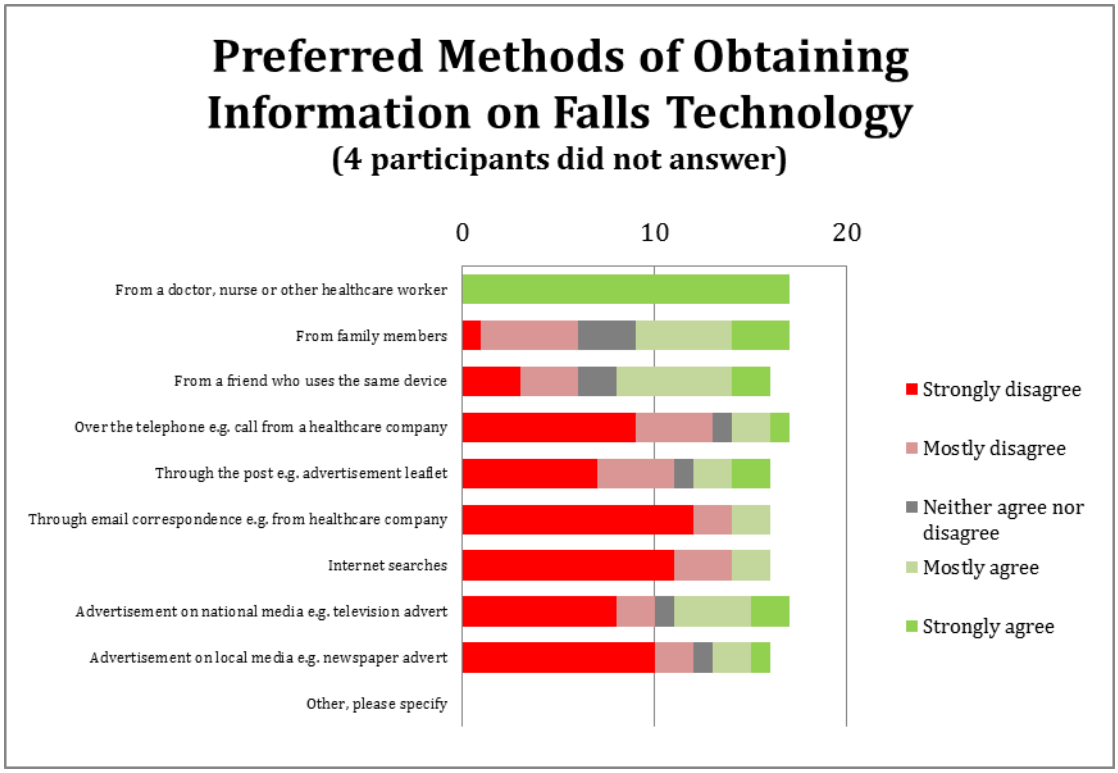

Figure 10. Preferred methods of obtaining information on falls technology

Finally, the main facilitator of uptake of technology for falls was the trustworthy certification of devices / technology solutions followed by an increased awareness about product / technology solutions for falls prediction and prevention as shown in Figure 11, giving once again the impression that proper and effective awareness actions carried lout throughout the country are definitely necessary.

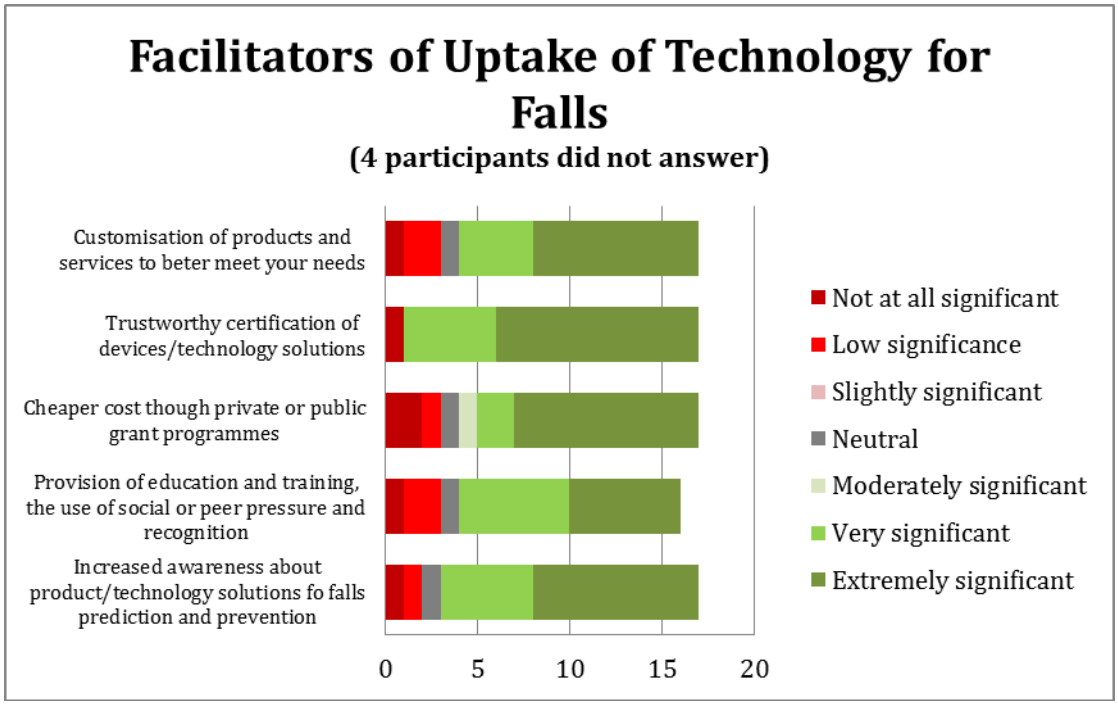

Figure 11. Facilitators of uptake of technology for falls

4.2 Norway

Questionnaire responses were received from a group of 24 older adults in Norway. Respondents were aged from 66 to 88 years. 54% lived with a spouse while 46% lived alone. The majority of respondents were independent in their homes, with only 25% receiving home help from a local authority/government health service or private help service. Figure 12 displays the types of housing in which the sample of Norwegian respondents lived.

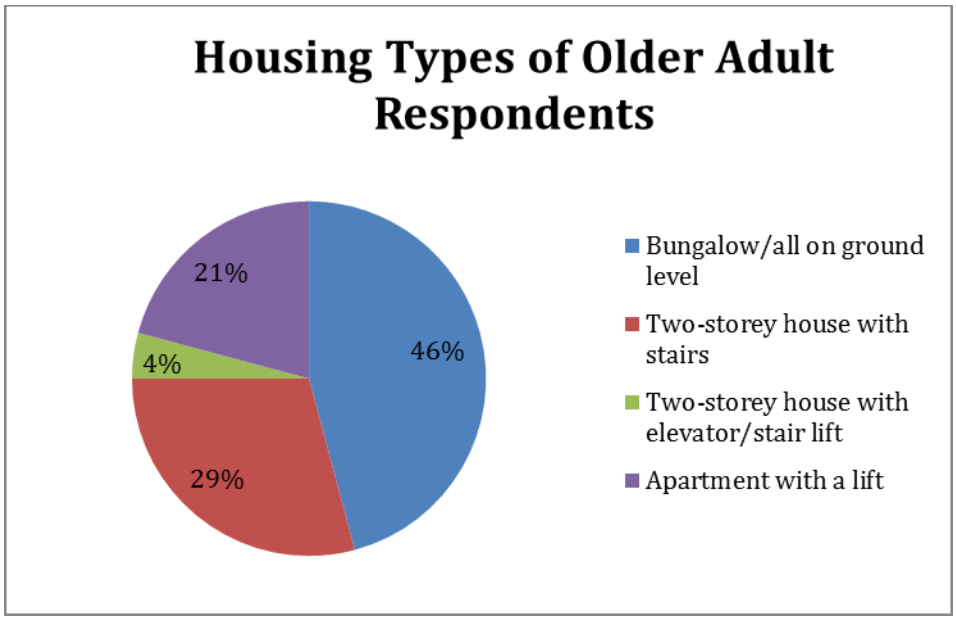

Figure 12. Housing types of Norwegian respondents to older adults' questionnaire

Approximately 46% of respondents reported falling in the past year (see Figure 13), which is similar to previously reported rates for community-dwelling older adults of this age group [4], but a lower rate than that observed in the Greek sample. Only minor injuries were reported resulting from these falls e.g. bruises, swelling.

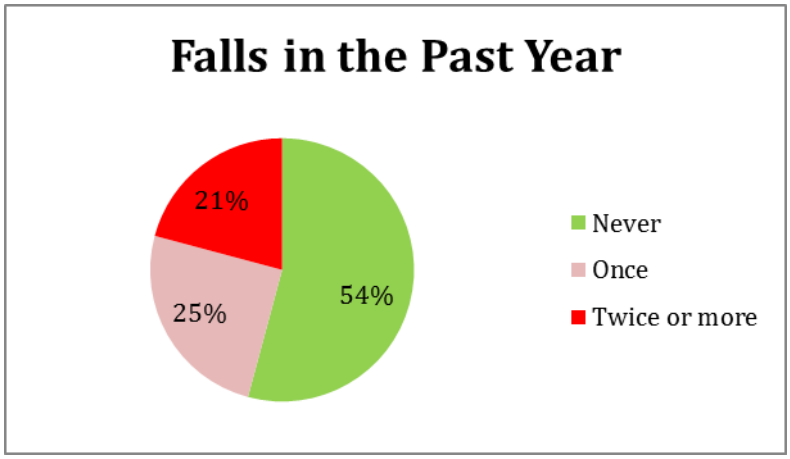

Figure 13. One-year falls history of Norwegian older adult respondents

Despite the prevalence of falls in this sample, none of the Norwegian respondents used an emergency call system or any other technology to help manage falls. The main barrier reported by respondents to the use of technology for the managements of falls was a lack of awareness that such technologies existed. Equally, the main facilitator reported to encourage respondents to use technology was increased awareness about product/technology solutions for falls prediction and prevention. These findings echo those of the Greek sample, and serve to further emphasise the need to raise awareness of falls-related technologies and the roles which they may play in falls prevention and management.

4.3 Netherlands

Responses to the Older Adults' questionnaire were also received from a small group of 8 individuals from the Netherlands. These respondents were aged from 75–88 years. All of this sample lived in sheltered accommodation and received home help from a local authority/government health service. 62% of this sample lived alone, while 38% lived with a spouse.

Falls were more prevalent and more frequent in this sample, with 75% reporting a fall in the past year. As shown in Figure 14, 60% of those who fell in the previous year experienced multiple falls i.e. they fell 2 or more times. In addition to minor injuries like bruises, swelling etc., one respondent reported sustaining a fracture due to a fall.

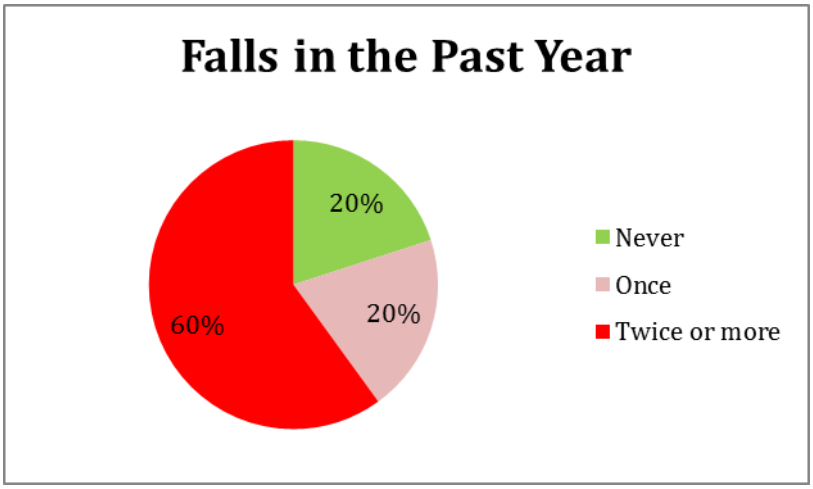

Figure 14. Falls incidence among Dutch respondents to the older adults' questionnaire

Technology use was much more prevalent in this sample of older adults. 75% of respondents reported that they used technology in the form of a personal alarm. Specifically, these respondents described the device they used as "a device that I press if I have a fall". Considering the characteristics of this sample, a higher prevalence of technology usage is to be expected, since personal alarm use tends to be more prevalent among individuals who are older, live alone, have a history of falls and have difficulties with activities of daily living [5].

Clear patterns in the reported barriers to the use of falls-related technology were not evident in this small sample, although barriers identified by respondents included a lack of awareness of the existence of type of technology, concerns about using technology, and a lack of interest. As reported in previous samples, the majority of respondents reported that increasing awareness about products/technology solutions for falls prediction and prevention was a significant facilitator to the use of such technologies. Respondents also highlighted the importance of low cost as a facilitator to the use of technology, as well as the availability of products which may be customised to the individual's needs.

4.4 Ireland

The results of the Irish older adults' questionnaires have previously been reported in D1.2. Thus, the following sections will focus on additional interpretation of those results in the context of current evidence to facilitate the formulation of recommendations on awareness and communication in relation to this stakeholder group.

4.4.1 Awareness of ICT for Falls among the Irish Sample of Older Adults

A notable feature of the sample of Irish older adults surveyed was the low level of uptake or usage of technology related to falls. Only 4 of the 16 respondents (25%) reported using an emergency call system at home e.g. a personal or pendant alarm system, which was the main form of falls-related technology used by this sample. Additionally, one respondent reported using automatic sensor lighting at home to help prevent falls, and another respondent reported using a device to help with exercise e.g. Wii Fit.

As reported in D1.2 Section 6.3, and reproduced below for the reader's convenience, approximately 56% of the sample reported that a lack of awareness that such solutions existed was a moderately or extremely significant barrier to the uptake of technology for falls (see Figure 15). Similarly, approximately 85% cited increased awareness about products as the greatest facilitator to the uptake of falls-related technology (see Figure 16). Provision of education/training in relation to ICT products for falls was the next most important facilitator to uptake noted by the Irish sample, as were social influences encouraging the use of such products.

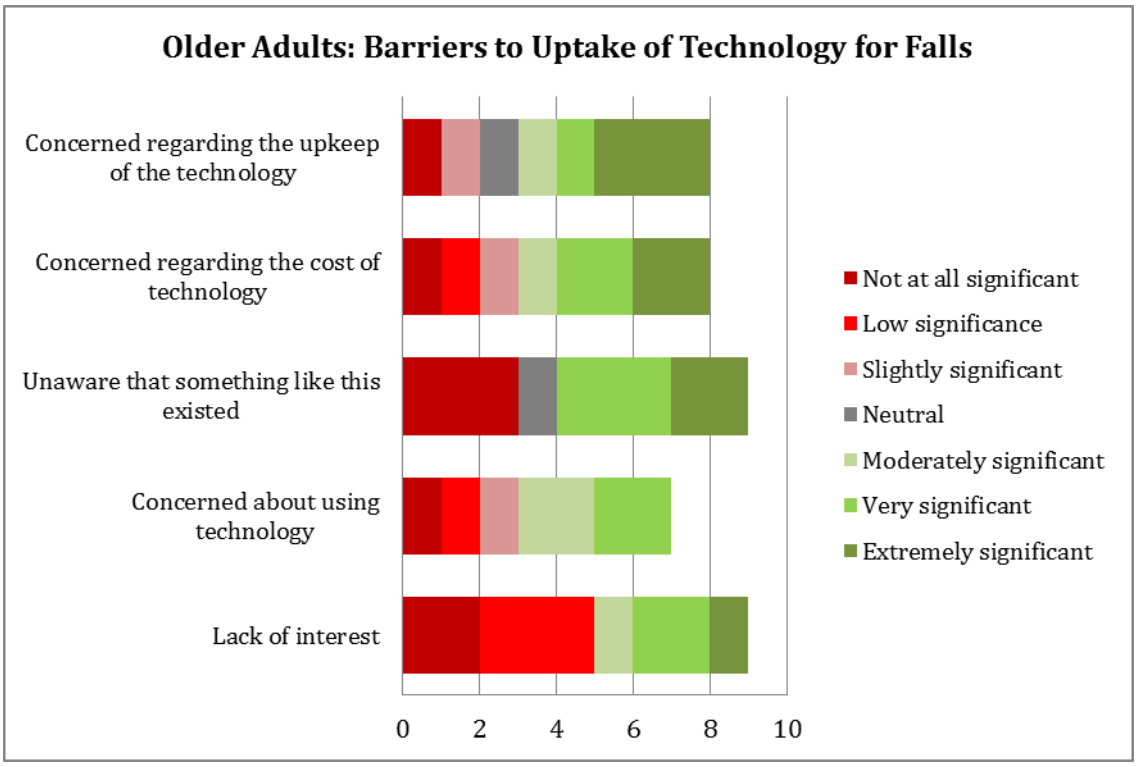

Figure 15. Barriers to the uptake of technology for falls reported by Irish older adults

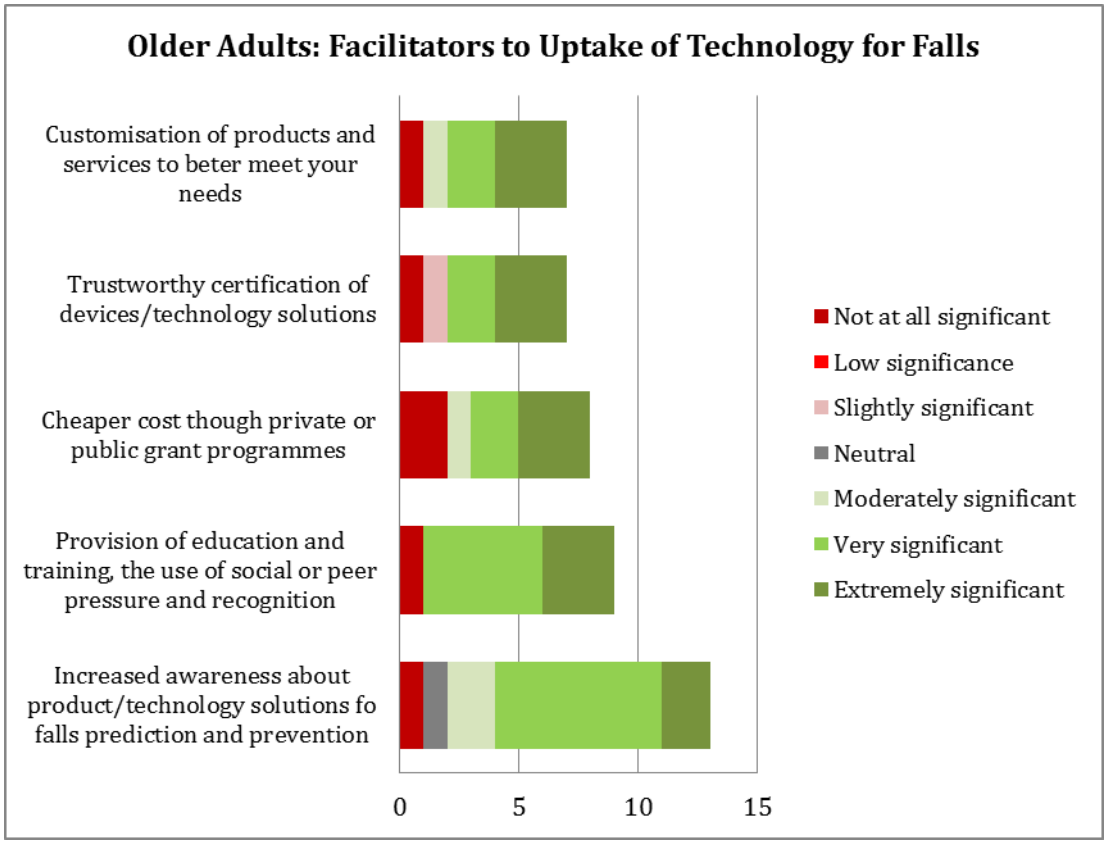

Figure 16. Facilitators to the uptake of technology for falls reported by Irish older adults

These findings suggest that current awareness actions in relation to ICT solutions for falls have not been effective in reaching this sample, a group of potential end-users of such products. Also, current awareness actions have not been effective in convincing this group of Irish older adults that such ICT products are usable and/or of relevance to them. Literature on technologies aimed at predicting, monitoring and preventing falls suggests that intrinsic factors related to older adults' attitudes around control, independence and perceived need for safety are very important to their motivation to use – and continue to use – such technologies [6].

Therefore, actions which raise awareness among older adults of the potential for falls-related ICT solutions to improve their safety and facilitate independence within a user-centred, self-management context are highly recommended.

Additionally, concerns regarding the use, costs and upkeep of technology were noted by most respondents, in keeping with the types of concerns previously noted in literature on technology acceptance among older adults [7]. Actions should therefore be taken to raise awareness among older adults of the costs, potential funding sources, methods of access, usability and benefits of technology to address these concerns.

4.4.2 Communication – Gaining Information on Falls-Related ICT Solutions

Considering that actions to date have been largely unsuccessful in raising awareness of ICT solutions for falls among this sample of older Irish adults, it is necessary to consider how this sample would prefer to receive information.

As reported in D1.2 Section 5.1.2, all older adults in this sample agreed or strongly agreed that receiving information on technology for falls from healthcare professionals was a good method of gaining information. Family members and friends were the next most preferred sources of this information, closely followed by advertisements in local or national media. Telephone calls, postal or email correspondence did not appear to be favoured by this group. These findings are supported by current literature which cites the importance of social influences in achieving technology awareness and acceptance among older adults [5].

In order to communicate effectively with older adults, multi-faceted communication strategies which raise awareness and provide information to their families, friends and professional caregivers must be considered. Considering that Researchers and Industry stakeholders reported in D1.2 that healthcare professionals, older adults and their families/carers were the main groups to whom they disseminated information on ICT for falls, it is clear that the effectiveness of current communication strategies is questionable and that these strategies need to be reviewed to meet the information requirements of the target stakeholder groups.

4.5 Overall Communication and Awareness Findings in Elderly People

Overall, the questionnaires for older adults received 69 responses, including those with incomplete or incorrectly answered questions. Respondents ranged in age from 55 to 88 years and were from 4 different European countries. Although this cannot be said to be a truly representative sample of older adults across all of Europe, the variations in age, nationality, living situation and fall history of our sample allow insights on awareness and communication among older adults in relation to technology for falls to be obtained from the pooled data.

Firstly, the low rate of technology usage is highly notable. Only 13% (n=9) of the overall sample reported using technology for falls-related purposes, all of which referred to the use of pendant alarms. Considering that 57% of the total sample reported falling in the past year, and 28% of the total sample lived alone, it is clear that there is great scope for wider usage of personal alarm or falls detection technology alone.

Furthermore, aside from personal alarms, a number of other products available for use in the management of falls were reported by respondents to the Industry questionnaires in D1.2, Section 4.1. Such devices included those concerned with detecting fall-risk, falls detection, physical activity monitoring and also telecare devices. No usage of such products was reported by the older adults surveyed, which suggests that the reach of these products may be poor.

Combined responses from all questionnaires indicate that a lack of awareness of the existence of falls-related ICT products is the foremost barrier to the usage of technology among these older adults (see Figure 17). Concerns regarding the costs and upkeep of technologies were also expressed, as was a lack of interest in such products, but to a lesser extent. Product providers must therefore focus primarily on raising awareness of their products among end-users.

Ensuring that low-cost solutions are available and providing support to users in the upkeep of these solutions should also be considered.

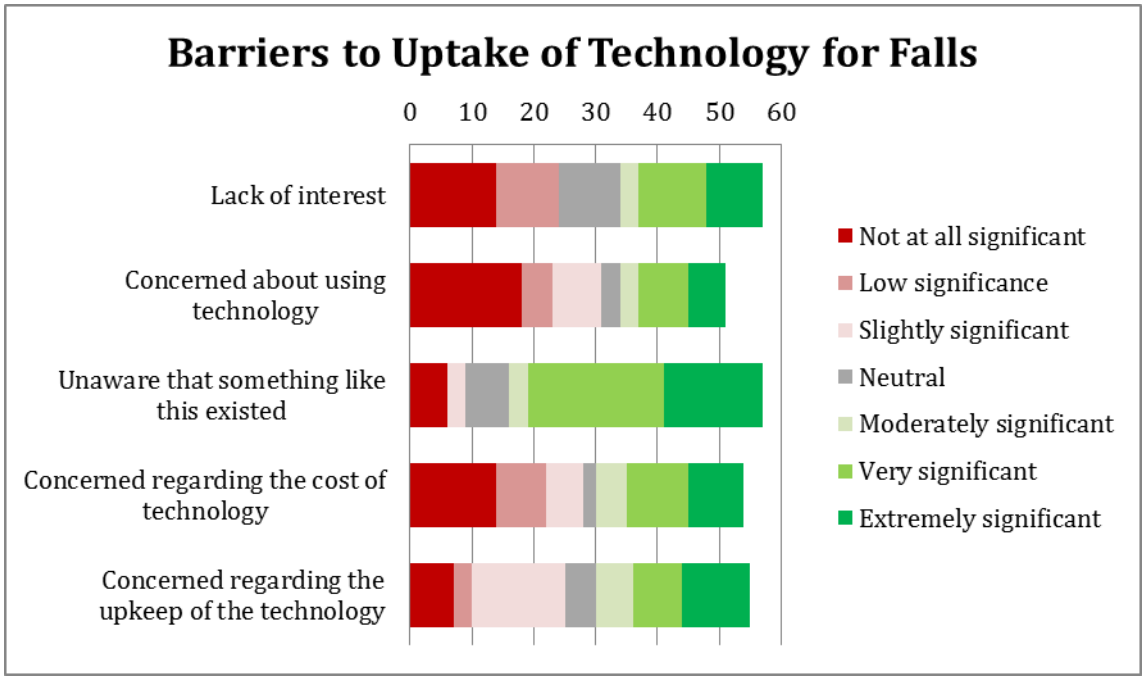

Figure 17. Barriers to technology uptake reported by the total sample of older adults

Similarly, the vast majority of respondents reported that increasing awareness about ICT solutions for falls would be a significant facilitator to technology uptake (see Figure 18). The availability of low cost solutions through private/public grant programmes was also noted as an 'extremely significant' facilitator by a large proportion of respondents, as was the ability to customise products to suit individual needs. This further highlights the need for improved awareness actions, but also emphasises that users desire high quality products at low costs.

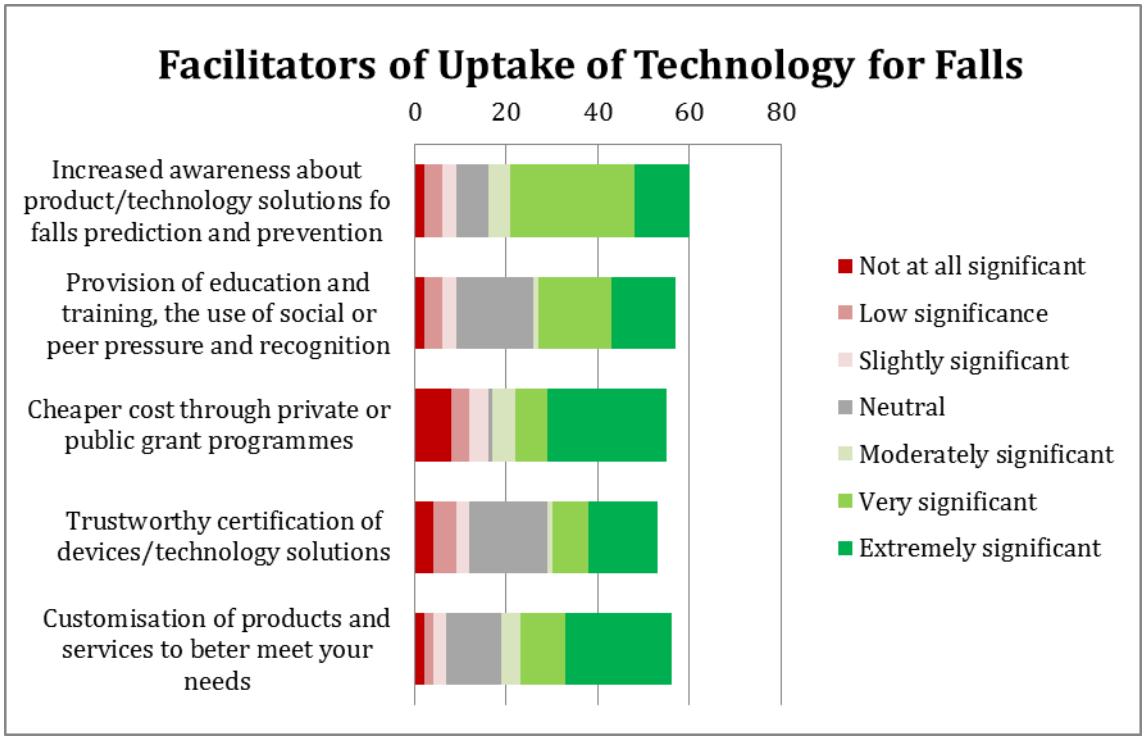

Figure 18. Facilitators to technology uptake reported by the total sample of older adults

The pooled questionnaire data on preferred methods of gaining information on falls-related ICT products is potentially of great value, as it may help to identify strategies to address the issue of poor awareness of such products among end-users. As shown in Figure 19, the older adults surveyed displayed a very strong preference for obtaining this information from healthcare providers. Family and friends were also considered to be largely acceptable sources of information. However, most respondents displayed negative attitudes towards receiving information via mass media outlets, online and particularly via telephone calls from relevant companies. A lack of trust has been noted as a major barrier to health technology usage among older adults [8], which may explain these negative attitudes towards gaining information from unfamiliar sources. It is clear that older adults prefer known and trusted information sources, and thus raising awareness of the existence of ICT solutions for falls among healthcare providers and family/carers and communicating information to these stakeholders regarding the costs, benefits etc. of using such products is vital to achieving awareness and uptake of falls technology among older adults.

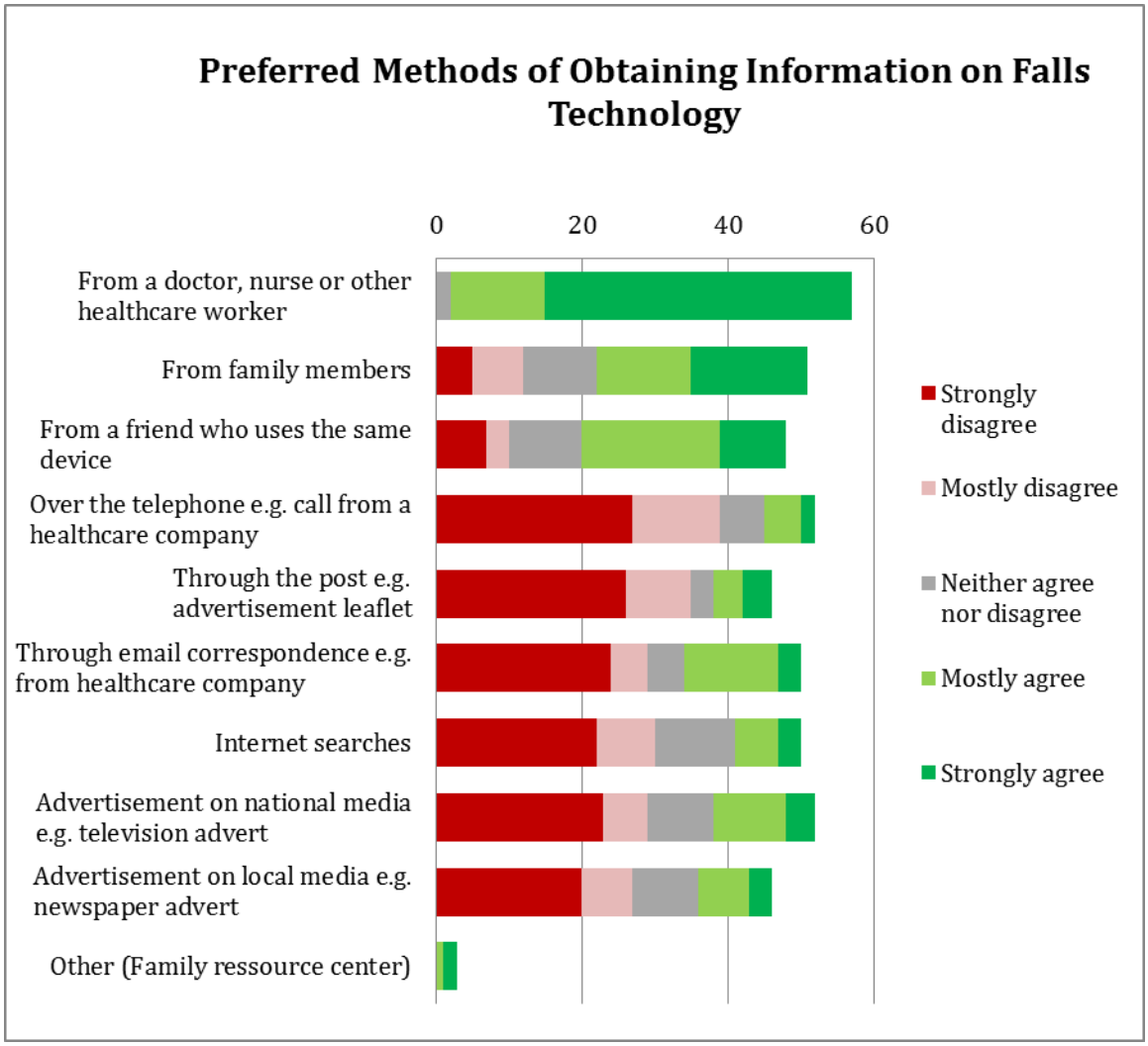

Figure 19. Preferred sources of information on falls products and technologies reported by the total sample of older adults

The responses represent a small sample of older adults in four different European countries. It is important therefore, to take into account that we cannot extrapolate these conclusions to a large part of the EU population. However, these responses offer a clear indication of what is the tendency of older people at present regarding ICT for Falls. Taking these responses into consideration can strengthen communication and awareness strategies towards the right practices to reach a large elderly audience. As it turns out from the responses, the key link to reaching older people is through their doctors, nurses and other health care professionals. Communication and awareness strategies need to be geared towards health professionals who will then transfer this knowledge to the older people.

4.6 Summary

4.6.1 Strengths

- Respondents were from 4 European countries in which falls services are in varying levels of development i.e. falls services are not well-established in Greece, are in the process of being implemented in Ireland, and are highly-developed in Norway and the Netherlands.

4.6.2 Limitations

- Responses from 4 countries were included, thus information relating to awareness, communication and partnerships specific to other European countries may have been missed.

4.6.3 Key Points

- The primary barrier to using technologies for falls noted across all respondents was a lack of awareness that such technologies exist.
- The main facilitator to technology usage was increased awareness of solutions available for such purposes, closely followed by the availability of low-cost solutions.
- Technology usage among the older adults surveyed was primarily in the form of personal alarm systems. The use of such alarms was highly prevalent among the Dutch older adults surveyed (75% of the sample), but was low (25% of the Irish sample) or absent among others (Greece and Norway).
- Healthcare professionals were by far the preferred source of information on falls-related technologies among the older adults surveyed.
- Friends with experience of technology usage and family were the next most preferred source of information.
- Telephone contact (e.g. “cold-calling” from unfamiliar sources) was the least preferred method of receiving information. Internet and traditional media were also viewed unfavourably as information sources by respondents.

4.6.4 Recommendations

- Increasing awareness of ICT solutions among older adults, their families and particularly healthcare professionals must be considered as a priority.
- Healthcare professionals in particular are a vital group with which to develop and enhance partnerships, as they are viewed as an important and trustworthy source of information by potential end users of falls-related ICT solutions.
- Impersonal forms of promoting awareness of or advertising ICT solutions for older adults, such as via telephone, internet or more traditional media outlets, may not be effective methods of communicating with this population.

5. Results and Analysis of Case Studies on Communication, Awareness and Partnership Enhancement Methods

In addition to the questionnaires, all E-NO FALLS partners, as experts in the domain each one from different points of view, were asked to complete a template that requested information about practices and methods they use for disseminating and obtaining information, for raising awareness and creating partnerships. Recognizing the vast variety of experience and expertise in the E-NO FALLS consortium, this method aimed to collect consortium expertise. The detailed methodology of how case studies were conducted is presented in D1.1. The following sections present the results of these case studies.

5.1 Communication Actions

All partners were asked to describe the methods used in their organization to disseminate information about Falls Management related activities. Also, partners were asked to mention the methods that they found more successful or unsuccessful and why. Table 2 presents partner responses about methods to disseminate information.

Partner Name	Methods used to disseminate information
UPC	UPC uses several methods to disseminate information about ICT for Falls. As being a research partner, UPC has been involved in relevant European research projects related to falls (such as FATE, CAALYX-MV, REMPARK, HELP, etc.). According to this, UPC mostly disseminates information via traditional methods for those in academia i.e. conferences, workshops and scientific publications. These events constitute the most traditional way to present results of R&D projects, and can be used to discuss results and possible future developments. The type of audience of these dissemination methods includes research, industry and clinicians. Regarding older people and general public, UPC has contributed in several TV story and press releases, having big impact in national media, including the national TV, web and press national agencies of news. Other methods of dissemination include social networking. UPC has an active Facebook page and a YouTube channel useful for discussing new developments and issues. These tools give us the opportunity to be proactive and reactive and get comments and opinions from the community. The most frequently used methods of dissemination do not lead to desired outcomes. Conference presentations, papers or posters and peer reviewed journal articles are not particularly effective means for encouraging adoption of an innovation. Presenting papers at conferences or in journals has a limited effect and does not produce the desired broad diffusion of an innovation. On the other hand, workshops are considered as a successful dissemination method. Organized focus sessions (working groups, info days, etc.) at local-regional-national level with specific audience, allow us the opportunity to dynamize the dissemination activities among actors in the eHealth value chain with special interest in the falls domain topic. As a recommendation, researchers must be encouraged to go traditional methods of dissemination. Online dissemination methods combined with social networking processes could provide successful propagation mechanisms.
FHP	FHP is a research centre that uses different methods to disseminate the information about ICT for falls. The most traditional and frequently used methods include scientific publications, posters and flyers, conference presentations and workshops

	which mostly addresses the scientific community. The participation in forums such as the AAL Forum and eHealth Forum are also an effective way to disseminate information and establish new partnerships. To address the general public, the information is as well disseminated by means of social media (including FHP website, national TV, radio and press releases), social networking (Facebook, LinkedIn, Twitter and YouTube channel). Besides, FHP regularly conducts tests with end-users that, in addition of keeping them informed about new ICT technologies for falls, also enable us to obtain opinions and adapt our systems to the needs of the elderly population. All the used methods are considered effective among the target group, however, the ones used by means of social media usually achieve a greater part of population causing more impact.
UL	As an academic institution, UL primarily disseminates information about our falls management activities using traditional methods in academia, namely publications in academic journals, conference presentations, workshops etc. The impact of the scientific publications is usually measured by the impact factor of the journal or how many times the article is cited. Other methods are number of downloads or hits. It is difficult to determine how successful some of these methods of dissemination are, as it is not easy to gauge the impact of conference presentations or workshops in terms of implementing changes in practice. Also, these methods are likely to only reach other researchers and clinicians already engaged in this area. One method which was used that was quite effective for targeting healthcare providers was a lecture/workshop followed by a World Café event. The workshop started with a presentation for the local regional branch of the Irish Society of Chartered Physiotherapists (ISCP) (the professional body for physiotherapy in Ireland). The event was successful, with approximately 50 people attending, including most of the physiotherapy managers in acute and community services in the region. The event was also open to other healthcare professionals and a small number of colleagues from nursing, occupational therapy and podiatry backgrounds attended. There was a strong level of interest in our work among attendees, with all participating in the World Café that followed the presentation. Many attendees stayed after the event to continue the discussion. Such an event was probably successful due to the strong clinical focus in our research, and also due to our alignment with the local ISCP branch, which is very active and gains good attendance at its events. As part of an ongoing research project, we have also presented falls information sessions for older people's community groups in the region (e.g. Active Retirement Associations, Probus Clubs, etc.). These sessions focused on general falls education, with some discussions around research and ICT innovations also. Feedback was very positive from those who attended these sessions, while many older adults were surprised and interested to learn of ICT uses in falls, as they were unfamiliar with this prior to the sessions. Informal conversations with healthcare professionals in the region are also used to an extent to disseminate information, as contacts we have who are working in healthcare often enquire about developments in falls research when the opportunity to meet arises. These conversations are mutually beneficial, since we can also enquire about current practices, policy developments and service provision in falls.
COOSS	COOSS usually uses several methods to disseminate information (and raise awareness, see below) about ICT-based solutions, especially for fall prevention and detection. Those methods are related to the triple role played by COOSS: as a Research Centre, COOSS spread information mainly via papers and via public events, through the participation to fairs and exhibitions (AAL Forum, ICT Forum, Health Forum, etc.), through the networking within EU partnerships and communities, in order to achieve scientific stakeholders and potential partners for future researches and initiatives, and to benefit from the exchange of knowledge to deepen the specific matter; as a training agency, COOSS disseminate information via training courses and dedicated workshops with professional caregivers, care operators and direct beneficiaries (elderly, disable persons and families), also introducing the issue of Fall

	Prevention in the training curricula of those profiles, as requirement for qualification (also within the Occupational Safety). In this way, dissemination and awareness scopes are both covered and strongly interconnected. Then, as a social and healthcare services provider, COOSS disseminates information about ICT-based solutions for fall prevention in the social and healthcare services, which are the specific and most interested environments: it means across users and related family (through leaflets, through specific events of focus groups, etc.) in order to get them aware of risks, consequences and procedures as well as with policy and decision makers of the Social and Care System (through meeting and project management) in order to include the process and the tools for Fall Prevention in public tender of social services procurement.
SmH	Smart Homes uses its demonstration house (http://www.smart-homes.nl/Ervaren/De-Slimste-Woning.aspx?lang=en-US) to inform all stakeholders (end-users, care organizations, technology providers, politicians, etc.) about AAL technologies including fall detection and prevention ICT. Every year, approx. 1500 visitors are informed about ICT for Falls. In addition, Smart Homes organises an annual 2-day home automation and smart living event, where at least 3000 visitors can also experience ICT solutions for fall detection and prevention. Furthermore, Smart Homes is a regular guest in radio and television programmes where we inform the general public about - among others - the possibilities of ICT for falls.
NFT	NFT is a privately owned consultant company within the field of Healthcare IT and Telecom and with a main focus on life science. Dissemination is usually performed by the respective client but when requested by the client, NFT may assist with dissemination through its extensive network of collaborating partners and clinicians. Occasionally also by publishing papers in trade journals or participating in conferences or workshops.
FSL	FSL dissemination strategy implies a multi-dimensional approach with different communication tools adapted to the identified target groups to attract the interest and the necessary feedback/involvement from them. Dissemination is addressed to: • elderly users and their families; • hospitals, health organizations, care service providers (including medical experts); • the scientific community; • the citizens and the society at large The framework of dissemination is flexible and subject to changes. Regarding elderly users and their families we organize meetings in small groups with residential and semi-residential patients. An issue of concern is the ecological validity and realism of the experimental simulation. During the meetings we therefore explicitly asked the participants about how realistic they found it. In general, almost all participants reported the simulations to be comparable to real life situations. In hospitals, efficient collaboration between clinicians is crucial for the management of patients. FSL health professionals accurately elicit and synthesize relevant information to other professionals, e.g. physicians, nurses, therapist etc. A fundamental dissemination channel is represented by the participation to conferences, workshops and symposiums and publication of informative and technical articles on different media and technical-scientific magazines. Apart from being present at external conferences and workshops, FSL organises its own workshops and events.
ERL	Tunstall Emergency Response delivers ICT products to older people and those with long-term needs. There are many different methods of dissemination which we find productive but primarily we feel that meetings and the ongoing education of frontline healthcare professionals is the most effective method. We conduct targeted training and education seminars for these people and also disseminate by communication through meetings with senior healthcare managers. We obviously also conduct the usual radio interviews and advertising campaigns in addition to editorial pieces in national press. Finally we conduct targeted campaigns for family members who we

	try to educate through DL leaflets and outbound call campaigns.
TICS	TICSALUT mainly uses workshops for disseminating information about ICT for Falls and also to disseminate the use of Pre-Commercial Procurement as a tool to boost these kind of solutions. This format allows us both to offer information about this subject and about the project progress and also to obtain information from the attendants. Workshops are addressed to the whole ICT-for-Health value chain stakeholders: R&D centres, ICT product developers, medical devices producers, Health service providers, physicians and Public authorities.
FORTH	FORTH disseminates activities through the regular research routes such as scientific publications, conference presentations and papers as well as through workshops at a national as well as at an international level.
NUIG	NUIG uses a number of methods to disseminate information about ICT for Falls. NUIG is a research partner, and is involved in a number of relevant research projects related to falls (FATE, eCAALYX, REMPARK, WIISEL). NUIG most commonly disseminates information via traditional routes for academia i.e. conferences and scientific publications which means the information is normally peer reviewed and the audience includes other researcher, industry and clinicians. Specifically for older people and general public, NUIG has contributed to several radio and print press activities both regional and national within Ireland.
CET	CETEMMSA is a research partner involved in several collaborative projects related to falls (WIISEL, eCAALYX, CAALYX-MV, HAPPY AGEING, etc.). Dissemination of information from these activities is carried out by means of different ways: First of all, the CETEMMSA website is the place where information about all the developed projects including those related with ICT for falls is presented and described in detail. Second, a twitter account (@CETEMMSA) where activities related to health, technology for well-being and living facilities are published for all those users who follow CETEMMSA in this platform. Likewise, a LinkedIn account is also an option of dissemination of information for professionals interested in CETEMMSA activities. In addition, press and digital media releases are periodically published. In this sense, all the releases are a perfect form to show the relevant activities of the developed project (included the ones related with ICT for falls). Each collaborative project has its own website with a periodic update of the activities carried out, and with the opportunity to subscribe to “interest groups”, which allow getting more details and being invited to project events; more than aiming at a wide audience, this means is particularly effective in getting specialized contacts interested in collaborating for further research or implementation of such activities (researchers, clinicians, innovative companies). Different training activities (web seminars, workshops, meetings, etc.) that CETEMMSA offers to the general public are published in specialized internet platforms and also in the web site of the company. As a Technological Centre expert in transferring technology and knowledge to the industry, CETEMMSA has a field sales team visiting potential SME customers, and uses an in-site Smart Showroom to show the concrete outputs from our research projects on ICT for falls, health and wellbeing. CETEMMSA staff attends to national and international workshops, meetings, events and conferences, especially related with technology for assisted living facilities, health and well-being, where the research activities are successfully disseminated by means of visual and oral presentations, proceedings and research papers. CETEMMSA also has organized conferences and meetings inside the health-context where the activities carried out are also disseminated. Additionally, there is a program of in-doors seminars and training where the staff gets information about the technology advances and the project developments including those involving ICT for falls. For internal dissemination of the obtained information CETEMMSA uses a corporative Blog called Good Morning - CETEMMSA. In this platform, which is used

	as a kind of intranet, CETEMMSA chronologically posts relevant health-related information. Here, not only the technology developed inside the company is looking at but also the world technological advances in ICT for health and well-being. This blog allows to the staff to be in touch with the last relevant news regarding not only ICT for falls but also with the different fields concerning to the organization. Finally, regarding the unsuccessful method we found less attractive for the general public those places where people must sign up as a user. According to our experience the media where the information is directly accessible (without complicate sign-in steps) result more attractive for the general public, except in specific project websites, as mentioned before, where "interest groups" allow us getting potential partners for specific collaborations.
SN	SN has approximately 8500 members that are seniors and therefor potential end-users, which we could disseminate information about ICT for Falls to. The strength lies in our large group of members and our regular contact with our members. In addition our network includes e.g. a large number of senior centres and a number of municipalities. Due to the fact that the project was focused on gathering information from researchers, industry and healthcare professionals, using a questionnaire, SN did not focus on the category elderly people and did not disseminate information to them, until now.
AAIF	In this sense, our foundation has often organized focus groups and workshops, with the aim to create and develop networks and stakeholder communities. Invitee lists include those directly concerned by the project, both private individuals (patients, caretakers) as well as representatives of health centres, care centres, emergency centres, specialized health security centres. In addition, we invite academic institutions, universities, hospitals, social authorities (e.g. those offering social support for elders and individuals with disabilities, or associations of retired people), as each of these has a different role in supporting or promoting the project. In these workshops we present the project, its objectives, their role as stakeholders (as we see it) and we collect their feedback and incorporate it in the detailed project scoping and timeline. Periodically, throughout the project (of course, depending on the specificities), we may convene additional meetings with stakeholders, to update them on the project development, intermediary findings, next steps or any material changes that may have occurred (if the case). Again, their feedback is considered and integrated further. From an administrative point of view, we launch the invitations to such meetings by e-mail, and we always follow up by phone (and ask for their RSVP). For the meetings, we prepare info packages on the projects (e.g. brochures, presentations, etc.). Going further, we keep them updated also on a regular basis by email (in addition to the abovementioned meetings) and send them information letters on the projects development. These information letters are also promoted through a dedicated section on our website http://www.brainaging.ro/ro/proiecte-2.
SIV	We communicate with our targeted audience via newsletters, posting news on www.siveco.ro and our social media accounts. We have Facebook, LinkedIn, Twitter account dedicated to the company.
CHA	Like the University of Limerick, Charité is an academic institution, and primarily disseminates information about their research activities through "traditional methods in academia": publications in academic journals (online available via US National Library of Medicine National Institutes of Health http://www.ncbi.nlm.nih.gov/pubmed/), but also in popular journals (like E-HEALTH-COM) and conference presentations. For the measurement of impact of academic scientific publications the impact factor of the journal is used. For other measurement methods please see also UL. Another "new" indicator could be the citations and hits at www.reasearchgate.net (ResearchGate is a network dedicated to science and research where participants can connect, collaborate and discover scientific publications, jobs and conferences). Through the distribution of the questionnaire we got contact to interested health

	insurance companies which in Germany are mainly in charge for paying medical solution in AAL like fall prevention and intervention technologies. For this reason the contacts are very important to call attention of health insurance companies on these prevention and intervention methods. Furthermore, we have our website to report about new research (projects), publication or other news from our Centre (http://telemedizin.charite.de), e.g. in 2014 the website had more than 5,000 different visitors (traffic). Our main working area is remote patient management of chronic patients; at the moment of chronic heart failure patients, which are mostly 65 years and older. But in future it may be possible that we enhance our care programmes (due to co-morbidites) and that we are going to use fall prevention/intervention technologies as well.
NEN	NEN mainly uses workshops and seminars to disseminate information on ICT based solutions for falls prevention and management. Through participating at the relevant workshops and seminars we disseminate information from the E-NO FALLS and PROFOUND projects. In 2013 NEN participated in the following: Technology Meeting Care in the Neighbourhoods 'The user is central' (15 March), Platform New Care 'Innovation of care in big cities' (27 March), Netherlands Congress of Public Healthcare 'Passion for health' (4 April), Healthcare and Technique seminar 'Move to prevent falls' (23 April), Medical Delta Seminar 'Active and healthy aging' (26 April) and the National Falls Symposium (12 December). Flyers of the E-NO FALLS project are distributed to interested participants. In the National Falls Symposium NEN had an oral and a poster presentation.
McR	McRobert is an SME and we are involved in the development of innovative methods to measure physical function and physical activity including fall detection and fall risk using body worn sensors. We are active in this field since 1991. We are involved in fall prevention since the FP6 project SENSACTIONAL. To further develop our products we are closely cooperating with scientific partners and we try to organize projects in which we test and further develop our products in the clinical practice. We have successfully realized projects in three care homes and in the community. We have been able to get financial support from two health insurance companies (Agis and Achmea) which are strategic partners in this field. The most relevant project so far is realized in cooperation with the faculty of movement sciences of the VU University Amsterdam. In this project a new method has been developed to improve prediction of falls using our activity monitor. In our vision this method could be a cornerstone for fall prevention as methods to identify older adults with fall risk fast objectively do not exist. As this method looks promising we further would like to improve the method and implement the method in clinical practice. The department of geriatrics of the VU medical centre has decided to implement our devices and methods in the clinical pathway through the mobility outpatient clinic. Several other clinics in the periphery are asked to join. The clinics involved are developing a network of physical therapy practices to develop treatment opportunities for the patients after having been diagnosed in the clinic. We are continuing to develop and improve this method as we think the objective element is important as it is based on assessment in daily life. At the same time we are trying to find out if this fall risk outcome can be used to evaluate and compare fall prevention interventions in a Horizon 2020 call. Part of this project is to define a core outcome set for fall prevention. The ultimate and realistic goal is to make it available for implementation in prevention. Ambulatory monitoring has shown the importance of physical activity for healthy ageing. In The Netherlands our experience with the uptake of this technology in secondary care (hospitals) is more successful than in home care. The next step is to integrate these new insights in primary care. Although we have successfully realized three projects in care homes there is not much follow up yet. This is remarkable as in The Netherlands the criteria for admission to care homes has been changed so for less impaired persons another solution has to be found. But as far as we know there is no policy developed to fill

	this gap. I think that care homes are not used to innovate and are more used to care about their residents than to improve their functional capacity.

Table 2. Dissemination methods

Partners were asked to describe the methods used in their organization to obtain information about Falls Management related activities. Also, partners were asked to mention the methods they found more or less successful and why. Table 3 presents partner responses about the methods used to obtain information.

Partner Name	Methods to obtain information
UPC	The most frequently accessed source of information on falls-related ICT solutions used by researcher from UPC are the internet searches and the online dissemination mechanisms. Nevertheless, other dissemination methods such as academic databases are also frequently used.
FHP	The most common methods to obtain information about falls are scientific publications, conferences and workshops. The involvement with several thematic networks related to falls such as E-NO FALLS, PROFOUND and European Projects such as REMPARK and eCAALYX are also availed as a mean of sharing information on the subject of falls. Moreover, FHP also accounts with the collaboration of several specialized professionals such as professors, doctors and therapists. Recently, FHP has created a platform called “Colaborar” in order to gather the end-user’s opinion and understand the acceptance with respect to the new technology and thus optimize our technologies according to the user’s needs. This information is collected through surveys, interviews, group sessions, observation, usability tests or evaluation of user experience, among others. The social networking works as a way to disseminate information and also to obtain reader’s opinion and feedback.
UL	UL researchers frequently access academic literature and attend conferences and workshops relating to falls management. Internet searches are probably the most frequently used method for keeping up to date on for recent developments in falls, including news stories which may be of relevance. Conversations and meetings with healthcare providers in the region and nearby regions are also very effective for gaining information about current practices and developments in falls from clinical and service provision perspectives. These meetings mainly come about through research partnerships between UL and public healthcare providers, continuing professional development workshops run or attended by clinicians working in UL, and via contact from UL staff with healthcare providers during UL student clinical placements.
COOSS	COOSS Researchers usually gather information about ICT solutions for fall prevention and detection by attending workshops, events and by the study of publications and papers. COOSS has also directly experienced the field test of several device and solutions, deployed and tested in COOSS’ sheltered accommodations for elderly and in healthcare premises. Devices mainly came from EU funded project, as CAALYX (FP6), CONFIDENCE (FP7) and the running project FATE (CIP ICT-PSP). Significant insights about falls detection and methods of prevention come from the feedback of caregivers and operators employed by COOSS and working every day with users at risk of fall; investigations carried out by COOSS researcher in close cooperation with professional caregivers contributed to create a knowledge about the targeted phenomenon and it represent a useful way to monitor the innovation in the specific field.

	Also the cooperation/networking with National and Local Health Institutions involved in rehabilitation of elderly (e.g. INRCA, Santo Stefano) is a mean for the collection of information, data, opinions and feedbacks.
SmH	Smart Homes is a member of the fall prevention network in The Netherlands where information about ICT for Falls is gathered. In addition, Smart Homes coordinates research projects for SME's (Innovatie Prestatie Contracten - IPC) and several projects involved ICT for falls. Thereby, Smart Homes gathers information first hand on innovations in ICT for falls. The most successful method to gather information is the Dutch fall prevention network, their newsletter and the annual conference on falls.
NFT	NFT primarily use Internet facts gathering and then verify/fine tune the findings within its network of collaborating partners and clinicians.
FSL	FSL health professionals gain information through participations in conferences and thematic workshop. Besides, physicians gain medical knowledge through self continuum teaching of literature and guidelines regarding a specific topic.
ERL	Through participating in workshops and conferences with other stakeholders in Falls Management in Ireland we collect information about activities going on in the field. As part of Tunstall, a global organization, we access to work being done in the areas of falls detection and prevention by our partners worldwide.
TICS	The main interest in from TICSALUT in E-NO FALLS, as a public authority, is to analyse the use of PCP and PPI as potential tools to enhance the ICT for Health market. Information is gathered mainly from other's experiences (ICT PCP projects, PCP calls, etc.) and is obtained mainly from the European Commission or projects websites. We also obtain information during our dissemination activities.
FORTH	FORTH is a research centre so the majority of information is incoming through participation in research activities such as participation in conferences, research projects, research proposals, scientific publications. EU projects are a great way to gain information in a particular field through interaction of different stakeholders as well as the knowledge obtained through personal research for specific tasks and deliverables. Information is also obtained through exchanges within FORTH between the different departments that have similar interests. FORTH is also an active member of the action group A2 of the European Innovation Partnership on Active and Healthy Ageing (EIP-AHA). Discussions and meetings within the action group is also a way to obtain information about relevant Falls Management activities.
NUIG	The most common source of information on falls-related ICT related solutions used by researchers at NUIG is the internet in general, specifically scientific academic databases.
CET	In general, the CETEMMSA staff has internet access to search information for the different developed projects. Open access journals are constantly visited in order to obtain the last news and advances in the different topics encompassed in the CETEMMSA main areas of focus. In addition, there are also some subscriptions to journals and websites than can provide relevant information in technological fields including those related to ICT for falls. All the staff involved in ICT for falls subjects can access to all these tools to gain information. The R&D CETEMMSA staff attends periodically to different meetings and workshops where they gain information about new and already established technologies. Being involved in collaborative National and European projects related to e-health and falls is an excellent means for staying at the forefront of the technology. Moreover, acting as an expert in specific work groups related to smart textiles for health & wellbeing (e.g. European Technology Platform for Textiles & Clothing) also allows CETEMMSA to gain information on ICT for health including falls. CETEMMSA finds these tools quite successful. Nevertheless, the discrimination of reliable information is always a challenge when having any subject of study in the initial steps of development.

SN	SN will start with a workshop where we will meet a small group of seniors. The goal is to collect information by using the questionnaire targeting elderly people, which was produced for this E-NO FALLS project. When needed, SN could collect information from a larger group of seniors at a later stage.
AAIF	In general we collect our information directly from our patients (our memory clinic has a large database with frail elder peoples) using some questions made especially for this kind of projects. We also extract the information considered important for this project from the internet databases (other European Projects similar with this one, public studies and publication in the field), from the healthcare professionals who work with us and others in conference meetings.
SIV	Organize meetings (workshops, working-groups and conferences) to dynamize and energize the collaboration, sharing information and exchange of best practices among the Network's partners and members. This will allow generating the recommendations, toolkits, guidelines, and roadmaps the project addresses.
CHA	The most information we obtain about fall prevention/ intervention is via academic literature and conferences, but also via newsletters about AAL, healthcare and healthcare technologies. Especially the newsletters are helpful to be up-to-date about actual research and development in this area.
NEN	NEN participates in workshops and seminars to get to know the stakeholders in falls prevention and management in the Netherlands, to learn about new ICT solutions for falls prevention and management and discuss standardization issues. NEN facilitates the CEN/TC 251 and the ISO/TC 215 on health informatics and therefore has access to all standards and work items on medical records, messaging and interoperability.
McR	The main sources of information are scientific papers, congresses, social media and contacts with our partners who are active in health care and have an interest in healthy ageing for the ageing population and chronic diseases.

Table 3. Methods for obtaining information

5.2 Awareness Actions

Partners were asked to describe the methods used in their organization to raise awareness about Falls Management related activities. Also, partners were asked to mention the methods they found more or less successful and why. Table 4 presents partner responses.

Partner Name	Raising awareness actions
UPC	For users and clinicians, the most often used and most successful promotion methods to raise awareness about ICT for Falls are conferences, demonstrations and press releases. Social networking and online promotion methods are also used. Nevertheless, as being researchers, the most often used promotion methods are those used in academia i.e. conferences, workshops and scientific publications.
FHP	The most successful methods used to raise awareness are scientific papers, oral presentations, organizing workshops and demonstrations. The social media (TV, press releases) is also an important method to address the general population. For the end-users group, the network "Colaborar" is an effective way to alert end-users for the importance of new technologies used to prevent and detect falls.
UL	From an academic perspective, conference presentations are probably the most effective way of raising awareness among other researchers or healthcare providers with research interests. For those working in healthcare, the workshop for local healthcare professionals was very effective in raising awareness of UL's falls-related activities. For older people, the education sessions we ran among older people's groups, as well as qualitative and quantitative research studies which involved the participation of some older people from local regions were very effective at raising awareness, although they do not necessarily reach a large audience.
COOSS	To raise awareness about innovative and more effective solutions for fall prevention, COOSS follows generally to ways: the first, the scientific one, is based on the publication of papers and the direct exchange of experience during workshops and conferences; the second way is based on the training sessions COOSS carries on devoted to direct operators and professional caregivers. By these two ways, there is a significant involvement of different target groups: Public Authorities, industries and healthcare stakeholders are involved and made aware about fall prevention methods during direct exchange of experience, and showing evidences collected by COOSS during EU projects activities. While during the training sessions there is a direct transfer of information to those who have to deal with persons at risk of falling, and consequently awareness campaigns can reach their goals. In order to raise awareness of direct beneficiary (elderly and families) a method used by COOSS is related to the organization of Focus Group with family and elderly, most of time within the daily or residential facilities; the Focus Group is aimed at discussing, brainstorming, informing and, therefore, getting aware the participants to specific theme. Quite often, such a technique is exploited before starting a pilot trials with elderly, so to increase their awareness on the issue before testing the ICT solution.
SmH	The most successful method is by oral presentations, either at the Smart Homes demonstration house or at conferences.
NFT	NFT primarily use personal communication within its network of collaborating partners and clinicians.
FSL	FSL provide information on ICT for fall prevention for both inpatients and outpatients. For outpatients is available an ambulatory dedicated to high risk subjects providing a target multidimensional approach to reduce risk of fall. It includes technological

	devices derived from experimental studies, both for evaluation and treatment. For inpatients are available posters for raise awareness on actions to undertake for fall prevention in general, and periodic communications on ICT based strategies available in the research field.
ERL	The majority of the information we gather is primarily from two sources. The first and most productive source is from healthcare professionals whom we speak to on a daily basis. The information that we gather from them allows us to be more informed as to any patterns which may be emerging in respect of a particular client and their conditions. This is also embellished by family members who will provide us with ancillary information in relation to the person they are caring for. In tandem our own software system assists us in establishing patterns in terms of falls from a particular client and compliments the anecdotal evidence as per above.
TICS	As stated above, according to TICSALUT interests and main participation in E-NO FALLS that is to explore the use of Procurement as a catalyst of ICT for falls, our awareness actions inside the project are more about to promote the use of PCP and PPI than for promoting ICT for Fall prevention itself. Anyway, as the promotion of ICT for Health is our Business Core we take advantage of our day to day activities and our networking and showcase activities (fairs and forum attendance, national and international project meetings, meetings with public authorities, etc.) to raise awareness about the use of ICT for Health and also ICT for Falls.
FORTH	FORTH has organized workshops for experts and the community in order to raise awareness about falls management issues. The clustering event was very successful because it brought together the relevant projects currently active in the EU about falls management as well as other projects in the broader area of personalized health systems. As a result there has been a cross boundary exchange of information about the different projects and possible synergies have been explored. This is an effective way to raise awareness as well as discuss similar issues encountered within projects. In addition, FORTH organizes workshops for the community. As Greece does not have a social policy about Falls management, E-NO FALLS created an opportunity to establish partnerships with key stakeholders and organize a local workshop to disseminate information and raise awareness in the elderly population within one of the villages in Crete. Material from PROFOUND was given to participants in reference to self-exercise programs. Face to face contact we find as very successful methods to raise awareness and discuss the different issues involved in Falls management. Also, creation of communities using social media and mailing list contributes to maintaining active and effective the awareness actions since the information exchange is not one-spot but it is continued over time. However, we find that it is more difficult to engage stakeholders in this way in an active way. FORTH is also an active member of the action group A2 of the European Innovation Partnership on Active and Healthy Ageing (EIP-AHA). EIP-AHA meetings and activities is a great way to raise awareness within a group of experts about the different issues and problems that are involved in this domain. The only problem with this approach is that, as it is based on own funding, it is often difficult to attend all meetings due to limited resources.
NUIG	The most commonly used promotional methods to raise awareness about ICT for Falls are scientific papers, conferences and press releases. Social networking and online promotion methods are also occasionally used.
CET	As it was previously mentioned, CETEMMSA has a corporative blog (Good morning – CETEMMSA), which is used as an awareness tool since all the information regarding the health-related technologies is periodically posted. CETEMMSA can also send massive emails (Emailing) to all the staff. Thus, relevant updated information can arrive to those people inside the company who has especial interest in not only ICT for falls but also in others applications for health, well-being and assisted living facilities. In addition, the program of internal seminars, where R&D staff explains the advances in the different projects to the

	coworkers, is a very useful tool to create awareness about ICT for fall. In addition, there is also a training program for the staff where occasionally some subjects have to do with ICT for fall. CETEMMSA found all these methods very useful to raise the knowledge about ICT for fall. We do not distinguish which of them is the less useful, but we can recommend the program of periodic internal seminars in order to make people aware of the actual situation of the different technologies.
SN	The method we very successfully use to raise awareness about ICT for Falls are demonstrations and direct contact with end-users. The reason for successfully raising awareness is that they can see/feel/try it for them self. Not from a picture or PowerPoint presentation but in real live.
AAIF	An important tool to raise awareness is the information posted on our website (http://www.brainaging.ro/ro/proiecte-2) which is periodically updated. Another method used is by oral presentations, posters presented at different medical conferences and workshops.
SIV	Using the media – local newspapers, newsletters, and websites - is a great way to promote the project (and any events you might be holding). They can reach a large audience in a short time, which is why it is important you provide them with clear and accurate information.
CHA	Besides conference presentations, CHA uses informal or formal conversation with employees of health insurance companies, nursing homes and other healthcare providers to raise awareness about this issue. Especially informal conversations at conferences or during workshops are very useful.
NEN	NEN raises awareness on standards related to health informatics, medical technology and healthcare, including ICT solutions for falls prevention and management.
McR	The dissemination of this method is through scientific publication and scientific congresses and through the Dutch Network for Fall Prevention. The questionnaire of E-NO FALLS is disseminated through the newsletter of the Network. Recently we have presented our methods and results in a workshop of a meeting from this network. We have presented our work during a symposium for self-management and prevention for geriatrics of a big organization for home care and rehabilitation (Solis). After this presentation we are invited to write an article in the Dutch journal of geriatrics.

Table 4. Actions for raising awareness

5.3 Enhancement of Partnerships

Partners were asked to describe the actions used in their organization to enhance partnerships among different stakeholders, the methods they found more successful or less and why. Partner responses are presented in Table 5.

Partner Name	Partnership enhancing methods
UPC	In order to enhance partnership and cooperation, UPC uses different methods and actions. Networking activities during the projects (workshops, focus groups, roadmap meetings) are used to share knowledge, expertise, resources, experiences and to enhance partnership among the different actors in the eHealth value chain with special interest in the falls domain topic.
FHP	In order to enhance and promote partnerships, FHP actively participates in conferences and workshops and exchange ideas and information with other partners. Besides, FHP frequently organizes thematic events and invites several experts in the area ICT for falls to strengthen ties and promote new partnerships. The active participation in projects within the field of the falls, Internal and European Projects, and participation in international events such as the AAL Forum and eHealth Forum are some of the most effective ways to enhance partnerships.
UL	Enhancing partnerships with other researchers has largely been achieved via collaboration on European projects. Partnerships have also developed via academic conferences, where meetings with other researchers who share an interest in falls can occur. Meeting with healthcare professionals to establish research partnerships has been very effective over the last number of years, with a number of clinical contacts gained and many completed or ongoing research projects established. Feedback from the healthcare professionals involved was very positive, since many expressed an interest in engaging in research but lack the time to pursue their own research interests due the pressures of their caseloads. The research projects established have very much been collaborative efforts, with significant planning and discussions around the feasibility of the projects and the roles of all involved. Partnerships with older people's community organisations have also been mutually beneficial, since UL can provide information and education sessions to interested members, while many of these people become involved as participants in UL research projects.
COOSS	A list of actions carried on by COOSS to enhance partnerships can be: - Focus group with elderly and family members and caregivers and other profiles involved in the service (e.g. Psychologist, physiotherapist, nurses, family doctor) - Meeting with policy and decision makers of Health and Care system - Participation to EU call for proposals in partnership with stakeholders (public, private non profit, private profit) all involved in the issue - Participation to fairs, exhibitions, forums to present COOSS' experience, to learn about other experiences and to find good practices to merge - Networking and closing alliances with: SME of the ICT sector; and Universities (Camerino/Politecnica) Studying, analyzing and reading researches and reports, in order to keep always update about new and innovative solution
SmH	Partnerships are made in the IPC projects and in our partner community of 130 SMEs, care organizations, knowledge institutes, etc. (see http://www.smart-homes.nl/Samenwerken.aspx). Smart Homes organizes events for the partners where they meet and network.
NFT	NFT primarily use personal communication within its network of collaborating

	partners and clinicians.
FSL	In order to enhance partnership and cross-sector collaboration with medical professionals, institutions, user associations and other no profit organization we promote thematic events, workshops, conferences to share information with different experts. Also, another activity to enhance partnership is the participation in EU dedicated activities. FSL participate in Action group A2 of the European Innovation Partnership on Active and Healthy Ageing (EIP-AHA) focused on falls prevention and management.
ERL	Though our active participation in EU projects we have forged partnerships with stakeholders in Falls Management in Ireland. Networking at conferences and workshops help us build partnerships with a wide range of stakeholders.
TICS	TICSALUT attendance at numerous conferences in the field of e-Health and also our participation as a speakers in different events, allows us to maintain and enhance partnership among different stakeholders. As part of its mission TICSALUT promotes direct meetings between the industry (ICT, health devices, etc.) and Health providers. Also, every year we organize 2 main events with broad attendance of all stakeholders in Health and ICT sectors: (1) “Jornades R+D+I en TIC I Salut” (http://www.jornadaticsalut.com/en/): The conference is intended to draw attention to the trends and projects of research in ICT applied to health (eHealth) and to social welfare that are being performed in the territories in the Pyrenees-Mediterranean Euroregion and to encourage international knowledge transfer. (2) “Map of Trends in ICT and health”: The TICSALUT Foundation, with the aim of objectively determining the level of adoption of ICT by healthcare organisations in Catalonia, has since 2007 conducted the annual survey “Map of Trends in ICT and health”, commissioned by the Ministry of Health. This is a reference document for the health sector, providing a view of the current reality and the development of ICT in the network of Catalan public health and social centres. The Map of Trends is presented annually at a public event, which offers the results of the ICT and Health Survey in Catalonia, the annual monograph which complements the survey and the analysis of the main international trends. We take part in European projects developing ICTs in health and we promote technological alliances with regions and networks around the world. TICSALUT is part of the Catalonia Health Technology Cluster which main aim is to promote competitiveness in this sector’s value chain. In fact in Catalonia health technologies now add up more than 300 companies and agents, a joint turnover of 3,600 million euros and nearly 15,000 workers. ALLIANCES, NETWORKS AND AGREEMENTS In accordance with the will of the Department of Health to encourage participation in national and international collaboration projects while increasing the recognition of the actions it carries out, the Fundació TICSALUT has set up strategic relationships with different organisations and territories: World Health Organisation (WHO), Canada Health Infoway, European Commission, HIMSS, The e-Health Scientific Society, European MHealth Alliance, European Health Telematics Association (EHTEL), Sociedad Española de Informática de la Salud (SEIS - Spanish Health ICT Society), Continua Health Alliance.
FORTH	EU projects are used as a starting point to involve different stakeholders and create partnerships in the field of Falls management. There are different levels of these partnerships and FORTH is active in a number of them. First, within FORTH different departments with similar interests are brought together to discuss activities about Falls management. Based on personal relationships the relevant stakeholders from surrounding institutions such as the University of Crete creating a collaboration outside of the limits of FORTH. This expands towards the community by signing collaboration agreements with the regional health authorities which in turn gives access to the different health care institutions. Within EU

	projects further connections are established with the municipality and the regional governance in order to mobilize the stakeholders who can contribute to the Falls Management activities. Action group A2 of the European Innovation Partnership on Active and Healthy Ageing (EIP-AHA) is a good way to enhance partnerships as people from different back grounds and expertise are gathered together to exchange information and discuss themes within the Falls Management domain.
NUIG	NUIG uses a number different approaches to enhancing partnerships, focus groups, public meeting to share knowledge, expertise, experiences and to enhance and develop new partnerships with those with a special interest in ICT and the area falls.
CET	The best alternative employed for CETEMMSA to create and enhance partnerships is the staff attendance to workshops, meetings, conferences, exhibitions and all kind of researching events especially focused on the technological fields interesting for the company. Moreover, being involved in ICT collaborative projects, and being member of European Technology Platforms is an excellent way of building partnerships for further research and development activities. From the CETEMMSA point of view all the marketing activities are a key instrument for the partnership promotion.
SN	Seniornett actively participates in both national and international projects within the field of the falls. We also participate in events such as the AAL Forum and eHealth Forum.
AAIF	For Enhancing Partnerships our organization attends at scientific workshops, meetings, events in our country and in other European countries. We also discuss and publish our activities and points of interest through media – TV, newspapers- so that different and potential stakeholders could know and join us in this project.
SIV	SIVECO uses different methods and actions: workshops, focus groups, roadmap meetings to share knowledge, expertise, resources, experiences.
CHA	Partnerships with other research are mostly enhanced via research and development projects, in Europe and Germany. Due to this projects contacts with other healthcare providers and health insurance companies were established. But also at conference (not always scientific conferences) and exhibitions (e.g. in Germany: MEDICA or ConHIT) are useful to establish new partnerships.
NEN	NEN facilitates the standardization activities on medical technology, health informatics and healthcare. Various standardization committees develop standards relevant for ICT solutions for falls prevention. The standardization committees include stakeholders from health care organisations, policy makers, auditing organisations, industries and patient representatives.
McR	From our role as an innovative SME our partnerships are focused on the further development of the clinical solutions for active and healthy ageing. We develop partnerships for clinical research and clinical implantation as described above.

Table 5. Actions for enhancing partnerships

5.4 Effectiveness Measures

All partners were asked to describe the methods used in their organization to measure the effectiveness of awareness actions about Falls Management. The results are presented in Table 6.

Partner Name	Measures of effectiveness of awareness
UPC	There are a variety of methods used to measure effectiveness of awareness actions. Evaluation reports and users feedback are the most frequently used methods. Nevertheless, social networking allow our organization to measure the effectiveness of the online campaigns by collecting data of the tools provided by the online channels themselves – for instance, Facebook provides useful information about how many people are reading and interacting with each post and Google Analytics allows us tracking websites readership and seeing the value of traffic by geography, referral, campaign, and many other dimensions.
FHP	To measure the effectiveness of awareness actions, FHP uses several statistics, including the analysis of: - The number of attendants in our conferences and workshops; - The number of scientific publications; - The number of citations and the score of the scientific publications; - The number of people with active participation in “Colaborar” network; - The number of contacts of partners interested in establishing a partnership; - The number of delivered leaflets; - Social networking activity and statistics; - Number of visitors of FHP website; - Number of user using our APPs.
UL	Attendances and workshops and numbers of respondents to advertisements for research participants are useful measures of the level of awareness of these activities. Feedback from workshop attendees and research participants are used to establish the effectiveness of those techniques. Informal reports provide very valuable information on what aspects of the workshops/education sessions work/don’t work. For academic publications, citations or views on ResearchGate can be useful to determine the reach of the piece of work.
COOSS	COOSS strategies and methods to evaluate the impact of its awareness actions are based on numeric principles and on qualitative criteria; from a numeric side, COOSS evaluates its actions by numbering persons contacted during conferences and papers and publications provided; according to the methodology expressed above (two ways to raise awareness) COOSS also can number the attendees of its training courses devoted to inform professional caregivers about innovative solutions. The number of elderly people and related family members who have been involved in Focus Group, in field trials, in tests and validation of ICT tools. Also, the number of new proposals developed and designed with EU and local partners is a criteria of measurement as it provides a feedback about the state of the attention and awareness on the issue. From a qualitative side, there are also several criteria that COOSS applies to evaluate its activities, i.e. the stakeholders asking for further cooperation and partnerships, the quality of information exchanged and gathered, the access to thematic network and the cooperation with Public Authorities and NHS institutes, the quality and appropriateness of articles, papers, publications and reports realized by COOSS.
SmH	Smart Homes uses a variety of dissemination strategies and is developing communication procedures that are quantifiable as such that we can measure the

	effectiveness of our awareness actions.
NFT	NFT use the feedback from its network of collaborating partners and clinicians to measure effectiveness of awareness actions.
FSL	There are different ways to measure effectiveness of awareness actions. We take in consideration especially number of participants in the events we organized, positive feedbacks from experts, new requests of cooperation.
ERL	Tunstall Emergency Response measures the effectiveness of awareness actions in the area of Falls Management. Primarily we measure the feedback from any press releases we conduct and also we use Google Analytics to identify patterns or trends based upon our dissemination activities
TICS	Beyond the scope of E-NO FALLS, TICSALUT does not do specific dissemination activities addressed to Falls but addressed to the eHealth sector. Given the broad nature of the media used in our communication activities, we use different methods as, for example, counting the number of attendees, counting the number of answer to a poll, counting the number of readers in one publication, etc.
FORTH	The number of attendees in each meeting is currently an indicator of how well the actions have been received.
NUIG	NUIG has no specific metric to assess the effectiveness of awareness actions. We collection information at focus groups and see increased web and email enquires in response to dissemination activities.
CET	There are specific indicators allowing the measurement of the internal dissemination of the information in CETEMMSA. We pay special attention to the number of intranet entries and posts in the Good morning – CETEMMSA Blog when health, wellbeing, assisted-living facilities subjects are published. Thus, it is possible to get a feedback from the staff about the level of knowledge and implication with regards to technology for health and well-being. There also exists an operational committee where a periodical evaluation of the awareness actions is carried out. Last but not less, we consider important to mention that the number of enquiries made via website and email involving ICT for falls is going to be a potential indicator for evaluation of dissemination of the information.
SN	SN uses basically 2 ways of measuring effectiveness of awareness actions. The first is through end-user testing which shows direct result of awareness. The second way is by practical workshop where they can see/feel/try some technology for falls prevention.
AAIF	We used for measuring effectiveness of awareness actions different methods such us the feedback from those who attended to our workshops and scientific meetings, the numbers of emails regarding our activity in this field, the activity on different social networks like LinkedIn and Facebook – who provide information about the interesting of peoples in prevent falls in elderly. We also periodically ask our physicians (which are specialized in geriatrics) if there is an increase interest in ICT falls prevention methods. This is considered a very important point in our evaluation because the success of eHealth methods in falls prevention depends of the clinicians adherence to this subject.
SIV	Brand awareness is a measure of how recognizable your brand is to your target audience. Use powerful and compelling words to drive your message home. Treat social media as a long term and cumulative process instead of a quick fix. Use blogging as a first tool for B2B social media success, LinkedIn like as a second tool for B2B and Twitter as a third tool.
CHA	The number of citation of our scientific publication, but also from our news (at our website) and the traffic on our websites are indicators of the effectiveness of awareness.
NEN	The number of attendees in the standardization committees and the seminars attended is an indicator of the dissemination activities of NEN.
McR	The medical market is a slow market but the awareness of the public of monitoring of physical activity using inertial sensors accelerated as these sensors are included in smart phones and the smart phone industry sees this as a potential market.

	Apple has added a dedicated processor in the iPhone recently. McRoberts uses no formal procedures to measure awareness but we notice the growing positive reactions of the clinical market to our products and solutions. For the clinical market it is important that our products work properly and supply relevant information to improve the clinical pathways to make our solutions sustainable.

Table 6. Measuring effectiveness of awareness actions

5.5 Analysis of E-NO FALLS Partner Responses

Partner responses were analysed based on the type of organization that they represented and also on the frequency a particular practice was used among partners. These responses were grouped together and are presented below.

5.5.1 Dissemination and Awareness methods

E-NO FALLS partners fall in three main categories of organizations: research; clinicians/users and companies. There are 9 research organizations, 4 clinician/user organizations and 5 companies represented in the E-NO FALLS consortium. All organizations filled out a table describing their dissemination, communication and awareness activities. The analysis of the results is presented below.

All organizations use as a method of raising awareness and disseminating information the traditionally scientific route which includes scientific papers, oral presentations or posters in conferences, demonstrations and press releases. As a more targeted approach, workshops and demonstrations are considered effective methods to raise awareness and disseminate information to different target audiences including researchers, public health authorities, companies, health care professionals and elderly persons.

In general, all respondents mentioned the importance of targeting different audiences that are participating in falls management activities. A list of stakeholders in addition to those mentioned above, also includes, academic institutions, universities, hospitals, social authorities (e.g. those offering social support for elders and individuals with disabilities, or associations of retired people), health centres, care centres, emergency centres, specialized health security centres. The elderly population in particular can be targeted through research, for testing new products, or conducting research studies that requires the engagement of elderly people, introducing to them knowledge about fall prevention but also ICT for fall prevention.

European research projects related to falls (such as FATE, CAALYX-MV, REMPARK, HELP, etc.) and traditionally academic routes such as conferences, workshops and scientific publications, posters and flyers, and workshops are used for disseminating information. Also, participation thematic events and international and national forums such as the AALForum and eHealthForum offer the opportunity to open technologies and information to a wider audience who can experience first-hand technologies for fall management.

Information about technologies for fall management can also be passed through an indirect route. Events such as workshops or focus groups can be mainly about general falls education, with some discussions around research and ICT innovations also. Feedback from these sessions is very positive, as they provide information to older adults that are often surprised as well as

interested to learn about technologies used in falls. Often older people are unfamiliar with these topics and such events help to disseminate information and raise awareness.

Researchers find that conference presentations are probably the most effective way of raising awareness among other researchers or healthcare providers with research interests. Also, conference settings provide the necessary environment for informal and formal conversation with various stakeholders such as health insurance companies, nursing homes and other healthcare providers. Overall, informal conversations at conferences or during workshops were regarded as very useful. Through the one to one informal interactions important information and knowledge is passed on based on the particular interests and concerns of the people involved in the conversation.

Health provider organizations and companies pointed out the importance of direct exchange of experience as well as evidence-based communications to raise awareness. Direct exchange of experience occurs during workshops and conferences as well as through training sessions for professional caregivers, public authorities, and the industry. The elderly population and their families are targeted through focus groups which offer a medium for brainstorming, and raising awareness about a specific theme.

Training courses and dedicated workshops with professional caregivers, care operators and direct beneficiaries such as elderly, disable persons and families, can involve dedicated sessions to fall prevention as a requirement for qualification. In this way, dissemination and awareness scopes are both covered and strongly interconnected.

Training is also important for companies. In-doors seminars and training offer the opportunity to staff to be updated and get information about the technology advances and the project developments including those involving ICT for falls. A platform in the form of a corporative blog can be used to post relevant health-related information, and allows staff to be in touch with the last relevant news concerning the organization.

Demonstrations and direct contact with end-users is considered successful because users have the opportunity to experience products hands on, engaging with them through seeing, feeling and trying. This can also occur within research studies that require usability tests for technology development. While participants receive information about the technologies, developers can obtain opinions and adapt systems to the needs of the elderly population.

Companies use similar methods for raising awareness to those used by research and healthcare organizations, including oral presentations, and demonstrations at conferences as well as scientific publications. In addition, companies may raise awareness within their organization using personal communication within their network, emails to their staff, corporative blog and programs of internal seminars and trainings to inform co-workers.

To raise awareness of a broader audience, companies participate in networking and showcase activities such as fairs and forum attendance, national and international project meetings, meetings with public authorities, as well as the media – local newspapers, newsletters, and websites to promote events and products.

Dedicated networks on a thematic area offer an acceptable platform used to raise awareness and disseminate information. E-mail can be used to communicate the information to the relevant target audience which are then followed up by phone in order to ensure that the targets have read the emails. Email can be used also to disseminate info packages on projects such as

brochures and presentations. Emails are used to disseminate updated information on a regular basis to specific lists of stakeholders.

TV stories and press releases have the potential to exert a big impact through national media, including the national TV, web and press national agencies of news.

Social networking is used by most organizations to reach a wide audience. Preferred platforms include Facebook, LinkedIn, Twitter and YouTube channel. Online dissemination methods combined with social networking processes have the potential to provide successful propagation mechanisms, while providing the opportunity to be proactive as well as reactive and get comments and opinions from the community.

It is important to note however, that if the goal of disseminating information and raising awareness is technology adoption, the most frequently used methods of dissemination do not necessarily lead to desired outcomes. Conference presentations, papers or posters and peer reviewed journal articles are not particularly effective means for encouraging adoption of an innovation. Presenting papers at conferences or in journals has a limited effect and does not produce the desired broad diffusion of an innovation. On the other hand, the more direct methods of workshops and focus groups are considered as more appropriate methods to promote technology adoption. This is probably dues to the fact that through workshops and focus groups that involve smaller groups of people, target audiences have the opportunity for a more informal interaction with the organizers and a hands-on interaction with technologies. Informal interaction is in many ways the key to creating a change and enhancing dissemination while creating partnerships.

For healthcare providers, informal interactions can occur through a lecture or a workshop followed by a World Café event. Informal conversations are mutually beneficial, the stakeholders involved can also enquire about current practices, policy developments and service provision in falls creating a two way route of information exchange.

Collaborative project websites is a widely used dissemination and awareness enhancing tool. On the website, periodic updates of activities are posted allowing subscriptions to newsletters creating interest groups. Further details are then send to these interest groups keeping them informed about the developments of the project and offering the opportunity to attend project events. More than aiming at a wide audience, project websites are particularly effective in getting specialized contacts interested in collaborating for further research or implementation of such activities such as researchers, clinicians, innovative companies.

However, most attractive to the wider audience are considered websites that allow free access to the information rather than those that require to sign up as a user. According to E-NO FALLS partner experience the media where the information is directly accessible (without complicate sign-in steps) are more attractive for the general public.

5.5.2 Enhancing Partnerships Methods

Partnership enhancement occurs mostly through participation in different events. Informal conversations are used for opportunities for networking during research projects and through workshops, focus groups, roadmap meetings both nationally and internationally. The opportunity to share knowledge, expertise, resources, and experiences helps the enhancement of partnerships among the different actors in the eHealth value chain with special interest in the falls domain topic. Networking is how closing alliances with SMEs and research organizations mostly occurs. Networking within EU partnerships and communities helps to learn about active stakeholders and identify potential partners for future research and initiatives. Exchange of knowledge and going in depth in specific issues is beneficial to all parties involved.

Thematic events as well as international events, workshops, conferences, fairs, exhibitions, forums such as the AALForum and eHealthForum, are means to gather several experts to strengthen ties and promote new partnerships. In addition, participation in EU dedicated activities such as Action group A2 of the European Innovation Partnership on Active and Healthy Ageing (EIP-AHA) focused on falls prevention and management help bring different stakeholders together to create partnerships.

Participation to EU call for proposals and research and development national and international projects create partnerships with stakeholders from different domains including public, private non-profit, and private for profit. Participation in research projects helps enhance partnerships with the users (clinicians and elderly). They are mutually beneficial, since researchers can provide information and education sessions to interested members, while many of these people become involved as participants in the research projects. In addition, national and international projects help promote technological alliances with regions and networks around the world.

Partnerships for health care organizations are enhanced through the organization/participation in focus groups with elderly and family members as well as other caregivers such as psychologists, physiotherapists, nurses, and family doctors. Also, direct meetings with policy and decision makers of the healthcare system help create partnerships.

Companies use partner networks of SMEs, care organizations, and knowledge institutes to create partnerships. In addition, companies establish partnerships through attendance, presentations and personal communications at conferences, workshops, focus groups, roadmap meetings, exhibitions, network events as well as direct meetings between the industry and health providers. Also, membership to networks such as the European Technology Platforms is an excellent way of building partnerships for further research and development activities. Marketing activities are a key instrument for partnership promotion. Networking platforms are offering a new way to communicate and obtain information. For example a platform called “Colaborar” has been setup in order to gather the end-user’s opinion and understand the acceptance with respect to the new technology and thus optimize our technologies according to the user’s needs.

Media such as TV and newspapers are used to reach a wide audience and potential stakeholders who can in turn seek collaborations.

5.5.3 Methods of Measuring Effectiveness

E-NO FALLS partners use a variety of measures to identify the effectiveness of the dissemination and awareness methods they are using. These methods can be classified as qualitative and quantitative methods.

The measures that are most commonly used are:

- The number of attendants in conferences and workshops
- The number of scientific publications
- The number of citations and the score of the scientific publications
- The impact factor of the journal where articles are published or how many times the article is cited. Other methods are number of downloads or hits
- Number of citations and hits at www.reasearchgate.net
- Number of people participating in trainings, workshops, focus groups
- The number of people with active participation in established networks
- The number of people who are willing to participate in a research study
- The number of contacts of partners interested in establishing a partnership
- The number of delivered leaflets
- Social networking activity and statistics
- Number of visitors to organization's website
- Numbers of emails and activity on different social networks like LinkedIn and Facebook
- Number of users of specific applications
- Number of accesses to thematic networks
- Frequency of cooperation requests
- Counting the number of answer to a poll
- Counting the number of readers in one publication
- Intranet entries and posts in the Blog
- Number of enquiries made via website and email involving ICT for falls is going to be a potential indicator for evaluation of dissemination of the information
- Brand awareness
- Number of positive reaction to activities/products
- Email inquiries of interest
- End-user testing which shows direct result of awareness

Social networking allows to measure the effectiveness of the online campaigns by collecting data of the tools provided by the online channels themselves – for instance, Facebook provides useful information about how many people are reading and interacting with each post and Google Analytics allows tracking websites readership and seeing the value of traffic by geography, referral, campaign, and many other dimensions.

Qualitative methods include:

- Feedback from workshop attendees and research participants
- Informal reports
- The quality of information exchanged and gathered,
- Feedback from activities
- The quality and appropriateness of articles, papers, publications and reports
- Information at focus groups

It is difficult to determine how successful some of these methods of dissemination are, as it is not easy to gauge the impact of conference presentations or workshops in terms of implementing changes in practice. Also, these methods are likely to only reach other researchers and clinicians already engaged in this area.

5.6 Summary

5.6.1 Strengths

- The respondents of the case studies included all the partners of the E-NO FALLS consortium. In this way it was possible to identify communication and awareness practices of a highly expert group. The methodology of the case studies allowed the gathering and analysis of more detailed information that it is possible to identify through questionnaires.

5.6.2 Limitations

- Responses were limited to the E-NO FALLS partners. Communication, awareness and partnership enhancement practices of stakeholders outside the E-NO FALLS consortium may have been missed.

5.6.3 Key Points

- The list of tools used for communication, awareness raising and partnership enhancement is:
    - Scientific Papers in journals and conferences
    - National and International Projects
    - Workshops – focus groups – informal communications
    - Networking activities – Thematic forums/events
    - Training within and across organizations / stakeholders
    - Research studies and technology tests
    - Internet-Websites-Platforms-Social media
    - TV-Radio-Press releases-targeted campaigns
- The list of the target groups for communicating information and raising awareness for ICT for Falls is:
    - elderly users and their families;
    - hospitals, health organizations, care service providers (including medical experts);
    - the scientific community;
    - the citizens and the society at large;
    - ICT-for-Health value chain stakeholders: R&D centres, ICT product developers, medical devices producers, Health service providers, physicians and Public authorities.
- The primary route to communicate information and raise awareness is the traditional academic route of research papers and conference presentations. The primary route to enhancing partnerships is National and International projects and workshops.
- Other commonly used methods include formal and informal face to face discussions, workshops, focus groups, and training activities within organizations. Workshops and focus groups are an effective way to create networks and stakeholder communities. Informal face

to face discussions are mostly used to communicate information to the elderly and their family members.

- Social media as well as TV, radio and press releases are also used to reach a wide audience.
- Research organizations use mostly the traditional academic route to disseminate, and obtain information as well as to raise awareness. Also, research organization use TV-press releases and Radio in order to communicate information about their activities. In order to obtain information, research organizations use mainly the internet in addition to participating in projects and conferences/scientific journals.
- Industry organizations use mostly workshops to obtain information. Networking activities are used to raise awareness about their products.
- Service provider organizations use mostly focus groups, workshops and information communications in order to obtain information and raise awareness. These organizations use mostly training courses and targeted campaigns in order to communication information to the target populations (elderly, family members, carers).

5.6.4 Recommendations

- Different methods are suitable for different target groups depending upon the desired outcome:
    - Papers and conferences: communication to an academic audience, proof of scientific value, networking to establish collaborations
    - Workshops and focus groups are used to reach a specific usually small group of stakeholders. It helps immediate feedback from both sides. It is an effective tool for learning. However, the small numbers of attendees, render this method limited for reaching a wide audience.
    - Training within and across organizations helps create a common understanding and a common vocabulary as well as it raises awareness through the transfer of knowledge from the experts to a wider audience.
    - Participation in national and international projects is important in order to create partnerships, create a common understanding of activities, learn from each other and produce meaningful results.

6. Results and Analysis of Expert Discussions on Communication and Awareness Actions in World Café Events

6.1 World Café during the Clustering Event

The E-NO FALLS WG1 organized a world café during the Clustering Event on Ambient Intelligence Advanced Technologies in Support of Healthcare and Assisted Living, that took place at the Foundation for Research & Technology - Hellas, in Heraklion, Crete, Greece, on 26-27th September, 2013. The aim of the clustering event was to bring together European projects for demonstrations, presentations of innovative solutions, and discussions of potential synergies and cooperation. The world café was organized during the session dedicated to Falls prevention and management represented with four European projects, including FARSEEING, I-Don't-Fall, FATE and E-NO FALLS. The participants of the Clustering Event came from 15 European countries and represented Universities, Companies, Research Centres, and Health Care Organizations.

The event was an open meeting offering an opportunity to raise awareness about the results of different projects, allowing participants to establish connections and exchange information about their activities. Participants who were involved in projects in the same area were able to identify complementarities and potential synergies. As one participant expresses "we have similar issues, it would be good to discuss what different projects do and combine the information." In general, it was agreed that knowledge should be shared and that events like the clustering event should be repeated in the context of concentration activities as foreseen by the EC. Suggestions also involved organizing meetings between projects on a regular basis and supporting spontaneous cooperation, establishing horizontal working groups for regulation, exploitation and impact evaluation studies, and also developing collaborations between the technical people per topic such as algorithms, low energy sensors, robotics, etc.

Overall, the participants were very enthusiastic about the event and were strongly in favour of organising a similar meeting next year.

During the world café, participants had the opportunity to meet and discuss within small groups of 5-6 people specifically upon the topic of communication of ICT technologies in healthcare. In particular, the questions that were given to them included: 1) What methods did you use to communicate with different stakeholders? 2) Which methods were most effective? 3) Where a communication method was/was not effective, why do you think this was the case? Participants discussed these questions and wrote their thoughts on pieces of paper that were posted on a board. Then all participants were asked to rate the responses by putting stickers next to the statements that were posted on the board. Overall, there were 39 statements that were developed by participants of the world café. Red marks indicated high level of agreement, yellow marks indicated middle level of agreement and blue marks indicated lower level of agreement.

Awareness and communication actions should be targeted to the specific groups of stakeholders. The most important and successful actions are considered to be focus groups, clustering events, and networking events. These actions help to bring stakeholders together with different backgrounds and start to introduce a dialogue, connecting and learning with each other and establishing a common vocabulary. There were two statements that received the highest red marks. The first one related to focusing on target groups such as clinicians or other professional

groups in order to raise awareness. The second statement was about matching user requirements to need. Positive examples of raising awareness included the importance of establishing connections with patient organizations and involving key stakeholders in communicating and disseminating information. Overall, participants stressed the importance of tailoring awareness actions to stakeholder groups using appropriate language. Participants pointed out that clinicians are overall difficult to reach out to, and educate. An important strategy to use is to organize focus groups with clinicians and users while relating the product with existing needs. In addition, national and regional TV are considered as effective media to raise awareness. Participants found also very important for the success of a product the CE mark and the support of EU.

Some negative examples of awareness actions, according to the participants, were telemarketing, and online surveys. Participants were also concerned about the difficulty of connecting with social networks. Overall it was stressed that awareness actions require money and professional support.

Figure 20 illustrates the results with their colour ratings.

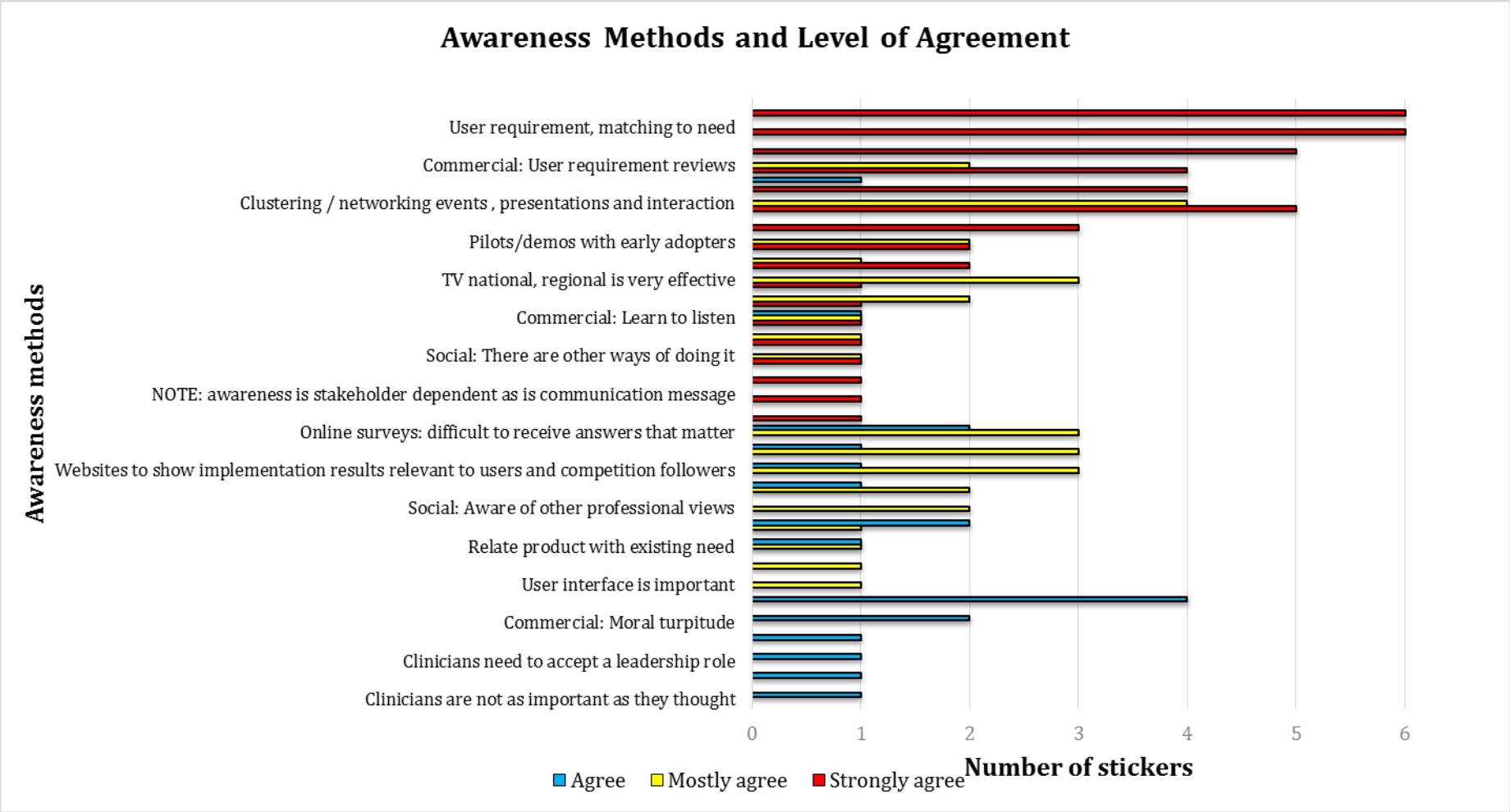

Figure 20. Awareness methods and level of agreement at the clustering event

6.2 World Café of Allied Health Professionals in Ireland

On Monday 17th February 2014, a World Café event was held in Limerick, Ireland to gather expert opinions on ICT for falls from a range of healthcare professionals, including physiotherapists, occupational therapists, public health nurses, and those in related healthcare management positions. The aim of this event was to seek opinions from a range of healthcare professionals on effective communication and awareness-raising activities in the falls domain, and methods of developing and enhancing partnerships among key stakeholders in this domain. Further suggestions and opinions on their requirements for the usage of ICT for managing older people at risk of falls were also sought as part of this event, as it was envisaged that an open question related to ICT for falls may provide useful information not obtained via more direct questions.

To achieve these aims, three questions were posed to participants in this event:

1. What methods do you use to provide information/raise awareness to other healthcare professionals and older people about falls prevention? Which methods are most effective? Why?
2. How do you think we could enhance partnerships between healthcare professionals (HCPs), older people, researchers and technology providers in the domain of technology solutions for falls prevention? Which methods would be most effective? Why?
3. How would you like to use technology for the management of older people that fall?

The following sections describe the main results obtained for each question as part of this expert discussion event.

6.2.1 Effective Methods to Raise Awareness about Falls Prevention

<u>Healthcare Professionals (HCPs)</u>

Methods of communicating with other HCPs could be broadly grouped into two categories:

1. Face-to-face: Team meetings were the main forums cited for discussing falls prevention with other HCPs, mainly primary care team meetings, as well as case conferences and meetings with general practitioners/family doctors. Continuous professional development events such as in-service training events, conferences, and journal clubs were also listed as useful means of communicating with other HCPs. Informal discussion was also highlighted as useful by some.
2. Documentation: Medical notes were highlighted as the most important means of communicating falls-related information with other HCPs, followed by referrals (e.g. from acute settings to community care). Within hospital settings, colour coded signs indicating levels of fall-risk were used commonly. Emails and shared folders for distributing information within a department were less commonly cited as useful communication methods.

Standardised fall-risk assessment and screening tools were also frequently noted as being important methods of communicating levels of fall-risk effectively among HCPs.

Older People

Face-to-face communication methods were the most frequently cited means of effectively communicating with older people, mainly in one-to-one assessment or treatment sessions. Group falls prevention programmes were also highlighted as being effective, delivered via public healthcare, day care centres, or community groups. Communicating with family and carers was also cited as important by many participants. Public presentations and information evenings were cited as being moderately useful.

In terms of documentation, falls prevention information leaflets were mentioned by many participants, but only one-third strongly agreed that they were effective. Emails were not frequently used to communicate with older people.

6.2.2 Enhancing Partnerships in ICT for Falls

The following main themes were noted in the answers provided to the question on developing and enhancing partnerships among stakeholders in ICT for falls. Specific answers provided by participants are described under each theme.

Engaging with research:

- Participants suggested that engagement with research and academic institutions could be achieved via student involvement e.g. work placements or research projects in healthcare and community settings for engineering, technology, product design etc. students. Promotion of falls-related ICT could also be achieved by linking with secondary school science and technology projects and competitions.
- Participants also suggested clinical trials of ICT solutions involving clients and HCPs as an effective means of linking a number of stakeholders.
- Focus groups with older people and older people's representative organisations to consult them on their wants and needs from ICT solutions was also highlighted as an important means of developing partnerships with older people.

Engaging with the wider public:

- Participants cited online, television and radio media campaigns as potentially effective methods of reaching the general public.
- Broadcasting exercise sessions for falls prevention via television was also listed as a potentially useful means of engaging older people in their homes.
- Linking to community groups, such as Active Retirement Associations and other older people's groups, was also cited as being highly important.

Overcoming barriers to technology usage:

- At the development stages of ICT solutions, participants noted the importance of seeking opinions and feedback from users – particularly HCPs and older people – on features of product purpose and design.
- In order to combat lack of awareness and knowledge of ICT, participants suggested that representatives from technology providers could attend HCP team meetings to inform them of relevant ICT solutions. Education classes or courses for older people and HCPs from technology providers were also recommended to train users on the usage of such solutions.

- To facilitate purchasing and uptake of ICT, participants recommended the provision of funding incentives and/or community grant schemes for falls-related technology.
- On-going support for users, in the form of support groups or information forums, was also cited as being important, although participants did not state what format these should take (online, telephone, email, face-to-face etc.).

Throughout the responses to this question, participants listed many methods of communicating with stakeholders, with varying levels of agreement as to their effectiveness. The main communication methods mentioned by participants, in order of agreement, were:

1. Mass media campaigns
2. Focus groups
3. Leaflets
4. Teleconferencing
5. Emails
6. Online forums
7. Questionnaires
8. Conferences

6.2.3 Uses of Technology for the Management of Older People Who Fall

This final open question afforded participants the opportunity to suggest specific technology features or uses that they felt would be useful in the management of older people who fall. Answers to this question were sorted into two categories: features that may relate to a number of technologies, and specific types of technology or products.

Participants rated the following general features as being important in ICT solutions for falls. These features may be of relevance to many ICT solutions, and are listed in order of importance:

1. Simple technology/devices
2. Knowledge of the range of products available and evidence of their efficacy for users
3. Accessible/easily-available
4. Make things fun for users
5. Cost
6. Feedback for HCPs on client progress and usage

In terms of specific aims of technology or products that participants would like to use, popular choices were technology solutions that allow improved communication with other HCPs and with older people. For example, ICT solutions to facilitate online group participation, mobile reminder systems for older people (e.g. text messages for medication, exercise etc.), education packages (e.g. smartphone apps) for use with older clients. Another suggestion was the compilation of an online database of falls-related data and statistics to aid research.

Suggestions were also made in relation to existing technologies, such as improved usability, and reduced costs of personal alarms, and additional features to encourage compliance. The use of activity monitors was also cited, particularly to monitor exercise adherence, and potentially included a feedback or reward system for adherence. Other monitoring technologies mentioned were physiological monitoring systems to determine the optimal times to exercise with regards to medication and its effects, as well as sleep monitoring, including monitoring outcomes to

detect effects on users of poor sleep. Participants also listed the use of gaming for exercise, with monitored usage and feedback for users and HCPs on usage and performance at home.

Participants also expressed an interest in currently popular technology solutions in the falls domains, such as smartphone apps and the development and usage of sensor technologies. Purposes listed for the use of these and other technologies included the measurement of gait, with one novel suggestion in this area to measure the force users apply through walking aids. Participants also expressed an interest in using technology to provide tools that assist in client assessment and/or outcome measurement, particularly if they improve objectivity and reliability.

6.2.4 Summary

6.2.4.1 Strengths

- This methodology allowed us to obtain a number of suggestions on communication practices, awareness actions and partnerships from a number of allied health professionals working in the falls domain.
- Data providing indicators of the agreement between clinicians regarding the effectiveness of current and proposed practices was also obtained.
- Clinicians from a range of allied health professions, across grades from entry level to senior management participated in the event.

6.2.4.2 Limitations

- Participants were allied health professionals, and predominantly physiotherapists, thus input from physicians working with older people was not obtained.
- Participants were all working in Ireland, primarily in the mid-west region. Thus, the findings may need to be adapted to other settings e.g. very large urban centres, or other countries.

6.2.4.3 Key Points

- Overall, this group of Irish allied health professionals reported that they primarily engaged in face-to-face communication with other HCPs and with older adults, and also used documentation to communicate with other HCPs.
- However, they also expressed a desire to use ICT solutions to improve their communication with both of these groups.
- They provided suggestions to improve partnerships with both researchers and the general public via:
    - Education initiatives
    - Focus groups
    - Links to community groups
    - Mass media campaigns
- The key suggestions to facilitate the use of falls-related ICT solutions made by this group of clinicians were
    - An emphasis on simple, user-friendly, low-cost solutions
    - End-user input in technology development

- Education and training for end-users (older adults, families/carers, HCPs) including on-going user support
- Increased and improved information and awareness campaigns on the types of falls-related technologies available and their efficacy.

6.3 Workshop WG1 Vilanova i la Geltrú

In Vilanova i la Geltrú, the two thematic networks E-NO FALLS and ProFouND as well as members of the European Innovation Partnership on Active and Healthy Ageing Action Group A2 Falls, had the opportunity to participate in joint activities regarding Falls management. One day of the meeting was dedicated to parallel workshops on a variety of topics concerning falls management. One of the parallel workshops was led by UL and FORTH with the Communication and Awareness Actions in the area of Falls management. During the workshop findings from the questionnaires and the world cafes were presented and participants were asked to provide their experience about using different methods for communication and awareness. The majority of attendants confirmed that networking face to face activities as well as focus groups with different target groups such as clinicians, professional groups, citizens, researchers, are important and effective methods in raising awareness and disseminating information. It was also rendered important to involve the users from the start through direct contact with the team that is designing and developing the technologies as well as conducting trials of products with users such as older people and clinicians. It is interesting to note that media campaigns using radio, TV or the internet were considered as moderately important for communicating information, raising awareness and enhancing partnerships.

7. Recommendations for Communicating Information, Raising Awareness and Enhancing Partnerships

Falls in the elderly population is a societal problem and needs to focus on prevention, screening, early diagnosis, as well as treatment and management of falls. As a multifaceted societal challenge, dissemination of activities and products in the field of falls needs to address a variety of groups including:

- Elderly users and their families;
- Hospitals, health organizations, care service providers (including medical experts);
- The scientific community;
- Citizens and society at large;
- ICT-for-Health value chain stakeholders: R&D centres, ICT product developers, medical devices producers, Health service providers, physicians and Public authorities.

Dissemination strategies are more effective when they follow a multi-dimensional approach using a variety of communication tools adapted to each target group in order to attract the interest and the necessary feedback/involvement from them. Organizations active in research and development use the traditional academic route in order to present their results. This provides visibility to them, allows communications to a wide audience with similar interests in order to raise awareness and also it helps these organizations in their ratings as top in their field (number of publications, impact factors etc.). However, such methods primarily reach others in academia and may not be effective in raising widespread awareness among those in healthcare and industry, or among potential users of ICT solutions. Commercial organizations use conferences to gain visibility about their products and to promote them. Service providers tend to use mostly face to face communications with their target audiences, e.g. elderly and their families. Conference and thematic events such as the AAL Forums mostly gather a certain type of organization, hence, making it difficult to really use them as a way to raise awareness to a larger audience of a variety of stakeholders. For example, doctors might not attend an ICT focused conference and therefore have more difficulty to find out what are the latest advances in ICT for fall prevention. This is why it is important to use a variety of different tools to reach different audiences. Workshops and focus groups offer a good tool to create small groups and gain immediate feedback from the participants; however, these tools tend to target small audiences making communication and awareness information available to less people.

The wide spread of the internet offers a way to target large audiences however, the limitation of this method is that it concerns mostly younger people. A large part of the European elderly population is not familiar with the internet and hence remains unaware of the technical advances that might be communicated through this route. Based on the E-NO FALLS results, the elderly are best targeted through face to face discussions with their physicians or other healthcare providers. Also, younger family members can play an active role in helping the elderly learn about ICT for falls. However, in order for healthcare professionals and family members to become aware of these technologies it is important that public authorities, research organizations and companies establish communication methods that will directly reach these stakeholders. Methods that can be applied towards this goal include workshops, clustering events, training courses and networking activities, as well as the establishment of policies at a regional and national level for falls prevention activities.

Dissemination and awareness-raising are really forms of education. Education in its general sense is a form of learning in which the knowledge, skills, and habits of a group of people are transferred through teaching, training, or research. Also, an experience that has a formative

effect on the way one thinks, feels, or acts may be considered educational. In the field of falls management, it is important that the evidence-based knowledge of the experts be transferred to the different stakeholders and societal groups that are or will be concerned about falls.

Depending on the type of information that needs to be transferred, and the goal of the dissemination and awareness activities different tools will need to be used. For example an ICT company that develops products for the elderly, in addition to radio interviews and advertising campaigns, editorial pieces in national press, also need to target frontline health care professionals to deliver training and education seminars in order to pass on the relevant information about their products. In turn, the health professionals will be able to communicate this information through direct face to face meetings with the elderly. The elderly then have more chances to benefit from the existing technologies. As it has been seen in the questionnaires, the elderly are most likely to use a specific technology for fall management if their health care provider recommends it.

Another target audience that is very important in the uptake of ICT for falls management is the family and carers of elderly. Awareness activities should be tailored to this particular group as it is the carers and family that are usually responsible for the well-being of the elderly people.

Activities of communication as well as awareness raising and partnership enhancing are important to occur within health care organizations. In health care organizations, a variety of stakeholders exist such as physicians, nurses, therapists. Collaborations and information exchange are achieved through the exchange of relevant information between professionals. Methods that are best suited for this group of stakeholders include training sessions, workshops but also informal communications.

Research projects provide a framework for enhancement of collaborations and sharing of information. The participation of stakeholders from a variety of different groups (e.g. researchers, industry, healthcare, user organisations) in research projects helps participants to gain a common understanding of the issues involved as well as developing a common vocabulary. Also, communication of practices of dissemination can raise awareness of available tools between partners of the project, and can inform the selection of appropriate dissemination methods for specific target groups.

When using experimental simulations, it is important to check with the participants the ecological validity and realism of the experiment. Simulations that are reported as comparable to real life situations have greater acceptance by the target population.

It is important to raise awareness and disseminate information as much towards different groups as within the organization. Face to face contact and informal settings are rendered as the preferred and the most successful ways not only to disseminate information and raise awareness but also to enhance partnerships and increase technology adoption.

An evolving medium for dissemination and awareness-raising is the internet and social media. More and more people are using the internet to get information, including healthcare providers and the general public. Access to the internet varies greatly in the elderly population and also across the different European countries. However, since 2011 the majority of European citizens are connected to the internet[3]. Presentation of projects and products is done through the organizational websites, Twitter is used to disseminate activities to health, technology for well-

[3] http://ec.europa.eu/public_opinion/archives/ebs/ebs_381_en.pdf

being and living facilities are published for all those users who are followers of a certain platform. Likewise, a LinkedIn account is also an option of dissemination of information for professionals interested in the organizations activities. Through social media outlets such as Facebook, organizations that were using more traditional methods to reach a wider audience are now able to disseminate their activities to a diverse network of people. However, these methods are still not targeting a wide audience as someone has to follow the organization's activities. The use of multi-faceted approaches, combining traditional media campaigns with an online presence, and reinforcing these activities through informal communications, may present a means of obtaining a wide reach for awareness-raising activities. This is a revolutionary change that is occurring with the development of the internet and social media, as more and more people will be able to access and use the internet, these methods have the potential to become the preferred means of disseminating information and raising awareness.

Based on the findings from the questionnaires, communication links are not well established among all the relevant stakeholders throughout the value chain of ICTs for falls. It is important to evaluate the effectiveness of communication practices between the different stakeholders such as clinicians and industry, or researchers and elderly people, since many discrepancies have been noted between the assumed effectiveness of communication between different stakeholder groups and the actual effectiveness as noted by the target audience.

Often, the media used for communication are not the optimal for practical reasons. It is important to identify the goal of the communication and adopt the right medium. For example, while publications and conferences are highly important to researchers as a means of quantifying their research output, it is clear that these are not the optimal methods of communicating their results to those involved in industry or in healthcare service provision.

Information from the questionnaires indicates that clinicians are highly receptive to accessing online information about ICT for falls, therefore a greater knowledge and use of such marketing strategies and techniques could offer less costly, more rapid, more effective methods of publicising research findings in relation to technology for falls.

Data from the elderly questionnaires identifies the lack of awareness of ICT for falls related products as the greatest barrier for using these technologies. Education and training in relation to ICT products for falls appears as the important facilitator for adoption of these technologies from the elderly. Proper education and training will also help alleviate the anxiety of several elderly people about the upkeep of the technology. Therefore, actions which raise awareness among older adults about the potential for falls-related ICT solutions to improve their safety and facilitate independence within a user-centred, self-management context are highly recommended. Actions should also seek to raise awareness among older adults of the costs, potential funding sources, methods of access, usability and benefits of technology to address these concerns.

A feature noted across many of the methods adopted in WP1 is that ICT product providers must focus primarily on raising awareness of their products among end-users. Ensuring that low-cost solutions are available and providing support to users in the upkeep of these solutions should also be considered. In addition, respondents consider an "extremely significant" facilitator the availability of low cost solutions through private/public grant programmes. It is therefore important for industry to not only improve awareness actions, but also to provide high quality products at low costs.

European research projects related to falls (such as FATE, CAALYX-MV, REMPARK, HELP, etc.) and traditionally academic routes such as conferences, workshops and scientific publications, posters and flyers, and workshops are used for disseminating information. Also, participation thematic events and international and national forums such as the AALForum and eHealthForum offer the opportunity to open technologies and information to a wider audience who can experience first-hand technologies for fall management. In addition, participation in EU dedicated activities such as Action group A2 of the European Innovation Partnership on Active and Healthy Ageing (EIP-AHA) focused on falls prevention and management help bring different stakeholders together to create partnerships.

These various recommendations are summarized in Table 7.

Finally, on the 27th of November 2014 the 2nd General Assembly meeting was organized in Vilanova i la Geltrú (Spain) and hosted by UPC. The following E-NO FALLS partners (UPC, FHP, UL, COOSS, NFT, TICS, NUIG, CET, SN and McR) attended the meeting in person and the following ones attended electronically (ERL, SMH, FORTH and CHA) via Skype. The methods and processes used to obtain the relevant information on communication and awareness strategies to inform Work Package 1, and particularly deliverable D1.3 were presented to the partners. Additionally, the processes used to analyse and interpret the information and formulate recommendations were discussed. The partners in attendance endorsed the processes and recommendations – pending the provision of specific examples for each recommendation to facilitate implementation – which have also been included in Table 7.

Activity	Recommendations	Tips	Examples
The dissemination of information and products needs to take account and address the needs of various target groups: • Elderly users and families • Citizens and society • Health providers, health organizations • Public authorities • Scientific community • Industry	To adopt a multi-dimensional approach using a variety of communication tools adapted to each target group in order to provide relevant information, attract interest and obtain the necessary feedback/involvement.	Generalized and unspecific approaches very often do not work	Word of mouth was noted as a good strategy by many stakeholder groups. Thus examples of how to create more opportunities for informal conversations and to share experiences would be: in-service training sessions (hospitals), research colloquia (universities), world café events (invite relevant stakeholders from multiple groups).
Dissemination and awareness activities are considered forms of education. Knowledge, skills, and habits of a group of people are obtained through teaching, training, and identified / explored through research.	The evidence-based knowledge of the experts must be shared with the different stakeholders and societal groups that are or will be concerned about falls. Different methods will need to be used, depending on the type of information and the goal of the dissemination and awareness activities.	The knowledge transfer activity needs to be suitable for each target group.	Shared events between clinicians and researchers (e.g. research/study days where links exist between academic institutions and hospitals) or awareness activities aimed at the general public (e.g. at large public events, at older adults' community groups etc.).
Healthcare professionals are the key people to communicate information about existing products through face to face meetings with older adults and their families/carers.	Older people are more likely to use a specific technology for fall management if their health care provider recommends it. Therefore, stakeholders in research and industry should aim to develop strong collaborative partnerships with healthcare professionals, and those in healthcare management and policy-making positions, in order to ensure that up-to-date, reliable information on ICT	Older adults mostly rely on healthcare professionals for information about healthcare solutions or products.	Research and industry stakeholders must establish clear and open communication links with HCPs e.g. personal contacts with specific HCPs working with older adults in the locality, links with professional bodies and clinical interest groups, joint involvement in research projects.

	solutions for falls is being disseminated among potential end-users.		
It is as important to raise awareness and disseminate information both within an organisation and out to different groups of people.	Face to face contact and informal meetings are the preferred and most successful methods to disseminate information and raise awareness and also to enhance partnerships and increase technology adoption.	Informal face to face contact is successful and extensively used.	Regular formal and informal meeting opportunities may be developed e.g. coffee mornings, journal clubs, research seminars, lunchtime discussion groups etc.
It is important for communication, awareness raising and partnership enhancing activities to occur within health care organizations. In health care organizations, a variety of stakeholders exist such as physicians, nurses, therapists.	Collaborations and information exchange are achieved through the exchange of relevant information between professionals. Methods may include clinical documentation, training sessions, workshops and also informal communications.	Involve all stakeholders within health care organisations using appropriate methods. Do not be afraid of the variety, but embrace it!	Regular formal and informal activities can encourage multidisciplinary collaboration within healthcare organisations and contribute to continuous professional development e.g. journal clubs, team meetings, coffee mornings, in-service training sessions open to multiple disciplines etc.
A framework for enhancing collaborations and sharing of information is often facilitated through participation in research projects	Participation in research projects helps participants to gain a common understanding of the key issues, develops a common vocabulary and raises awareness of available tools within a project.	Communication and dissemination activities should be an integral part of research projects related to ICT for falls.	Multidisciplinary collaboration including clinical partners and end user groups can facilitate dissemination activities throughout projects e.g. many projects funded via the Ambient Assisted Living Joint Programme
Dissemination through the Internet	Presentation of projects and products is done through the organizational websites. However, these methods are still not targeting a wide audience as it is necessary to follow the organization's activities.	"Pulling" approach is not so effective especially in the elderly	Clear, accessible web design and online newsletters which present simple information and offer clear means of contacting the organisation may be useful e.g. http://dutchdomotics.nl/

Dissemination activities through social media	Technology for well-being and living facilities are published for users who follow certain platform. Through social media such as Facebook, organizations that were using more traditional methods to reach a wider audience are now able to disseminate their activities to a diverse network of people.	This is a revolutionary change that is occurring with the development of the internet and social media, as more and more people will be able to access and use the internet. These "pushing" methods have the potential to become the preferred means of disseminating information and raising awareness, as they can provide more personal, targeted means of communicating with users.	A consistent and active presence across a range of social media platforms e.g. Facebook, Twitter, LinkedIn can be used to provide information and links to relevant online resources, to engage with other stakeholders and to promote online discussions about relevant topics and developments.
Dissemination through publications and conferences	This type of dissemination is highly important to researchers as a means of quantifying their research output. However, these methods are not a wide-reaching method of dissemination, as it is not an optimal method to communicate their results to those in industry, in healthcare, or other potential end-users of ICT solutions for falls.	The diffusion of open access journals and transmission of conference sessions via the Internet may render this method more effective in the future, as the information will be more easily accessible to the public.	Targeting conferences and journals that are multidisciplinary can create opportunities to share knowledge, develop a common language and find out about the work being done at different stages of the technology development processes e.g. ICAMPAM/ISPGR conferences include researchers from clinical, engineering, biomedical, biomechanics etc. backgrounds
Actions which raise awareness among older adults about the potential for falls-related ICT solutions to improve their safety and facilitate independence within a user-centred, self-management context are highly recommended.	Data from the elderly questionnaires identifies the lack of awareness of ICT for falls related products as the greatest barrier for using these technologies. Education and training in relation to ICT products for falls appears to be an important facilitator for adoption of	In order to communicate effectively with older adults, multi-faceted communication strategies which raise awareness and provide information to their families, friends, informal and	The methods noted above to involve healthcare professionals apply, as they are a vital link in the awareness-raising chain from research/industry to end users, as are secondary end users e.g. family, friends, carers of older adults. Clear offers of training and on-going

	these technologies from the elderly. Appropriate education and training will also help alleviate the anxiety of several elderly people about the upkeep of the technology. Actions should therefore be taken to raise awareness among older adults, their families and carers of the costs, potential funding sources, methods of access, usability and benefits of technology to address these concerns.	professional caregivers must be considered. Impersonal awareness actions, such as via telephone, internet or mass media outlets, may not be viewed as trustworthy and effective methods of communicating with older adults.	technical support for potential users must be made. Face-to-face contact e.g. via presentations to older people's organisation and community groups, is preferable. Public and private grant/funding authorities (as appropriate in a given region) should also be included in plans for marketing falls-related ICT solutions.
Product providers must focus primarily on raising awareness of their products among end-users.	Ensuring that low-cost effective solutions are available and providing support to users for the uptake and upkeep of these solutions should also be considered. Respondents consider an "extremely significant" facilitator the availability of low cost solutions through private/public grant programmes.	It is important for industry to not only improve awareness actions, but also to provide and assure users of high quality products, low costs, and adequate user training and support services.	Information on initial costs, running costs and supplementary funding/grant options should be clearly communicated to end users via the methods listed in the above examples.
End-user involvement in the research and development processes of ICT solutions for falls to facilitate awareness and uptake.	Consultation with users throughout the design, research and development processes should be consistently sought to facilitate awareness-raising among potential users and to ensure that the ICT solutions being developed meet the users' needs.	Users can include older adults, their families/ informal carers, health and social care professionals etc.	Collaboration with older adults' organisations and community groups, healthcare professionals and/or carers groups should be a priority throughout the design process.

Table 7. Recommendations for awareness and partnership enhancement activities

8. Conclusions

Based on the literature review in D1.1 and the findings from all the methods used in WP1, it has been clear that methods that engage stakeholders face to face in workshops, training, research activities, focus groups etc., are considered more effective in raising awareness, enhancing partnerships and disseminating information than those that are more impersonal and less interactive such as press releases, publications and internet media.

All communication and awareness activities need to be targeted and designed based on the specific goal to be achieved. Knowing the target group and the preferred outcome helps pick the necessary methods in order to go about reaching the goal. In the field of Falls management, there is a specific network of stakeholders that are acting towards helping improve prevention and management outcomes. People involved in this field need to identify all stakeholders in their region/country that are involved in falls prevention and the links that they have with each other. It is often the case that there are several links missing in the network for falls prevention and management making dissemination and communication activities difficult to accomplish the desired goals. Falls prevention and management is a collaborative effort and collaboration enhancement is at the core of reaching the desired outcomes for the majority of the elderly population.

National and international projects can be used to connect different stakeholders establishing a wide range of networks. By connecting all stakeholders, communication channels are more holistic and therefore more effective. However, communication will be effective only if the information is able to reach at all levels of the network involved. It is important to identify the network in its entirety and also the ways that each node of the network can be reached. For example, rural communities of elder adults living alone who do not have direct access to information, can be reached through their family members or local care provider. Social media routes can have a large impact to a big audience, however, are not directly relevant to the elderly community (based on computer literacy and access to internet), but again, social media can target family members and therefore reach indirectly a large part of the elderly community. However, researchers can only reach a wider audience when having the support of public authorities in all levels including budget, communication strategies, awareness campaigns, projects.

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