Learning from integrated eCare practice and promoting deployment in European regions

BeyondSilos

D5.1 BEYONDSILOS OPERATIONAL PILOTS

WP5 Pilot site preparation and operation

Version 1.1 / 15th February 2016

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D5.1 v1.1 BeyondSilos Operational Pilots

Statement of originality

This deliverable contains original unpublished work except where clearly indicated otherwise. Acknowledgement of previously published material and of the work of others has been made through appropriate citation, quotation or both.

Executive summary

Based on outcomes of the service definition phase (WP1 & WP2), architecture specification (WP3) and prototype testing (WP4), the service to be piloted (WP5) needs to be rolled out into the field by Month 13, in terms of both technology and organisation.

The pilot partners consist of seven pilot sites in six different countries across Europe that will have to deploy the BeyondSilos service delivery model as defined in the previous WPs. The total number of end-users involved within this service provision will be around 900 end-users.

To achieve this, the pilots should carry out the same preparatory activities; however, the timing and length of each phase varies from pilot to pilot according to different starting points and to the characteristics prevailing at each pilot site. Consequently, pilots follow the same path but not the same planning; the only one common objective is to be fully operational by Month 13.

This document describes the initial planning prepared by each pilot site. Afterwards it presents the follow-up of such planning, and the lessons learnt according to the different activities conducted.

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1 Introduction

1.1 Purpose of this document

This is the first deliverable coming from WP5 – Pilot site preparation and operation, which collects all the data generated within the first four tasks of the work package:

- Task 5.1 – Operational Planning.
- Task 5.2 – Recruitment of patients and older persons (v.1).
- Task 5.3 – Training of health service, social service, voluntary sector staff and informal care givers.
- Task 5.4 – Introduction of systems and services.

This document describes all the work that has been conducted within WP5 in order to achieve a set of pilot sites fully operational by M13. In addition, it also includes all the lessons learned while making the pilots live.

The work to set up the pilot sites fully operational is currently on-going and final results will be presented in a later deliverable. Because of that, this document should be considered as an initial draft.

1.2 Deliverable context

Project item	Relationship
Objectives	Implement and validate in seven European pilot regions the BeyondSilos services, namely ICT-based support to integrating healthcare, social care and self-care for different health / living conditions, along integrated care pathways; it also includes the underlying organisational models.
Milestones	MS3: BeyondSilos pilots fully operational. All BeyondSilos pilot sites have begun operation with clients/patients and professionals (M13) MS4: Deployment plans for participating regions completed. All BeyondSilos pilot sites have begun operation with clients/patients and professionals (M36)
Associated tasks	T5.1,T5.2, T5.3, and T5.4
Risks	See consolidated risks table (see Appendix A)

1.3 Structure of this document

Section 2 begins with the operational planning, which is the first task the pilots conducted within WP5; this forms the basis for all the work to be conducted within the preparation and operation phase. Following subsections point to the individual operational plans (confidential annexes to this document) in a first stage to be consolidated into a single operational plan table in a second stage. The last subsection gathers all the risks and treatment measures that the pilot sites identified within the development of the operational plans (see section 2.5 and Appendix A).

In section 3, every pilot site explains the recruitment process, the training process for the different stakeholders, and the introduction of services. This is because the real conduction of work may have differed from the initial planning.

Appendix B Lessons learnt presents the different experiences the pilot sites have gathered within the realisation of the work.

1.4 Glossary

ADS	Amadora Deployment Site
BSA	Badalona Serveis Assistencials
ICF	Informed Consent Form
ICT	Information and communication technologies
MS	Milestone
NGO	Non-governmental organisation
PMx	Project month x
WP	Work package

2 Operational planning

2.1 Introduction

With the project objective of deploying integrated care solutions and services at large scale in a real life setting with around 1,000 users within seven pilots across Europe, it is important to ensure that it happens in a consistent and standardised manner to the extent that this is possible, in order to be able to evaluate the results of the project.

Figure 1: Pilots and the number of users they will enrol for the BeyondSilos project

There are a number of different types of stakeholders which will be involved in the pilot implementation: citizens, formal and informal care givers, service providers from the health and social environment, third sector care providers, NGOs and technology providers. Policy makers, finance intermediaries and distribution intermediaries are not directly involved in the pilot implementation; however, they are important for sustainability of the project during BeyondSilos' lifetime and after.

The beneficiaries of the pilot implementation will, among others, be those people who wish to be able to avoid dependency in nursing homes or other healthcare settings, preferring to continue to live independently in their own homes. Assistance might be needed in any aspect of daily life, from health safety and security to social integration and mobility support. Each pilot site and country comes from different starting points, has different technologies, different cultural contexts and different laws and regulations which all have an impact on the pilot.

Once the design of the intervention has been finished, conceptually represented by the integrated common care pathways for home support, the pilots have localised the intervention within their regional context through the service process models. Afterwards, the pilots have mapped their ICT already in place with the BeyondSilos ICT building blocks in order to identify the any gaps. In the meantime, the ethical and legal considerations prevailing at each site have been investigated.

All those elements, when put together, draw a complex scenario which needs to be addressed appropriately in order to achieve a successful starting point of the operation. The methodological approach adopted to tackle with this situation and the preliminary outcomes achieved are described in the remainder of the document.

2.2 Approach followed

Taking into consideration the complexity outlined above, an operational planning template was designed in the context of T5.1; this gives information on the different steps and tasks which must be carried out in order to ensure a successful pilot implementation. In addition, the template also identified all the structures at an organisational level that have to be set up to achieve a proper operation.

The operational planning template was developed during Months 4 - 5, and was delivered for the pilots to fill in. After quality assurance, they were delivered to the EC for review in Month 9.

These operational plans are the underpinning element which this deliverable is based on, as they present highly detailed information specifically to direct people and in timing and monitoring performance of the tasks required to achieve the preparation and a successful operational site.

The operational plans have been a great tool to be used to track the different activities amongst the different pilot sites in order to identify any possible risks that might delay the pilot starting date. To achieve this, a consolidated operational plan table was constructed (see section 2.4 below). The WP leader and the Project Coordinator have used this to track all activities, and in particular those regarding user recruitment and consent.

2.3 Individual operational plans

As mentioned above, every pilot site developed an operational plan, following the proposed template. The aim of the template was to take into account all the activities to be carried out before the piloting in order to achieve the project's MS3 (BeyondSilos pilots fully operational). The template also included all the structures at organisational level that should be set up in order to ensure a proper operation and to further achieve project's MS4 (Deployment plans for participating regions completed).

Those documents were submitted to the EC at PM9 for review as separate documents, tagged as annexes to D5.1. Because of some of the content, the annexes are confidential. The annexes are:

- D5.1 Annex 1 BeyondSilos Operational Plan - BSA v1.0
- D5.1 Annex 2 BeyondSilos Operational Plan - Kinzigtal v1.0
- D5.1 Annex 3 BeyondSilos Operational Plan - KPRH v1.0
- D5.1 Annex 4 BeyondSilos Operational Plan - La Fe v2.0
- D5.1 Annex 5 BeyondSilos Operational Plan - HSCNI v1.0
- D5.1 Annex 6 BeyondSilos Operational Plan - Campania v1.0
- D5.1 Annex 7 BeyondSilos Operational Plan - Amadora v1.0

2.4 Consolidated operational plan

The consolidated operational plan mainly consists of a table that gathers all the relevant deadlines for all the activities to be performed by the pilot sites in advance of the pilot operation at PM13 (see Table 1). As was mentioned before, the table was developed with the aim to be used as a tracking tool by WP5 leader and the Management Coordinator to further identify any possible risk that may put the start of the operation at risk.

Table 1: Consolidated deadlines table according to the information from the operational plans

Topic / Pilot	Contractual measures	Internal change management	Staff training	End user training	ICT procurement	Technical adaptation	Technical installation (end users)	Technical installation (service provider)	Testing
BSA	Jan'15		Feb'15	Operation	Jan'15	Feb'15	Feb'15		Feb'15
València	Feb'15		Jan.15	From Mar'15		Mar'15	Mar'15	Feb'15	Mar'15
Northern Ireland	Dec'14		n/a	n/a	-	Mar – Jul'15	n/a	n/a	Mar – Jul'15
CPRH	Nov'14		Dec'14	Jan'15	Dec'14		Jan'15	Jan'15	Dec'14
Kinzigtal	Oct'14		Feb'15		Jan'15	Feb'14		Feb'15	Feb'15
Amadora	Not applicable	Feb'14-Mar'15	Apr'15 - May'15	Mar'15	Not applicable	Sep'15	Sep'15	Sep'15	Oct´15
Campania	Jan'15		Mar'15	Apr'15	Dec'14	Mar'15	Apr'15	Apr'15	Mar'15

Topic / Pilot	Identification of users	Assessment & enrolment (with ICF signed)	Helpdesk	Data protection & privacy	Ethical approval	Evaluation process	Pilot exit
BSA	Nov'14	Feb'15	Feb'15	Feb'15	Feb'15	Jan'15	Nov'14
València	Nov'14	From Mar'15	Mar'15	Mar'15	Feb'15	Mar'15	Mar'15
Northern Ireland	Mar – Jul'15	Mar – Jul'15	n/a	n/a	Not relevant	Aug'15	
CPRH	Oct'14	Oct'14	Jan'15	Mar'15	Mar'15	?	Feb'15
Kinzigtal	Jan'14	Mar'15	Feb'15	Jan'15	Not relevant	Apr'15	Feb'15
Amadora	Jan'14	Feb'15	Sep'15	Mar'15	Not relevant	Mar'15	Mar'15
Campania	Jan'15	Mar'15		Dec'14	Not relevant		

2.5 Consolidated list of risks and treatment measures

BeyondSilos is a complicated project with a lot of interdependencies. Organisational changes involve different stakeholders with a high deployment of ICT solutions; these changes must be put in place in order to achieve a successful pilot. Consequently, there are many risks which have to be dealt with. Appendix A has a complete list of the risks the pilot sites have identified, and the mitigation measures to tackle them. In total, 30 risks were identified which can be grouped under the following general headings:

- Organisational (6).
- Technological (11).
- Legal / Regulatory (including contract matters (6).
- User-related (7).

The numbers in brackets refer to the number of risks listed under each heading at Appendix A.

One concern of the pilot sites is the engagement of users. They are afraid that it will be difficult to make them use the applications continuously throughout the whole operation phase. The pilot partners therefore make sure they provide enough information about the project and the application, as well as following up regularly.

Quite a few risks are related to suppliers and vendors. Most are related to fears that their services or products are not delivered on time. Other risks are related to commitment. The pilot sites try to mitigate this by having solid contracts with their suppliers / vendors.

Most risks tackled by the different pilot sites are technological. The technological solutions vary greatly, and some of them can be difficult to deploy. This is a risk mentioned by several pilot sites. Training sessions and clear instructions can help diminish this risk.

Some applications are still under development, and there are risks related to this. However, the pilot sites consider those risks unlikely to happen and are confident to solve these problems.

The risks are being monitored continuously by the pilots themselves, by WP5, and by risk management.

3 Other activities held to ensure a proper start of the operation

3.1 Introduction

The operational plans outlined the work to be carried out before starting pilot operation in order to reach the starting deadline on time, and also to ensure proper operation. Because of this, WP5 was constructed so that pilot sites first had to think about their planning (T5.1), and afterwards to carry out their initial ideas in practice (WP4 for everything related to ICT, and T5.2, T5.3 and T5.4 for organisational activities).

In the operational plans, the pilot sites explained how they were going to carry out the following activities:

- Recruitment of patients and older persons.
- Training of health service, social service, voluntary sector staff and informal care givers.
- Introduction of systems and services.

Even though they explained their initial ideas this does not mean the process, when set up in real, has remained the same. The idea of this section, is to clarify how has this process gone in real

3.2 Amadora pilot site

3.2.1 Recruitment of patients and older persons

Amadora Site has 150 end user enrolled in the Pilot. End users constitute the universe of Home Care Support (HCS) clients of Misericordia of Amadora. The reason to choose all the clients was based on the premise of improving the quality of life for the clients that depend on social and health care, but who do not need to be institutionalised. So far, and due to the low level of ICT (Amadora council just have panic button and help phone), Amadora citizens just have the possibility to receive social care (hygiene and food) at their homes. BeyondSilos will enhance the possibility for citizens to have both social and health care at home, due to the fact that Amadora Deployment Site (ADS) will improve tele-assistance, and will introduce telemonitoring. This will be triggered along with an integrated online platform that will summarise all the critical information regarding social and health incidents that will be accessible to all the relevant stakeholders; and along with an elearning tool for formal / informal carers (relatives and volunteers) focused on providing care.

In order to enrol all the clients in the Project, ADS established a match between BeyondSilos profile definition for end users and the characteristics of Misericordia clients. In this scope, and besides the defined common characteristics (age ≥65 years; presence of health needs, specified as presence of heart failure or stroke plus at least one additional chronic disease; presence of social needs based on Activities of Daily Living or Instrumental Activities of Daily Living), ADS included mental disorders.

Thus, Amadora Pilot site (ADS) defined the end users pool at an early stage. After that identification, ADS triggered a process of two focus group sessions in April 2014, with end users,formal & informal carers and with key stakeholders with the purpose to: disseminate the project; gather contributions; motivate / enrol end users and formal and informal carers; clarify questions and doubts (see minutes attached in Annex 14).

Table 2: Results of the focus groups sessions

Categories / Dimensions	Attendance	Engagement
End Users	2	100%
Formal & Informal Carers	5	100%
Key-Stakeholders	7	100%
TOTAL	14	100%

Below, are stated some evidences of those Focus Group Sessions, in order to engage end users and formal & informal carers:

End Users& Informal Carers

Networking

Stakeholders

Figure 2: Focus group sessions

Amadora has identified the users to be part of the BeyondSilos service provision in two different ways, according to the integrated common care pathways:

- **Short-Term**: three different entry points for CRs (care recipients) in an acute situation (after hospitalisation, surgery, early discharge or any acute episode, including social issues):
  - Discharge from the hospital / healthcare centre: after a hospitalisation, surgery, early discharge.
  - Referral from the CLAS (Local Council for Social Action), or any related organisation, namely Social Security and Amadora Municipality: identification of elderly people living alone in need of home care support due to several and emergent constraints related to mobility and/or subsistence; and/or identification of CRs being monitored for social & health reasons by other organisations but who could benefit from BeyondSilos workflow.
  - Referral by CR him/herself or by relatives: incapacity to continue living without social & health support.

  When the actors above identify a CR with an acute episode regarding social and/or health care, they can trigger the process of referral to SCMA Home Care Support Service (HCSS). After that, the Coordination Team of HCSS, composed of nurses and social workers, will evaluate the situation, and in case of need, enrol the CR into BeyondSilos workflow. If the Coordination Team considers that the potential CR needs any different type of response, such as permanent assistance, or partial but on-site assistance, they can refer to other social & health services of SCMA, such as nursing homes, continuing care unit, or day care centre.

- **Long Term**: three different entry points for CRs with a chronic situation (worsening of health status: heath failure; COPD; and/or worsening of social situation: living alone with no primary or secondary network; lack of means of subsistence or mobility):
  - Discharge from the nursing home / day care centre / care continuing unit: Once the BeyondSilos deployment site supports the increase of services at home due to better quality in terms of improvement of skills in professionals domain (training) and also due to ICT components (tele-assistance improvement and telemonitoring), it will allow some people

who currently must live institutionalised to return to their homes and have access to the services they need without leaving home.

- Referral from CLAS or any related organisation, namely Social Security: identification of elderly people living alone in need of home care support, and/or identification of CRs being monitored by other social & health organisations, but that could benefit more from BeyondSilos services.
- Referral by CR him/herself, or by any relatives: unable to continue living without social & health support).

When the actors above identify a CR who is entering a chronic situation regarding social and/or health care, they can trigger the process of referral to SCMA HCSS. After that, HCSS will evaluate the situation, and in case of need, enrol the CR into BeyondSilos work flow. If the Coordination Team consider that the potential CR needs any different type of support, such as permanent assistance or partial but on-site assistance, the CR can be referred to other social & health services of SCMA.

In the time between April 2014 and February 2015, CRs were contacted to confirm their availability to participate and will sign the Informed Consent (see Annex 14); Home Care Support team has been also talking about the Project with the clients and responding to questions and doubts.

Based on the specification of the target group, namely the nonexistence of ICT and health care services at home, ADS decided that the treatment group and the control group would be the same, to better test / experiment a real new service in Amadora. This decision permits to evaluate more efficiently what would work best and what would need to be improved before mainstreaming / embedding this new service in other geographic and organisational context.

3.2.2 Training of health service, social service, voluntary sector staff and informal caregivers

ADS identified from the very beginning the importance of delivering training, not only to formal and informal carers, but also for the end users. A new service is being introduced, which means that staff / relatives / volunteers and end users need to know how to handle ICT components, and how to provide better care.

In this framework, ADS identified the opportunity, because several internet components need to be installed at clients homes, to design and deliver an elearning tool to be used under a b-learning training format, mixing face-to-face sessions with online sessions, and streamlining the possibility to access the platform any time anywhere for follow up and/or contents refreshment. In line with this, Portugal Telecom has been developing this tool.

With regards to the contents, the training course for formal / informal carers (training to end users will be delivered at their homes) was divided into modules:

With regards to the contents, the training course for formal / informal carers was divided into the following modules (see also Annex 14 - Training Framework):

1. Welcome and Expectations
2. The role/status of the carer: formal/informal.
3. Communication.
4. Interpersonal relationship.
5. Activities of daily living satisfaction (environment context).
6. Activities of daily living satisfaction (personal context).
7. Biomedical approach.
8. Psychological and social approach.

9. ICT: approach and usage (to be delivered in a 2nd phase).

Training to end users will be delivered at their homes.

Training has been delivered since January 2015 in Misericordia of Amadora facilities to an average of 20 trainees per session, and will end in March. After that, and after the Pilot starts, supervision process will be triggered.

Training on Modules 1 to 8 was delivered in April and May 2015 in Misericordia of Amadora facilities to an average of 10 trainees per session. Attendance at the training sessions is shown in Table 3 and Figure 3 below

Table 3: Amadora: Training session attendance

Categories / Dimensions	Attendance
Formal Carers	30
Informal Carers (Relatives)	10
Informal Carers (Volunteers)	15
TOTAL	55

Figure 3: Amadora: Training sessions

3.2.3 Introduction of systems and services

The selection of the patients for the test is the responsibility of SCMA and CMA, and will be according to the needs of the pilot, in terms of social and healthcare, and assuring the requirements for the considered ICT solution.

After the selection, the testing steps performed by Portugal Telecom are:

- Deliver the equipment to the client.
- Test the activity signal of the equipments.
- Test the telephone.
- Test the e-learning FORMARE.
- Do a specific measurement.
- Validate if the client data was created and available in the Smartliving.

To conduct the pilot tests, it should be assured that:

- One client will be accompanied during one whole day.
- The client's indicators will be measured in the morning, the afternoon and in the evening.
- The availability of the measured data will be validated.

- It will be checked if a call from Santa Casa da Misericórdia will be done to the configured number, in case of suspect abnormal measured results.

BeyondSilos will trigger a very important process regarding innovation of ICT. So far, patients living at home in a frail situation only have access to a very archaic system of tele-assistance, based on a panic button.

In this project, Amadora pilot site will enhance the use of the following ICT products / solutions:

- Tele-assistance
  - Create PT's exclusive phone number for Santa Casa da Misericórdia, and associate it to the tele-assistance service, either using a mobile or a fixed communication.
- SmartLiving
  - Smartliving is a platform that has been designed to support the functionalities available on *PAD* and *SmartHealth* portals. It is a telemonitoring web portal for health professionals and informal caregivers to plan and register their daily activities.
  - The platform aims to support distinct Ambient Assisted Living services and environments, while supporting multilingual GUI, customised for different terminals, and based on SAAS platform open to cooperation between different digital service providers.
  - It will take measurements automatically from the following telemonitoring equipment:
    - ForaCare W310 balance;
    - ForaCare D40 Series sphygmomanometer;
    - ForaCare IR20 thermometer;
    - SmartPhone.
  - It allows patient data management, home services scheduling, and reporting
- E-learning integrated solution:
  - Adjusted contents as a tool to train formal and informal carers.

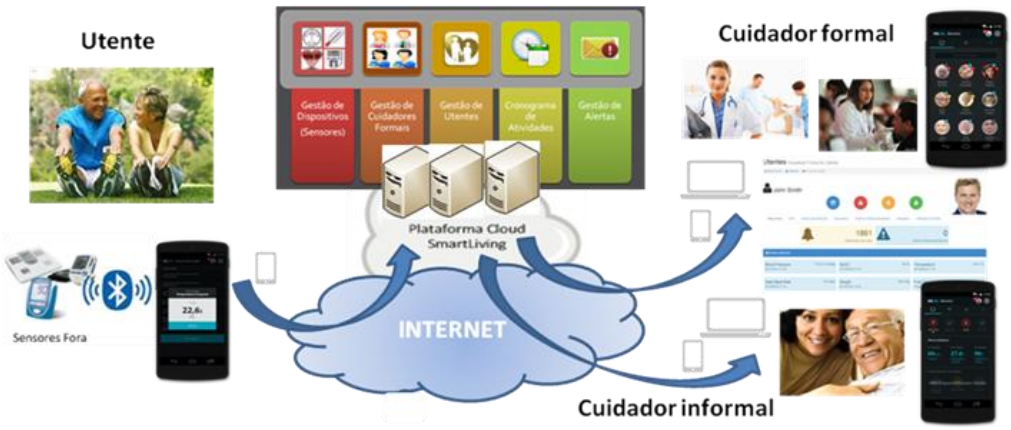

Figure 4: Global architecture of SmartLiving

3.2.4 Service Innovation

BeyondSilos has been of extreme importance for Amadora Region, in terms of the quality of life of end users, relatives, formal carers and organisations. It mainly consists of:

- a real integration between social and health care;
- introduction of ICT
  - Home Care Portal;
  - e-learning tool;

- telemonitoring;
- tele-alarm;

- maximising partnership work in real time (Home Care Portal), in poarticular regarding client referral processes and monitoring;
- training in b-Learning format to formal and informal carers.

Up till now, due to the low level of ICT (Amadora council only have panic button and help phone), Amadora citizens have only had the possibility to receive social care (hygiene and food) at their homes.

Table 4 below demonstrates the transition from usual care to BeyondSilos integrate care.

Table 4: Amadora: Transition from usual care to BeyondSilos integrate care

USUAL CARE	INTEGRATED CARE
Social care (hygiene and food)	Social & health care
Tele-assistance	Tele-assistance & telemonitoring
Lack of structured training to formal & informal carers	Structured training to formal & informal carers under a b-Learning format
Lack of ICT components / tools	Online Platform (PAD) with integration of tele-assistance & telemonitoring and e-learning tool
Several people institutionalised	Enhancement of the possibility to continue living at home

In summary, several benefits are expected, according to the type of actor, as shown in Table 5 below.

Table 5: Amadora: Benefits expected

Actors	Benefits
End users	Improvement of self-confidence and security. Enhancement of QoL. Improved satisfaction with service delivery. Perception of service-specific impacts such as safety and security, improved physical status, improved communication with care providers, reduced social isolation etc.
Formal carers: social and health care practitioners	Training in health &social care. Improvement of self-confidence and security. Improved feeling of quality of service provision. Reduction in the number of hospitalisations. Reduction of the average time per case, when the CR, I/FC are sufficiently trained. Reduction in the number of visits.
Informal carers: relatives and volunteers	Training in health &social care. Improvement of self-confidence and security.
3rd sector organisations and other service care providers	More efficiency means less time spent with each client. More efficiency means more quality of service provision, and consequently more interest from potential clients to request the services. More time and the same resources to reach more clients. Improved feeling of quality of service provision. Enrichment of their role in care provision.

3.3 Badalona pilot site

3.3.1 Recruitment of patients and older persons

BSA has identified the users to be part of the BeyondSilos service provision in two different ways, according to the integrated common care pathways:

- For the long term care pathway, BSA has identified potential pilot users in a two-stage process. The first part of the process has been carried out by the Information Systems Department, and consisted of identifying possible candidates through the corporate databases following the inclusion and exclusion criteria as defined in the study protocol. Conversations with the Information Systems Department suggested that the easiest would be starting the screening process by checking which of the users within the population of Badalona are already receiving social and health services at the same time. That gave us a core of 4,800 users, where we applied more specific inclusion criteria, such as diagnosis-based specificities amongst others, to finally get a list of possible candidates. After this process, around 430 patients have been identified.
- For the short term care pathway, there is no way to identify them in advance. This second group is formed by those patients going through a surgery, normally after a major fall, which is something that cannot be predicted in advance. Because of that, the different professionals involved in the project service provision have been instructed to identify possible candidates to be part of the short term setting.

Once the possible candidates have been identified, and similarly to the screening process, there will be essentially two types of settings, which lead to different ways of assessing and enrolling them within the pilot.

For the long term users, BSA already has a list of possible candidates that strictly follow the inclusion and exclusion criteria as described in the study protocol. That list was obtained as described above. The users included in the list have been contacted by their Case Managers (who they know personally) in order to check if they are willing to participate in the study. If they agreed to participate, the Case Manager has already visited them at home, and delivered to them more detailed information of the project and the changes that it would mean for them if they join the new intervention group, which mainly means the use of a telemonitoring solution and a better integration of the TSCP. From that visit, Case Managers have identified which users are willing to join the BeyondSilos service delivery, and obtained the signed informed consent form. Afterwards, and before starting service operation, BSA carried out a randomisation process in order to decide which patients are going to the control group and which ones are going to the new service delivery.

Regarding the short term users, the assessment and enrolment to the BeyondSilos pilot service is more complex. As explained above, we cannot identify them in advance. So their enrolment into the BeyondSilos project is done after surgery, and before they go into the early discharge programme. These patients will be approached by the surgeon once they are in their room, and after an introduction to the project, they will be asked if they are willing to participate in this new service delivery.

The informed consent form and the cession contract (in Catalonian) that is being delivered to the participants is attached at Annex 1, section 1. In addition, the participants have also signed an image rights cession contract (in Catalonian) that can be found in Annex 1, section 2.

Figure 5: BSA - signing up for the project

3.3.2 Training of health service, social service, voluntary sector staff and informal caregivers

Different activities have been performed in order to empower staff. These training programmes have been adapted to the different users and roles in the project.

- Training courses on the use of the biomedical devices have been provided to social agents, supported by paper material and best-practices recommendations. These courses have been provided by healthcare professionals (nurses).
- Training courses on the use of BeyondSilos collaboration platform have been provided to the care providers' agents. These courses have been provided by local BeyondSilos management team.
- Courses on the use of the BeyondSilos telemonitoring platform and integrated tools have been provided to the healthcare call centre staff and GPs. These courses have been organised by the BeyondSilos local management team / call centre.
- Course on the use of the BeyondSilos assessment tools for professionals engaged in the Project: this has been organised by the management team / call centre nurses.
- Dedicated training courses on the procedures for provision of care have been provided by each service provider.

In the context of the BeyondSilos project, BSA has slightly changed the way it currently works by putting in place some new ICT building blocks that fill the gaps existing in current ICT systems in order to be able to deploy the architecture proposed by BeyondSilos. These include mainly: new functionalities in the ICR (formalising the participation of the TSCP and giving them access to it), and the integration of a telemonitoring solution within the ICT systems of BSA.

Changing the way staff work, and adding more services to be provided, especially when adding new ICT tools such as the telemonitoring solution, requires proper training for the professional staff involved in the its use.

This sub-section includes all the necessary documentation to be produced, training with suppliers to be received, and structural set-up to be put in place before providing the training.

General information about the BeyondSilos service is prepared: The information will be used as general knowledge about the service. The document will be a localisation of the general BeyondSilos leaflet. It will be used to promote the project within all the involved stakeholders at Badalona's pilot, i.e. for the City Council to know what is going on, for the professionals to aid them with the recruitment process, etc. Responsible party: BeyondSilos Coordination Team at BSA.

The above mentioned information brochure (in Catalonian) can be found at Annex 1, section 1; it is the two first pages of the informed consent form.

New ICT building blocks: Training is arranged between the ICT Department (specifically the Software Development Team) and the professionals involved in the service provision, including HCP, SCP and TSCP. The objective of the training is to explain to them the new functionalities available in the ICT systems deployed following the BeyondSilos architecture. Responsible party: BeyondSilos Coordination Team at BSA and ICT Department.

The training was held on 9th January 2015. The management team also took the opportunity to show the devices that were recently received. To see the minutes of the meeting (in Catalonian) please go to Annex 1, section 3.

Telemonitoring tool training (back-office): Training is arranged between the supplier of the telemonitoring solution and formal caregivers. The training is meant to train a set of super-users in the use of the solution. This core of super-users will be the people involved with the service provision, and the ones dealing with the telemonitoring tool. Later on, these super-users will be able to train other users if needed. Responsible party: BeyondSilos Coordination Team at BSA & Supplier of the telemonitoring solution.

The material produced to support this can be found in Annex 1, section 4. The training material was distributed amongst the professionals and explained in depth in a training that was held 6th February 2015, which was the week that deployment started. The minutes from that meeting can be found at Annex 1, section 5.

Telemonitoring tool instructions (front-office): This documentation is used as the guide for caregivers (both formal and informal) and patients to use the software and hardware tools provided within the solution. Most likely, such instructions will be a localisation of the ones provided by the supplier. Responsible party: BeyondSilos Coordination Team at BSA & Supplier of the telemonitoring solution.

In the case of the front-office, a manual has also been produced to be used by the professionals and the users; this can be found at Annex 1, section 6. The training related to the front-office was delivered to the professionals on 30th January 2015; the minutes can be found at Annex 1, section 7.

3.3.3 Introduction of systems and services

As mentioned in the previous section, BSA will add a new service within the context of the BeyondSilos project. The telemonitoring solution will provide a new solution available for patients involved in the project.

The telemonitoring solution requires proper training for the patients involved in its use.

This sub-section includes all the necessary documentation to be produced, training with suppliers to be received and structural set-up to be put in place before providing the training.

General information about the BeyondSilos service is prepared: See section 3.3.2 above. It will used to promote the project within all the involved stakeholders at Badalona's pilot (i.e. for the patients and relatives to know about the project, etc.).

Telemonitoring tool instructions (front-office): See section 3.3.2 above.

Trainings is being delivered to the patients directly at their home, once they have received the devices. The manuals are included in the BeyondSilos kits prepared by BSA.

Figure 6: BSA's kits including training material

3.4 Campania pilot site

3.4.1 Recruitment of patients and older persons

Identification of patients is a task that was arranged together with the ADI (Assistenza Domiciliare Integrata, Integrated Home Care) of Salerno and Napoli. Patients are identified among those that are already enrolled in the programme. In particular, it was agreed that patients with some level of heart disease according to the American Heart Association / American College of Cardiology definition of the severity of the disease (4 classes, from A to D) are to be chosen. In addition, it was agreed that the patients should have other co-morbidities, in order to be enrolled.

End users are therefore identified from the list of those who are already receiving the service, and that meet the characteristics indicated above. When patients are enrolled in the service, they sign an informed consent form that is collected and saved by the ADI office at the Local Health Authority. Patients have therefore already signed to receive the ADI service.

3.4.2 Training of health service, social service, voluntary sector staff and informal caregivers

Within the ADI service, health and social caregivers have received training in the use of the reports that are usually on paper. This paperwork is prepared in order to register the activity performed and to adapt or modify the home care work plan (PAI, Piano Assistenziale Integrato). BeyondSilos has produced innovation by digitising these reports that are now entered into the ICT platform. Training on how to use the work station in the office or at the client's home has been provided to the operators of the Salerno ADI since November 2014. A further session of training is programmed for March 2015 in the ADI of the

Napoli ASL. Online and on field training session are used to help the operators familiarise with the new procedures of data entry on the ICT platform.

3.4.3 Introduction of systems and services

Another innovation that is envisaged in BeyondSilos in Campania is the use of the home monitoring of biometric parameters in patients. This task has been subcontracted to Magaldi life, which has also been requested to instruct the patients and relatives on how to use the devices that are installed at the homes of the patients. These instruction sessions are scheduled to be performed at the time of first installation at the home of the patient. To deliver this task, we are waiting for the assignment of patients identified from the lists of the ADI for the monitoring sessions, which will start April 2015.

3.5 Kinzigtal pilot site

3.5.1 Recruitment of patients and older persons

A person from social care staff has been selected to be responsible for the evaluation process, and has been introduced by Gesundes Kinzigtal GmbH into the background setting and details about the project. They will operate as a case manager. The recruitment process is mainly done by this case manager who is staff member of home care unit of social care provider, because usually these staff have the best relationship with clients, to persuade them to participate in BeyondSilos.

There will be two different social care providers. Seniorenzentrum am Schlossberg, which is operating the new service, is responsible for recruiting participants for the intervention group. Caritas Kinzigtal is operating usual care, and is responsible for recruiting control group. Each social care provider has its own case manager.

Recruitment process for both evaluation groups is based on following two steps:

- First step: Potential participants are people who:
  - are living in Hausach or the surrounding area;
  - are clients of home care unit of Seniorenzentrum am Schlossberg or Caritas Kinzigtal;
  - are cared for by a local GP in the same region who is a member of Gesundes Kinzigtal.
- Second step: people meeting the inclusion criteria of the study protocol, based on patient´s social care record.

Once the possible candidates have been identified, the case manager has to visit them at home to introduce BeyondSilos, and ask for their willingness to join the project. After written consent is given, data for evaluation aspects which is not included in social care record has to be documented via interview or questionnaire. After the visit, results have to be entered into the evaluation database by the responsible case manager.

3.5.2 Training of health service, social service, voluntary sector staff and informal caregivers

To set up the BeyondSilos pilot site infrastructure, only a training session for social care staff is necessary, because they are the only group that need to work with the new software, and have changes in their workflow management. GPs are already used to working with an electronic patient record. A two day training session is scheduled for mid February (10^{th} - 11^{th} February) for social care staff to receive training for the AscleonCare software, and operate with the new service. Gesundes Kinzigtal is responsible for the

organisation of the training course, and also provides the location. The training course itself is held via web presentation and online training units by Medical networks, which is the provider of AscleonCare.

The second part of training session to introduce the interface to access electronic patient record is held via face-to-face training between IT expert of Gesundes Kinzigtal and social care staff.

Contents of training course: day 1 is to get used to working with the new AscleonCare documentation software, and to share data with electronic patient record CGM net.

- Content of training course day 1:
  - Master data maintenance;
  - Employee administration;
  - Shift planning;
  - Tour planning;
  - Background information about different application in software;
  - Communication module: how to send messages via software;
  - Information center: optional application for patient management;
  - Billing §302 und §105 sgb v.
- Content of training course day 2:
  - Connecting AscleonCare Pflegeakte with CGM net.
  - Generating a dataset.
  - Introducing patient data management DocAccess.

Final project meeting on the use of BeyondSilos collaboration platform between AscleonCare and CGM net will be provided to professional social care staff of Seniorenzentrum am Schlossberg and GPs scheduled for 18th March 2015. The event is organised by Gesundes Kinzigtal. Objectives of this event are:

- Demonstrate whole BeyondSilos architecture on pilot site and workflow.
- Way of entering GPs' electronic patient record by social care staff.
- Clarifying last doubts and questions from professionals (social carers and GPs) about new service system.

Training certification and handbook of AscleonCare software and DocAccess interface is attached to this document.

Figure 7: Participants of social care staff training with certificate and trainers

3.5.3 Introduction of systems and services

Innovation in BeyondSilos is replacing paper documentation with digital tools, sharing relevant patient information between social care provider and GPs via an interface, and a quick access to electronic patient record for home care unit staff via mobile devices.

In the Kinzigtal pilot site, devices such as tablets are distributed to social care provider after the DocAccess interface has been installed on the devices by Gesundes Kinzigtal. After that, no further devices will need to be distributed.

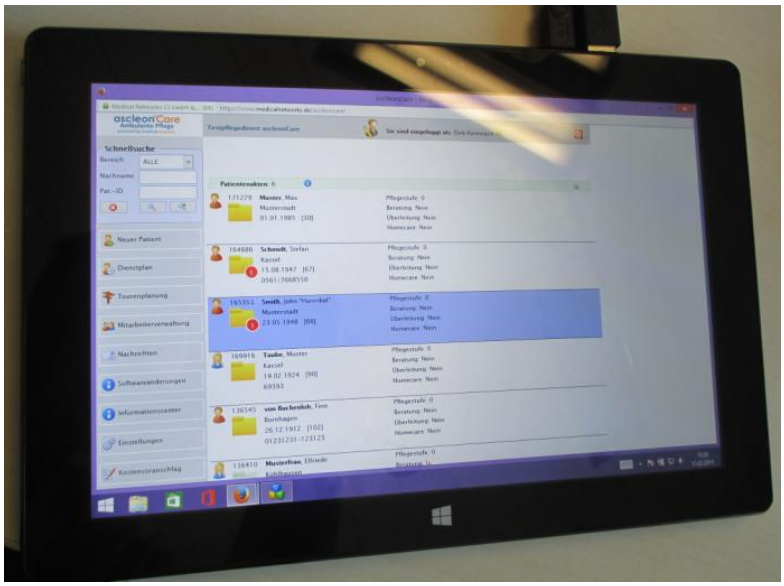

Figure 8: Tablet running AscleonCare software

Technical support and helpdesk is managed by medical support. To demonstrate the whole BeyondSilos intervention, a final focus group with social care provider and involved GPs will be organised in March 2015.

3.6 Northern Ireland pilot site

3.6.1 Recruitment of patients and older persons

Currently, Health and Social Care Trust staff refer people for telehealth and telecare, and carry out eNISAT assessments on people. As the BeyondSilos pilot will simply integrate these two existing services in the ECR, all people in receipt of the services will, by default, become pilot users; patients and clients will not notice any change with the integration. Therefore there is no formal recruitment process required.

For the Shared Care Plan (SCP), GPs in the pilot practices (six practices per Trust area – 30 in total) will receive reports from a risk stratification project based on information held within the GP databases. They will identify 15 patients per practice for whom they will complete a detailed SCP. The risk stratification process has been ongoing irrespective of BeyondSilos, so all patients will be identified in advance of the SCP being implemented.

3.6.2 Training of health service, social service, voluntary sector staff and informal caregivers

It is not envisaged that any specific training will be required. TNI and eNISAT services already exist, and clinicians, including GPs, are already accessing the ECR. At this stage, the pilot in Northern Ireland does not include giving access to the ECR to the voluntary sector or informal care givers.

3.6.3 Introduction of systems and services

Contracts for ECR, TNI and eNISAT systems already exist, and updates to the systems occur on a monthly basis.

Existing systems will not need to be adapted; however, they will need to be integrated with the ECR. This will be done under a variation to the existing contracts. BSO will lead the integration work for HSCNI working with Orion (ECR supplier).

For the SCP, multi-disciplinary integrated care teams currently operate using paper based care plans. With the introduction of the interactive SCP in the ECR, the process will be amended to reflect the replacement of physical forms by the online version.

3.7 Sofia pilot site

3.7.1 Recruitment of patients and older persons

In December 2014, we received list of 200 eligible citizens who could be enrolled in the project, provided from State Social Services in Sofia. From this list, 30 persons were chosen – 15 users and 15 controls. Those 30 persons best met the criteria: age of 65+, at least two chronic diseases; resident of Sofia municipality; in need of homecare and assistance, or being in risk of exclusion due to illness or disability; autonomous in self-services.

These people were visited by social workers at home. A preliminary evaluation was done, with the following features: health status; family status; everyday activities; contact with GP; care and services, from official authorities, voluntary organisations, and relative's willingness to participate in the project.

One week later, they were visited for a second time by the "team" of social worker and nurse. They received information about the project, and especially about using ICT. They answered a questionnaire,

and were given the informed consent form (ICF). The team organised a third appointment to sign the ICF, provide the personal devices, and train the client.

3.7.2 Training of health service, social service, voluntary sector staff and informal caregivers

Domain and technical knowledge is spread amongst stakeholders through the "champion model", e.g. producing committed and trained sources of knowledge in the following domains:

- Social workers: three social workers have been trained, and participated in the education of the first monitored patient. The education of the first patient was done with the support of technical experts who facilitated the event technically, and provided confidence to the social workers.
- General practitioners: GPs have been trained to use the back end web solution, and constantly monitor patient alarms (blood pressure, temperature, panic calls).
- Patients: patients are trained in two phases:
  - Initial phase: a small number of patients that were initially trained with very few materials. The first batch of patients helped identify potential issues: for example, patients had no problem measuring their blood pressure through their mobile devices, but found it hard dialling numbers on their teleconferencing or voice lines. This first batch helped establish the educational materials, guidelines and documentation.
  - Parallel phase: patients were trained in parallel with established and ready brochures, guidelines and training procedures gained from the experience in the initial phase.

Staff training has been done by members of Saorsa Ltd who are familiar with the technical solution.

The acceptance of the technical solution has been assured by an agile method of development with constant sprint releases and demos, so that the "champions" can be familiar with the product throughout the whole development cycle.

3.7.3 Introduction of systems and services

The introduction of systems and services regarding Sofia's pilot site was divided into two steps:

- Back end infrastructure introduction and deployment.
  - The back end infrastructure introduction and deployment was done on a cloud environment (https://bs.czpz.org).
  - The back end infrastructure introduction and deployment is fully automatic, and has a one click delivery solution. This means that through the support of modern technologies (mostly based around Microsoft), the effort for back end introduction and deployment is very low. The only thing that is time consuming is the regression tests after every deployment.
  - The back end infrastructure was first deployed on 27th January 2015, as a Beta V2 working release.
  - The next planned release is Beta V3, which at the time of writing was not performed; it is scheduled for 13th February, as a normal Agile methodology sprint release.
- Mobile devices, blood pressure devices, temperature devices, setup and testing.
  - In a more time consuming phase, the devices for each person have to be set up and tested individually.
  - Each user has to have their own Google account to which they will be integrated.
  - Their Google account is set up on the mobile device, and additional details such as back end endpoints and urgent call centre phone numbers are set up during the process.
  - This task is performed by members of Saorsa Ltd as technical experts.

3.8 Valencia pilot site

3.8.1 Recruitment of patients and older persons

The recruitment process will be carried out by Telemedicine Unit of Hospital La Fe. From more than 700 patients already included in Chronic Patients Case Management Care Plan (CPCMCP), and for those who will come, a prior identification of patients who fit the inclusion criteria will be carried out. For each patient identified for intervention group, at the same time a control will be matched from database of the whole CPCMCP. Patients will be paired one-to-one by age, gender and geographical area. Case Management Nurses (CMN) invite them (intervention and control) to participate in BeyondSilos pilot study, explaining the characteristics of the new integrated care service; for patients enrolled as a control, CMN explains that study will not change the treatment that they currently receive. For those who refuse to participate, whether intervention or control, their reason for refusal will be registered in an Excel database. If either intervention or control refuses to participate, his/her pair will be also excluded to maintain the recruitment process as randomised as possible.

Once patients accepted to participate, Informed Consent Form is taken to patient's home visit in order to sign it.

3.8.2 Training of health service, social service, voluntary sector staff and informal caregivers

No specific training related to ICT platform will be given to Telemedicine Unit Staff, because they are already familiar with platform from previous experiences. If booster training is needed, this will be given by BeyondSilos Management Team.

For social providers (ATENZIA), sharing information about care recipients involving the ICT platform may need some training; this will be carried out by BeyondSilos Management Team.

Figure 9: Valencia: Training sessions for social providers

For the rest of health staff involved in the new care model from Beyond Silos, they do not have to enter any data through the ICT platform, so they do not need any specific training.

Training courses on the use of the biomedical devices, PC, tablet device, and remote home teleassistance device will be provided to end-users and their relatives. This training will be provided by healthcare professionals from hospital at home unit, in the patient's home. Any doubts that could arise after the training will be solved by BeyondSilos Management Team.

Figure 10: Valencia: Training a participant

3.8.3 Introduction of systems and services

TSB will be responsible for the introduction of ICT platform in Hospital Informatics system. They have wide experience in integrating remote monitoring platforms. They are the developers of Nomhad Chronic® remote platform tested in previous clinical trials to monitor patients. Releases of ICT-platform were developed in order to cover all the requirements to follow up BeyondSilos patients. In order to face any challenge that will appear or any changes that Case Management nurses will need, further releases could be developed by TSB.

Figure 11: Screenshot from start screen and Instruction for blood pressure measurement from Nomhad Chronic

PC tablet, blood pressure monitor and pulse-oximeters will be left at patient's home in order to deliver measurements to follow-up platform.

Figure 12: Kit for self-management for BeyondSilos participants

ATENZIA will deliver teleassistance kit consisting of a home-based teleassistance device and pendant emergency button.

Figure 13: Kit for Teleassistance service

4 Service innovation

4.1 Introduction

One of the key features on the BeyondSilos Consortium design was to choose pilot sites that were at different points of adoption of integrated care. This has clearly fostered an improvement within the pilots where previously almost nothing was happening, and somehow forced the most advanced ones into improving a service model which could already be considered at the state of the art. Besides the technological innovation which is analysed in deliverable D4.2, this deliverable provides a comparison of service innovation between the previous situation in every pilot site and the current situation thank to the BeyondSilos project.

4.2 Measuring adoption of integrated care

This is not always an easy task because there is a general lack of consensus about how to measure integrated care, including which data sources to be captured in integrated healthcare delivery[1]. To avoid the lack of specificity and clarity, some authors claim that integration is a nested concept[2] that could be summarised in five dimensions that are helpful in differentiating integrated care archetypes. These dimensions are shown in Figure 14 below, and then discussed in more detail.

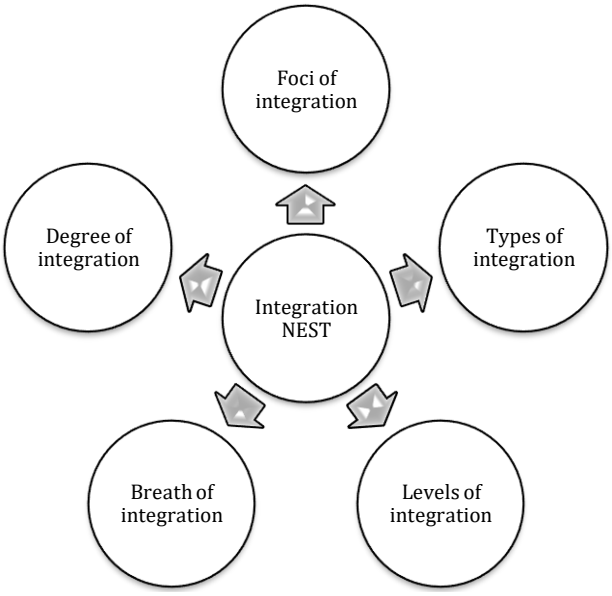

Figure 14: Integrated care concepts

Foci of integration. Integration efforts focus on entire population, vulnerable subgroups (e.g. the frail elderly and persons with disabilities), and patients with complex illnesses (e.g. chronic conditions, some cancers).

Types of integration. There are six types of integration:

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1 Strandberg-Larsen, M., & Krasnik, A. (2009). Measurement of integrated healthcare delivery: a systematic review of methods and future research directions. *Int J Integr Care, 9*, e01.

2 Kodner, D. L. (2009). All together now: a conceptual exploration of integrated care. Healthc Q, 13 Spec No, 6-15.
Kodner, D. L., & Spreeuwenberg, C. (2002). Integrated care: meaning, logic, applications, and implications--a discussion paper. Int J Integr Care, 2, e12

1) Functional integration: the degree to which back-office and support functions are coordinated across all units.
2) Organisational integration: relationships between healthcare organisations.
3) Professional integration: provider relationships within and between organisations.
4) Service or clinical integration: coordination of services and the integration of care in a single process across time, place and discipline.
5) Normative integration: shared mission, work values and organisational / professional culture.
6) Systemic integration: alignment of policies and incentives at the organisational level.

Level of integration. Closely related to the above dimension, integrated care also operates on five different levels:

1) Funding.
2) Administrative.
3) Organisational.
4) Service delivery.
5) Clinical).

It is thought that interventions that span multiple, interlocking domains, both in terms of levels and types of integration, allow for better patient outcomes and system-level performance.

Breadth of integration. Organisations link up to provide a range of clinical and functional services in two ways:

- horizontal integration, wherein similar organisations / units at the same level join together (e.g. two hospitals); and
- vertical integration, which involves the combination of different organisations / units at different levels (e.g. hospital, community health centre, home care agency and nursing home).

Vertically integrated solutions, whether hierarchical or virtual in nature, are a major ingredient of integrated care.

Degree of integration. There are three different configurations:

1) Linkage, the least-change approach, entails providers working together on an ad hoc basis within major system constraints.
2) Coordination is a structured, inter-organisational response involving defined mechanisms to facilitate communication, information-sharing and collaboration while retaining separate eligibility criteria, service responsibilities and funding.
3) Full integration, the most transformative combination, refers to a "new" entity that consolidates responsibilities, resources and financing in a single organisation or system in order to deliver and pay for the entire continuum of care.

This nested approach allows us to understand how integrated care could be deployed taking into account its main components as identified by a review of systematic reviews[3]:

- **Self-management support and patient education**. Self-management support involves collaboratively helping patients and their families to acquire the skills and knowledge to manage their own illness, providing self-management tools and routinely assessing problems and

[3] Ouwens, M., Wollersheim, H., Hermens, R., Hulscher, M., & Grol, R. (2005). Integrated care programmes for chronically ill patients: a review of systematic reviews. *Int J Qual Health Care, 17*(2), 141-146. doi: 10.1093/intqhc/mzi016

accomplishments. Education is defined as providing information (materials and/or instructions) to patients regarding their condition and possible management.

- **Clinical follow-up.** Follow-up is monitoring the patient during or after treatment on a regular basis. This is often done by a nurse case manager who uses phone, mailings, or visits. Clinical follow-up can be seen as part of self-management support.
- **Case management**. Case management is explicit allocation of coordination tasks to an appointed individual (a case manager) or a small team who may or may not be responsible for the direct provision of care. The case manager or team takes responsibility for guiding the patient through the complex care process in the most efficient, effective, and acceptable way.
- **Multidisciplinary patient care team.** A multidisciplinary patient care team is composed of a group of professionals who communicate with each other regularly about the care of a defined group of patients and participate in that care.
- **Multidisciplinary clinical pathway.** Clinical pathways or integrated care pathways are structured multidisciplinary care plans which detail essential steps in the care of patients with a specific clinical problem and describe the patient's expected clinical course. Clinical pathways should be derived from evidence-based guidelines translated into practice.
- **Feedback, reminders, and education for professionals**. The aim of feedback, reminders, and education is to provide healthcare providers with information regarding appropriate care for patients. This information can come from patients themselves, clinical pathways, medical records, computerised databases, or audits by colleagues. Feedback is provided after the consultation; education is provided before consultation; reminders are provided before or during consultation.
- **Additional requirements:**
  I. Supportive clinical information systems and ICT enable integrated care components.
  II. Specialised clinics or centres.
  III. Shared mission on integrated care.
  IV. Leaders with a clear vision of integrated care.
  V. Finances for implementation and maintenance.
  VI. Management commitment and support.
  VII. Patients capable and motivated for self-management.
  VIII. Culture of quality improvement.

In addition to these components, the concept of the BeyondSilos project includes the **health assets perspective** to promote the shift from a reactive approach to proactive and patient-centred care in community and home care settings, overcoming the shortcomings of taking a 'deficits' or 'treatment' approach to the delivery of health and social care services by including the third sector care providers into the loop.

4.3 Comparison between the previous and the current situation with regards to service innovation achieved in the BeyondSilos project

Within the BeyondSilos project, great achievements have been made in regards of service innovation. Table 6 below, summarizes the previous situation in each pilot site and the current situation thanks to the BeyondSilos project.

Table 6: Comparison between the previous and current situation with regards to service innovation

Topic / Pilot	Self-management support and patient education	Clinical follow-up	Case management	Multidisciplinary patient care team	Multidisciplinary clinical pathway	Feedback, reminders, and education for professionals	Additional requirements	Health assets perspective
BSA (previous)	Available only through Primary Care and at home	Yes	Yes	Yes	Yes	Yes	Yes	Informal interaction with TSCP
BSA (current)	Now available also through IT	Yes	Yes	Yes	Improved by adding TSCP into the loop	Yes	Improved integration of telemonitoring	Formalised interaction with 2 TSCP
València (previous)	Preventive and secondary education program for CMCP patients	Yes	Yes	Yes	Yes	Yes	Yes	No formal integrated Care
València (current)	Patients empowered with ICT tools to improve their self-management	Improved with ICT tools and peripheral devices	Yes	Improved with social care provider	Yes	Yes	Improved integration of telemonitoring	Integrated care (health and social) no participation of third sector
Northern Ireland (previous)	Various patient education and support programmes available via Specialist Nurses and GP practices	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Topic / Pilot	Self-management support and patient education	Clinical follow-up	Case management	Multidisciplinary patient care team	Multidisciplinary clinical pathway	Feedback, reminders, and education for professionals	Additional requirements	Health assets perspective
Northern Ireland (current)	Various patient education and support programmes available via Specialist Nurses and GP practices	For patients on RTNI service, information now available through NIECR to wider group of health & social care professionals	eNISAT information now available through NIECR to wider group of health & social care professionals	Shared Care Summary (SCS) in NIECR gives access to information to all health & social care staff associated with patient to improve decision making	Changes available to view in SCS	No impact from BeyondSilos	Improved integration of Telemonitoring, eNISAT and SCS	No impact from BeyondSilos – third sector cannot currently view NIECR.
CPRH (previous)	Available at home on request	Yes	No	No	No	No	Yes	Not integrated
CPRH (current)	Yes, also IT supported and education	Yes	Yes	Yes	Yes	Yes	Improved integration of telemonitoring	TSCP included
Kinzigtal (previous)	No	No	No	No	No	No	No	No
Kinzigtal (current)	No	Yes	Yes. Practice assistance has access to certain patient data	Yes	No	Yes considering feedback	No	No
Amadora (previous)	Available only through Primary Care and at home	No	Yes	No	No	No	Yes	No Health Services provided

Topic / Pilot	Self-management support and patient education	Clinical follow-up	Case management	Multidisciplinary patient care team	Multidisciplinary clinical pathway	Feedback, reminders, and education for professionals	Additional requirements	Health assets perspective
Amadora (current)	Now available also through IT	Yes	Yes	Yes	Yes	Yes	Integration of Telemonitoring & other ICT tools(online Portal and e learning tool)	Integration of social & heath care services: telemonitoring: (temperature; oximeter; blood pressure; weight; blood sugar) & improvement of tele-assistance; integration of ICT (online portal and connection with Contact Centre)
Campania (previous)	Available based on GP Volunteering	Yes	No	Yes	YES, on paper	No	No	Not enough access Integrated Care
Campania (current)	Available through BS	Yes	Yes	Yes	Yes, on website	Yes	Telemonitoring	Increased use of Integrated care

Appendix A: Consolidated list of risks and treatment measures

Table 7: Consolidated list of risks and treatment measures classified per type and pilot site

Risk no.	Risk	Pilot site reporting	Impact	Probability	Remedial action	Manager	Deadline	Status
Related to Organisational risks (6)								
1	Problems recruiting patients	BSA	☒ low ☐ medium ☐ high	☒ low ☐ medium ☐ high	Screening process already in place. First contacts done. No further problems expected	BS Coordination Team and Information Systems Department	February 2015	Eliminated
2	New CEO willing to keep on research and investigation activities	BSA	☐ low ☐ medium ☒ high	☐ low ☒ medium ☐ high	She has to still arrive. We need to demonstrate these are good for the company, but nobody knows how she will act.	Innovation & Research Department	October 2015	Eliminated
3	Problems with dropouts	BSA	☐ low ☐ medium ☒ high	☒ low ☐ medium ☐ high	The screening process showed that there's a good core of patients willing to participate. Furthermore BSA has experience with retention strategies coming from other piloting experiences.	BS Coordination Team and Information Systems Department	January 2016	Eliminated
4	Problems with co-ordination among sub-contractors and organisational players	CPRH	☐ low ☐ medium ☒ high	☐ low ☒ medium ☐ high	Careful selection of sub-contractors and experts Strict measures in contracts Building of automated processes to decrease the importance of individual players	CPRH team	on-going	Eliminated
5	Delay on SIM procurement due to strict / complex policies for public procurement	LA FE	☐ low ☐ medium ☒ high	☒ low ☐ medium ☐ high	Procurement process will be started with enough time	Administrative staff	SIM procurement completed	Eliminated

Risk no.	Risk	Pilot site reporting	Impact	Probability	Remedial action	Manager	Deadline	Status
6	ASL do not sign the agreement	Campania	☒ low ☐ medium ☐ high	☐ low ☒ medium ☐ high	Districts can participate independently from the approval of the ASL	Guido Iaccarino	November 2014	Eliminated
Related to Technological risks (11)								
7	Not achieve on time changes to the ICR	BSA	☐ low ☒ medium ☐ high	☒ low ☐ medium ☐ high	Software Development Team already working on it. Requirements analysis in place	BS Coordination Team and ICT Department	December 2014	Eliminated
8	Doc access interface to exchange data between social care and health care sector is not developed and implemented in time	Kinzigtal	☐ low ☐ medium ☒ high	☒ low ☐ medium ☐ high	Shortening or cancelling test period	Gesundes Kinzigtalk	Two month before pilot period starts	
9	Problems with ICT	CPRH	☐ low ☒ medium ☐ high	☒ low ☐ medium ☐ high	Laboratory and field testing. IT partner support negotiated	Saorsa Ltd	November 2014	Passive
10	Integration of TNI and eNISAT with the NIECR fails due to a technical problem.	HSCNI	☐ low ☐ medium ☒ high	☒ low ☐ medium ☐ high	Integration with the ECR has happened successfully on a number of occasions and the process has been thoroughly tested	Gary Loughran, ECR Manager		Eliminated
11	Improper functioning of devices	LA FE	☐ low ☒ medium ☐ high	☐ low ☒ medium ☐ high	Technological support	Technical Pilot staff	During pilot	Active
12	Delay to achieve technical adaptations	LA FE	☐ low ☐ medium ☒ high	☒ low ☐ medium ☐ high	Constant monitoring of technical adaptations during time line	Pilot staff	When all technical adaptation finish	Active

Risk no.	Risk	Pilot site reporting	Impact	Probability	Remedial action	Manager	Deadline	Status
13	Integration of TNI and eNISAT with the NIECR fails due to a technical problem	HSCNI	☐ low ☐ medium ☒ high	☒ low ☐ medium ☐ high	Integration with the ECR has happened successfully on a number of occasions and the process has been thoroughly tested	Gary Loughran, ECR Manager		Eliminated
14	Low compatibility between ICTs (home monitoring and eCR)	Campania	☒ low ☐ medium ☐ high	☐ low ☒ medium ☐ high	Informal testing is already taking place (September 2014)	Guido Iaccarino		Eliminated
15	Inadequate bandwidth at the ADI sites	Campania	☒ low ☐ medium ☐ high	☒ low ☐ medium ☐ high	Acquisition of 3G tablets	Guido Iaccarino		Eliminated
16	Need for ICT preparatory installation (Telephone facilities; Internet facilities)	Amadora	☐ low ☐ medium ☒ high	☒ low ☐ medium ☐ high	Needs analysis and identification in terms of telephone and Internet facilities; Report on that to Portugal Telecom; Reinforcement of reports to identify theneeds	SCMA / Amadora Municipality / Portugal Telecom	July 2015	Active
17	Lack of specific training, namely on ICT, regarding staff and end users	Amadora	☐ low ☒ medium ☐ high	☒ low ☐ medium ☐ high	Training on care giving and ICT	SCMA / Amadora Municipality	February 2015	Active
Related to Legal / Regulatory risks (6)								
18	Contracts with TSCP	BSA	☐ low ☒ medium ☐ high	☒ low ☐ medium ☐ high	Already working with them and with the Legal Department to solve possible issues	BS Coordination Team and Legal Department	January 2015	Eliminated
19	Telemonitoring tool procurement	BSA	☐ low ☐ medium ☒ high	☒ low ☐ medium ☐ high	Plan already on the table. Budget from supplier in place. Seems no public tender will be needed	BS Coordination Team and Legal Department	November 2014	Eliminated

Risk no.	Risk	Pilot site reporting	Impact	Probability	Remedial action	Manager	Deadline	Status
20	Local Investigation Ethics Committee approval	BSA	☐ low ☐ medium ☒ high	☐ low ☒ medium ☐ high	The IMEC has suffered some organisational changes. So far we are experiencing delays in other research studies and project. We are looking for an alternate one. We also lack the final Evaluation Framework to develop the documentation they need.	BS Coordination Team	February 2015	Eliminated
21	Catalonia becoming an independent country and being outside the EU	BSA	☐ low ☐ medium ☒ high	☐ low ☒ medium ☐ high	Nothing we can do. There's great chance to be taken outside the EU if the freedom process keeps on going		9th November 2014	Active
22	Delay to achieve ethical approval committee	LA FE	☐ low ☒ medium ☐ high	☒ low ☐ medium ☐ high	Send pilot protocol and Case Report Form Before data of ethical committee meeting	La Fe Pilot staff	Before Pilot starts	Active
23	Need for approval of National Protection Data Committee	Amadora	☐ low ☐ medium ☒ high	☐ low ☒ medium ☐ high	In June 2014, a request was sent to the National Data Protection Committee for them to inform if there are any legal / regulatory procedures to undertake Follow up to be done in October due to the fact that until now they have not responded	SCMA / Amadora Municipality	July 2015	Active
User-related risks (8)								
24	Not enough users in intervention and control group	Kinzigtal	☐ low ☒ medium ☐ high	☐ low ☒ medium ☐ high	Open inclusion criteria	Social care institution	Before pilot period starts	
25	Drop out ratio is too high	Kinzigtal	☐ low ☒ medium ☐ high	☐ low ☒ medium ☐ high	Adding more users during the pilot period	Social care institution	Two month before pilot periods ends	
26	Lack of volunteers to enrol	CPRH	☐ low ☒ medium ☐ high	☒ low ☐ medium ☐ high	We have provided several entry points to enrol in the system: healthcare referral and social referral	CPRH team	November 2014	passive

Risk no.	Risk	Pilot site reporting	Impact	Probability	Remedial action	Manager	Deadline	Status
27	Delivery of the service process to include an ICP in the ECR fails due to lack of buy-in by GPs.	HSCNI	☐ low ☒ medium ☐ high	☒ low ☐ medium ☐ high	Integrated Care Directorate in HSCB have previously had positive engagement with GP practices who are already engaged in the risk stratification process and who have requested easier access to Integrated Care Plans.	Michele Bekmez, Southern ICP Manager	End of 2014	Passive
28	Drop out of participants	LA FE	☒ low ☐ medium ☐ high	☒ low ☐ medium ☐ high	Increase sample size	La Fe Pilot staff	Before pilot starts	Active
29	Staff / end users resistance to change	Amadora	☐ low ☒ medium ☐ high	☐ low ☒ medium ☐ high	Focus group sessions; dissemination activities; communication of the project	SCMA / Amadora Municipality	On going	Active
30	Patients turnover	Amadora	☐ low ☐ medium ☒ high	☐ low ☒ medium ☐ high	Updated data base from SCMA; hospital regarding potential substitutions; profile criteria monitoring	SCMA / Amadora Municipality	On going	Active
31	ICT Stakeholder dropout due to Company acquisition by a third party	Amadora	☐ low ☐ medium ☒ high	☒ low ☐ medium ☐high	Overcome	SCMA / Amadora Municipality / Portugal Telecom	July 2015	Passive

Appendix B: Lessons learnt

This section gathers all the input provided by the pilot sites regarding the experiences acquired within the work conducted in WP5.

Pilot site	Lessons learnt by the pilot sites
Amadora	• Information structuring. • Overview of all the processes and partners' roles. • Identification of potential risks. • Identification of potential good practices to overcome difficulties and constraints. • Importance of training to formal & informal carers. • Importance of having Plan B in all situations. •
Badalona	• Planning is really important to achieve a successful pilot starting point. • Deployment and installations require a lot of coordination. • The introduction to services should be done by the professionals the participant knows and trusts. • Installation at patient's home takes a lot of time. • Staff members should be involved on an early stage of the pilot design. That will favour the change management.
Campania	• The idea that a better healthcare could derive from the integration of Health and Social Care was first introduced in the Italian legislation in 2004. In 2011, the so called Balduzzi Decree, from the name of its proponent, introduced the concept of Integrated Care. According to the decree, due to the regional autonomy in terms of healthcare, regional governments are responsible for providing healthcare. In particular, for integrated healthcare, the Regions define the organisation of local services in primary care by promoting the "integration with the company, also with reference to" home care and hospital services in order to improve the level of efficiency and ability to take charge of the citizens, according to operating modes that provide organisational forms monoprofessional and multiprofessional. • The regional government in Campania derogates healthcare through the local health authorities (ASL) which have competencies and budgets for healthcare. ASL Salerno has recently used part of the budget to subcontract homecare from a private company. In the subcontract there is the use of an ICT platform for the management of the costs and evaluation of the integrated health and social care plans. BeyondSilos has to integrate with this ICT technology, and to exploit the level of telemonitoring and clinical data collection, in order to ameliorate the service. • Therefore the major lesson learnt is that to break down the silos, there is also the need to understand the background that led to the status quo, in order to build on the existing solutions. This also helps to better use the available resources.
HSCNI	• One of the main lessons we have learnt is that it is impossible to overstate the amount of work involved in engaging with GP practices – currently they are so busy with current pressures that it is very difficult to get them to agree to release time to do anything else. We have had to engage at a political level with the Northern Ireland branch of the GP Council (NIGPC) to get overarching

	agreement before we could approach GP practices on the ground. We have included a representative of NIGPC on the Project Team, but even he has found getting agreement difficult. It has taken effort over a number of months and agreement on reimbursement scheme to get practices to be involved. • Further to the above, we have also found that when we eventually get the interest of individual doctors, they are, in general, very enthusiastic and want to be involved. It is difficult to get them all together in one place so the best way to involve them is holding large workshops for half a day a few months apart, together with individual practice visits at times that suit them in between. • Because the pilot is on a large scale, and because we are building into a live regional system (the NIECR), any large piece of work on the ECR (e.g. system upgrade) impacts on the project. There is an unavoidable delay in the Shared Care Summary integration because the ECR is being upgraded from August to November 2015.
Kinzigtal	• Getting detailed information about for example recruitment numbers from social care providers is difficult. • Pilot site evaluation does not work without financial support to social care provider who are doing documentation. • Change Management is a long and exhausting process. • Motivation of stakeholders is essential. • Always beware of technical difficulties and challenges during ICT development process which cause delays in milestones plan. • Always select two persons for each area of responsibility in case of illness or quitting job. • Planning enough time for negotiation phase with subcontractors.
Sofia	The careful preparation of the selection process is a guarantee for successful enrolment of patients in BeyondSilos pilot Sofia. • The training must take place both in laboratory conditions and on site. • The ICF must cover the comprehensive process model, pathways, devices and BS service features • Protocols must be in place for the call center and help desk employees.
València	• Coordinate with research institution from hospital in order to control the time to achieve ethical committee approval or any amendment to protocol or annexes that could be need. • Legal agreement between entities involved in development of pilot study to share information confidentially. • Coordinate to identify ICT platform requirements and changes to introduce social care data. • Case Management Nurses and Teleassistance operators are key staff for new service model. They are first contact with patients, and identify weakness of the process. • Start from previous experiences in order to streamline the processes involved in a new care model.