Thematic Network
CIP-ICT-PSP 2012 Call 6 | Ref.: 325137
European Network for FALL Prevention, Intervention & Security

D3.3 Roadmap for the pre-commercial procurement of ICT-based fall prevention and effective intervention

E-NOFALLS

Innovation Procurement to develop ICT solutions for fall prevention and intervention

E-CIP-ICT-PSP-2012-6 | Ref.: 325137 | http://www.e-nofalls.eu

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1 Introduction

Foreword

This roadmap aims to become a practical guide to help public procurers, companies and other stakeholders involved in the "ICT for Falls" value chain, to recognize the Procurement of Innovation (PI) process as a tool to achieve solutions for society real needs, attaining their companies and institutions objectives.

Context

Falls constitute a problem in elderly and determine the growing of morbidity and mortality by being one of the main causes for hospitalization in a geriatric unit. Estimated 80% of all accidents which lead to injuries with serious consequences are caused by falls in elderly people. Falls still constitute a major threat to the health and well-being of elderly people.

ICT for Fall Prevention and Intervention

ICT for Falls aims to improve the current techniques for determining the risk of falls and help to accurate diagnosis.

With an appropriate knowledge of the risk of falls, **ICT tools enable better implementation of activities in both prevention and detection of falls**. The deploying actions (prevention and detection systems) should involve all relevant stakeholders.

1 Introduction

Summary

This guide is written to give public health care institutions, as procurers, and companies in the ICT and Health sectors, as solution providers, a first practical roadmap for how to utilize the Procurement of Innovation (PI) process to solve the need for new and innovative *ICT for Health* products and services, contextualising the process with an *ICT for Falls* approach.

The document is based on the analysis of several procurement practices within Europe, literature review and experts insight. The methodology followed is described in Chapter 2.

Chapter 3 defines the main concepts related to the Procurement of Innovation , also offering a description of the process and its different phases.

In Chapter 4 it is described the *ICT for Falls* Value Chain identifying its current challenges and how Procurement of Innovation could help to overcome such challenges, through a step-by-step approach.

Chapter 5 identifies the *Critical Success Factors, that is the limited number of areas in which results, if they are satisfactory, will ensure successful performance of the PI process.*

Chapter 6 offer some information about funding opportunities identifies to support PI initiatives.

Chapter 7 and 8 identify 2 good practices in Procurement of Innovation related to ICT for Health.

Finally, Chapter 9 offers some remarks and hints gathered from the different experiences , cases, and experts recommendations; and Chapter 10 shows some useful references and tools.

1 Introduction

Basis

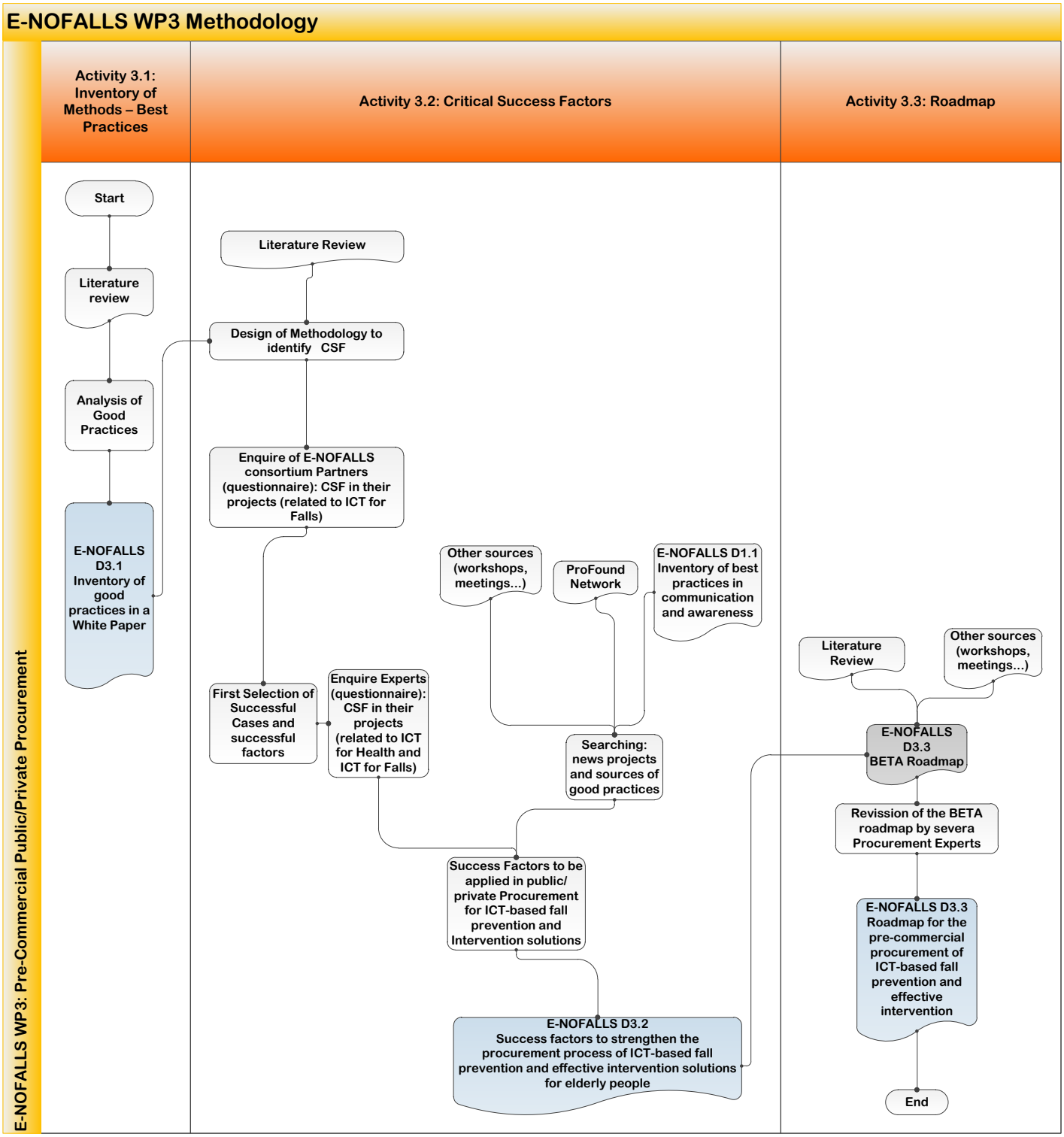
The analysis carried out within this study allows us to conclude that there are certainly opportunities for public authorities in Europe in public technology procurement; opportunities that could bring both significant improvements to the quality and efficiency of public services, as well as facilitate the emergence of new lead markers for business. Innovative procurement can be used as an effective instrument to influence technological development and innovation and as an additional tool, next to subsides and fiscal schemes, to increase the R&D public expenditures.

The studied cases and the expert insights show that technology procurement can be successfully applied in different areas to overcome major societal challenges, including aging and heath care. However, although European public authorities can successfully undertake technology procurement, there are a number of recommendations that can be used in order to improve this process and to ensure the success of the project.

It is clear, however, that PCP is still not a favoured tool for procurement amongst public procurers, especially in Europe. This guide intends to be a first step, by raising increased awareness among all stakeholders involved in the "ICT for Falls" ecosystem and that therefore could potentially launch or participate in a PCP process to create step-change innovations in this field.

2 Methodology

As described below, this Roadmap is the result of the analysis of several procurement practices within Europe, literature review and experts insight.



3 Main Concepts

PI, PCP and PPI Concepts

Procurement of Innovation (PI) is the purchase from a public organization of Innovation Goods and Services to solve specific needs, while improving economic competitiveness of the industry. PI processes take into account the design and delivery of public services, giving public buyers the opportunity to **influence the market towards innovative solutions**.

- **Pre-Commercial Procurement (PCP) refers to:**

  Contracting research and development services

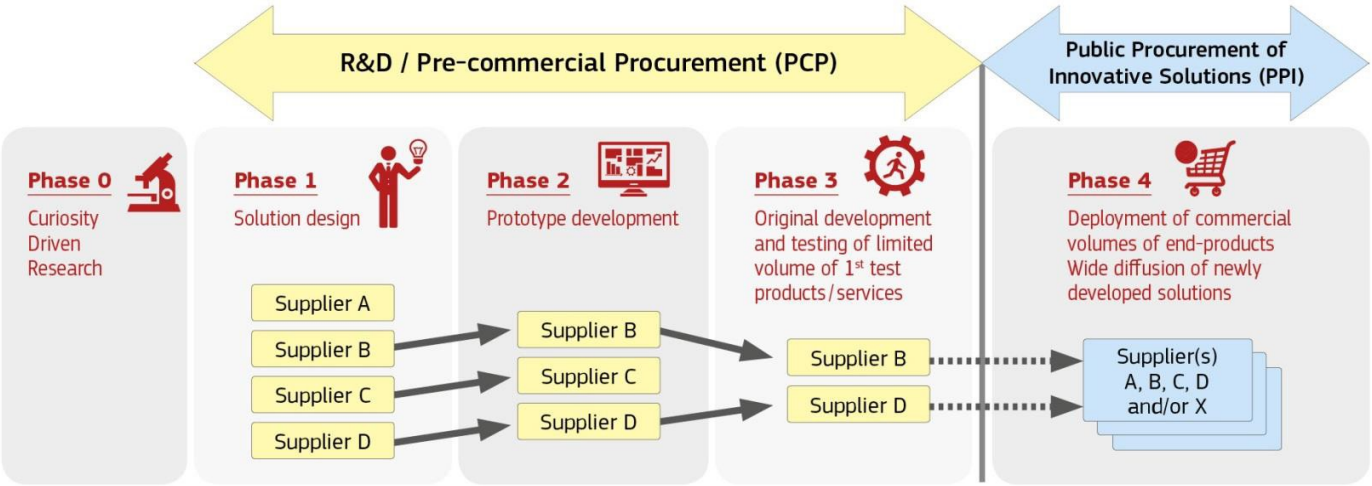
  → Close to R&D (PCP Project is looking for R&D)

- **Public Procurement of Innovation (PPI) refers to:**

  Purchase of newly arrived products to the market

  → Close to Market (PPI Project is looking for new solutions already available on the market but at a small scale)

PCP/PPI Overview



3 Main Concepts

Procurement of Innovation process

Every Procurement of Innovation process shares specific steps that should be followed, from the identification of needs until the commercialization phase.

Preparation

Identification of problem with negative impact in the provision of a service. Needs assessment.

Market consultation to search for available products/services. Align public needs with industry development pathways.

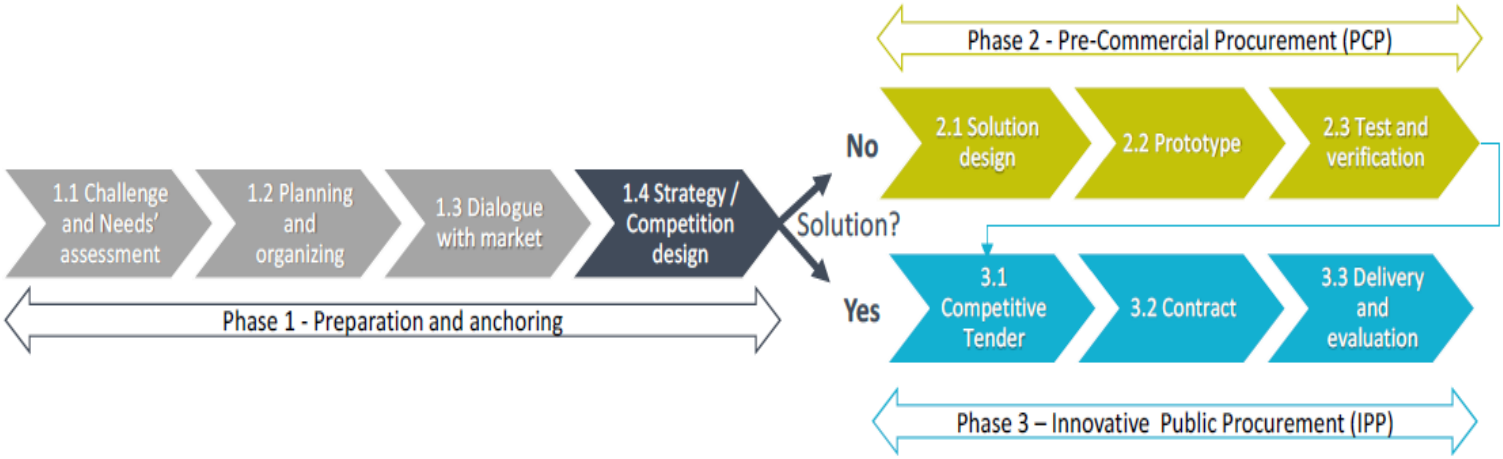
Business case: consider the impact of not innovating and the evolving scenario.

PCP/PPI tendering

Consider all information available and decide the procurement process that best fits (PCP or PPI).

Include all documentation in the tender. Provide a clear problem statement and set operational context to test the solutions.

Consider risk management and Intellectual Property Rights management.

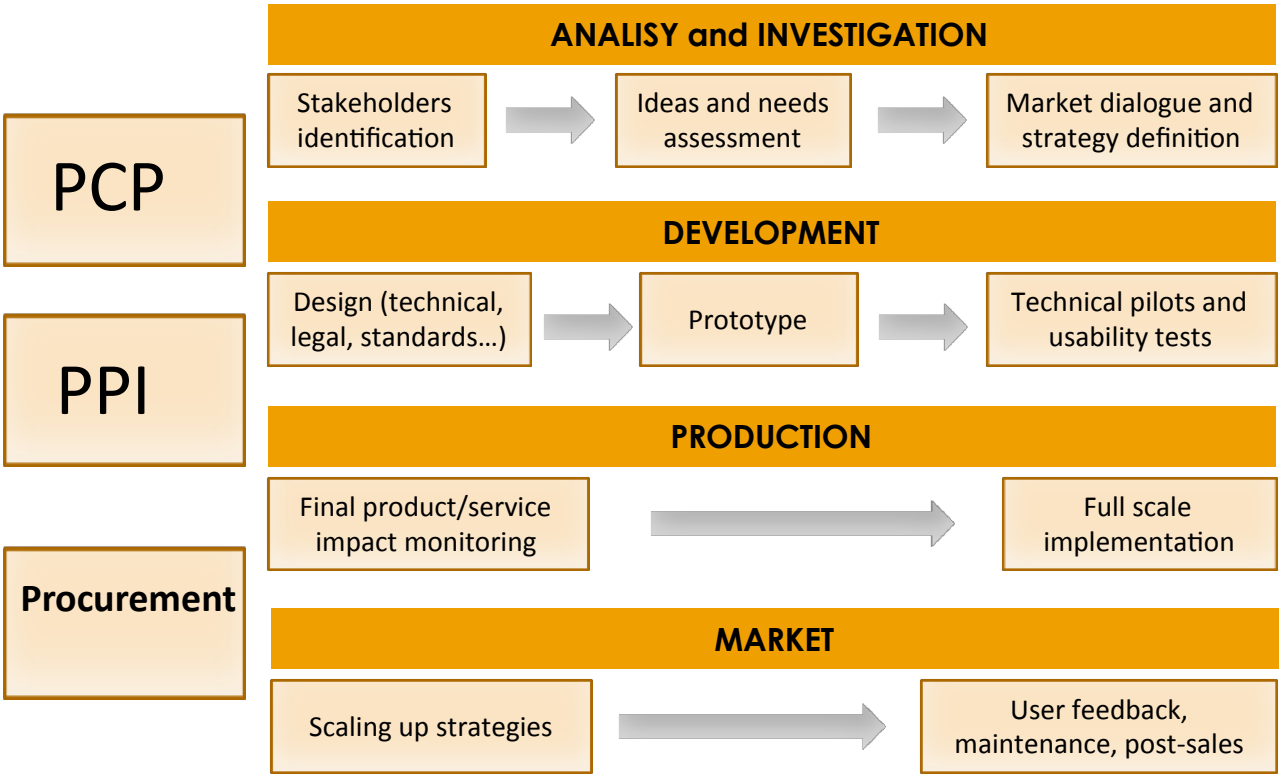


Procurement of Innovation main phases [1]

[1] http://www.nordic-net.com/media/1025/guide-for-ppi-in-public-health-sektor-public-draft-version-print.pdf

4 Procurement of Innovation as a driver for ICT for Fall Prevention

ICT for Fall Prevention and InterventionValue Chain



Current deployment challenges

- Widespread use of ICT tools for analyzing fall risk
- Distinguishing effective systems to detect and prevent falls
- Fitting with health systems and social services
- Better scalability and deployment of best practices in the field of prevention and detection
- Raising awareness to find assessment methods
- Developing more sustainable solutions
- Fostering standards and interoperability of ICT for Falls systems

4 Procurement of Innovation as a driver for ICT for Fall Prevention

Challenges

- Research centres/actors are not in the same position in PCP/PPI field. They can be part of the innovation ecosystem as supply side consortium members in a PCP. However, they can't act as suppliers alone generally while they are lacking the production and financial capacity to become suppliers.
- In Falls detection Area there are some ICT products and services already in the market (mostly supplied by SME's) while in Fall Prevention there are only ICT devices evidence based suppliers . Most of them are prototypes and will not arrive to the market in a short term, so it is needed more products in the market. Furthermore, both, detection and prevention for falls need to be general accepted by health community.
- ICT devices for prevention are actually useful in labs but not for the introduction of them in houses for elderly or nursing homes. PCP could help to arrive from prototype to real product and scaling up.
- A new profile of key actors in PCP process should be part of the process (designers, materials engineering, usability and human computer interaction experts…) They could associate to prototype makers and arrive to market.
- The improvement in services and devices related to falls needs a continuous feedback with user and personal carer (they can report about the impact in quality of life, usability, acceptability...)
- One of the barriers in falls area is the low awareness of the final users in the actual need of prevention or detection systems. Then, coaching actions through medical and care professionals should be done previously to rise demand and act on it.

4 Procurement of Innovation as a driver for ICT for Fall Prevention

Who can participate?

Procurement of Innovation enables public administration to challenge industry to develop solutions for demanding problems.

Two cases are considered: i) no commercial solutions exist, and ii) commercial solutions exist, but not deployed and tested in a given sector (only proof-of-concepts or early-adopters).

Usually, the **public purchaser starts the procurement process**. Once the process is started, the rest of stakeholders involved will be able to participate, according to the scenario set by the purchaser.

4 Procurement of Innovation as a driver for ICT for Fall Prevention

Who can participate?

Procurement of Innovation: stakeholders in *ICT for Falls*

Public authorities place an order for the fulfilment of certain functions within a reasonable period of time through the development of a new products.

Industry is the main actors involved in the development phase

Research Centres take part directly in the innovation processes by participating in the research and invention activities that influence innovation

Health centres are particularly valuable in the design and testing phases in order to support better health outcomes

Health professionals are involved in drawing up, developing and evaluating the plans

Citizens are the main beneficiaries of the product and should be involved in the PCP project from the beginning for a user-centred approach

4 Procurement of Innovation as a driver for ICT for Fall Prevention

Why PCP/PPI?

In either case considered for the procurement process (PCP or PPI), procurement of innovation provides benefits for **procurers** (public administration and health centres), **providers** (research centres and industry) and **end-users** (health professionals and citizens).

Benefits for procurers

Public authorities

Quality and efficiency of services offered

Generate a solution for an uncovered need.

Risk shared model commercial tendering

Health centres

Participation in the process for innovation demand

Improve services delivered to the population

Addressing real needs through innovation process

4 Procurement of Innovation as a driver for ICT for Fall Prevention

Why PCP/PPI?

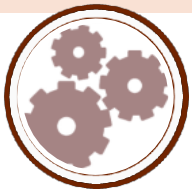
Benefits for providers

Industry, SMEs

Risk sharing in product/ service development

Need-oriented product or service development

Co-funded phased competitive development



Research Centres

Market-oriented funds for applied research

Development opportunities for need-oriented solutions

Quick acceptance and implementation of projects

Benefits for end-users

Citizens

Quality and efficiency of services offered

Availability of affordable products addressed to social needs

Integrated care / care path / service concept adopted solutions

4 Procurement of Innovation as a driver for ICT for Fall Prevention

How to start with a Procurement of Innovation Process?

PCP/PPI processes respond to a given need or opportunity for which either no solution is available; or it exists, but is not fully tested in our field of interest.

Ideas can arise from Health Professionals, Health Centres or Public Authorities, aiming to give answer to citizens needs, **although the process is usually started by Public Authorities or Health Centres** wanting to purchase some innovative good or service.

4 Procurement of Innovation as a driver for ICT for Fall Prevention

How to start with a Procurement of Innovation Process?

PCP/PPI processes need the participation of different actors at different levels. Professionals play a significant role developing new products and services delivered to the citizens.

Health professional

Being closer to the patient, health professionals may find new opportunities and needs towards improvement of care through new products and services, **how to proceed?**

1. Once an opportunity or need is identified, do a little research on available products in the market and find those gaps which may be addressed through innovation procurement.

2. Make a brief proposal of the idea, describing the new functionalities that needs to be covered, if solutions already exist in the market, including in the analysis pros and cons of the solution proposed.

3. Talk to your health centre, proposing the idea and the benefits of the solution.
   Consider making a proposal to the corresponding procuring authority in the region (Yes really important), or directly launch the process within your health centre, if
   resources for investment are available.

4 Procurement of Innovation as a driver for ICT for Fall Prevention

How to start with a Procurement of Innovation Process?

PCP/PPI processes may be seen as complex and resource demanding. Proper allocation of efforts, driven by experts from different sectors, will pave the way for a successful and fruitful process.

Health/social care centre

Health centres, as providers of health and social care services, have the commitment to improve services delivered to citizens. New technologies may foster this improvement, **how to proceed?**

1. Once identified the opportunity or need, with the corresponding proposal of ideas, check the availability of resources in the centre to participate in a PI process.
2. Assess potential cost-reduction and service improvement with the new product or services proposed, evaluating the efforts needed and the expected outcomes (social, economic, quality of service). Define the minimum benefits and acceptable to justify the cost of being engaged in a PI process. (**Important to calculate in "complete costs", to take in consideration all the benefit in term of economy at long term and not short term. The cost of an innovative solution will often be more expansive compared to a classic solution but only if you consider the cost of the solution itself).**
3. If a funding opportunity is available, select an expert team to develop the PCP/PPI process, describing in detail all the needed documentation and participation of the different actors involved.

4 Procurement of Innovation as a driver for ICT for Fall Prevention

In which case should be used PCP or PPI?

Once the decision is made to be engaged in a PI process, the procurer organization must decide between PCP or PPI, according to different issues related to the procurement scenario.

Issues to consider…

✓ What is the affordable level of risk I can assume?

In PCP process, solutions are designed and built from an idea or need, unlike in PPI, which already some products are available. Given that, there is a higher risk in PCP than in PPI to achieve a desirable solution, because no previous reference is available. In PPI you may find some proof-of-concepts or pilots with already tested solutions.

✓ What are your expectations towards the solution?

As in the previous one, PCP process aims to build still non-existent solutions, so expectations about the designed solution can be higher than in PPI. In the latter, solutions already exists, which may not fit completely our needs, but a least we have some certainty to find a solution close to the requirements.

✓ Short-term or long-term requirements and resources?

PCP process requires significantly more resources in terms of budget and time to be fully completed. Given that, PPI processes are more suitable for solutions that want to be fully deployed in the short-term, and with less allocation of resources required.

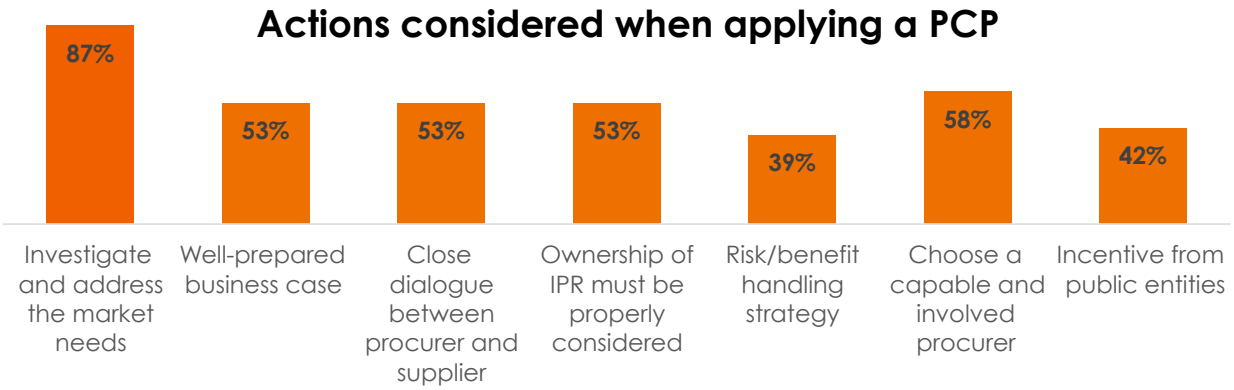
5 Critical Success Factors

Achieving relevant results from a PI process requires an accurate allocation of resources, as well as considering some **Critical Success Factors**, that is, areas in which favourable results are necessary to reach the goals targeted, where '*things must go right*'.

Critical Success Factors in PCP/PPI

Investigate and address market needs	It is important to identify public sector priority challenges which could be addressed through PCP of innovative solutions.
Well-prepared business case	Helps in reducing uncertainties for the supplier who will have a greater incentive to invest in the project.
Close dialogue between procurer and supplier	The dialogue may increase the knowledge transfer and the creativity through "sparring", leading to a more efficient ways to deal with problems. TO ENSURE REACH THE MARKET
Ownership of IPRs must be properly considered	The choice must depend on the project in question and on the capabilities and ambitions of the procurer and the supplier. Find balance between industry and procuring authorities' interests.
Use a risk/benefit handling strategy	A proper risk assessment combined with a clear business case, would enable risk-sharing and thus make the project more attractive to both procurers and suppliers.
Choose a capable and involved procurer	The procurer should have sufficient knowledge of the subject field of the development project, and an organization well- equipped to steer and participate in the project.
Incentive from public entities	If public procurers, are to undertake more radical innovation projects, other incentive structures are needed, in particular larger rewards for innovative approaches and entrepreneurial behavior.

5 Critical Success Factors



Other Success Factors to be taken into account in PCP/PPI

The involvement of the end-users, primary and secondary	A user-centered approach may guarantee the acceptance of the product.
Involve legal and regulatory experts and innovation agencies	Facilitating organizations such as innovation agencies, consultancy agencies and competence centers can guarantee the support and necessary competences to deal with this process on legal and regulatory matters
Involvement of specialized professionals and decision makers	It is recommended the early interaction with certification bodies and compliance with quality control systems for design, testing, trialing and manufacturing.
Efficient and effective dissemination of the project	Methodologies to disseminate the project and establish communication links to end-users may be decisive to convince the latter to buy the product.
Commitment of all partners and effective project management	All partners should be committed in advancing the project and the benefits and incentives of each partner should be clear for the whole consortium
Streamline the PCP process	The partners should know well the PCP process and handle it efficiently.

6 Funding Opportunities

PI processes can be funded by different means, either private or public. Private funding can be obtained from external organizations, or from investment budget of the procuring organization. Regarding public funds, two calls are described next: Horizon2020 and ESIF.

Horizon H2020

In Horizon2020 program, €33M out from €130M planned for PCP/PPI projects could be eligible for Fall prevention initiatives.

- **PCP/PPI Calls**

PCP Actions (90% funding rate): Provide EU co-financing for an actual PCP procurement (one joint PCP procurement per action) + for related coordination and networking activities (to prepare, manage and call for tender follow-up).

PPI Actions (35% funding rate): Provide EU co-financing for an actual PPI procurement (one joint PPI procurement per action) + for related coordination and networking activities (prepare, manage and call for tender follow-up.

- SC1-PM-12–2016: PCP- eHealth innovation in empowering the patient
- SC1-PM-13-2016: PPI for deployment and scaling up of ICT solutions for active and healthy ageing
- ICT-34: Pre-Commercial Procurement open
- 9 in PCPs: 1 in e-Health, 6 in ICT, 1 in security, 1 in research infrastructure
- 6 in PPIs: 1 in e-Health, 3 in ICT, 1 in Transport, 1 in research infrastructure

6 Funding Opportunities

There are also other sources of funding, coming from European Structural & Investment Funds (ESIF) which can be used in synergies with H2020.

European Structural & Investment Funds (ESIF)

ESIF and H2020 funding cannot be used "accumulatively" to finance the same cost/expenditure item, so financing must be carefully planned and specified. Next there are some considerations regarding ESIF funds

- The value of support for research, development and innovation could be further enhanced by combining funding resources (increase of effects at regional level).
- Procurers could choose for higher ESIF co-funding rates instead of H2020 co-funding rates whilst participating to H2020 funded PCP/PPIs.
- Better communication between "regional development community" and "Horizon-Science community".
- A regional development scheme through the participation in a H2020
  project acquires a European perspective.

More information about EU funding opportunities for PCP and PPI

http://ec.europa.eu/digital-agenda/en/news/calls-eu-funding-opportunities-pre-commercial-procurement-and-public-procurement-innovative

7 PCP in Practice – SILVER Project

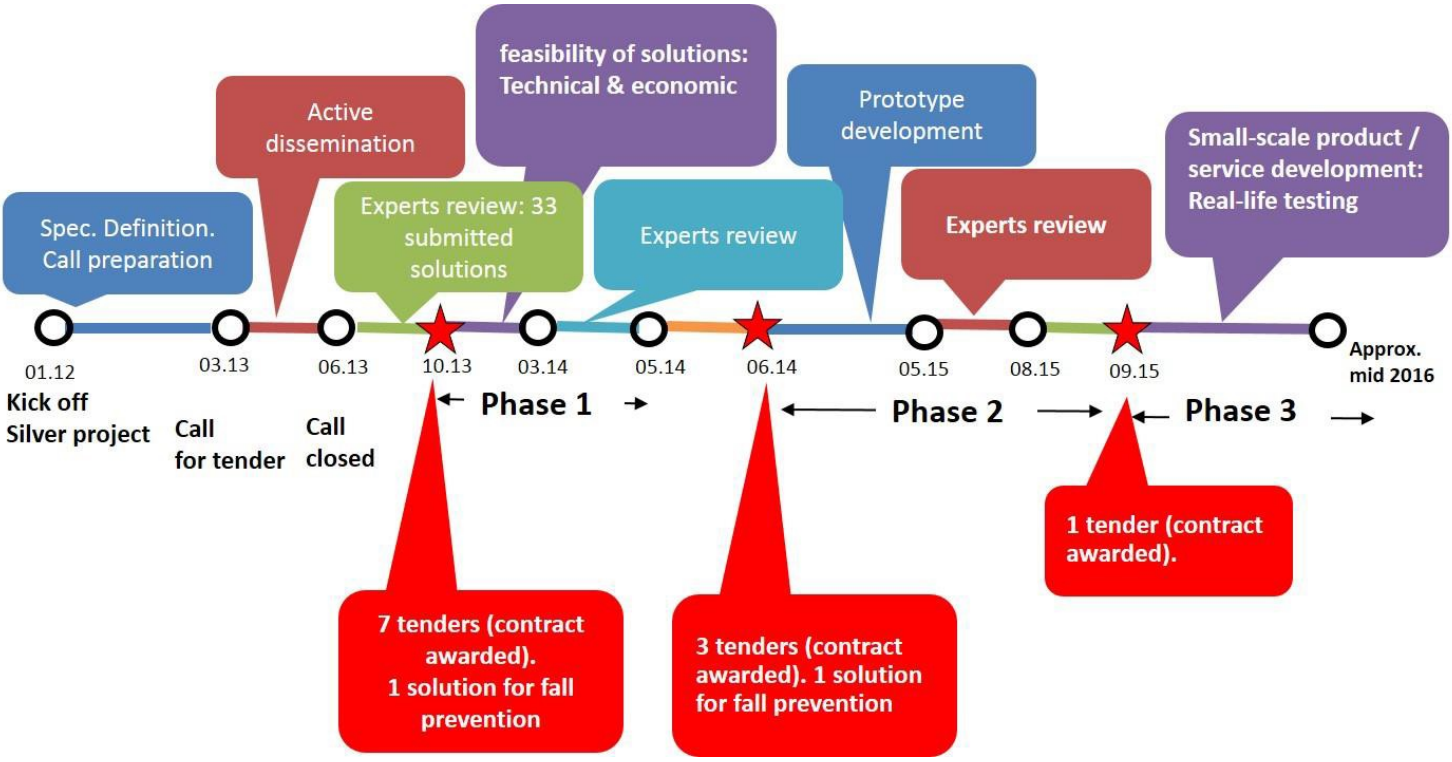
SILVER PROJECT ((Supporting Independent LiVing for the Elderly through Robotics, http://www.silverpcp.eu/): Pilot Project funded by EC (Project reference: 287609)

Goals: Use public procurement to explore new robotics assisting technologies for elderly people to extend independent living. A generic procedure will be established and executed and will serve as model to other cross-border PCP processes.

Participants:

- **7 Public Procurers:** City of Eindhoven, City of Odense, City of Oulu, City of Stockport, City of Vantaa, City of Västerås, Region Syddanmark
- **8 Other partners**: Innovate UK (coord.), Aalto University, Forum Virium Helsinki, VINNOVA, Brainport Development NL, Netherland Entreprise agency, OPI-Lab, Brainport Development

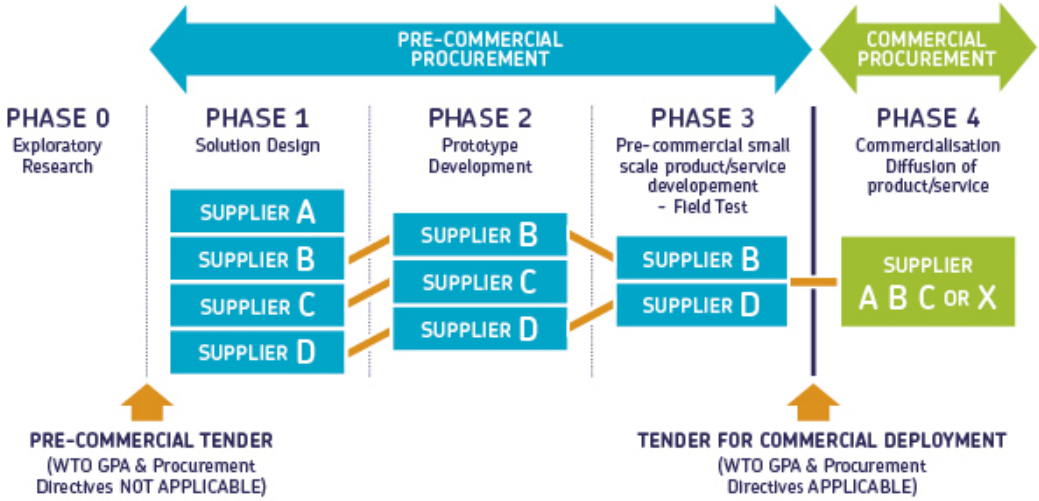
Timeline of the project



7 PCP in Practice – SILVER Project

SILVER PROJECT ((Supporting Independent LiVing for the Elderly through Robotics, http://www.silverpcp.eu/)

From the 7 proposals awarded in the Phase 1 of SILVER competition, 3 solutions went through Phase 2 of SILVER competition and 1 prototype succeeded to pass to Phase 3 of SILVER competition



Phase 1: Solution Design (350.000 EUR, 6 months)

DEXTERous Mobile Manipulator by Assistobot B.V.

Kompaï-Robosoft by Robosoft Mealtime 360 by Bestic AB

Wearable Bionic Exoskeletons by Marsi Bionics S.L.

Phase 2: Prototype development (720.000 EUR, 1 year)

HelpingHand by Alten Nederland B.V. -**Fall prevention solution**
Iron Arm by Bioservo Technologies AB

Phase 3: Pre-Commercial small scale product/service development (1.080.000 EUR, 1 year).

LEA (Lean ElderlyAssistant) by Robot Care Systems

8 PPI in Practice – HAPPI Project

HAPPI PROJECT (Healthy Ageing – Public Procurement of Innovations, http://www.happi-project.eu/): Pilot Project funded by EC (ENT/CIP/11/C/N02C011)

Goals: Use public procurement to stimulate demand-driven innovation in healthy ageing to address the challenge of demographic change in Europe in the following fields: Telematics and electronic systems, Smart room aids, Wellbeing and ageing well, Diagnostic tools or processes, Support for care workers and ergonomic work place.

Participants:

- 7 Central Purchasing Bodies: Reseah-idf (coord.), Centrale de Marchés Mercure, Società di Committenza Regione Piemonte, Fédération des Hôpitaux Luxembourgeois, NHS Commercial Solutions, FIBICO, The Federal Procurement Agency.
- 3 procurement & innovation experts: BPIFRANCE, BITECIC, ICLEI
- 2 Academics: Ecole des Hautes Etudes en Santé Publique, University of

5 Topics of interest in the call for tender

- Lot 1: Fall detection and alert system
- Lot 2: Treadmill for rehabiitation and analysis of walking disordres
- Lot 3: Walking course for preventing falls and maintining independece
- Lot 4: Bed thermoregulation system
- Lot 5: Chair enabiling users to maintain Independence and reducing effor for aides.

8 PPI in Practice – HAPPI Project

HAPPI PROJECT (Healthy Ageing – Public Procurement of Innovations, http://www.happi-project.eu/).

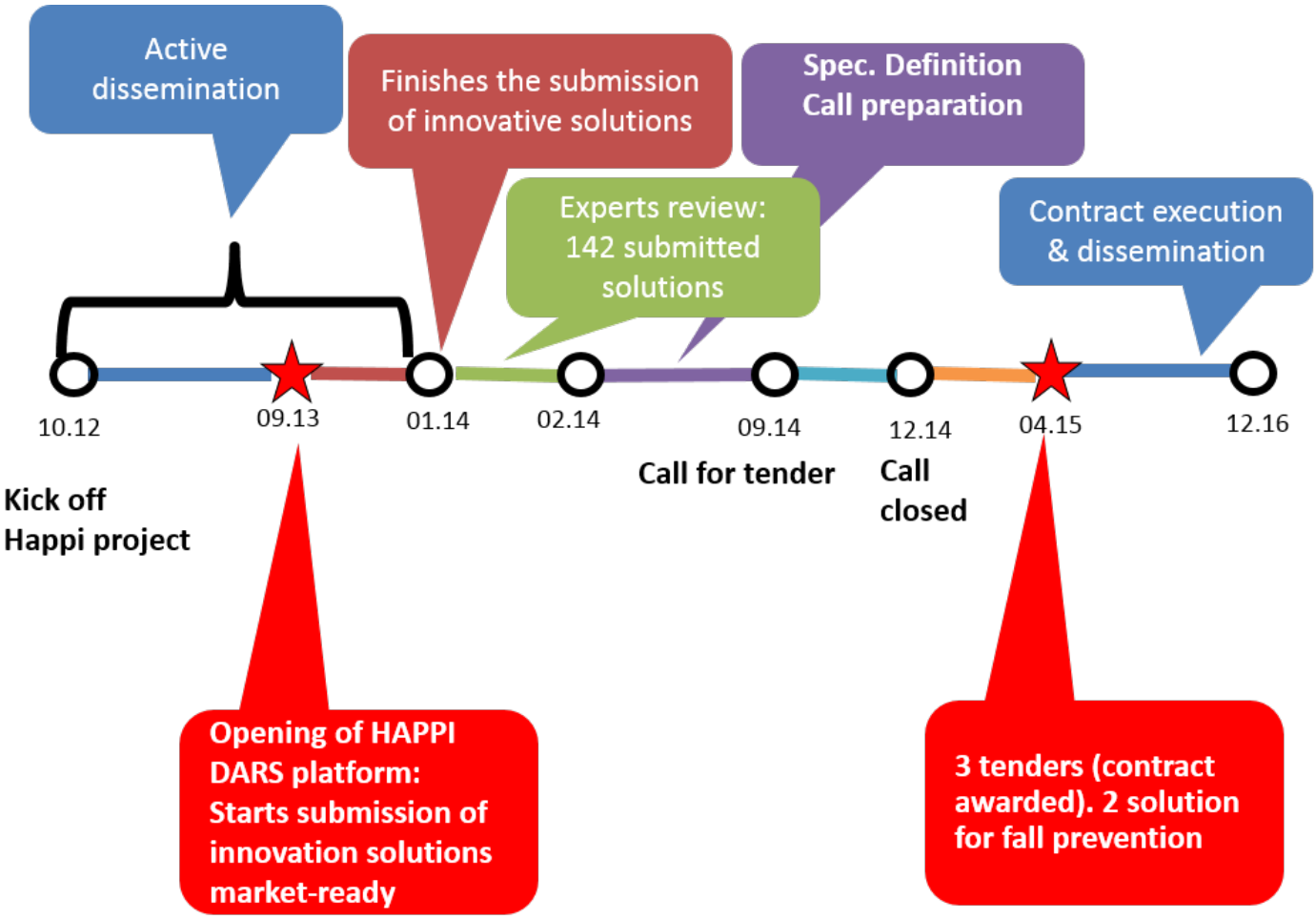
Lots awarded:

Lot 1: Solution VAC by C2S. creative2s.fr/. Fall detection solution

Lot 2: Solution C-MILL by Forcelink. forcelink.nl/

Lot 3: Solution DM3 by AlterEcoSante. alterecosante.net/ Fall prevention solution

Timeline of the project



9 Final remarks

The world is experiencing economic, social and demographic changes that involve aging population, economic downturn and climate change. Those challenges require solutions that can be found in the market or not.

The analysis carried out within the different steps of this study allows us to conclude that Pre-Commercial Procurement and Public Procurement of Innovative processes have the potential to positively influence innovation, research and development.

PCP and PPI are separate but complementary procurements. In both cases it is necessary to follow the correct pathway to achieve a successful process. PCP and PPI initiatives can be a good solution for fostering ICT solutions for fall prevention and its adoption, as following these models, risks are shared among the stakeholders and funded solutions are meeting real needs

Having a clear agreement on the ownership of the Intellectual Property Rights (IPR) is a critical issue. IPR ownership options include:

- The supplier owns all the resultant IPR.
- The supplier owns overall IPR but licences it for use to the procurer in a specified application or area.
- The procurer takes an exclusive licence or ownership of the IPR.

9 Final remarks

PCP process allows to share the risk and profits between procurers and suppliers. PCP allows **public bodies** to acquire of R&D capacity to solve a societal problem of significant public interest. On the other hand, PCP procedure allows a mechanism for **researchers, ICT providers and service providers** to access public bodies and be in contact with real life problems.

PCP and PPI are a chance for **industries and SMEs** to build up a new market and the related business opportunities. Furthermore, the contracting authority can acquire better new solutions that are not possible to find on a large scale on the current market. Thus, promoting the participation of SMEs into PCP and PPI processes can be a key to perform successful projects.

9 Final remarks

Process and dialogue

- Dialogue as part of the process is useful and necessary when carrying out innovative procurement. Dialogue increases the procuring agency's level of market knowledge as well as the companies' knowledge of user needs.
- Innovative procurement is associated with additional costs as more time and resources to carry out dialogue, feasibility studies etc. are required.

Incentives

- Dialogue with companies and users is a main incentive for the procuring agency.
- The outlook of getting better solutions than what could be obtained through standard procurement.
- Companies' main incentive to participate in innovative procurement is connected to a commercial perspective through the demonstration of a demand and a first sale.

Risk Management

- Risks are inherent and inevitable in innovative procurement.
- There have been no formal risk management, and risks have been handled as they emerged.

Legal framework

- The legal framework does not exclude innovative procurement.
- Legal counselling and support is an important element in innovative procurement if the procurement process is to be in line with the legal framework

10 References and resources

- **Digital Agenda for Europe. European Commission**
  http://ec.europa.eu/digital-agenda/en/innovation-procurement

- **EAFIP – European Assistance for Innovation Procurement**
  http://eafip.eu/toolkit/

- Guide for Public Procurement of Innovation in the health sector. Nordic PPI Net.
  http://www.nordic-net.com/about/step-by-step-guide/

- **HAPPI Project: Healthy Ageing – Public Procurement of Innovations**
  http://www.happi-project.eu/

- **Innovative Public Procurement and Health Care**. Nordic Lighthouse Project
  www.norden.org/publications

- **INSPIRE Project: International Network Supporting Procurement and Innovation via Resources and Education**
  http://inspirecampus.eu/

- **PCP related initiatives in countries around Europe**
  European Commission. http://cordis.europa.eu/fp7/ict/pcp/msinitiatives_en.html#

- **Practical guide to PCP. Implementation for Progre-EAST pilots. Innovative procurement techniques.**
  http://www.progreast.eu/files/PCP%20GUIDE.pdf

- **Pre-commercial procurement: Best practices and alternatives in the European eHealth sector.**
  S. Ikävalko, M. Rolfstam

- **Procurement Forum. European Secretariat of ICLEI - Local Governments for Sustainability**
  https://procurement-forum.eu/

- **Procurement of Innovation Platform: Guidance for public authorities on Public Procurement of Innovation**
  h
  ttps://www.innovation-procurement.org/fileadmin/editor-content/Guides/PPI-Platform_Guide_new-final_download.pdf

- **Silver Project: Supporting Independent Living for the Elderly through Robotics**
  http://www.silverpcp.eu/

- **The HAPPI Experience.** Louis POTEL
  http://eafip.eu/events/workshops/1st-eafip-workshop-health-and-innovation-procurement/