Competitiveness and Innovation Framework Programme
CIP-ICT-PSP-2012-6 325137
European Network fOr FALL Prevention, Intervention & Security E-NO FALLS

Project Number:	**325137**
Acronym:	**E-NO FALLS**
Title:	**European Network for FALL Prevention, Intervention & Security E-NO FALLS**
Call (part) identifier:	CIP-ICT-PSP-2012-6
Start date:	28/01/2013
Duration:	37 months

D4.4.2
'Design of the E-NO FALLS Network Business model'

Nature[1]: R
Dissemination level[2]: PU
Due date: Month 25
Date of delivery: Month 37

Partners involved:

- **Stichting Smart Homes (SmH, Task Leader T4.4, Deliverable Leader D4.4.2)**
- Universitat Politècnica de Catalunya (UPC)

Authors: Ad van Berlo (SmH), Andreu Catala (UPC)

[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)

Revision history

Rev.	Date	Partner	Description	Name
0	23.12.2015	SmH	Outline	Ad van Berlo
1	08.01.2016	SmH	Greater part of content	Ad van Berlo
2	16.02.2016	SmH	SIB and HIB refined	Ad van Berlo
3	25.02.2016	SmH	Refinement after Falls Festival Bologna	Ad van Berlo
4	26.02.2016	UPC	Adding Conclusions	Andreu Catala, Lucia Alandes
5	03.03.2016	UPC	Final review	Andreu Catala
6	05.06.2016	UPC/SmH	Adding activities/costs for sustainability	Andreu Catala, Ad van Berlo

DISCLAIMER

The work associated with this report has been carried out in accordance with the highest technical standards and the E-NO FALLS partners have endeavoured to achieve the degree of accuracy and reliability appropriate to the work in question. However since the partners have no control over the use to which the information contained within the report is to be put by any other party, any other such party shall be deemed to have satisfied itself as to the suitability and reliability of the information in relation to any particular use, purpose or application.

Under no circumstances will any of the partners, their servants, employees or agents accept any liability whatsoever arising out of any error or inaccuracy contained in this report (or any further consolidation, summary, publication or dissemination of the information contained within this report) and/or the connected work and disclaim all liability for any loss, damage, expenses, claims or infringement of third party rights.

Table of Contents

1. Introduction 4
1.1 Deliverable Objectives 4
1.2 Summary 4
2. Process towards Final Version of the Business Model 5
2.1 Conclusion from Inventory 5
2.2 Discussion based upon Inventory 6
2.3 Market Uptake Workshop 7
2.4 Answers to the basic questions coming from both workshops 8
2.4.1 Stakeholders for the knowledge network 8
2.4.2 Activities of the knowledge network 9
2.4.3 Communication strategies 10
2.5 Results from short interviews among care providers 11
2.6 E-NO FALLS Network business plan 13
3. Towards a Health Impact Bond for falls prevention 14
3.1 Social Impact Bonds 14
3.2 Health Impact Bonds 17
3.3 A Health Impact Bond on Falls Prevention 18
3.4 Maintaining the network 20
3.5 E-NO FALLS sustainability and Network business model 20
4. Bibliography 23

1. Introduction

The E-NO FALLS Network business model is part of task 4.4 of the E-NO FALLS project. This task intended to develop the preliminary and final version of the E-NOFALLS business plan. Goal was to ensure the continuity of the network mainly by three means [1]:

1. By offering - after the project end - "services" to interested parties. Some of the interested parties will be participants/members of the network and therefore already involved during the project network life. Perhaps, elicited information will turn out in "market" services with specific disclosed information, which is of value for interested parties.

2. By aligning close collaboration with Action Group A2 of the EIP AHA and the ProFouND project.

3. By exploring other communities and knowledge networks to learn from their approach and to investigate possibilities to cooperate. An example of a community is the Smart Homes Partner community: a number of appr. 80 companies and organisations form a community in which they pay an annual fee for exchanging information on new developments, products, services in the area of smart homes and smart living.

1.1 Deliverable Objectives

The E-NO FALLS Network business model describes the possibilities for the continuity of the current E-NO FALLS network after the preliminary investigation in D4.4.1. The main topics that will be discussed are:

- Identification of results and outcomes of E-NO FALLS that can be exploited.
- Overview of current exploitation practices in relation to knowledge networks of E-NO FALLS partners and third parties like EIP AHA A2 and ProFouND.

1.2 Summary

This E-NO FALLS Network business model investigates the possibilities for the continuity of the current E-NO FALLS network. In this deliverable material already produced by the E-NO FALLS consortium has been clustered into 5 areas: 1) Type of stakeholders that can become a member or customer of the network, 2) Activities to be conducted by the network, 3) Preferred ways of communicating with the customers and members of the network, 4) Knowledge that can be converted into services and 5) Important values of the network.

For each of the clusters several questions had been formulated that needed to be answered by the consortium in the process of defining the exact scope and goal of the continuation of the knowledge network.

For the business model, concrete actions are proposed if the network needs to continue without European wide financial support. The latter seems an option if the concept of Health Impact Bonds would be adopted on a EU scale. The concept of a Health Impact Bond on falls prevention, adopted from the Social Impact Bonds, is discussed in this report.

2. Process towards Final Version of the Business Model

This chapter starts with a copy of chapter 8 of D4.4.1, Preliminary E-NO-FALLS business plan.

This chapter describes the steps that will be taken to reach the final version of the business model. The term “business plan” has been changed into “business model” after discussions and suggestions made at the final review of the project. It starts with a conclusion based upon the inventory of currently available deliverables within the E-NO FALLS project. The second paragraph focuses on questions to be answered in order the make concrete decisions on how to move forward towards a E-NO FALLS Network business model. Part of that process is to gain input from experts in a workshop. The chapter ends with a paragraph describing the overall goal of the E-NO FALLS Network business plan.

2.1 Conclusion from Inventory

When looking at the stakeholders that have been involved in the work of the E-NO FALLS project a lot of information has been gained on older adults, clinicians and the research community. Less information has been gathered on local/regional authorities, SME’s and family members. In case these are also considered to be important stakeholder groups the current inventory needs to be expanded.

Direct exchange of information is considered to be effective from the point of view of raising awareness, to promote technology adoption, and a two way route for information exchange. Most attractive to the wider audience are considered websites that allow free access to the information rather than those that require signing up as a user. For that purpose a single access point has been created by implementing “fallsprevention.eu” as a public web portal where people can access to other initiatives being carried out (other networks, European and international projects-initiatives-programs) related to falls.

Due to the importance of usability and interoperability tests the network can offer the testing facilities and expertise to perform the tests as service in order to stimulate the development of solutions that are aligned with the needs of users and can be integrated with other products.

Pre-commercial procurement enables public authorities to get new technologically innovative solutions that can address their specific needs. Part of identifying specific needs is to develop Key Performance Indicators that can be used to evaluate the effect of a certain solution. The knowledge network can assist public authorities in defining Key Performance Indicators to see if the innovative solutions meet their specific needs.

A lot of scales and assessments are discussed within the deliverables written by the consortium. Also from a legal/regulatory perspective information has been collected. Can we offer guidance on how to apply methods/assessments/regulations as a service? For that a deeper understanding needs to be established on the expertise within the consortium on this specific aspect. Is the current expertise gained from desk research or from actually applying the methods?

It has been highlighted that the cooperation between different stakeholders isn’t optimal. The knowledge network can become an intermediary organization to connect all the relevant stakeholders and to enhance cooperation. For example 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. In terms of the type of information clinicians are looking for it is evidence based information. Their preferred channel for retrieving that kind of information is scientific journals.

Communication and awareness strategies for older adults need to be geared towards health professionals who will then transfer this knowledge to the older people.

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.

In terms of the image of the network to their customers important values are being seen as a trusted information source, to be considered as a promoter of standardization and interoperability, focusing on raising awareness, to see technology as an enabler not as a solution by itself and to focus on providing confidence to older adults.

Based on the work done the following categories of possible exploitable outcomes have been selected: Development of toolkits, Information that fills the gap between expertise on fall prevention and fall risk estimation solutions, evidence based information, Technology as a part of a multi-factorial approach, Database of available technologies, overview of methodology/best practices.

2.2 Discussion based upon Inventory

In terms of stakeholders for the knowledge network the following questions can be asked:

- Some of the stakeholders like SME's and public administrations currently get little attention, could this become our focus?
- Who will be part of the network? Is that the same group as the group that we offer services to?
- Who do we offer services to, who from the list of stakeholders is our customer?
- Can the current stakeholders who provided answers to the questionnaire be consulted again? Can they become an expert reference group for the knowledge network?
- Who do we consider to be the target group of the knowledge network? It could also be a step-wise approach where we don't target all interesting parties at once but focus first on easy to reach stakeholders and then expand.

In terms of type of activities the following questions can be asked:

- Direct exchange of information is a good method to establish a strong relationship with stakeholders. It is however a time-consuming activity that members of the network must be willing to undertake.
- From the point of view of reaching a wider audience a public web portal "fallsprevention.eu" has been created. Currently the focus of this web portal is on other initiatives being carried out (other networks, European and international projects-initiatives-programs) related to falls. The suitability of this web portal for other type of activities needs to be investigated.
- Developments can be monitored and the repository can be kept up-to-date. For visitors of the web-portal this will serve as a quick scan of all that is available. Do we want to add advice on what too choose as a service?

- When offering test facilities as a service do we have issues with the independence of the network?
- Do we have enough expertise within the consortium to be able to define Key Performance Indicators for public authorities?
- In case expertise of how to apply methods and regulations in available within the network this can be offered as a service.

In terms of communication strategies the following questions can be asked:

- Do the current partners within the network envision this group to become an intermediary organization in the field of fall prevention and detection?
- In order to be able to provide the evidence based information clinicians are looking for an alliance with scientific journal needs to be investigated. For example would those journals offer that specific parts of their database with articles related to fall prevention and detection can be accessed via the knowledge network. Also a strong relationship with scientific journals can increase the change that those journals will devote attention to research about ICT solutions for fall prevention and detection.
- Since older adults are best reached through health professionals it needs to be determined whether or not it is wise for the knowledge network to work on a B2C relationship with the end consumer or that the knowledge network should only focus on B2B relationships.
- The current strategy from researchers to disseminate their knowledge and reach stakeholders isn't always in line with what stakeholders prefer. So when focussing on the continuity of the network it needs to be carefully taken into account that the communication strategy should incorporate more than the current strategies from a research point of view.
- In-depth information has been collected on communication strategies of clinicians, older adults and researchers. How about reaching local authorities and the SME's and the strategies that they use?

In terms of the values important to the network they must be aligned with what the network has to offer. Therefore it is important to look at the knowledge and services provided from that point of view.

In terms of the type of knowledge available within the network the following questions can be asked:

- Check if the selected possible exploitable outcomes reflect the need of intended stakeholders of the network.
- How expert are the current partners of the network in relation to the selected exploitable outcomes. Are additional experts needed?

When taking into account current experiences of partners with knowledge networks one of the major decisions that needs to be taken is to decide if the focus will be on a commercial approach where the network can become self-sustainable or if the focus will remain to be on a research perspective where it is more likely that at least part of the work will be supported by public funding.

2.3 Market Uptake Workshop

A first workshop was held during the first EU Falls Festival on the 24rd of March 2015 in Stuttgart. In preparation of the workshop a business model canvas was completed based upon the information presented in the interim business plan. This was intended to serve as a basis to start the discussion with the persons present at the workshop.

This workshop was, though announced widely, attended by 12 persons, half of them coming from the E-NO FALLS project. After a general presentation by the coordinator of the project, a lively discussion took place.
A second workshop was held during the second EU Falls Festival on the 22nd of February 2016 in Bologna with E-NO FALLS partners. From both workshops the following highlights are given below:

- There is a desire and willingness of all partners of the E-NO FALLS network to continue meeting after the project has finished officially. This can be done on low profile costs, f.e. at central and easily reachable places in Europe, hosted by one of the current partners;

- There is a strong willingness to combine this network with the partners of ProFouND;

- Most partners are interested to join the A2 working group of EIP AHA. Since this network will at least continue in the next three years, the E-NO FALLS partners might find here some other sparring partners to continue working on the objectives of E-NO FALLS;

- Most partners find it difficult to ask money for information on falls prevention and detection; so a website must also be free of charge; a membership fee of an association to only keep the website up and running might also be difficult to motivate;

- A website sponsored by companies that offer products is not desirable.

- A website with banners for advertisement is a bit more acceptable, but it is generally believed that such a website must attract many visitors, before companies may pay for banners;

- There is a so-called partnership model that Smart Homes already is exploiting for approximately 10 years. But here, the partner companies are more or less all involved in real projects, and are concentrated in one country. This makes it easier to frequently meet and knowing each other. E-NO FALLS partners do not see immediate success for such a model in the falls prevention and detection area on a European scale, mainly because of the fact that unlike in the case of smart houses, in falls prevention only a minor part seems to be solved with technology. Nevertheless, it seems worthy in trying to establish such a partnership of companies and possibly other stakeholders.

2.4 Answers to the basic questions coming from both workshops

2.4.1 Stakeholders for the knowledge network

- Some of the stakeholders like SME's and public administrations currently get little attention, could this become the focus of the network?

There is number of SME's (most probably less than a dozen, based on the repository and the Roadmap inventory) that is doing successful business in the area of falls prevention and falls detection. It takes many years of persuasion, fighting against the established business and fighting against ignorance at clinicians, service and care providers of new opportunities. This means that only few SME's can survive: Only those which came out of a subsidised project or those that have been participating in EU or nationally funded projects have been able to gradually grow.

In general, public administrations have only few or actually no real specialists in the specific area of falls detection and prevention, other than perhaps taking away barriers and obstacles in the public domain. Focussing more attention to public administrations would certainly raise more awareness, if the right persons can be found. Moreover, small villages and smaller cities would need to join efforts in this, which makes it more difficult to specifically address the issue. Therefore, it might be preferred to start with public administrations of the bigger cities or regions.

- Who will be part of the network? Is that the same group as the group that we offer services to?

The Smart Homes network has proved that the target group can survive if it does not contain members to which the services are offered. Experiences with some service recipients being member of the network have not been very successful: these members often felt being a prey for the hunters. A better model has been the organisation of network meetings with inviting these service recipients for particular questions and co-creation.

- Who do we offer services to, who from the list of stakeholders is our customer?

It depends of course on the services, who will be the customer. If the network would assist in PCP, the customer could of course be the region or bigger cities that want certain solutions in the prevention of falls, but this could also be a group of care providers.
If services are to be a wide awareness campaign, the older citizens will clearly be the customers. Also, clinicians could become customers if they need to be educated or trained for a certain new technology in f.e. gait analysis or walking speed test.

- Can the current stakeholders who provided answers to the questionnaire be consulted again? Can they become an expert reference group for the knowledge network?

An expert group for the network is certainly of big value and should be consulted at regular intervals or when specifically needed. Ideally, these experts are leading in the area. In the ProFouND network these leading experts are present.

- Who do we consider to be the target group of the knowledge network? It could also be a step-wise approach where we don't target all interesting parties at once but focus first on easy to reach stakeholders and then expand.

When considering the general consensus that falls prevention is a multi-factorial action of many stakeholders, it seems not wise to start with a step-wise approach. Rather, a region with all stakeholders present could be the target group of the knowledge work. Also a certain minimum size would be helpful.

2.4.2 Activities of the knowledge network

- Direct exchange of information is a good method to establish a strong relationship with stakeholders. It is however a time-consuming activity that members of the network must be willing to undertake. Would they willing to do so?

Current members of the E-NO FALLS network would have limited time for direct exchange of information to unknown stakeholders, that would not immediately pay them back. So, if there is not

a sort of “return on investment” most partners are reluctant to invest substantial time in simply giving uni-directional information. If the future network would be extended by many paying members, the task of information giving would most probably be given to officers that will be specifically hired by the network.

- From the point of view of reaching a wider audience a public web portal “fallsprevention.eu” has been created. Currently the focus of this web portal is on other initiatives being carried out (other networks, European and international projects-initiatives-programs) related to falls. The suitability of this web portal for other type of activities needs to be investigated.

Early 2015 this website has been set up preliminary. But since that time the website could not be updated because of lack of “volunteers” to do so. Also here, a business model for maintaining the basic information is necessary, before other type of activities could be envisaged.

- Developments can be monitored and the repository can be kept up-to-date. For visitors of the web-portal this will serve as a quick scan of all that is available. Do we want to add advice on what too choose as a service?

In general, it is felt that advice on which products/services to be chosen, is not desirable. The major reason is the neutrality of the advice, which would be difficult to maintain, particularly if there is a small group of suppliers that support the network with a paid membership fee.

- When offering test facilities as a service do we have issues with the independence of the network?

Offering test facilities should be feasible without independence being an issue, as long as there are commonly agreed test methodologies and measures.

- Do we have enough expertise within the consortium to be able to define Key Performance Indicators for public authorities?

The current partners of the E-NO FALLS consortium do think that there is a lot of expertise to define some Key Performance Indicators for public authorities. Thefore, expertise from ProFouND partners would be necessary and welcome to be complementary for this purpose.

- In case expertise of how to apply methods and regulations is available within the network, can this be offered as a service?

Also in this case, the question would be if a public authority or group of care/service providers is willing to pay for the service. It is generally believed by the current E-NO FALLS partners that this will be the case.

2.4.3 Communication strategies

- Do the current partners within the network envision this group to become an intermediary organisation in the field of fall prevention and detection?

The current partners of the E-NO FALLS network do believe that only a combination with the partners of ProFouND would be able to become such an intermediary organisation. That combination would encompass all knowledge needed for such a roll. The question is, however, how to structure the governance and the business model for the network of both project partners such

that a sustainable intermediary role can be foreseen. The ProFouND partners will keep their website alive for another three years, but it is not clear if the partners envision such an intermediary role.

- In order to be able to provide the evidence based information clinicians are looking for an alliance with scientific journals. Would those journals offer that specific parts of their database with articles related to fall prevention and detection such that these can be accessed by the knowledge network?

A strong relationship with scientific journals can increase the change that those journals will devote attention to research about ICT solutions for fall prevention and detection. Some of the current partners of the E-NO FALLS network have these relations.

- Since older adults are best reached through health professionals it needs to be determined whether or not it is wise for the knowledge network to work on a B2C relationship with the end consumer or that the knowledge network should only focus on B2B relationships.

Partners of the E-NO FALLS network all agree that the focus should be on B2B relationships, but that consumers would always be welcome if they ask for information or advice. The obvious reason is that a B2B relationship is, at this moment, the only foreseeable viable business model.

- The current strategy from researchers to disseminate their knowledge and reach stakeholders isn't always in line with what stakeholders prefer. So when focussing on the continuity of the network it needs to be carefully taken into account that the communication strategy should incorporate more than the current strategies from a research point of view.

It is clear that the dissemination of researchers is mostly via scientific conferences, which is rarely the case for care providers. Therefore, clearly other strategies are needed.

- In-depth information has been collected on communication strategies of clinicians, older adults and researchers. How about reaching local authorities and the SME's and the strategies that they use?

For local and regional authorities, the communication channels in their common practice have to be found. As stated earlier, it will not be easy to find the right persons within these organisations. For the SME's active in this area, targeted mailing and events like the falls festival would probably work most efficient.

2.5 Results from short interviews among care providers

At a conference and exhibition on smart technologies in care in the Netherlands (18 November 2015), at random, a number of general care providers (social care, community care, home care) was interviewed shortly about their knowledge and needs on care prevention and detection. The interviews took approximately 15 min. and the results of 20 interviews are summarized below:

- In your daily work, you have anything to do, directly or indirectly, with falls of older persons?

90 % of the persons had experience with falls among older persons, because they are working in nursing homes or in home care.

- How would you rank the fall problem as important for your organization on a scale of 1 – 5?

95 % of the interviewed persons ranked the fall problem with 5 (most important), 5 % with a 4.

- Has your organization in the past done anything to prevent falls?

All of the persons consider that the organization they work for is more or less concerned of the fall detection problem, 80 % consider that they themselves always have a look around if there is something that might induce a fall among the client they take care for.

- If so, what were the measurements taken?

Workers in home care mentioned: permanent awareness raising of sufficient moving and excercising, no slippery floors in bath rooms, cables, carpets, etc. In nursing homes, care workers take extra care at night if persons have come out of the bed, if they are wandering around, etc.
One nursing home has introduced camera's for remote monitoring at night, but this has also raised questions about privacy.

- Do you think your organization has sufficient information on the possibilities to prevent falls?

70 % of the interviewed persons do think that there is a lot more information available on new technologies for falls prevention, but they indicated that this information is difficult to find. In some cases it was even the main reason they were present at the conference and exhibition. Only 30 % of the interviewed consider that their organization knows enough about technologies to prevent or detect falls.

- Do you know anything about the ICT related solutions to prevent or early detect falls and if yes, could you mention some?

90 % of the interviewed said they knew about ICT related solutions; in all cases the personal safety alarm and a fall detection device was mentioned for falls detection. Only 20 % mentioned systems that could measure balance, walking speed, leaving the bed at night.

- Would you yourself be interested to learn much more or be trained?

80 % of all interviewed persons said they were very interested in learning more about the new possibilities and technologies that are newly available. All of them has not received any special training or education so far; 15 % considered it as not necessary, 5 % was very well trained due to the fact that they have a remote surveillance system in the nursing home.

- Do you think such information and training should be available for free?

95 % thought that information for themselves should be freely available. For training, some persons thought that the organization would be willing to pay money, although they realize budgets would be low. For older persons at home, all information must be freely available.

- If yes, who should pay for it and maintain a related website, database, etc.?

All of the interviewed persons mentioned that local and national governments should pay for the websites, in some cases also health care insurance companies were mentioned.

- If a website would be for free, would you be bothered about commercial advertisements of companies that offer their products?

50 % found it irritating and bothering if commercial advertisements would be present, the other 50 % would not have problems with it, since they consider it as natural for payment of costs.

- Would you go to a big annual conference + exhibition on falls for updating your knowledge?

70 % would prefer to go to a big conference + exhibition, but not necessarily each year; 40 % found it would be sufficient to have good information from websites or have some training and explanations at work.

- Would you, yourself, become a paying member of an organization that works on information and training related to falls prevention?

10 % would consider a personal membership fee, but only for a limited amount; 90 % considers that the organization they work for should pay for a global fee, it this was necessary, but most also said that information such as on exhibitions and websites must be freely available.

2.6 E-NO FALLS Network business plan

The overall goal of the E-NO FALLS Network business plan is to focus on the most promising business opportunity on an EU level. This focus has not been set within the project yet, because of the general notion that the business of falls prevention through ICT should be part of the general approach of business on falls prevention. And the business of falls prevention has not come to a widely accepted area of interest yet, primarily since there is no direct relation between investments and profits for the investors in current health care models.

In this report, however, a possible investors' model, i.e. the Health Impact Bond, is described first, which was further being discussed in a workshop at the EU Falls Festival in Bologna, February 23-24, 2016.

3. Towards a Health Impact Bond for falls prevention

This chapter describes the notion of Health Impact Bonds with has recently been adopted from the also relatively new Social Impact Bonds. In fact these are new ways of financing for social innovation. At the end of this chapter, the possibilities of a Health Impact Bond on falls prevention are discussed.

3.1 Social Impact Bonds

A new phenomenon, Social Impact Bonds (SIBs), also referred to as Pay for Success Bonds, are increasingly being discussed and written about on an international level [2]. These contracts constitute new and innovative funding arrangements under which government authorities only pay for measurable social results after such results have been achieved.
The primary purpose of these projects is to deal preventively with social problems of citizens. To this end, a performance contract is concluded with an intermediate party that makes funds from the private capital market available and engages private or non-profit parties to achieve social results. This ultimately results in cost savings for the public sector that are (partly) paid to the parties involved. SIBs make it possible for the implementers who perform the activities to scale up their successful local approaches on the basis of funding made available in advance. SIBs could be a sound addition to existing financial instruments and programmes and could potentially provide an additional impetus to improving the social position of the target group.

At the time of writing [2] in 2013, experiments with SIBs were being carried out in Great Britain, the United States, Canada and Australia. In addition, similar experiments were being carried out in the field of development cooperation in African countries and elsewhere. The SIB phenomenon is also starting to gain ground in other countries because it seems to offer many benefits to all of the parties involved. Although not much is known yet about the effectiveness of SIBs, responses are mainly positive and the prospects are promising: additional funds from the private market, limiting the financial risk of the government, achieving measurable social effects, cost savings for the government and a focus on outcome rather than input or output.

No cure, no pay
SIBs are also referred to as *Pay for Success contracts.* The idea behind these *Pay for Success contracts* is that government resources, certainly in a time of spending cuts, should be spent on projects that achieve the intended results. The government concludes a *Pay for Success contract* and pays for successful projects.
Private parties fund the setting up and implementation of a programme aimed at lessening the risk position of a given population group (improving health, for example) and therefore achieving social savings. The government pays these private investors back only if the social results have been achieved by converting the future savings (because the population group makes less use of government provisions, for example) into cash. Depending on the performance agreements made in advance, the investors receive a return in relation to the programme's effectiveness. The better the result, the higher the amount paid. If the intended savings are not achieved by the programme, the government does not pay back the money invested or pays it back to a lesser extent.

Focus on prevention and outcome based
SIB programmes differ from those aimed at dealing with social problems that have already occurred. Under the motto 'prevention is better than cure', SIBs focus on preventive measures to meet social needs before such needs become problematic. In the context of SIBs, the focus of the government and implementers is on achieving programme objectives and performance improvements in a transparent manner. Implementers are additionally motivated to apply innovative solutions in practice because their payment is completely dependent on performance. Because

results are clearly agreed in advance and are actually measured, it is less likely that the government will invest in ineffective implementation programmes.

Private funding through external investors

A key part of SIBs is that they make it possible to raise additional funds from the market. The private financiers, for example a philanthropist, a donor-advised fund that supports good causes, social funds of banks, insurers or pension funds and so on, can agree to a lower return (though with a higher risk) and possibly a longer term with respect to their investment. The social entrepreneur is therefore supported in setting up or expanding his business. At the same time, the money provided is not a loan: the external financier expects to recover his investment and expects a return on this investment.

Parties involved in a SIB

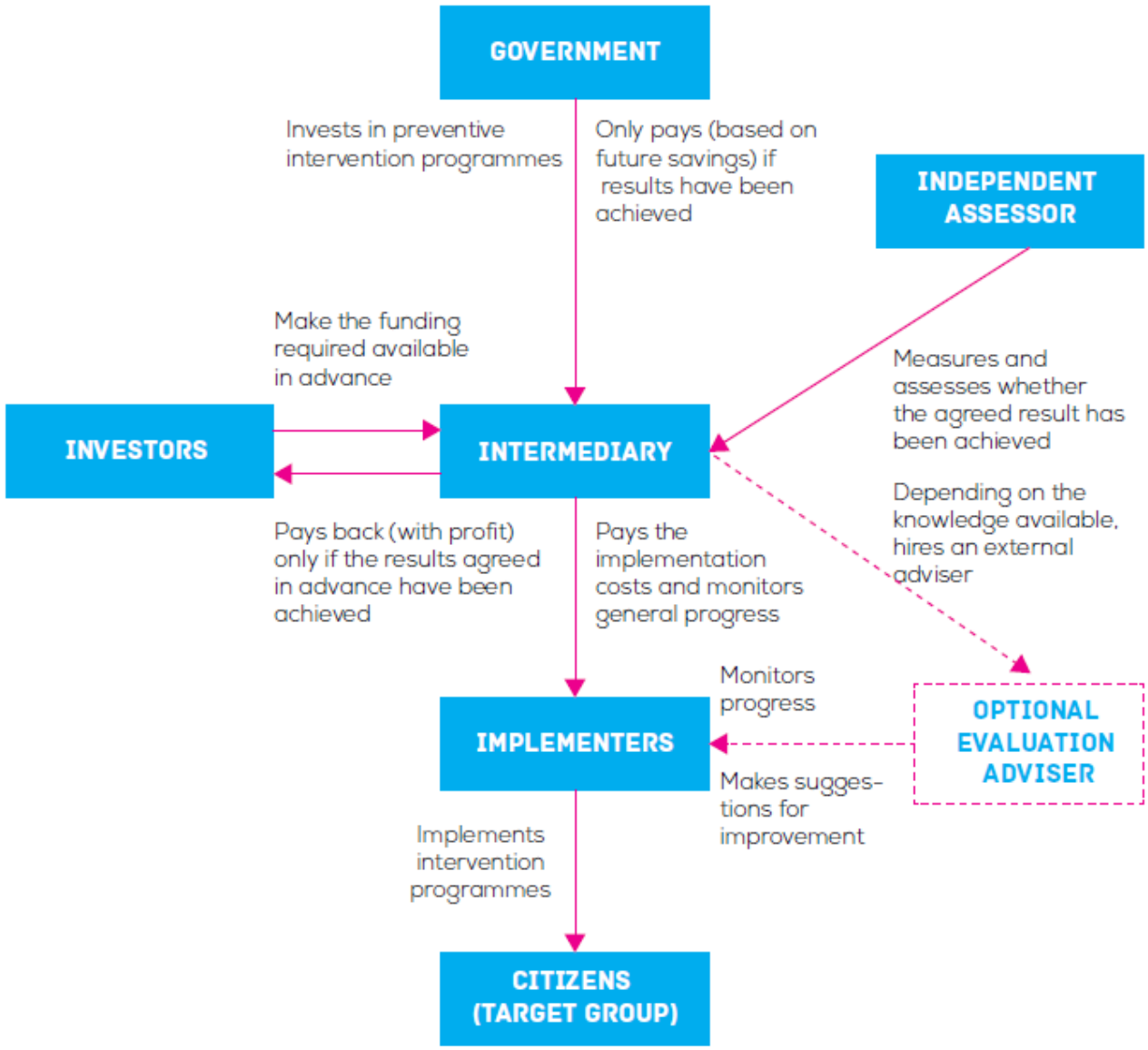

Fig. 1 Scheme of parties involved in a Social Impact Bond, from [2]

Target group: citizens
The ultimate purpose of a SIB is to improve the social position of the target group. The government and an external party contractually establish the social outcomes that must improve the lives of citizens. The focus is not on repressive measures designed to deal with social problems that already exist, since such measures are already in place and are funded by tax money. The target group of a programme supported by a SIB is determined in precise terms. A range of preventive measures is available for this target group.

Implementers
In the SIB model, implementation is carried out by implementers who are hired, funded, supported and directed by the intermediary. The implementers have experience in dealing with social problems and, ideally, have achieved proven successes in the past and/or evaluations or measurements of effects are already available. These factors help in making the desired effects in the SIB measurable. The structure of the SIB is such that intermediaries can only withdraw money from the financial market if investors are convinced that the implementers can also deliver the intended results. Implementers can be hired because investors make the financial resources available in advance. They receive the resources required (working capital) to implement programmes. The implementers may be non-profit organisations or private parties, including entrepreneurs, for example.

Government
A SIB's success depends mainly on the involvement of the government. The government, often in the form of local authorities, can identify issues in respect of which prevention programmes are needed, must determine the social and financial outcomes (which social problems must be dealt with and which cost savings will be achieved for the government) and must commit to the entire process. The results to be achieved must be laid down in a results contract concluded with an investor or an intermediary organization. The government must also be prepared to provide information about the target group in different areas. This information is necessary to determine whether a change is occurring in the lives of members of the target group. This information must also be supplied to the party that carries out the evaluations. Since it often takes years before the social outcomes of preventive programmes manifest themselves and therefore become measurable, the government organization must remain closely involved during those years, not to determine the substantive course but to supply the necessary information, for example. In contrast to regular programmes funded by the government, in the case of SIBs the government must place as few control mechanisms as possible regarding the way in which the external party achieves the result. The government pays on the basis of the future cost savings for the government that the programmes achieve. The government pays less or does not pay if the result agreed in advance is not achieved.

Intermediary
The intermediary is an external organization that connects all of the parties involved. It can have different roles in the SIB model. First, the intermediary acts as the contracting party for the government and must therefore be knowledgeable about the policy area concerned. Agreements are made with the government party about social results to be achieved and the financial resources that the government will ultimately make available for those results. Second, the intermediary must secure funding from investors. This funding is
required to engage implementers to implement the programmes. Third, the intermediary identifies and selects the implementers based on the programmes and projects that they can implement and the contribution that
this capability makes to the whole. During the term of the SIB, the intermediary directs these implementers, supports them and may also opt to engage different intermediaries if results are not being achieved.

Investors
SIBs are about using capital from the capital market. Private investments provide the initial capital for the projects. When supporting a social enterprise, investors must accept that they will receive a lower return and that it may take longer to receive this return. The risk is also greater. In addition, investors may achieve a higher return on their investment if the outcomes exceed the level that was initially agreed. This strengthens the focus on outcome and the action taken in this context. Potential investors include, for example, socially oriented or socially engaged providers of capital (philanthropists, foundations, non-profit organisations and charities).

Examples are the Bloomberg Foundation in the US and the Big Lottery Fund in the UK. Pension funds, insurers and banks may also invest. Goldman Sachs is involved as an investor in a SIB in Rikers Island prison in New York City, for example, and Triodos Bank is investing in a SIB of the UK Department for Work and Pensions.

Independent assessor
A programme's success is determined on the basis of a measurable improvement that has occurred in the lives of members of the target group. To determine this success, unequivocal agreements regarding results that can be measured at the end of the programme must be made in advance.

This measuring is done by an independent party that has access to empirical data of the both the government and the parties contracted to implement a programme. For this purpose, a validated method must be developed to measure the outcomes of the SIB during its term.

Optional: evaluation adviser
In addition to the independent assessor that focuses mainly on the measuring method and on measuring the outcomes, an evaluation adviser may be engaged. The evaluation adviser can monitor the performance of all the implementers to ensure that the activities as a whole continue to meet the requirements of the assignment agreed with the government The evaluation adviser assists in determining the evaluation method and social outcomes that must be achieved, monitors general progress and advises on possible actions (such as terminating cooperation with an implementer if the implementer concerned is making insufficient progress).
Engaging an evaluation adviser is optional because the role can also be fulfilled by the intermediary organisation itself if it has the expertise and capacity required.

3.2 Health Impact Bonds

A Health Impact Bond would be a variant on the Social Impact Bond. Like with the SIB, private captical would be collected to realise effective interventions met social and health impact. The difference is more in the context and in stakeholders. With a HIB the benefits and revenues would not only occur at national, regional or local governments, but also at health care insurance companies, hospitals and care organisations. The aim of a HIB would be the improvement of health of a specific target group, prevention of a disease or accident and therefore reduction of costs involved.

A HIB is an innovative financing model which has, up to now, little international experimentation. First experiments are being prepared [3]. Important is that all stakeholders involved work together intensely, for a longer period of time. For the target group (a group of citizens) a better health must be achieved. Effectiveness of the intervention or prevention must be guaranteed through careful evaluation of the results.

Chances for a Health Impact Bond on falls prevention
It seems that a HIB on falls prevention has a lot of chances but also challenges. In this section some first analyses are given:

- In a Health Impact Bond only effective interventions are being paid, which will lead to cost savings. A HIB is based on a direct relation between intervention, performance and cost saving. But in the case of falls prevention it will not be easy to demonstrate this relation;
- The demonstration of cost savings requires a lot of investigation where potential savings might occur. Also a social cost-benefit analysis is required; all stakeholders must agree about direct and indirect cost savings and how to capitalize them. In the case of falls prevention these will be difficult to address;
- The effectiveness of preventative measures must be demonstrated via data generated. These data must be made available, but in falls prevention, reliable data will only become available over a longer period of time.

Perverse stimuli
For some stakeholders the reduction of the number of falls accidents will not automatically generate enthusiasm: f.e. a hospital might lose income when the number of fall accidents, and thus the use of emergency wards and beds will be reduced. Therefore, in the HIB on falls prevention part of the revenue stream might be allocated to hospitals.
Another perverse stimulus might be that only those persons will be given preventative measures, where chances on success are highest.

3.3 A Health Impact Bond on Falls Prevention

In this paragraph the possibilities for a HIB on falls prevention will be explored in more detail. First, the general idea will be discussed, followed by zooming in on ICT measures for falls prevention and finally on the possibilities to maintain a network.

Societal problem
In the EU, an average of 35,848 older adults (65 and above) are reported to have died from falls on an annual basis (data 2010-2012). This figure is expected to be an underestimation of the true number of fall-related deaths. Falls are also the predominant cause (58%) of injury related emergency department (ED) attendances for older people within the EU.

Approximately 36,000 older people are reported to be fatally injured from falls every year in the EU; 1,443,000 fall-related injuries are admitted to hospital each year (40 x number of deaths) and 2,314,000 older people attend emergency departments with fall-related injuries each year (65 x number of deaths).
Age and gender related functional decline and impairment result in an increased risk of fall related injuries in older people. The costs of falls are high, both to the individual, carers and society. The health care expenditure for treating fall-related injuries in the EU is estimated to be 25 billion Euros each year [4].

Possibilities of prevention
Multimodal interventions typically focus on four main areas of prevention [4]:

a. Offering multifactorial post-fall risk assessments to all ‘first-time fallers’, including review of their multi-medication and enrolment in a physical activity programme supervised by a physiotherapist;
b. Encouragement to join home- or group-based exercise programmes focussing on balance training and muscle strength, tailored to the physical condition of each participant;

c. Design modifications to both the home and public environment, including: 'age-friendly' transportation modifications, home modifications by facilitating home visits by a trained professionals, and seeking opportunities from the Information and Communication Technologies (ICT) sector to provide solutions for fall-detection and -prevention;
d. Enhancing 'Fall Awareness' among health and social care professionals and older adults, and maximising opportunities for accessing evidence based fall prevention methods and tools.

Goals of a possible HIB on falls prevention
Studies reveal that dedicated falls prevention programmes targeted at high risk groups can help decrease injury rates by 20-40%. Fall prevention activities also have the potential to be cost effective and reduce substantially the health care costs associated with fall-related injuries [4].

One of the important conditions for a good HIB is that cost effectiveness can be clearly demonstrated. In general, however, there is not a whole lot of evidence that cost-effectiveness of a multi-factorial approach will clearly deliver 20-40 %. In a HIB, clear outcome results must be defined and a clear relation between result and interventions must be present.

In the remainder of this report a cost saving of 5 % is proposed. This number, chosen on the safe side of the spectrum of expectations, will be used to further discuss the feasibility of a HIB. In the Netherlands, in 2014 88.000 persons came to the emergency ward and 40.000 persons were admitted to the hospital because of a fall accident. A reduction of 5 % would mean 11 cases per day less on the emergency ward and 5 cases per day less admitted to the hospital. In the Netherlands, the annual cost of 800 million euro would mean a reduction of 40 million of costs. A rough extrapolation to EU would mean 1,25-1,50 billion cost saving at 5 % reduction.

Of course, extra investments are needed to reach these cost savings. It would be worthwhile to calculate how many extra person hours and equipment could be invested if a quarter of the aimed savings, f.e. 10 million euro would be invested in The Netherlands. So, would f.e.100 person years * euro 60.000 + 4 million euro's on equipment be able to decrease the number of hospital admissions from 40.000 to 38.000?

With such considerations it is instructive to make an overview for the stakeholders on the advantages and disadvantages of such a HIB:

Stakeholders	Advantages	Disadvantages
Target group 65 + persons	- Less injuries - More quality of life - Longer ageing in place - Delayed or no admission to nursing home	
Care provider	- Decrease of number of emergency wards will diminish workload of doctors in hospitals - Less pressure on family carer and nursing home carers	- Loss of income because of reduction of patients
Health Care Insurance company	Direct cost saving	Direct relation between intervention programmes and effects has not been proven yet

National, regional government	Reduction in care costs	Investments needed to execute interventions
Society	Less costs due to less fall accidents	

3.4 Maintaining the network

If a HIB on falls prevention would be set-up, in The Netherlands, at a 5 % targeted cost reduction (40 million euro), minus an investment of 10 million, minus paying back the revenues to the investors and minus the long-term support actions, there would be money left for installing part of the European network. For all activities mentioned earlier, an extra investment of f.e. 200.000-300.000 per year would be justifiable, even if there is no direct visible relation between these costs and the effectiveness of the total interventions. If a HIB in The Netherlands appears feasible, f.e. early 2017, a similar initiative could be set-up in another EU country, which would raise additional funding for maintaining a European wide network.

In order not to jeopardize the knowledge and know how achieved during these three years, through the HIB it could be made a smart investment in falls that ensure financial sustainability of the network. With the strong commitment and involvement of those ENF and PFN partners that were interested it could be possible to create an ecosystem based in HIB. The main goal would be to create a working group with the knowledge achieved during these years in order to be recognized as evaluator and adviser in the process to support the preparation and implementation of HIB in falls area.
This working group, acting as a key player, should be composed by an intersectorial and multidisciplinary team as i.e. managers, physiotherapist, carers, academia, ICT providers and technology developers. The group should offer a framework of expertise in the deployment of physical activity programs (balances, muscular strength..) , ICT , awareness programs, assessment, evaluation, ROI (return of investment), and tools (e. MAFEIP) and also enhancing public environment and homes.

To maintain the financial sustainability of this working group, part of the money remaining from the HIB should go to funding meetings, personal support, administrative staff and expert's fees.
The working group would act as a "thematic network" specialized in the implementation of HIB in the falls area, and would be a catalyst for supporting actions to expand the HIB to other fields, areas and even countries. In addition, the working group could act as a consultancy in order to bring specific and strategic solutions in the area due to the experience of the partners that have been involved in innovative activities for Fall Prevention during many years.

We can conclude that a partnership resulting from partners of both thematic networks related to falls (E-NO FALLS and PROFOUND), together with EIP on AHA members with a clear and strong commitment, could be sustainable in order to act as expert advisor through the use of HIB. In the following paragraph first ideas of a Network business model are given, which describe activities and costs for the advisor role in a HIB on falls in a particular country.

3.5 E-NO FALLS sustainability and Network business model

After the 3 years of work in the field of ICT for Falls, the thematic network E-NO FALLS would continue working making profit of the colaborative work and knowledge developed. The commitment of the partners with the Project and the collaboration not only among participants but also among

many groups of strategic stakeholders involved in the area is one of the strengths of E-NO FALLS. The working group can bring solutions as adviser quickly and efficiently, because the partners have been involved in activities to find innovative solutions in Falls during many years.
The network would act as a thematic network specialized in the implementation of the ICT aspects in a HIB in the Falls area. Apart from that, the netowork could act as a catalyst for supporting actions to expand the concept of a HIB to other fields, areas and even countries.
In order to continue with the work we propose a sustainability and Network business model based specially on the creation of a working group to act as a member of the evaluator and adviser team (see fig 1. in par. 3.1). Also the working group could be active in the process to support the preparation and implementation of a HIB in the falls area and the management of activities of generation of knowledge, assessment, dissemination, coaching and networking as a regular thematic network, mainly focussing on the ICT aspects of falls prevention.

The main activities will be:

- Creation of an expert working group in the particular HIB on falls prevention in the particular country (structure, objectives, operation)
- Annual meeting (revision of work done and annual planification)
- 2 Workshops on diferent thematics (the issues will be decided in the annual meeting)
- Participation in congresses, conferences, Falls Festival, fairs, events related to ICT for falls
- EIP AHA support and active participation
- Collaboration with other networks (ProFounD) and related projects
- Activities related to innovation procurement (PCC, PPI) in Falls prevention area

In the example of 10 million euro investment in The Netherlands, f.e.100 person years * euro 60.000 + 4 million euro's on equipment might be able to decrease the number of hospital admissions from 40.000 to 38.000. If the HIB would be set-up for 5 years, an average of 20 person years would be invested per year. In this particular case the involvement of 1 of the 20 persons with ICT expertise would be justified.

This 1 person with ICT expertise will be member of the working group of the sustained network of E-NO FALLS and participate in the aforementioned activities. His costs will be taken in the general 10 million investment. For the extra investment in the thematic network, the amount of euro 165.000 per year is foreseen. For a 5 year period of one HIB in the Netherlands only, this would sum up to 825.000 in total. However, it is expected that at least 2 other countries will follow soon after NL. Then the investment for maintaining the network would be appr. 300.000 per year, which would mean appr. 100.000 per year per country.

Below an overview of the detailed calculations is given:

E-NO FALSS Business Opportunity Plan					
(Per year with 1 HIB)					
Concept	Annual Costs	Description			
Annual meeting	€ 1.500	Room rental, lunch etc.			
Personnel (part time mngt)	€ 30.000	Salary of 1 pers (15h/week)			
Web maintenance	€ 2.500	External services)			
Dissemination	€ 20.000	Awarenss campaigns			
Participation in EIPAHA	€ 3.000	3 meetings in Brussels			
Travel and accomodation	€ 17.000	Partner travels			
Workshops (2 per year)	€ 12.000	Experts, room, lunch, etc.			
Evaluator and advisor in HIB	€ 15.000	Work as assessors in a HIB			
Technical reports	€ 35.000	Docs analyis, reporting, HIB adv.			
Indirect costs (30 %)	€ 24.000				
Not foreseen	€ 5.000				
Total	€ 165.000				
E-NO FALSS Business Opportunity Plan					
(Per year with 3 HIBs)					
Concept	Annual Costs	Description			
Annual meeting	€ 1.500	Room rental, lunch etc.			
Personnel (part time mngt)	€ 60.000	Salary of 1 pers (30h/week)			
Web maintenance	€ 2.500	External services)			
Dissemination	€ 20.000	Awarenss campaigns			
Participation in EIPAHA	€ 3.000	3 meetings in Brussels			
Travel and accomodation	€ 17.000	Partner travels			
Workshops (2 per year)	€ 12.000	Experts, room, lunch, etc.			
Evaluator and advisor in HIB	€ 45.000	Work as assessors in a HIB			
Technical reports	€ 75.000	Docs analyis, reporting, HIB adv.			
Indirect costs (30 %)	€ 54.000				
Not foreseen	€ 3.000				
Total	€ 293.000				

4. Bibliography

[1] E-NO FALLS, “Annex I - Description of Work (DoW),” 2014.

[2] Lunes R., Frissen R., Vermeer F. (Society Impact Platform) and Revenboer A. (Ernst&Young): Social Impact Bonds, 2013

[3] Vermeer F., Van der Meer D. (Society Impact Platform) Clarenbeek J. and Lagendijk K. (Ernst&Young): Haalbaarheid en toepasbaarheid van Health Impact Bonds, 2015

[4] Factsheet: Falls among older adults in the EU-28 - Key facts from available statistics.

[5] ProFouND joint declaration: Active ageing through preventing falls: “Falls prevention is everyone’s business”