Deliverable D5.5
Consolidated Learning and Recommendations Report – Phase 0 - 3

1

SILVER

Document revision history

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Notes

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• PU = Public

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• RE = Restricted to a group specified by the consortium (including the Commission Services)

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Introduction

The SILVER project has two primary objectives. The first is to develop and validate a generic model for a transnational Pre-Commercial Procurement (PCP) process in the participating countries. The second objective is to use the developed generic PCP process as a basis for running an actual specific call, to develop new technologies and services that will address the challenge of Supporting Independent Living for the elderly through Robotics.

The goal is to discover new robotic solutions, that when implemented in elderly care will make it possible to care for 10 % more care recipients in 2020 with the same number of care givers. The solutions should, also at the same time, increase the quality of life for the elderly, by making them more independent and improving their health.

The aim for SILVER's work package 2 is to gather existing experiences to create a generic, transnational, European process for running PCP, including supporting guidelines, templates and artefacts which can be used for an actual PCP call in SILVER and in future PCP calls.

While Work Package 2 will generate the best current view on how a transnational PCP scheme can be run it is expected that during the course of the actual PCP call in SILVER, further understanding will develop through the actual implementation of such a scheme. The objective of Work Package 5 is to capture learning points and to make recommendations both to the partners in the SILVER consortium and to others who may in the future wish to implement a similar process. The recommendations will be applied to relevant SILVER process documents as well as the generic PCP process document (D2.2) and template (D2.3) as work package 5 deliverables (D5.6 and D5.7).

The PCP process in SILVER is divided into three phases of respectively 6, 12 and 12 months duration. The first phase is a feasibility study of the selected technologies and proposals. The most promising ideas are developed into well-defined prototypes in phase two. The third phase aims to verify and compare a first test production or services in real-life situations. The duration for the SILVER project is 56 months, running from 2012 – 2016. The SILVER project consortium consists of partners from five countries: the UK, the Netherlands, Finland, Sweden and Denmark.

The SILVER Work Package 5 (that this report is part of) focuses on making Learning and Recommendation Reports from phases 0 – 3 as well as a consolidated report for all phases in the SILVER PCP.

This deliverable 5.5: "Consolidated Learning and Recommendations Report – phases 0 – 3" describes the key learning points extracted from the entire PCP process of the SILVER project. The recommendations are based on the learning reports from each of the phases (0 – 3) and additional reflections from the SILVER partners and the contractor remaining in Phase 3. To find learnings and recommendations in more detail for each Phase please consult deliverables 5.1 (Phase 0), 5.2 (Phase 1), 5.3 (Phase 2) and 5.4 (Phase 3) (www.syddansksundhedsinnovation.dk/projekter/silver-supporting-independent-living-for-the-elderly-through-robotics/).

1. PCP Project Management

1.1: Project Plan

Three overall recommendations from SILVER are considered especially important when planning the PCP project in relation to: Work Package leadership, the role of the Project Monitoring Officer (PMO) and the Prototype Tests.

PCPs may consider having one of the procuring partners be directly responsible as Lead Procurer and the Authority for Assessment and Monitoring - as they have the best knowledge regarding the needs and circumstances of the procurers. The procuring partners could also provide dedicated resource early in the process to engage with the contractors on a regular basis to provide feedback in order to ensure commitment and accountability in the project. It may also be advantageous for a procuring authority to own the development of call documents to ensure accountability of development and implementation of testing plans and ethical requirements.

Another recommendation from SILVER is to include a Project Monitoring Officer (PMO) as a central role in the PCP and the project planning to ensure that deadlines and information for contractors are aligned and notified to the contractor as early on as possible. Experience from SILVER shows that appointing a coordinator to handle the primary contact with all contractors also qualifies the flow of information to become protected and standardised. Depending on the expected workload in the Project Monitoring task it may be relevant to consider whether it is necessary to have more than one PMO. In section 5 "Recommendations for the monitoring of future PCPs" the learnings from the PMO are described in more detail.

The PMO may be in the best position to ensure that suppliers deliver as promised and to minimise risk to the project by:
- Ensuring that good management practice is adopted
- Ensuring that payments are justified by progress
- Managing and promoting communication between the suppliers and the PCP project consortium
- Maximising the chance of commercial success by:
  - Ensuring that the commercial footing for the contractor is sound
  - Ensuring that the contractor has developed detailed exploitation plans that allow the product/ service pricing to be accurately stated and timescales delivered.

In SILVER it also became clear how essential the Phase 2 and 3 tests are for assessing and improving the usability and potential of the solutions to solve the PCP challenge. Testing is therefore considered paramount for the success of the PCP project and it is recommended to start preparing for the tests well in advance and to reserve sufficient time for planning, carrying out and evaluating the tests. In the Phase 2 and 3 call documents overall information about the tests should be included with e.g. an outline of timeline and requirements/ expectations.

1.2: EU funded PCP project

The SILVER PCP was partly funded by the European Commission, which meant that the deliverables had to undergo a yearly review and approval by external experts appointed by the European Commission. These meetings and all other contact with the EC was coordinated by the SILVER Project Management. Experience from SILVER shows that sufficient time must be allocated especially to these reviews and possible correction of PCP process documents in the project plan as well as the individual plans of the SILVER consortium members. In general the SILVER reviews of project deliverables went well and the external experts provided the project with valuable feedback and guidelines.

1.3: Transnational PCP

The SILVER project provided a few important learnings regarding project management of a transnational PCP. A main learning point was that transnational cooperation takes time and that this has to be considered when planning the PCP. Running a transnational PCP also means that the project team may experience a degree of language- and cultural barriers, which may lead to miscommunication especially in the beginning of the project.

Bringing project partners together for physical meetings demands substantial time- and resource allocation in a transnational project, however an important learning is that physical meetings should be prioritised since SILVER experience shows that these meetings can be highly useful and productive for the transnational cooperation. In addition, an efficient and flexible online platform for videoconference calls and communication is considered a great tool to support the ongoing collaboration in-between physical meetings.

Based on the fact that the project partners and participants in SILVER came from different countries and different organisations - municipalities, innovation agencies etc. at a national, regional or local level, the project team in SILVER experienced that it generally took more time than initially planned to get a joint understanding of PCP and the SILVER process. However, when the joint understanding was established, the SILVER project found that there was a general consent between the partners during the PCP and the cooperation gradually improved from Phase 0 to 3.

These learnings underline the importance of achieving and maintaining a joint understanding of the process and the requirements from the beginning of the PCP in order to succeed and achieve good results in the PCP.

2. PCP as a Model for Solution Development

2.1: The PCP Model and the Process in SILVER

The SILVER PCP project was initiated by developing a generic PCP process and documentation, which was used as a basis for a specific call for Independent Living. The generic PCP process was based upon a PCP model created by the European Commission (EC).

The PCP process was executed in three phases. Phase 1 was a feasibility study of the selected technologies and proposals. The most promising ideas were developed into well-defined prototypes in Phase 2, and Phase 3 aimed to verify and compare the first real end products or services in real-life situations (PCP model illustrated below).
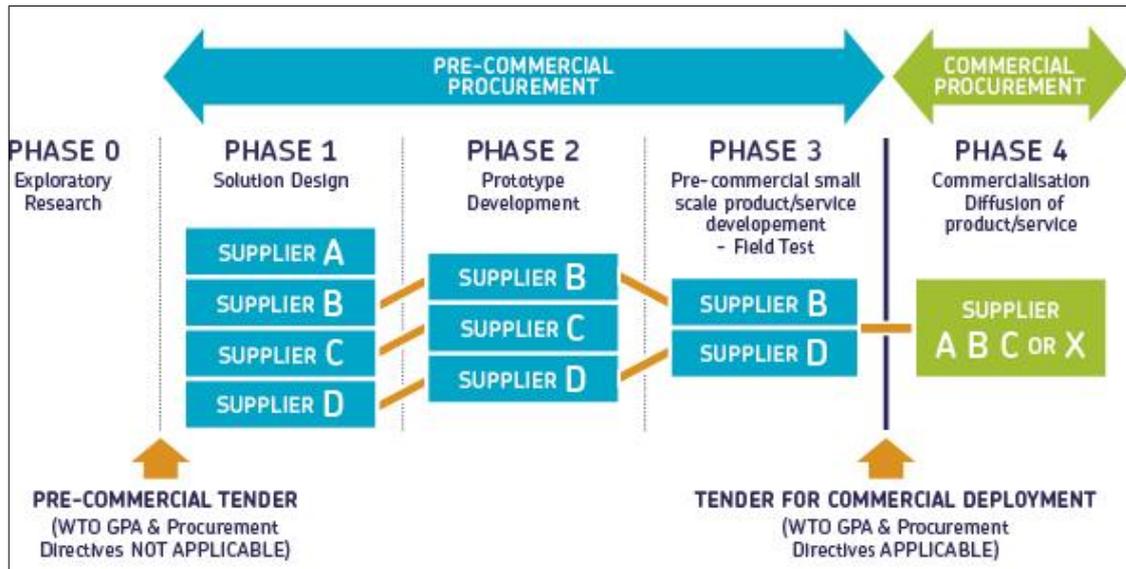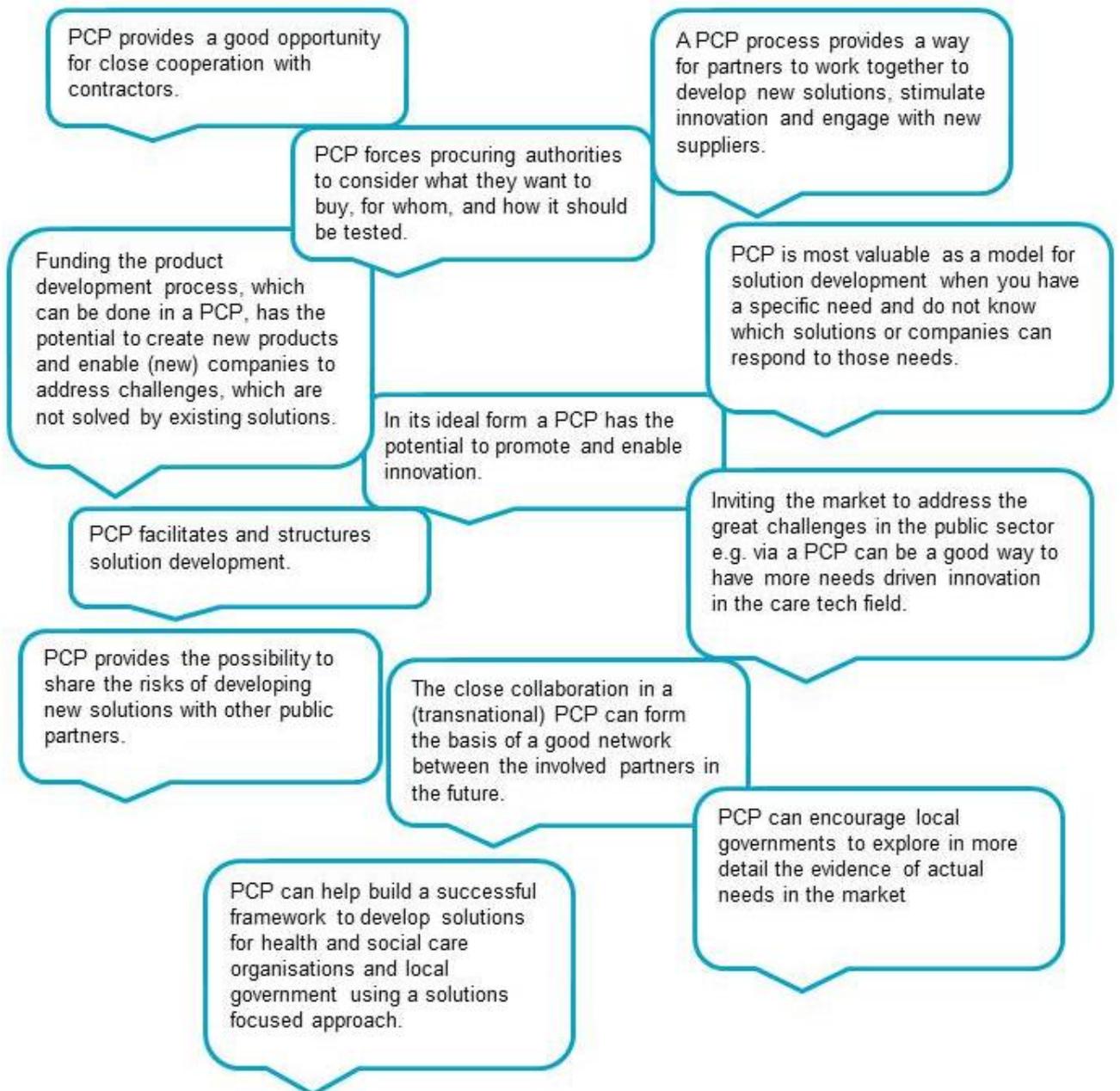

The SILVER PCP model

The SILVER call for bids was available for bids until 12th of June 2013 and was open to all EU members and associated state countries. In total 32 bids were received by the closing of the call. During the summer of 2013 all bids were assessed by external assessors, who were experts in robotics, elderly care or business economics. The bids that offered the best solution at an appropriate risk and cost level were favoured. In total seven proposals were awarded with contracts in Phase 1.

In May 2014 all seven Phase 1 contractors were invited to submit a bid for Phase 2. Three companies were awarded with contracts and developed prototypes that were tested in a living lab in Denmark in April 2015. In July 2015 two of the Phase 2 contractors were invited to submit a bid for Phase 3. One company was awarded a contract for Phase 3 and continued work by improving the prototype and testing it in real life situations in the spring of 2016 in all five partnering countries.

2.2: Why use the PCP Process?

Based on the experiences in the SILVER PCP process the project partners have identified the following main advantages of the PCP model.

PCP provides a good opportunity for close cooperation with contractors.

A PCP process provides a way for partners to work together to develop new solutions, stimulate innovation and engage with new suppliers.

PCP forces procuring authorities to consider what they want to buy, for whom, and how it should be tested.

Funding the product development process, which can be done in a PCP, has the potential to create new products and enable (new) companies to address challenges, which are not solved by existing solutions.

PCP is most valuable as a model for solution development when you have a specific need and do not know which solutions or companies can respond to those needs.

In its ideal form a PCP has the potential to promote and enable innovation.

PCP facilitates and structures solution development.

Inviting the market to address the great challenges in the public sector e.g. via a PCP can be a good way to have more needs driven innovation in the care tech field.

PCP provides the possibility to share the risks of developing new solutions with other public partners.

The close collaboration in a (transnational) PCP can form the basis of a good network between the involved partners in the future.

PCP can encourage local governments to explore in more detail the evidence of actual needs in the market

PCP can help build a successful framework to develop solutions for health and social care organisations and local government using a solutions focused approach.

2.3: When would it be Appropriate to use the PCP Process?

Based on the learnings from SILVER, PCP is not considered suitable for all kinds of solution development projects, however the PCP process can be a valuable innovative procurement method as outlined above.

Firstly it is a time-consuming process, which deems it essential to have sufficient time and resources for carrying out the PCP in order to reap the full benefits of the PCP. Having many partners and from five different countries makes it especially time-consuming to agree on different issues during a PCP process. It could therefore prove valuable to have less public partners in the PCP project consortium and from a maximum of three different countries. On the other hand learnings from SILVER suggest that the process may be too complicated and risky for only one procuring authority, e.g. one municipality. More partners may be needed to balance risk and share costs (as was done in SILVER).

It is important that the nature of the solutions sought by the PCP complies with the budgets and timeframe of the PCP project. Robotic solutions, for instance, are time-consuming to develop.

SILVER partners as well as contractors emphasise the importance of keeping the focus of a PCP on the challenge and how this can be solved through innovation and product development (for more information on the contractor's perspective go to section 4 "Contractors' Perspective on the SILVER PCP" to see their learnings from SILVER). The PCP process can entail a high level of documentation and administration and SILVER experience shows that it can be advantageous to minimise the administrative focus in order to make room for and focus on the innovation, as this is the purpose and interest of all partners. In the SILVER PCP project, however, one of the objectives was to develop and validate a generic model for a transnational PCP, which may explain the intensified focus on the process. This may not be the case for future PCPs.

2.4: Phase 0 – Key Learnings

In SILVER Phase 0 (Exploratory Research Phase) the main activities were: project planning and management, needs analysis, market consultation, call documents and assessment of bids.

The following key learnings were identified during the phase:

- **Needs assessment** and **market consultation** are vital in preparing the PCP and the tender material to ensure that the needs of relevant stakeholders are addressed and that all relevant market operators are involved.
- Experience from SILVER shows that it may be advantageous to **involve the (end-) users** more in the whole PCP process. E.g:
  - as part of the assessment board
  - as part of **co-creation**[1] sessions early in the PCP as well as during the product development – with relevant companies/ market operators and procuring authorities.
- SILVER worked with a **broad challenge definition** to lead to ideas that were unconventional and truly innovative within the complex field of elderly care. This resulted in fairly broad functional requirements, which made it challenging

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[1] Co-creation: a method of solution development where relevant stakeholders are involved in the process as active co-creators.

to communicate them accurately. However, In SILVER the experience was that the companies/ tenderers responded well to the broad challenge description and functional requirements and the received proposals showed a high level of innovation at this early stage.

- As opposed to a broad definition a **narrow challenge definition** can be easier to formulate and thereby eliminate out of scope ideas. E.g. as challenge 1 in the CHARM PCP project
  - "Advanced Distributed Network Management to realise a module that provides automated support for management of large (nationwide) traffic networks. The module should be a multi-layered, self-learning engine that is able to manage large networks and balances between different types of goals"[2] (Please consult deliverable 5.6 for more considerations on a broad or narrow challenge description)
- Regarding the **assessment criteria** and their weighting in the challenge, a key learning point from SILVER is that it is possible to have the same criteria for very different solutions to meet the same challenge.
- Learning from SILVER shows the importance of **aligning expectations with regard to level of prototypes** in Phase 2 and 3 with the contractors so that they know in advance what is expected from their product (development) further on in the project.
- Learning regarding legal issues in SILVER has shown that **the legal framework** is probably one of the most challenging tasks when performing a transnational PCP. It is considered of absolute importance to carry out national legal checks by legal experts.
- It is recommendable early on in the PCP to **consider whether to accept only having one contractor in Phase 3**. If having one contractor would be acceptable for the PCP, then any demands regarding licensing out the Intellectual Property Rights (IPR) should be documented, along with a clear timeline to which the Phase 3 contractor is committed.
- To ensure that the IPR considerations are addressed sufficiently it may be valuable to include an **expert on IPR** in the project consortium.
- For the PCP-call in SILVER **"ceiling-price" combined with "price"** of proposals was used as an assessment criterion. This resulted in some initially "low priced" proposals, which could influence the ranking of less capable solutions.
- A formal **Q&A function** on the project website and nominated contact points to handle this function may be valuable tools for communicating necessary details.
- In the **assessment** of the bids SILVER used a large panel of **external experts with different fields of expertise** to participate in the Decision Panel with the procurers. In the assessment process it is important to consider how many expert assessors and what types of expertise are necessary to ensure a suitable representation of the PCP project in its entirety. It is also relevant to consider, whether all expert assessor rankings should be weighted the same

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[2] www.rijkswaterstaat.nl/english/about-us/doing-business-with-rijkswaterstaat/charm-pcp/index.aspx

within each criterion based on their fields of expertise. These decisions may have a significant impact on the final ranking of proposals.

2.5: Phase 1 – Key Learnings

In SILVER Phase 1 (Solution Design Phase) the main activities were: project management, cooperation with contractors, call documents and assessment of bids.

The following key learnings were identified during the phase:

- Experience from SILVER exemplifies the importance of the **contractors' involvement of end-users** in Phase 1. A PCP may consider assisting the contractors e.g. by hosting co-creation sessions.
- In a transnational PCP the use of **international personas**[3] may further enable the solutions to meet possible differences between countries. In this regard it may be beneficial for the contractors to actively use the transnational network of the public partners in the PCP project. The project consortium partners could also assist with this task.
- In SILVER the importance of agreeing on **expectations for Phase 2 testing** (purpose, criteria, scope, timeline, testing tasks etc.) within the consortium before Phase 2 starts became clear. A detailed testing description should be included in the contracts for Phase 2, including details regarding e.g. purpose, strategy, approach, criteria, scope, timeline (including planning process), test user description, test tasks, risk schedule, insurance, data privacy, ethics and confidentiality. This may help manage expectations between the contractor and the consortium up front.

2.6: Phase 2 – Key Learnings

In SILVER Phase 2 (Prototype Development Phase) the main activities were: project management, cooperation with contractors, Phase 2 testing, call documents and assessment of bids.

The following key learnings were identified during the phase:

- In Phase 2 of the SILVER PCP, experience from both the SILVER partners and the contractors show that **cooperation and dialogue between the procurers and contractors** throughout a PCP can be essential, e.g. in order to:
  - ensure that the future needs of the end-users are addressed
  - ensure that the management of the projects and the PCP process at large reflects the needs of the procurers and the contractors
  - ensure that the development of the prototypes is going as planned
  - exchange ideas and input to enhance the innovation process and value of the product
  - discuss and clarify requests in the concept call documents.

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[3] Persona: representation of intended users

- It is recommendable to allocate dedicated resources from the procurers to engage with the contractors from Phase 1 to provide feedback and develop a **business case for procurement**
- In Phase 2 of the SILVER PCP it was discovered that **interviews with contractors** before assessment of bids for the next phase could be very beneficial in ensuring that the assessors have sufficient information about the bids and the solutions. The interviews were successfully implemented in Phase 3.
- Learnings from SILVER underline the importance of reserving enough time for the **preparation of the Phase 2 Prototype Tests** with regard to e.g:
    - Agreement on test tasks and test user profile between procurers and contractors
    - Agreement on assessment criteria and how to assess them
    - Ethics (especially in relation to medical devices)
    - Safety and mitigation strategy (including expectations for the risk and mitigation preparations of the contractors)
    - Timeline (communicate deadlines and expectations to contractors well in advance so that they know what is expected when and can plan accordingly)
    - Setting up the test environment.
- The Phase 2 Test Team in SILVER found it highly valuable to **visit the contractors while planning the Prototype Tests**.
- The Phase 2 **Test Reports** were considered good counterparts to the **End of Phase Reports** as they included more details about the performance of the prototypes, the potential of the solutions, and the issues discovered in the Phase 2 Tests. The reports may provide a good basis for assessing the Phase 2 results.
- In SILVER, unanimity in the Decision Panel was needed in assessment of the bids for Phase 3. This may result in time-consuming discussions. If **unanimity** is demanded in the **assessment of bids method**, experience from SILVER shows that the following precautions may have the potential to reduce the time of the discussions:
    - A pre-meeting between procurers before the Decision Panel meeting to form an idea of the procurers' scores and "level of feeling" regarding the solutions
    - 1:1 pre-meetings between Project Management and procurers before the Decision Panel meeting to discuss "level of feeling"
- To minimise the expenses of the contractors it is possible to implement a **short tender period** between phases. In this case the contractors may need to prepare for writing the bids for Phase 3, using an early draft of the call documents before the final call for bids is published, to make sure that they have enough time.
- If one criterion (such as time-savings in SILVER) has a **higher weighting** than the other **criteria** this may have a large impact on the final scores of the bids. The learning from SILVER is that it should be considered whether the PCP will benefit from questions with a significant impact.

2.7: Phase 3 – Key Learnings

In SILVER Phase 3 (Pre-Commercial Small Scale Product Development Phase – Field Test) the main activities were: project management, cooperation with contractors, Phase 3 testing and end of project activities.

The following key learnings were identified during the phase:

- In **planning** the Phase 3 testing it is considered essential to look at the **previous test results** as well as the **PCP challenge** in order to assess the progression of the solution and the potential to solve the challenge.
- Most of the test coordinators/ procurers and other relevant SILVER consortium members **saw and tried the solution** before the Phase 3 tests, which proved valuable for planning the tests.
- The overall experience with Phase 3 tests in SILVER was that it proved very valuable to **involve end-users in the tests** as it provided insight into how the solution worked, which functionalities were useful, the relevant target group and the overall potential of the solution.
- Learnings from SILVER show that the **online meetings that followed the tests in each country** were very valuable for sharing learnings and knowledge. When you have consecutive tests at each location as in SILVER, following up on learnings between each country test may provide an opportunity to improve both the solution itself and the conduction of the following tests.
- **National and international events** during the PCP with participation by the contractor are recommendable as they create good PR opportunities for both the PCP project and the contractor and communicate valuable learnings. In SILVER most of the procuring authorities hosted national events in connection with the Phase 3 tests and the SILVER PCP project hosted an international event at the end of Phase 3. SILVER experience emphasised the importance of planning events early to allow maximum participation.
- In SILVER the development of **End of Project videos** proved really useful for **dissemination** purposes.

3. End of PCP Project

At the end of Phase 3 the potential of the solution(s) can be evaluated in order to provide the procurers with a good foundation for deciding whether they are interested in procuring the final solution after the PCP. In SILVER the assessment of the Phase 3 results could be based on the Monitoring Reports and the Consolidated Phase 3 Test Report. It is considered important to ensure that procurers have access to all of the non-confidential information relating to the testing as well as the PCP process in order to support them in a future potential procurement. In SILVER all non-confidential information was made public on the website.

As actual procurement of the solution is not a part of the PCP, at the end of the PCP the procuring partners in SILVER can only speculate if their organisations would like to procure the final solution in SILVER. In connection with the final Learning and

Recommendations Reports (D5.4 and D5.5) composed during the final months of the project the procurers were asked if they would want to put a business case together to procure the solution. Most of them answered 'no' for the current state of the solution, and that it was too early to say given the level of maturity in the end of Phase 3. However the SILVER consortium were convinced that there was potential for the solution to support the SILVER challenge and achieve time-savings after further development and incorporating the feedback from the testing. Overall the SILVER project was considered a success by the SILVER consortium. Most procurers wish to keep track of the further development of the solution and consider procurement when the solution is closer to commercialisation. Some procurers also expressed a willingness to assist the Phase 3 contractor in engaging with other procuring authorities.

Development work will continue for two or more years. In order to ensure the SILVER procurers are aware of any exploitable results arising or IP developed and how it is being protected, their rights have been extended in relevant clauses of the SILVER framework contract to allow the SILVER procurers to continue to access information about IP progress and development for the next two years.

Some procuring authorities will also look to further exploit the results of Project SILVER through networks such as the European Connected Health Alliance (www.echalliance.com), which has a large connector platform with which to share the lessons from Project SILVER as well as bring the contractor to a wider market.

A learning from SILVER is that it may be an advantage to plan and dedicate resource to developing a business plan for procurement by the procurers and involve potential decision-makers before the PCP is finalised.

The SILVER partners were also asked to what degree they would use the learnings from the SILVER project in other procurements and/ or projects. In the bar chart below, the results of the scoring are presented with amount of people who chose the specific degree presented in the blue bars.

To which degree would you use the learnings from the SILVER project in other procurements and/ or projects?
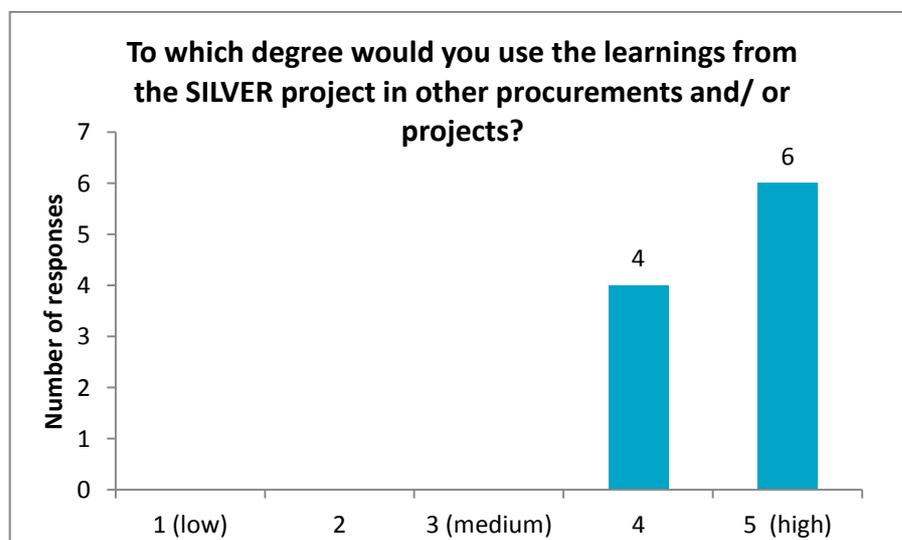
With these results in mind it is safe to say that the SILVER partners will indeed use the learnings from SILVER to a higher degree, e.g. learnings regarding market consultation, prototype testing and development of assisted living technology, and guidelines for other PCP/ PPI projects. Some partners further confirm that the learnings have already been used in other projects and as experience influencing the partners' work with innovative procurement and innovation projects in general.

As to whether or not to engage in a PCP process again the overall approach of the SILVER partners is positive. It is, however, important to consider the subjects mentioned in section 2.3, "When would it be Appropriate to use the PCP Process?" before entering, especially in regard to the amount of time and resources needed and also the number of partners in the PCP project consortium. One of the partners further mentioned the wish to have the end-users be more involved from the beginning e.g. as "co-creators" of the solution(s).

For more information on the SILVER partners' future work with PCPs and other innovative procurement models, and cooperation with the contractors from the SILVER PCP please consult SILVER deliverable 6.5, Sustainability Plan (www.syddansksundhedsinnovation.dk/projekter/silver-supporting-independent-living-for-the-elderly-through-robotics/).

4. Contractors' Perspective on the SILVER PCP

During the PCP, the experience from SILVER indicates the usefulness of conducting surveys among the contractors to obtain valuable input for the PCP process, providing a better idea of "the other side" of the process as well as valuable knowledge for future work. Questionnaires were sent to the contractors after Phase 1 and 2 and an interview was performed at the end of Phase 3, which produced the learnings and recommendations that are outlined below.

4.1: PCP Process and Management

All participating contractors in SILVER expressed an overall satisfaction with being part of the SILVER PCP. Especially the Phase 2 and Phase 3 tests provided the contractors with valuable input for the future work on their solutions and provided a good opportunity to get in touch with procurers, health care institutions etc. in several countries – and in a short period of time. The participation in SILVER also contributed with good PR for the contractors outside of their home countries.

The contractor that participated in all three phases emphasised that funding from the SILVER PCP made it possible to start up the company, which the contractor considered unlikely to have happened without the SILVER PCP. Learnings from this contractor further show that the PCP phases from 1 – 3 created a good structure for developing a new solution, and the EU support in itself gave the solution development a quality stamp and credibility outside the project. This quality stamp made it easier for the contractor to receive the necessary extra funding for the development process from other parties.

Recommendations for future PCPs regarding PCP management:
- Allow and encourage sufficient dialogue with procurers early on in the PCP – and especially in Phase 2 and 3
- The deadlines for delivering documents were often considered too tight in SILVER. More time and flexibility was desired.
- Rules of competition need to be very clear in the contract and fixed before applying for every phase
- Cooperation with the PMO was very helpful and the contractors received a lot of useful information, especially help with risks mitigation was valuable.
- It may have been valuable to have the PMO take more active part in Phase 3 testing and the planning of the tests, supporting the procurers and test coordinator.
- The PCP funding in itself was not sufficient for the development process (especially the mini-series of six prototypes in Phase 3) and it is therefore considered imperative that contractors have the option of pursuing additional funding from other parties.
- For robotics solutions the SILVER timeline was considered too short, if a fully ready-for-market solution was expected at the end of Phase 3. Phase 2 and 3 may benefit from a longer timeframe.
- It is possible to involve relevant companies before the PCP is published in an open market dialogue – even more than was done in SILVER – to give input to the challenge definition, market potential, initial tender material and possible solutions.
- If companies (entering the PCP or not) and organisations are involved in an initial open market dialogue it could be valuable to create a network of stakeholders related to the PCP, which is activated throughout the PCP process. This could increase the learning possibilities of the contractors and in turn benefit the development of the solutions, while at the same time benefitting the companies and projects, which are not chosen to continue within the PCP call, as they can still follow the learnings and knowledge generated through the PCP (e.g. "big players" on the market are valuable resources to support the solution development in the PCP).
- Coaching and/ or workshop sessions for the contractors during the PCP could be valuable, e.g. on topics such as how to talk to procurers (what is allowed and what is not?), how to get extra funding, how to talk to media, how to get from prototype to procurement etc.

4.2: Phase Specific Recommendations

Experiences from the contractors show that Phase 1 proved valuable as a preparatory phase to conduct actual testing of prototypes in the following phase.

The Phase 2 tests were a great learning experience for the contractors in regard to e.g:
- The importance of making technology almost invisible and putting user experience first
- The need for more research into some areas of the prototype development

In relation to assessment of bids for Phase 3 some contractors emphasised that the comments the Decision Panel made for the progress of the prototypes and the Phase 2 results were important in fine tuning the solutions.

The contractor found the Phase 3 Testing highly useful as a form of pre-testing to bring the solution closer to market. It provided great value to experience test users using the solution in their daily routines and to receive feedback on the use from the users and care personnel. In SILVER the Phase 3 tests and Test Reports were predominantly based on a qualitative study of the use of the solution. The contractor found the feedback in the Test Reports very useful in regard to the interviews made with care personnel and test users – and their documentation in the log books.

Recommendations for Phase 3 testing in future PCPs:
- Quantitative studies of the performance of the solution may be added to provide the Test Reports with more data for comparison of tests, documentation of performance and further development of the functionalities. A business case could also be useful at this point in the PCP.
- The Phase 3 tests in SILVER could have benefitted from more focus on aligning expectations for testing between test users, care personnel and procurers/ test coordinators in phase 3 (e.g. what was tested, what was the aim for testing etc.). Maybe a workshop session with all groups and the contractor could be held prior to the testing.

4.3: Other Companies Entering a PCP

When asking the one contractor that participated in all three phases, they can highly recommend other companies to enter a PCP as it provides a good opportunity for developing new solutions and even starting up a new company. Recommendations for other companies entering a PCP with a broad challenge as in SILVER are to decide on and describe the solution they want to produce as early on in the process as possible. It is also recommendable to apply for further funding if possible as the funding in a PCP might not be enough for a new robotics solution to reach the market.

5. Recommendations for the monitoring of future PCPs

The section below offers recommendations on the monitoring of European PCP exercises.

Subject	Recommendation
Engage 2 MOs	That 2 Monitoring Officers be assigned to share the workload for PCPs to ensure that workloads are manageable and continuity can be maintained.
Produce Supplier Information Pack	That the Monitoring Officer Produces a Supplier Information Pack and that this is updated when needed and at the start of each phase. This pack provides clear guidance to all suppliers on how the project will be operated.

Implement Question and Answer Process	That a formal Q&A process be established for the PCP. All questions and requests for information (supplier > PCP Consortium and PCP Consortium > Supplier) use this process. The PCP Consortium needs to provide nominated contact points (either for all questions or on a subject bases) responsible for providing a PCP Consortium agreed response. The MO ensures that: • Supplier questions are passed to appropriate authorities in the PCP Consortium. • Process and other questions which are the responsibility of the MO are answered. • Non-supplier specific/confidential information from the PCP Consortium to suppliers is copied to all suppliers. • Responses are tracked and chased where necessary.
Obtain Supplier Roadmap	As well as the Project Plan, suppliers must provide a Product Roadmap. This shows dated key functionality deliverables for the proposed Product and/or Service throughout the life of the PCP and into the commercialisation/delivery phase after the PCP has ended. This roadmap: • Allows the PCP Consortium to understand and question the supplier on how the product is likely to meet the current and future needs of the users they represent. • Allows the supplier to inform the PCP Consortium of their plans and to adjust them as their understanding of the field develops. • Helps build a rapport between the PCP Consortium and the Suppliers.
Specify Formal/Informal Contact	The need to promote communications between the PCP Consortium and the suppliers is problematic as mentioned earlier. To enable contact and rapport to be built three elements are required: • A definition of formal/informal contact that is understood by all stakeholders • Change management and Q&A processes **Definition – Informal Contact.** Contact between all members of the PCP Consortium and PCP Experts and the suppliers can be made at any time and should be encouraged. The supplier is ultimately responsible for the product/service they propose and are free to use the PCP Consortium members as a research resource. Any information that the supplier gathers is not the opinion of the PCP Consortium and the suppliers use this information at their own risk (as they do with any research data). **Definition – Formal Contact.** If the suppliers wish to confirm or change their plans/deliverables based upon their research (including contact with the PCP Consortium and PCP Experts) they must use the Q&A or Change Management processes to obtain a Formal response from the PCP Consortium.

Implement Change Management	A change Management process is required which allows the suppliers to seek formal permission from the PCP Consortium to make changes to their plans/deliverables. The PCP Consortium cannot change its requirements without the potential need to retender, however as the PCP is a research project, changes from the suppliers are inevitable. The Change Management process allows the suppliers to request approval to change plans/information already provided to the PCP Consortium, such as: • Product roadmaps • Business structure • Key personnel • Financial Allocation • Subcontractors • Contracted commitments The Change Management process also assists in ensuring that the supplier and PCP Consortium's understanding of the project remains aligned.
Define Monitoring Officer's role at end of each phase	The role of the Monitoring Officer at the end of each phase and the success factors that the supplier must meet need to be defined.