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inDemand
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inDemand
Demand driven
eHealth co-creation

D5.1 Co-creation and business support report of first inDemand Model iteration

Vs1.0

Delivered: 6 April 2019

The inDemand project has received funding from the European Union's Horizon 2020 Research and Innovation Programme under Grant Agreement No763735

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Instrument:	Thematic Priority
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Title
D5.1 Co-creation and business support report of first inDemand Model iteration

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The report is elaborated on the basis of the Original Grant agreement

Abstract

This report presents the work done by the partners of the inDemand with the role of Challengers and Supporters (WP5) in the first iteration of the model with regards to the third phase of the project: co-creation and business support management. It presents the methodology elaborated and followed to implement the co-creation and business support activities in the 3 pilot regions. Then, the implementation in each region is described, including: an introduction of the region, calendar for the implementation of the activities, results of the co-creation and regional lessons learned. Finally, a consolidation of lessons learned and recommendations to improve this phase are provided. The deliverable also includes a section on how gender aspects have been handled in the project.

Dissemination level (Project co-funded by the European Commission within the H2020 Programme)	
PU Public	X

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History

VS	Date	Changes made	Modified by
0.1	10.01.2019	First version of the document structure and methodology. Murcia implementation	Elena López, Ticbiomed
0.2	15.01.2019	Oulu implementation, business support	Heini Malm, BusinessOulu
0.3	18.01.2019	Oulu implementation, co-creation	Timo Alalääkkölä, NOHD Pauliina Hyrkäs, NOHD
0.4	07.02.2019	Paris implementation, Co-creation	Louis Potel, RESAH
0.5	14.02.2019	Paris implementation, Business Support	Aurélien Seve, Medicen
0.6	01.03.2019	Review of Oulu implementation, Executive summary, consolidated recommendations, and conclusion	Heini Malm, BusinessOulu
0.7	18.03.2019	Review of co-creation in Murcia	Gorka Sánchez, SMS
0.8	28.03.2019	Review of finished document	Elena López, Ticbiomed, Heini Malm, BusinessOulu
1.0	29.03.2019	Final review	Myriam Martín, Ticbiomed

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Table of abbreviations

D	Deliverable
DoA	Description of Action
EC	Evaluation Committee
ET	Executive team
EU	European Union

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ICT	Information and Telecommunications Technologies
NOHD	Oulu University Hospital
RESAH	Réseau des Achateurs Hospitaliers
SME	Small and Medium Enterprise
SMS	Servicio Murciano de Salud
WP	Work Package

Glossary

inDemand methodology uses several words/names that have been created or adapted for the purpose of the project. These words/names have a precise meaning that is necessary to know to completely understand the process. Please find below the definition of theses specific word/names

APPLICATION	Consist on the following items: 1/ The Proposal has to follow the templates provided for this purpose, 2/Declaration of honour duly signed. Stating that this very same project proposal does not receive funds elsewhere
CALL	Publication of an announcement inviting target companies to submit its proposal-application aimed to satisfy the identified challenges
CHALLENGE	A Challenge is a precise unmet need identified by the challenger (more especially the Intrapreneur) that might be addressed by an innovative eHealth solution. To define a Challenge, an Intrapreneur has to complete the questionnaire dedicated to this and provide the following information: Definition of the Challenge, the Challenge scope (Scalability), the Functional requirements, the Expected impact, the Feasibility but also a Commitment to be involved in the inDemand project if the proposed Challenge is selected by the Evaluation Committee in phase 1. A Challenge is a Micro vision of the needs in the Healthcare organisation.
CHALLENGER	Public (healthcare organization) that identifies the unmet need and frame it in the form of a challenge. It also works in close collaboration with the Solver to co-create a solution.
EVALUATION COMMITTEE OF CHALLENGES	group of people who are responsible for selecting the challenges that are winners among all proposals submitted by intrapreneurs. The ECC must be composed of at least 6 people covering the following profiles: Challenger (4 members): • Top management • Clinical • IT • Innovation Funder (1 member) Supporter (1 member)
EVALUATION PROCESS	The Call evaluation process is structured in three steps: 1-Eligibility Check. A first review performed by the Funder, 2-Proposal evaluation. A Selection Committee will evaluate all eligible proposals, 3- Solver selection. A list of beneficiary SMEs per Challenges will be published & notified.
EXECUTIVE TEAM (ET)	ET will manage and support the process of challenge identification. This team will be formed by technical staff, knowledgeable about innovation management and with access to the political decision makers. Typical candidates will come from Innovation units of the public entity.
FUNDER	Funding organization that launches a competitive call to select the best Solver for each challenge. It also provides the economic support to the Solver to carry out the development of the solution.
INTRAPRENEUR	Professional person from challenger entity who proposes a concrete challenge and takes the commitment to develop by a pilot of co-creation in next phase if it is selected.

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SOLVER	Private SME company that, one selected, becomes the solution provider and starts co-creation with supporter and challenger.
SUBGRANT AGREEMENT	Selected Solvers are requested to sign a covenant document whose main objective is to validate financial and technical operational capacity from the SMEs teams, and to establish some minimum ground rules for receiving support from the inDemand project.
SUPPORTER	Intermediate organization that delivers support to optimize the business model, access to funding and commercialization of the Solver. It will also mobilize the local business ecosystem.
TOPIC	A Topic is a large Healthcare area where there are needs that can be addressed by an innovative eHealth solution. The Topics are defined by the Top Management of the Challenger. The Topics are defined by top management to focus the identification of challenges to most relevant healthcare areas. A Topic is a Macro vision of the needs in the healthcare organisation.
TOP MANAGEMENT	People who are decision makers in their entities, about policies and priorities.

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1 Executive Summary

inDemand is a new co-creation model where Healthcare organizations (Challengers) and companies (Solvers) co-develop Digital Health solutions, with the economic support of public regional funds managed by Regional funding organisations (Funders). inDemand targets to solve Challenges identified by the Healthcare organizations.

In the third phase, described in this deliverable, **Challenger and Solver develop together a new healthcare solution. Solver receives business advice from the Supporter.** These activities facilitate the co-creation between Challengers and Solvers as well as the delivery of the business support (Task 5.1 and 5.2, respectively). At the end of co-creation, Funder oversees the Evaluation and Payment process. Finally, lessons Learnt, and recommendations are gathered to improve the inDemand model (Task 5.3).

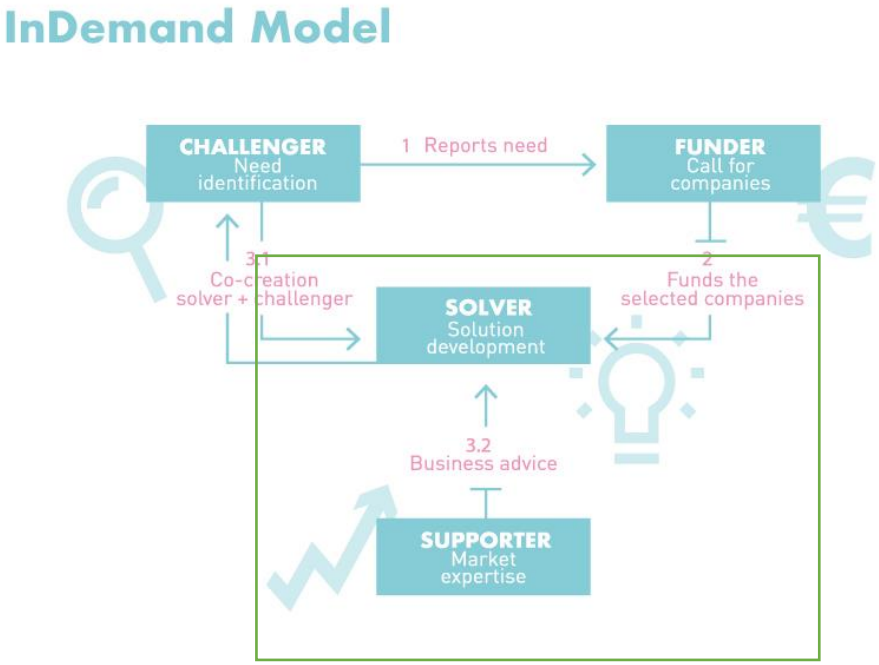

Figure 1 inDemand model

By applying this approach, SMEs will develop digital solutions with higher success rate in terms of their application in practice/market uptake because they have been developed side by side with the client.

The objectives of Phase 3 are to:

- Prepare the cocreation and the business support activities for the selected solvers
- Define the regional frameworks
- Implement the cocreation and the business support activities in a coordinated way
- Interact with awarded Solvers for justification and payment of the financial contribution foreseen by the project (grant)
- Disseminate the results achieves by each of the challenges

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- Assess the outputs and management of the acquired knowledge to improve the model.

This **D5.1 Co-creation and business support report of first inDemand Model iteration,** is a practical, hands-on description including a qualitative analysis of the first implementation of inDemand model Phase 3 in Murcia, Oulu and Paris pilot regions from September 2017 until March 2019.

Development work is led by BusinessOulu, and it is implemented and reviewed with Ticbiomed and Medicen Paris Region in collaboration with the regional Challenger Organizations: Murcia Regional Healthcare System (SMS), Oulu University Hospital (NOHD) and RESAH IDF.

Although this report focuses on the 3rd phase, it also aims to highlight the importance of the interaction and collaboration between other work packages in the successful project implementation.

Firstly, **in chapter 2,** the methodology for co-creation and business support implementation is explained. This methodology is the result of interactive collaboration with the Consortium partners. The intermediate organisations' vast ecosystem and business development experience in the Health Sector, Martti Ahtisaari Institute of Global Business and Administration at the University of Oulu and Murcia Regional Healthcare System experience (FICHe project, 2013-2016) and Oulu University Hospital (University Hospitals as Innovation Platforms" -Co-creation project in Finland, 2016 – 2017) experiences were successfully utilized.

In brief, the methodology applied can be summarises as follows:

- **STEP 0: PREPARATION** seven preparatory activities have been identified before the start of actual co-creation with companies: general planning & minimum requirements, adapting for each region, identifying and producing materials, planning ethical issues, planning with intrapreneurs, recruitment of co-creation participants, and invitation letter to Solvers.
- **STEP 1: MANAGEMENT OF COCREATION.** The aim is the management of co-creation between Challengers and Solvers with the following three objectives: To create a common framework for inDemand co-creation., To facilitate the interaction between the healthcare professionals (Challengers) and awarded SMEs (Solvers) in each pilot region., and To coordinate and integrate co-creation activities with business support activities (Task 5.2) to deliver a complete support to Solvers.
- **STEP 2: MANAGEMENT OF THE BUSINESS SUPPORT**. is the management of co-creation between Supporters and Solvers. To achieve this end, the objectives to pursue are three: Create a common framework for inDemand business support, Deliver regionally to Solvers the business support activities, including business modelling, access to funding and access to market, and Coordinate and integrate business support activities with co-creation activities (Task 5.1) to deliver a complete support to Solvers
- **STEP 3: EVALUATION AND PAYMENT i**ncluding the evaluation of the work done and how the new solution has progressed by the Solvers.
- **STEP 4: ASSESMENT AND CONTRIBUTION TO THE KNOWLEDGE BASE**

Figure 2 inDemand methodology for the Phase 3: co-creation and business support (WP5)

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The methodology described is common for the three regions. The innovative feature is that it although there is a co-creation and business support model for 3 countries, regional specifications have been included in order to obtain the best possible results adjusting the methodology to the regional framework and the profile of partners, making it easier the adoption for other regions and can be exported to the rest of the inDemand Community.

Chapter 3 includes all the particular information with regards to the implementation of the inDemand model in the 3 regions

Chapter 4 and 6 presents the lessons learned and consolidated conclusions made by the Challengers and Supporters of the 3 regions by highlighting the common lessons as well as lessons learnt/recommendations in order to improve the process before the second iteration.

For the analysis, a longitudinal participatory case study method has been used where the writers of this report actively take part in the development of the methodology and its implementation.

After the first iteration, the six key relevant characteristics are:

- WP5 methodology include pragmatic and concrete processes, tools, and working methods in planning, managing and leading complex projects in the coupled open innovation context.
- Minor regional variations indicate positive recommendations for the replicability of the model. Public healthcare organisations and the Innovation Management Units have received a tool in the form of inDemand model to develop their Innovation Management processes and practices, to provide bottom-up healthcare professionals a possibility to address their needs and a meaningful way to develop solutions together with companies. These elements provide these healthcare professionals opportunity factually influence what kind of new solutions will be built and ultimately taken into use to enhance the digital transformation in healthcare entities.
- Companies appreciate and understand the inDemand model and the roles of each Regional Partner.
- Companies report that developing solutions side by side with the field professionals help them to keep the focus on the most important aspects when developing new products and services to the complex healthcare market.
- Companies have received new potential business opportunities.
- There has been good use and usefulness of the materials that have been prepared in this work package.

The report ends with Conclusions and the consolidated recommendations including eight areas to improve the co-creation implementation process for the 2nd iteration in different steps:

- Step 0: A slightly more detailed Regional Approach is beneficial to ensure all the required resources are available in Phase 3. In addition to Monthly Consortium online meetings, it is useful to have for example regular meetings among Regional Partners (Challenger, Supporter, Funder) to keep all Partners updated and all views shared. Challenger Innovation Management Units will dedicate more time to prepare and guide Intrapreneur Teams so that they understand the inDemand model and give tips how to work with external companies. The Co-creation work plan template will be updated to ensure that each section in the work plan is clearer.
- Step 1 – Co-creation Management: Challenger organisations will seek opportunities to have adequate resources to carry out the development work between healthcare professionals and companies. In addition to Monthly Consortium online meetings, it is useful to have for example regular meetings/monthly meetings among Regional Partners (Challenger, Supporter, Funder) to keep all Partners updated and all views shared.

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- Step 2 – Business support Management: Regional Supporter organisations will offer tailor-made services to the companies during the co-creation in addition to the tools and materials provided in this work package. Regional intermediate organisations are encouraged to leverage their health and innovation ecosystems for business support.
- Step 3 – Evaluation and Payment. At the end of co-creation, Challengers evaluate the targets vs results of each Challenge. The Challenger organisations will share the information of the successful solutions in different pilot regions as well as the inDemand Community to enhance the potential scalability of the solutions and adoption of use.
- Step 4 – Assessment and Contribution to the Knowledgebase. The methodology, processes and tools created in this work package is now included in the Knowledge base. Work package 2 will next gather the regional lessons learnt in the scientific form.

Finally, it is important to recognize the limitations of this report. It is too early to demonstrate how many of these Solutions will be truly adopted in the Challenger organisations or by other potential healthcare organisations. The methodology, regional approaches, and lessons learnt will be next shared among the inDemand Community. It is expected that new interesting insights and inputs can be achieved in order to improve and optimize the Phase 3 in the inDemand model during the next 18 months as well as implement the 2nd iteration in the 3 pilot regions.

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2 Methodology and process elaborated for the co-creation and business support activities

The last, 3rd Phase of the inDemand model implementation facilitates the co-creation between Challengers and Solvers as well as the delivery of the business support. Therefore, the Chapter 3 describes the developed methodology for the co-creation and business support activities implementation. This methodology has been applied during the first iteration of the model in the three pilot regions.

WP5 tasks are led by regional Supporter organisations and deal with the following responsibilities:

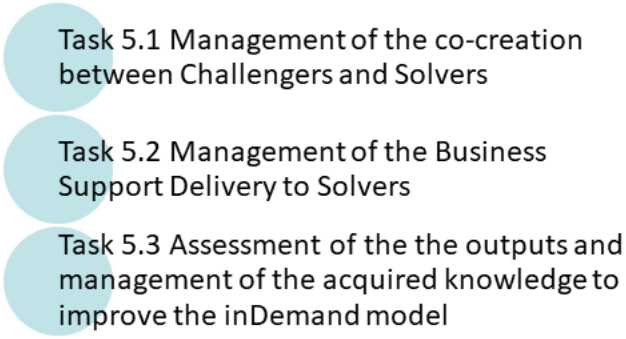

Figure 3 Work Package 5 Tasks

The co-creation and business support methodology and process is the result of long, collaborative and analytical work based on multiple discussions with the Consortium partners. WP5 is led by BusinessOulu (BOU), the Economic Development Organisation, City of Oulu. This large work package is implemented and reviewed with TICBIOMED (TBM) and Medicen Paris Region (MPR) in collaboration with Oulu University Hospital (NOHD), Murcia Regional Healthcare System (SMS) and RESAH IDF.

The Challengers and Supporters establish the methodological approach based on:

- the Challengers (NOHD, SMS and RESAH) previous experiences, their know-how and resources
- the Supporters (TICBIOMED, BusinessOulu and Medicen) vast ecosystem and business development experience in the Health Sector who will leverage their know-how and resources in the most meaningful way
- Martti Ahtisaari Institute of Global Business and Administration's (www.mai.fi/en) at the University of Oulu
- Servicio Murciano de Salud's experience from the FICHe project years during 2013-2016.
- Lessons learned from the "University Hospitals as Innovation Platforms" -Co-creation project in Finland between May 2016 – December 2017. The project focused on creating a productive health care system that supports new innovations, effective ways of working, and creation of new businesses. The project was part of the national Six City Strategy (6Aika) which connects Finland's six largest cities, including Oulu, to work on joint development projects and platforms (more information).

2.1 Deviations to the Initial WP5 Work plan in the DoA

In the beginning of this project, co-creation and business support implementation was defined in the initial WP5 work plan as described in the DoA (P. 21 to 22 of the State of the Art). However, several

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modifications and improvements were needed as the inDemand model implementation requires careful planning, collaboration and co-creation among partners of the project.

inDemand partners defined the Methodology for the model Implementation mainly during 10 online teleconferences, email communication (Q3 2017 - Q3 2018) and one face-to-face meeting during 18-19 April 2018 in Murcia. This table presents the five most important deviations from DoA. However, it must be noted that Work Package 5 partners have been further developing and adapting the WP5 methodology throughout the 1st iteration implementation.

INITIAL PLAN	CHANGES ON THE INITIAL PLAN	WHY?
1. Implementation process was not divided into clear and logical different steps.	Creation of inDemand Methodology: Step 0: Preparation Step 1: Co-creation Management Step 2: Business Support Management Step 3: Evaluation and Payment Step 4: Assessment and Contribution to the Knowledge Base	This is a complex international project in the coupled open innovation context. It is important to have steps dedicated also to Preparation, and Evaluation and Payment; these steps include strong interaction with other WPs. The division of the process is now more understandable and logical.
2. No clear instructions whether regional variations would be possible.	Possibility to have regional variation from the initial process.	All regions are different; flexibility is required in ensuring success of the process in all regions as well as possibility to try different sub-processes to find the best options for model implementation.
3. Same calendar to achieve WP5 objectives for the 3 regions.	Possibility to have different calendars for the 3 regions during the first iteration.	One of the main reasons is that RESAH is the Challenger of the Paris region. instead of being a hospital or regional healthcare provider like in Oulu and Spain respectively, RESAH is a Central Procurement Body. Therefore, preparation and implementation of the co-creation environment and process take more time in France than in the other regions.
4. Two days of business modelling group training	A 2-days workshop was planned which was shortened to one day and complemented with later follow-ups either online or face to face to ensure tailor-made approach.	For Solvers inconvenience regarding travelling, as many of them are not based in the Challenger region. Most of the Solvers' time is devoted to the co-creation with Challenger as this is a very intensive activity.
5. Funding group training	Each region can decide to organize this workshop or not. If organized, it could be a group or an individual session.	Supporters realized that not all the SMEs were interested in access to funding due to several reasons (e.g. current availability of funds or early stage in the company life cycle).

Table 1 Deviations in Work Package 5 Tasks from the Initial Plan in DoA

For the following section of the document it is important to note that, despite DOA describes co-creation and business support as two separated tasks (**5.1 and 5.2 respectively**), both have been running in parallel, as they are interrelated and coinciding in time, and therefore, the work performed must be understood as a **joint effort.**

2.2 inDemand methodology for co-creation and business support activities in the open innovation context

The developed inDemand methodology includes 5 steps: preparation, co-creation management, business support management, evaluation and payment, and assessment and contribution to the knowledgebase.

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Figure 4 inDemand methodology for the Phase 3: co-creation and business support (WP5)

Next, more detailed process for each 5 steps will be described.

Step 0: Preparation

In Step 0 the following seven preparatory activities have been identified before the start of actual co-creation with companies: general planning & minimum requirements, adapting for each region, identifying and producing materials, planning ethical issues, planning with intrapreneurs, recruitment of co-creation participants, and invitation letter to Solvers.

Figure 5 inDemand methodology for the Step 0: Preparation of the co-creation and business support

S.0.1 – General Planning & Minimum Requirements

Firstly, during general planning Partners agree to set the minimum requirements for the co-creation & business support implementation activities.

The target is to carry out similar Phase 3 implementations in all three pilot regions to ensure efficient project management (WP1) and validation of the model (WP2).

Minimum requirements are defined:

- **Provide training to SMEs focusing in three areas: validation of the business model, access to funding and commercialization**
- **Initiate discussion with each company on the business model approach to identify the specific needs.**
- **Set a personalized framework including a planning for the 7-month period that will include the following information: team, calendar, milestones, deliverables, description of the interactions.**

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- All materials will be prepared in English, although implementation may be completed in a local language.
- There will be at least 3 business support face-to-face interactions coordinated with the co-creation ones.
- Based on the needs of Solvers, the Supporter will assist companies to access services provided by InDemand consortium partners, such as coaching by experienced and qualified coachers, validation with Business plan experts, support in the definition of a market development strategy and business scaling for target markets, and targeted support to access private capital market.

- **Follow-up of the implementation.** When a milestone is reached, a joint assessment takes place and corrective measure, if necessary, are put in place. It is important to discuss these needed measures with all relevant stakeholders.
- **Reporting**. At the end of co-creation, Solver and Challenger interact to discuss the expected and final results of co-creation. At the end of co-creation, Solver and Supporter interact to discuss the Final Go-to-market strategy and if any other business support is needed. Solver needs to report to the Funder the results and provides those in the set format

S.0.2 – Adapting for each Region

Secondly, the pilot regions adapt the defined Minimum Requirements according to regional resources in creating own regional approach for Phase 3 implementation. The Regional Approach is required to ensure coordinated actions among Challenger, Solver, Supporter and Funder organisations.

In the regional approach, the most important activities will be defined (i.e. inDemand kick-off day for the Solvers, Co-creation with users, Group Sessions, One-to-One meetings, Test Trial Period and the Co-creation Final Event for companies). These Regional Approaches are shared with the rest of the Consortium Partners for feedback, knowledge transfer and validation. Next, each regional approach for the first iteration is described.

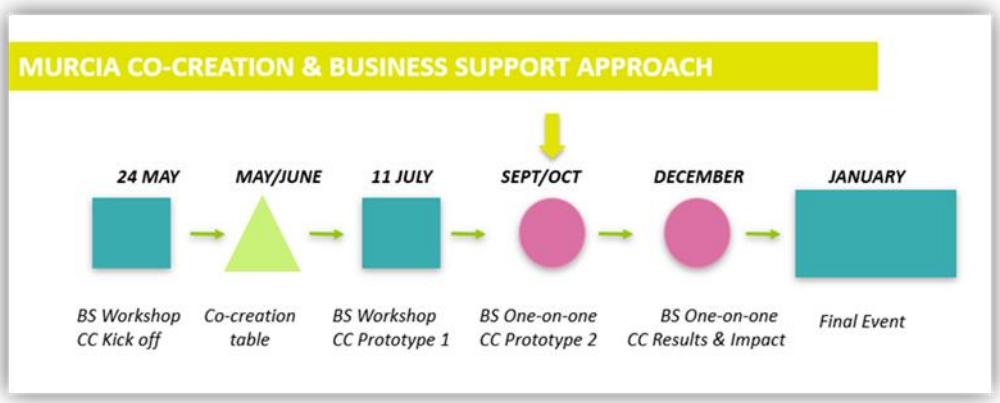

Figure 6 Murcia Co-creation and Business Support Approach

In Murcia, co-creation and business support start with the kick-off in May 24th, 2018 and end with the final event in February 26th, 2019. The planning for sessions in between is: two group interactions and two individual interactions for co-creation and business support. Also, at least one co-creation table with users (other than Challenger intrapreneur team) is scheduled.

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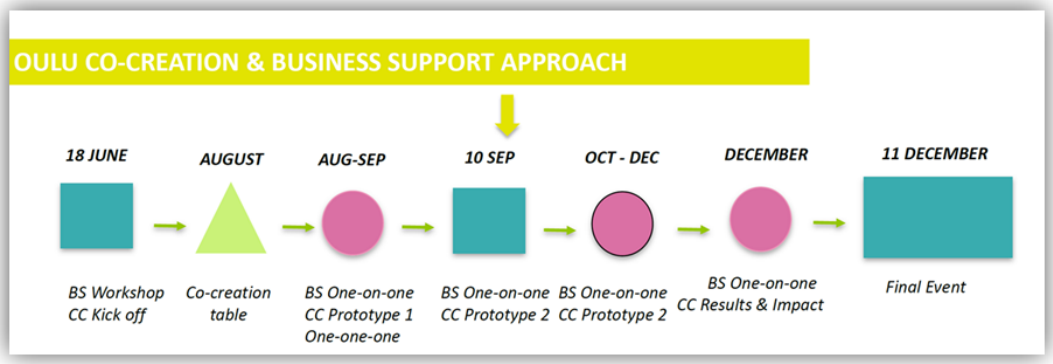

Figure 7 Oulu Co-creation and Business Support Approach

In Oulu, co-creation and business support start with the kick-off in June 18th, 2018 and end with the final event in December 11st 2018. The planned sessions in between are: one group interaction and three individual interactions for co-creation and business support. Also, at least one co-creation table with users is scheduled.

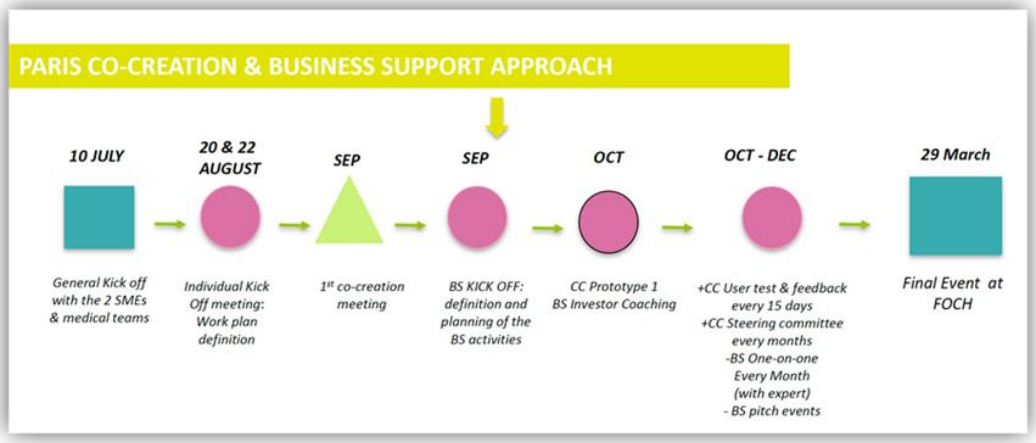

Figure 8 Paris Co-creation and Business Support Approach

In Paris (Île-de-France), cocreation and business support start with the kick-off in July 2018 and end with the final event in March 2019. The planning for sessions in between is: four individual interactions for co-creation and business support. Also, at least one co-creation table with users is scheduled.

S.0.3 – Identifying and Producing materials

Taking into consideration that awarded SMEs would be in different stages of the life-cycle in their businesses, WP5 Partners decided to focus on building general, hands-on materials that all European Digital Health SMEs could benefit. The most important new materials introduced were:

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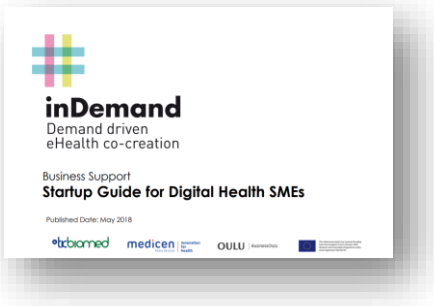

The Start-up Guide for Digital Health SMEs gives an overview of the key concepts and some tips to work in the digital health ecosystem. Some tools and innovative approaches are recommended to support the entrepreneur in the design and mapping of their activities. (ANNEX 1)

Co-creation & Business Support Work Plan (Deliverable Template) is prepared to present the Co-creation work plan established between the Challenger, the Supporter and the Solver during the kick-off meeting. It is a key document during co-creation that includes milestones, deadlines and meetings. The Co-creation Work Plan needs to be signed by the Supporter, Challenger and Solver organisations preferably during the 1st kick off meeting or at an earliest opportunity after that and is updated as needed. (ANNEX 2)

Go-to-market Plan (Deliverable Template) and Powerpoint presentation includes the development of the feasible market launch plan for a new Digital Health Solution. In this document, the 1st part explains the key concepts regarding a marketing plan and a Go-to-market Plan for a specific SME business. The 2nd part includes a template that SMEs must follow to submit the Deliverable to Supporter. (ANNEX 3)

Lean Start-Up Approach and **Lean Canvas Presentation** to be used during the Business Modelling workshop. It explains how and when to use the Lean Canvas and the main concepts of Lean Start-up and Customer Development Methodologies. (ANNEX 4)

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	**Access to Finance Presentation** to be used during the Access to Funding Workshop; includes an introduction to private and public funding options, concrete funding opportunities and strategies and resources for private investor negotiations. Each Region could adapt this presentation for its own country. (ANNEX 5)

Table 2 Business Support Materials elaborated for the project

Furthermore, Supporters decided to create inDemand Digital Workspace (in Google Drive) to facilitate the communication, agreement and follow-up of the progress (Challenger, Solver, Supporter, Funder) in each regional health ecosystem. In addition, each Solver has its own workspace where the most important project materials are stored and developed.

S.0.4 – Planning Ethical Issues & Data Protection Procedure

Before actual co-creation starts, Challenges must be submitted to each Hospital Ethics Committee to obtain approval, if needed, so that no interruptions occur in co-creation due to ethical concerns.

Furthermore, the Challengers gather the key issues that companies need to pay attention to comply with the Hospital code of conduct and data protection procedures.

Challengers inform the Solvers about the needed procedure and actions in the kick-off meeting. Challengers ensure that Solvers will complete all the required paperwork before starting co-creation.

S.0.5 – Planning with intrapreneurs

Challenger organisations will arrange internal meetings with Intrapreneur/Development Teams and IT & Purchasing department personnel to

- explain and build a common understanding of the inDemand methodology for co-creation.
- work together to develop Co-creation Work Plans in order to pre-define number and form of interactions with Solvers, milestones, expected results and KPIs to measure the impact of the developed solutions.
    - The Co-creation Work Plans must be negotiated and finally agreed with Solvers during the kick-off meeting.
    - It is possible to send the 1st version of the Work Plans to Solvers before the kick off so that they can familiarise with it before the actual meeting.
- advise the Intrapreneur Teams how to prepare a Challenge presentation for Solvers.

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S.0.6 – Recruitment of Co-creation Participants

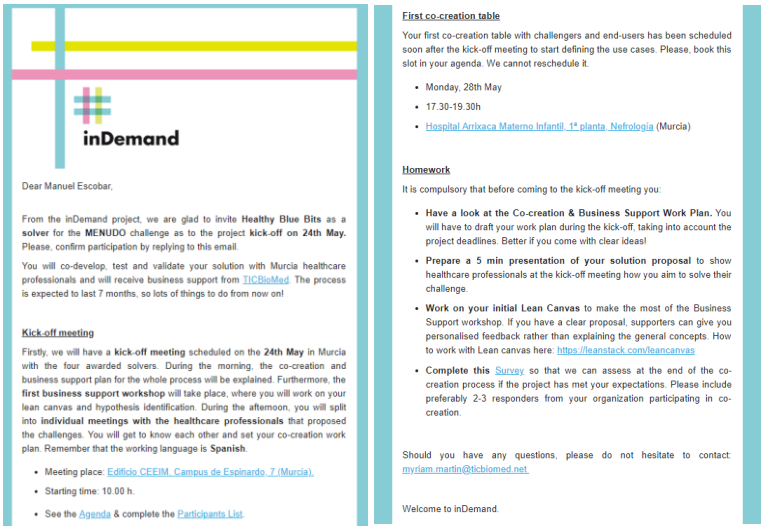
During co-creation, Solvers are expected to interact with the intrapreneur team and IT department but also with end beneficiaries (e.g. patients or relatives) to design and validate the solutions.

Challengers must initially identify the required users to test the different use cases and recruit them to participate in co-creation.

S.0.7 – Inviting Solvers to co-creation

In the Step 0 Preparations Phase the last activity is to write an official Invitation Letter to awarded Solvers. The Letter is written by Challenger and Supporter. The Challenger will send the Invitation by email including:

- Welcome words to the inDemand project by the Challenger organization. To ensure and show the commitment, the Invitee should be from the top/intermediate management of the Challenger.
- Contact details of the Regional inDemand partners' (Challenger, Funder, Supporter).
- Logistics information and homework for Solvers regarding the Kick-off meeting.
- In relation with the validation framework (WP2), the link to complete Feedback 1: Expectations Survey. SMEs must answer to a set of questions related to the expectations they have for co-creation and business support.



inDemand

Dear Manuel Escobar,

From the inDemand project, we are glad to invite **Healthy Blue Bits** as a **solver** for the **MENUDO** challenge as to the project **kick-off on 24th May.** Please, confirm participation by replying to this email.

You will co-develop, test and validate your solution with Murcia healthcare professionals and will receive business support from TICBioMed. The process is expected to last 7 months, so lots of things to do from now on!

Kick-off meeting

Firstly, we will have a **kick-off meeting** scheduled on the **24th May** in Murcia with the four awarded solvers. During the morning, the co-creation and business support plan for the whole process will be explained. Furthermore, the **first business support workshop** will take place, where you will work on your lean canvas and hypothesis identification. During the afternoon, you will split into **individual meetings with the healthcare professionals** that proposed the challenges. You will get to know each other and set your co-creation work plan. Remember that the working language is **Spanish**.

- Meeting place: Edificio CEEIM, Campus de Espinardo, 7 (Murcia).
- Starting time: 10.00 h.
- See the Agenda & complete the Participants List.

First co-creation table

Your first co-creation table with challengers and end-users has been scheduled soon after the kick-off meeting to start defining the use cases. Please, book this slot in your agenda. We cannot reschedule it.

- Monday, 28th May
- 17.30-19.30h
- Hospital Arrixaca Materno Infantil, 1ª planta, Nefrología (Murcia)

Homework

It is compulsory that before coming to the kick-off meeting you:

- **Have a look at the Co-creation & Business Support Work Plan.** You will have to draft your work plan during the kick-off, taking into account the project deadlines. Better if you come with clear ideas!
- **Prepare a 5 min presentation of your solution proposal** to show healthcare professionals at the kick-off meeting how you aim to solve their challenge.
- **Work on your initial Lean Canvas** to make the most of the Business Support workshop. If you have a clear proposal, supporters can give you personalised feedback rather than explaining the general concepts. How to work with Lean canvas here: https://leanstack.com/leancanvas
- **Complete this** Survey so that we can assess at the end of the co-creation process if the project has met your expectations. Please include preferably 2-3 responders from your organization participating in co-creation.

Should you have any questions, please do not hesitate to contact: myriam.martin@ticbiomed.net

Welcome to inDemand.

Figure 9 Example of an Invitation Letter. MENUDO Solver (Murcia Region)

Key recommendations Step 0

- Regional adaptions for co-creation and business support are allowed but must follow inDemand principles and minimum requirements.
- S.0.4 Planning Ethical Issues and Data Protection procedures to be followed by Solvers prior to co-creation kick-off is essential so that they can start working with their intrapreneur team as soon as possible.
- S.0.5 Planning with intrapreneurs cannot be skipped as healthcare professionals must have clear expectations on co-creation.
    - They must be extensively briefed about the process and trained on how to work with an external company since they are not used to do it.

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- Intrapreneur teams need to be trained how to work with external companies in new solution development since they are often not used to do it. (For example, it is a good practice to decide a certain milestone or date, after which Intrapreneur Teams should not keep requesting new features to the developed solution.)

Regional Variations Step 0

REGION	VARIANT	WHY?
Murcia – SPAIN	N/A	N/A
Oulu - FINLAND	S.0.1 General Planning & Minimum Requirements	Oulu Region Partners arranged an InDemand info for SMEs during the Call for Solvers period at OYS TestLab 03/2018. Each Partner explained their role and Intrapreneur Team Leaders presented the Challenges. Participating companies were able to ask questions related to Challenges.
	S.0.4 Challenges not submitted to the Ethical Committee	By law, the inDemand first iteration solutions do not require statement from the ethical committee. Development of these solutions is not regulated under research law and they do not include physical intervention.
Paris – FRANCE	N/A	N/A

Table 3 Regional Variations in Step 0

Step 1: Management of the co-creation (task 5.1)

The aim of **task 5.1** is the management of co-creation between Challengers and Solvers with the following three objectives:

- To create a common framework for inDemand co-creation.
- To facilitate the interaction between the healthcare professionals (Challengers) and awarded SMEs (Solvers) in each pilot region.
- To coordinate and integrate co-creation activities with business support activities (Task 5.2) to deliver a complete support to Solvers.

Figure 10 inDemand methodology for the Step 1: Management of the co-creation (task 5.1)

S.1.1 – Kick-off: General Planning with Solvers

Solvers and Challenger gather together for the first time in a joint meeting where the common methodology for co-creation is explained. Solvers are also briefed about the expected code of conduct & data protection processes.

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The Funder is present in the joint meeting in case Solvers have questions regarding the administrative procedures and signing of documents before co-creation starts.

Furthermore, Challenger must arrange an initial face-to-face meeting between each awarded Solver and its related intrapreneur team, together with the IT department, and any needed stakeholders relevant for the Challenge. During this meeting, functional, organizational and technical information is shared. This will provide further input for the co-creation Work Plan.

Signing the co-creation work plan

Once an agreement is reached, the co-creation work plan is signed by each of the parties (1. Challenger and its Intrapreneur Team Leader, 2 Solver, 3 Supporter, and 4 Funder). The work plan is signed during this meeting or soon after.

This co-creation work plan is the guiding roadmap for co-creation duration.

Challenger organization supervises the achievement of the set milestones.

S.1.2 – Co-creation Interaction and Prototypes

Solvers interact with the Intrapreneur team and IT department to develop their solutions.

End beneficiaries (e.g. patients or relatives) are also involved in the design and validation, if needed. After Challenger approval, Solvers can adapt the number of meetings involving users required to their needs. This is what we call co-creation tables. A co-creation table is composed by the intrapreneur team, users and Solvers.

Furthermore, at least two meetings are held between the Solver and its related intrapreneur team where companies present at least **two prototypes**. (these two key milestone dates are pre-defined in the co-creation work plan). In these meetings, **Intrapreneur teams and IT department as well as any other relevant stakeholder evaluate the compliance of the prototypes with the requirements** defined. Suggestions for further improvements are made.

S.1.3 – Users training and Pilot at the Hospital System

Once the **2nd prototype** is presented and validated, Solvers deploy a pilot phase in the Healthcare organisation / Hospital Systems.

Companies also present **a training plan for users** in the healthcare organisation to get started with the solution and take it into use.

Key recommendations Step 1

- The kick-off meeting is essential to set the basis for co-creation. It is crucial to have Solvers and Intrapreneur Teams to get to know each other and generate trust.
- The kick-off meeting should also be used to co-define the work plan and working methodology for the co-creation phase (objectives, key people, roles of each partner, Deliverables, Milestones, type and number of interactions. This should be commonly defined between the Intrapreneur team and the Solver with the help of Challenger organisation Innovation management personnel and the IT department.
- It is necessary to create a Co-creation work plan where all this information is registered and must be signed by all the parties to officially validate the content.
- The duration of the co-creation period should be defined during the Kick-off meeting with the selected companies. Having a range of duration (between 5 months and 10 months maybe) it is necessary to let the medical team including IT personnel and the companies estimate the necessary time to develop the solution. It is impossible to define the duration before having a deeper understanding of the real development stage of the selected prototype.

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- The achievement of milestones, especially during the first months of co-creation must be closely followed by the Challenger Executive Team, in case corrective measures are needed.
- Ensure that adequate resources (healthcare professionals and the needed workstations and technology devices) are reserved well in advance also for the Test trials / Pilot phase.

Regional variations

REGION	VARIANT	WHY?
Murcia – SPAIN	S 1.1 Signing co-creation work plans during the kick-off meeting was not possible	The co-creation work plans were not signed in the kick-off meeting, as Solvers and Intrapreneur Teams needed more time to discuss the roadmaps.
Oulu - FINLAND	S 1.1 Signing co-creation work plans during the kick-off meeting was not possible	The co-creation work plans were not signed in the kick-off meeting as there were many areas that needed to be planned further both by the Solvers and Challenger organisation. Once all the main aspects were agreed, the signing took place.
Paris – FRANCE	S.1.1 Two different types of Kick-off meetings:	General Kick-off meeting with representatives from the different Solvers selected in order to introduce them the inDemand project, the methodology etc. Individual Kick-off meeting (3 hours) with each Solver and the respective medical team from the Challenger Hospital in order to jointly define the work plan, Deliverables, Milestones, key persons and other relevant topics.
	S.1.2 There is no 2 distinct prototypes which are presented.	The Intrapreneur Team and the Solver are working closely together to co-develop the solutions during the co-creation phase. They have one physical steering committee every month to present the evolution of the prototype and take decision. Between the Steering Committees there are continual interactions via email or phone conferences to work on the prototype together: Intrapreneurs team bring its medical expertise as well as its knowledge of the hospital environment and the Solver bring its technical expertise (IT…).

Table 4 Regional Variations in Step 1

Step 2: Management of the business support delivery (task 5.2)

The aim of **task 5.2** is the management of co-creation between Supporters and Solvers. To achieve this end, the objectives to pursue are three:

- Create a common framework for inDemand business support
- Deliver regionally to Solvers the business support activities, including business modelling, access to funding and access to market.

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- Coordinate and integrate business support activities with co-creation activities (Task 5.1) to deliver a complete support to Solvers.

Figure 11 Main activities of the Business Support Management Step

S.2.1 – Kick-off: Common Methodology with Solvers

Supporters explain the common methodology for business support to Solvers and brief the main documents: Start up Guide for Digital Health SMEs, Co-creation Work Plan, Lean Startup Approach and Lean Canvas, Go-to-Market Strategy, and Access to Funding.

Finally, Supporters also ask and assess Solvers' needs and interest regarding business support, in case next encounters need adaptations.

S.2.2 – Business Modelling Workshop

One of the objectives in this project is to help entrepreneurs find a business model that can work for the co-created solution after the inDemand has finished. With this purpose in mind, Supporters arrange a training course on business modelling.

Regional Partners may use different methods. A recommended approach is to give a presentation on theoretical concepts (e.g. Lean Start-up Approach and Customer Development Methodologies), then leave time for Solvers experimentation (e.g. use a tool for business modelling such as Lean canvas) and share their conclusions with Supporters and peers for feedback. Furthermore, links to relevant sources (videos, blogs, articles, etc.) are provided.

S.2.3 – Business Modelling Follow-Up

Supporters will give feedback on the evolution of the Lean Canvas and reinforce encounter #1 concepts in the next sessions, emphasizing customer discovery and validation. It can be a group or individual session.

- Companies may need further assistance in other areas; for example, in AI assisted solutions to build new business models. There is already AI-related technology and applications, but the business concept is ultimately the one that matters. Developing Artificial Intelligence Strategy will help planning how to generate value, for both clinician and consumer (by for example improving insight, enhance decision-making and enable automation).
- The regional Supporter organisations can provide additional business support services and / or in collaboration with the 3rd party service providers.

S.2.4 – Access to Funding

Supporters present a summary of the main public and private funding available.

Entrepreneurs are trained on how to approach private investors including support on how to make a good pitch and presentation.

- This coaching can be either in the form of a group or an individual meeting, depending on the region.

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In addition, companies may need further assistance in other topics, such as:

- Corporate Finance. Supporters can give advice on how to estimate financing needs and option when starting, growing and exporting business. Concrete services may include e.g. preparation of financial plans and calculations, the raising of financial capacity and assistance for the actual financing.

S.2.5 – Targeted needs and Access to Markets

Solvers receive help with their **commercialization strategy and positioning** through personalized coaching in at least one session.

- For that, the Go-to-Market Strategy template mentioned in Step 0 is used.
- Companies receive information on how to prepare the document either as part of Group Training Sessions or as part of individualized Coaching.
- Supporters ask companies to send draft versions of Go-to-market strategies to the Supporters for review and comments before they must submit the document as **Deliverable** to Supporter.

Potential tailormade meetings may be set for other targeted needs

As companies are in different stages of the business life cycle, they naturally have different needs for the business support. Depending on the needs and preferences of the Solvers, further individualised support will be provided.

Examples may include:

- Regulatory Affairs: Companies need to show their potential customers that it has taken care of all legal issues and acquired all the certifications needed to operate in the markets they operate. Companies are expected to list the certifications (CE marking, Medical Device Directive) they already have or are in the approval process, be clear on how they deal with user's data or other relevant issues that apply to the specific solution.
- Boosting sales: coaching companies to develop sales capacities and build commercial competence (e.g. brand building, visibility, design, and development of commercial channels and the use of digital tools.
- Networking with relevant industry related stakeholders: coaching and mentoring companies with the health ecosystem networks and opportunities; building international commercial networks and the search for export opportunities.

S.2.6 – Final event

In order to increase the visibility of the new co-created solutions, a final event is organised in each region where key stakeholders in healthcare innovation, potential customers or investors and media are gathered. Here are some general guidelines for organising a final event:

- The final event can be a **Challenger,** Supporter or a relevant 3rd party event.
- Each region may choose the detailed content for the final event.
    - For example, Intrapreneur Teams may present their Challenge as they were in the beginning of the project. It may be also a good opportunity to reward Intrapreneur teams on the innovation activity, in the form of inDemand Diploma.
    - Naturally it is important that Solvers are given an opportunity to present the results of co-creation and promote their solutions.

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- In addition, regional inDemand partners may share their experiences and provide information on any other relevant future health ecosystem information and activities.

Key recommendations Step 2

- Co-creation period - the technical development of the new inDemand solution - between Challengers and Solvers is very intensive so it is good to be aware that most of the Companies' time is devoted to this.
- Business Support content should vary depending on the SMEs stage of the company life-cycle. Supporters are responsible of this adaptation according to their resources and the interest of the companies. As an example, some companies may place more emphasis on business modelling and regulatory aspects while others on funding opportunities. Supporters are recommended to develop modest, but value-adding business support services and align those activities with co-creation schedule.
- Since companies are developing solutions that require domain specific expertise, they can involve potential buyers and/or regulatory specialists in the development of go-to-market strategies.

Regional variations Step 2

REGION	VARIANT	WHY?
Murcia – SPAIN	S.2.2 – Business Modelling Workshop Group Training. The workshop is organised in 2 sessions. The first day is during the kick-off meeting on the 24th May and the second one the next workshop on the 11th July.	The reason is to leave enough time for SMEs to improve their initial lean canvas and share their learnings.
	S.2.4 – Access to Funding is a group meeting	Although they had different types of interest regarding funding, 3 out of 4 Solvers interested in funding. This way they can share experiences and questions on the topic.
Oulu - FINLAND	S.2.2 – Business Modelling Workshop Group Training. The course is shortened from 2 to 1-day group class.	For Solvers convenience regarding travelling, as three of them are not based in the Challenger region. Still, SMEs receive Lean Canvas Templates and Lean Start-up Methodology Material one week before the Kick off to get familiarized with the general concepts, and SMEs receive feedback in the Kick-off.
	S.2.4 – Access to Funding is an individual meeting	Only one company interested in access to funding
Paris – FRANCE	S.2.2 – Business Modelling Workshop	Some of the solvers are not interested in a full review of the Business/Lean Canvas and therefore the actions were adapted based on SME needs. A mapping of all actors with whom the company will interact is helpful to organize pertinent meetings.
	S.2.4 – Access to Funding	Only one company interested in access to funding. A specific training has been organized with a fundraiser in order to present the solution to investors.
	S.2.5 - Targeted needs and Access to Markets	External experts have participated in the Go to Market Strategy, including potential future buyers or regulatory specialists.

Table 5 Regional Variations in Step 2

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Step 3: Evaluation and Payment

Step 3 includes Final Reporting, Evaluation and Payment, and Search of Scaling Opportunities.

Figure 12 Main activities of the Evaluation and Payment Step

At the end of co-creation, it is important that Challengers evaluate how the

- the work was conducted during co-creation and how the new solution has progressed by the Solvers.
- Challenger organisations will interact to enhance the adaption of best co-created solutions.

Supporters:

- ensure that Solvers have finalized the Go-to-Market Strategy

Funders:

- the set targets have been met, to release the payment.

S.3.1 - Final reporting

At the co-creation end, the Solver delivers the required documentation by the Funder to the inDemand partners:

- Updated and Signed Co-creation and Business Support Work Plan – to be reviewed by Challenger and Supporter (ANNEX 2)
- Go to Market Plan (i.e. commercialization plan) – to be reviewed by Supporter. (ANNEX 3)
- Work Performed and Costs Incurred during Co-creation and Business Support (ANNEX 6) which includes:
  - Work Performed for the Co-creation and Business Support – to be reviewed by Challenger and Supporter. This is a comparison between the initial workplan, and the actual work conducted, including the results obtained with the co-created solution.
  - Cost Justification – to be reviewed by Funder. The report on costs incurred by Solvers during inDemand.
  - Team Monthly Timesheets – to be reviewed by Funder.

S.3.2 – Evaluation and Payment

Supporter and Challenger review their assigned deliverables. In case of mistakes or needs for improvement, they directly notify the Solvers before the reporting deadline. Then, Solvers produce an improved version and send it back to the inDemand partners for revision. Once the documents are finalized, Supporter and Challenger notify the Funder.

If the Solver has fulfilled the conditions, the Funder will release the payment, as described in the methodology of WP4 (D.4.1).

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S.3.3 – Search of Scaling Opportunities

As a next step, the Challenger Executive Team assess the outputs with the different stakeholders: intrapreneur team, technical department, patients, etc. A summary report together with a recommendation regarding the next steps is submitted to Central services management level of the public entity. It also exchanges the relevant information with the Funder and rest of consortium.

Finally, regional Challengers will interact among themselves to exchange insights and look for opportunities of replication of the proposed solutions across project regions and others.

Key recommendations Step 3

- The process must be closely coordinated among Supporter, Challenger and Funder.
- The Funder is the ultimate responsible to check that the Solver has fulfilled the conditions before releasing the last payment.
- The Funder is the ultimate responsible organisation to check that the Solver has fulfilled the conditions before releasing the final payment.
- At the end of co-creation, it is good practice to reserve enough time for the discussion of the co-created results with the Solvers and then with the Central Services Management. Challengers can identify the means to advance the adoption of successful solutions in their own healthcare organisation and other regional healthcare organisations as well as among pilot regions.

Regional variations Step 3: Evaluation and Payment

REGION	VARIANT	WHY?
Murcia – SPAIN	N/A	N/A
Oulu - FINLAND	S.3.2 Evaluation and Payment. The Funder in Oulu released the Payment in 2 phases; advance payment and final payment.	In the first iteration in 2018 Oulu Region Council chose two phase method of payment; to show commitment and support to Solvers right from the beginning of the co-creation.
	S.3.3 Search of Scaling Opportunities	It will be executed as a part of the Final event conversations. The companies, the Hospital Intrapreneur Teams and the Hospital Administration will all be involved and give a possibility for each one to freely express their opinions about the whole process and the results.
Paris – FRANCE	S.3.2 Evaluation and Payment. The Funder in Paris released the Payment in 2 phases; advance payment and final payment.	In the first iteration in 2018 Paris Region Enterprises chose two phase method of payment; to show commitment and support to Solvers right from the beginning of the co-creation. This method of payment will be used also for the 2nd iteration.

Table 6 Regional Variations in Step 3

Step 4: Assessment and Contribution to the Knowledge base

The aim of **task 5.3** is the assessment of co-creation and business support tasks and the contribution of main learning to the knowledge base.

To achieve this end, the objectives are:

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- Identify issues, key lessons, and best practices per regional iteration to assess the model and propose improvements for the next iteration.
- Gather the key materials to be used in the implementation of the model to incorporate in the inDemand knowledge-base and for dissemination purposes.
- Compile and disseminate the main results of each interaction.

The activities in this step are the following:

Figure 13 inDemand methodology for the Step 4: Assessment and Contribution to the Knowledge Base

S.4.1 – Proposal of improvements

This final phase aims to assess the inDemand model, propose improvements for the 2nd iteration, and finally define the final version of the inDemand model.

Partners identify issues, key lessons, and best practices per regional iteration during the implementation of the model and share the proposal for improvements with the rest of Consortium Partners.

This 5.3 task is coordinated with the Work Package 2: Setup, Monitoring and Optimisation of the model. Following WP2 guidelines, WP5 Partners distribute the validation questionnaires and conduct the corresponding research interviews to obtain feedback from the rest of inDemand participants in order to consider this input when proposing improvements to the inDemand model.

S.4.2 – Dissemination

A proposal of improvements will be produced after the first iteration and second iterations. For each model iteration, the following outcomes will be incorporated in the inDemand knowledge-base of WP2:

- Business Support Training Materials
- Templates used by the Solvers to report the work performed and costs incurred at the end of the co-creation period.
- Examples of internal dissemination and coordination material: e-mails, internal documents, etc.
- Report on key learnings, improvements, lessons learnt and best practices.

Key recommendations Step 4

- Identification of issues, key lessons, obstacles and best practices must be exchanged across the consortium.

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Regional variations Step 4

REGION	VARIANT	WHY?
Murcia – SPAIN	N/A	N/A
Oulu - FINLAND	S.4.1 BusinessOulu, WP5 closely defining the End of project interviews for Solvers with WP2, University of Oulu. WP2 took part in all co-creation workshops ensuring the data collection.	WP2 and WP5 interaction ensured good combination of theoretical and practical framework for the interview questions. University of Oulu located in the proximity of NOHD.
Paris – FRANCE	N/A	N/A

Table 7 Regional Variations in Step 4 Assessment and Contributions to the Knowledgebase

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3 Iteration 1 – Co-creation and Business Support

The fourth Chapter is a comprehensive description of the main activities in co-creation and business support implementation in the three pilot regions, Murcia, followed by Oulu and Murcia, respectively. The implementation activities are reported based on the methodology developed and described in Chapter 3. This Chapter follows the following structure:

- Region Introduction and Organisations involved
- Calendar with most important activities
  - Co-creation management between Challengers and Solvers
  - Business support management between Supporters and Solvers
- Evaluation and Payment description (handover from WP5 back to WP4).
- Regional lessons learnt and recommendations at the end of each regional description.

3.1 Co-creation & Business Support Implementation in Murcia

This part shows the implementation of the co-creation and business support in the Region of Murcia (Spain).

3.1.1 Murcia Region – Introduction

Region of Murcia is Reference Site 2 stars in the EIP on AHA (European Innovation Partnership on Active & Healthy Ageing) thanks to a solid tradition of innovation in Health with highlights as 20 years of Electronic Health Record in Primary Care or 13 years of Hospital Information System.

Servicio Murciano de Salud (SMS) – Challenger/Intrapreneur

SMS is responsible for health care in the Region of Murcia, integrating a total of 11 hospitals, with 3,651 beds and 508 outpatient appointments of primary care, and providing healthcare to 1.47 M inhabitants. SMS has 9 Health Local Areas apart from Mental Health & Emergency Departments, until a total of 11 different departments. SMS is also considered a perfect Living Lab to implement innovation as has been shown in other EU projects where they have participated. SMS is a desirable ecosystem to test innovations solutions and pilot solutions in a real environment and has a great knowledge about leadership on innovation and identifying and supporting to the intrapreneurs.

Ticbiomed (TBM) – Supporter

Ticbiomed is a business association that promotes collaborative projects in digital health. We facilitate open-innovation agreements between different eHealth stakeholders. We link demand with supply, leveraging our extensive European network that includes SMEs, startups, healthcare organizations, pharma, medtech, big IT, investors, legal and regulatory experts, academia, support organizations and other stakeholders. Ticbiomed is one of the five Spanish clusters with the Gold Distinction of Excellence. The Management Excellence Gold Label was awarded in 2016 by the European Bureau of Cluster Analysis.

Instituto de Fomento (INFO) –Funder

Instituto de Fomento de la Región de Murcia (INFO) is the Regional Development Agency in Murcia. INFO Murcia is attached to the Regional Ministry of Industry, Tourism, Enterprises and Innovation responsible for co-ordinating most of aspects of regional economic development including promotion of technical and financial services to regional SMEs (e.g. information services, entrepreneurship, business cooperation, export promotion, innovation schemes, cluster development, business facilities, RTD, etc.), building soft infrastructures such as Technological or Business Innovation Centres and

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attracting investment to the region. Thus, INFO is a driving force behind the regional economy, promoting and supporting regional business sectors through different aid mechanisms and technical services provided for the improvement of business competitiveness in the Murcia Region.

3.1.2 Calendar and Implementation of the activities

In Murcia, co-creation and business support activities started in the 24TH May 2018 and ended with the presentation of results the 15th December. The different activities carried out during this period are explained in the following section by dividing them into the four steps of the Methodology: Preparation, Cocreation Management, Business Support Management, Evaluation and Payment and Assessment and Contribution to the Knowledge Base.

Preparation in Murcia

RELATED ACTIVITY	DATE	DESCRIPTION
Planning Ethical Issues	May - June 2018	Companies were sent a custom contract model for data processing to describe the agreed data treatment during the pilot. Besides, SMS requested Solvers a copy of the user conditions for validation.
Planning with intrapreneurs	May 2018	Informative session at the SMS headquarters in two different meetings with the intrapreneurs teams.
Recruitment of co-creation participant	May 2018	Identification of participants according to the intended targeted users of the solution by SMS director of innovation and intrapreneur teams.
Inviting solvers to co-creation	16th May 2018	The Invitation Letters were sent on 16th May using a dedicated *Mailchimp* template. The invitation letters were personalized per company.

Table 8 Preparation Step in Murcia Region

Co-creation Management in Murcia

The kick-off was the first meeting between Solvers and intrapreneurs where a road map was agreed. The meeting took place on 24 May 2018. In the morning, general project information was explained to Solvers. In the afternoon, individual meetings were held between each challenge Solver and intrapreneur team to present the Challenge and Solution. Time was also devoted to developing the Co-creation Work Plan.

Figure 14 inDemand Kick off meeting with Solvers and Intrapreneurs in Murcia 24. May.2018

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The first meeting with the users took place the week after the kick-off. These meetings were held every two weeks throughout June and the first half of July, following the SCRUM method in two challenges, collecting indications, suggestions and improvements from the users and presenting them later in the next meeting.

The first milestone was achieved in mid-June with the presentation to users and clinicians of the prototype 1, not functional but as a model. Solvers collected the latest validated to work during the summer months. The training and the support after the implantation of the final prototype was also planned.

In September, Prototype 2 was presented, definitive and functioning, first to the co-creation group to validate it and then to the rest of the final users to fine-tune the latest requirements of the solution.

The Trial period started from October onwards and results were presented in December 2018. These were individual meetings among the Solver, intrapreneur team and Challenger to assess the objectives accomplished by the solution compared to the initial work plan and evaluate the improvements brought to the Challenger organisation.

All the follow-up of the co-creation was done through a collaborative work platform in which all those involved were involved (Solvers, Intrapreneurs, users ...) and which allowed the innovation director of the SMS to coordinate and supervise all the co-creation process.

Final event took place on the 26th February 2019 as the second edition of the "Innovation gala". This event is held by SMS to present all healthcare professionals the new selected inDemand Challenges. The novelty this year was the presentation of the co-created solutions and results from the first iteration. Intrapreneurs and Solvers of the Challengers made a joint presentation, stressing the beneficial aspects of co-creation. More than 160 participants attended the event, including the president of the Regional Ministry of Health (as well as other regional government authorities), SMS and INFO top management. Solvers obtained visibility during the event, including the press.

Further details on the meetings held are provided below for each of the challenges.

ACRA - Avoiding Care Re-Admission Solver: BigML		
NAME / PARTICIPANTS	**DATE**	**DESCRIPTION**
Kick-off individual meeting (Solver and Intrapreneurs)	24th May 2018	First meeting between company and intrapreneurs in which the objectives, framework and milestones to be reached are established.
Co-creation Table (Solver, Intrapreneurs and Challenger)	25th May 2018	The necessary tasks were established with their deadlines and those responsible. One person for each database was identified to help the challenger obtain the indicators sought.
Prototype 1 (Solver, Intrapreneurs and Challenger)	10th July 2018	The first test extraction was made and the required storage dimension and the process of access to the data by the company were estimated.
Prototype 2 (Solver, Intrapreneurs and Challenger)	July 2018	Raw Data Set in cloud.
Users Training & Pilot (Solver, Intrapreneurs and Challenger)	Month – Month	Not applicable

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Presentation of Results (Solver, Intrapreneurs and Challenger)	14th December	Presenting amendment proposal for extension. New milestones were set February 2019: Machine Learning Data Set a March 2019: Machine Learning Ready Data Set April: Results from algorithms.
Other discussions (Solvers, Intrapreneurs and Challenger)	Constant	Both the company, the challengers, and those responsible for each database and the SMS innovation manager shared a collaborative work platform to facilitate communication, monitoring and support.

Table 9 ACRA Challenge Co-creation Interactions

In this challenge is especially important to note that a request to extend the co-creation period was submitted by BigML the 15th December. The reason behind this extension was a misestimation of the time required to extract and process the data by the company. Due to incidents in the processing of data and its ulterior resolution, the subsequent milestones could not be reached on time. As a result, the company requested an amendment of the Sub-grant agreement to extend the co-creation period until the 30th April 2019 in order to deliver the agreed solution with the required quality (see the request in ANNEX 7). A new realistic planification was created and deadlines were agreed with SMS prior to the amendment signature.

SMS and INFO reviewed and accepted the request due to the advanced state of the solution and co-creation process considering that the search of a new Solver would do more harm than help to inDemand as a project but also to SMS and healthcare professionals involved in the co-creation. Significant lessons learned have been extracted from this experience, which will be explained in a latter section of the document.

As for the co-creation process of the ACRA solution, in the first months the key indicators in their best quality status were identified in the different databases and extracted by those responsible for each of them. All this data was collected by the Solver in a rough anonymized data lake, initially scheduled for July 2018 but finally delivered in November 2018. The next step in the process was its transformation and improvement to obtain a machine learning ready dataset, rescheduled to the 8th March 2019. The 30th April results of the co-created solution will be presented. BigML will provide the documentation of the complete process (needs of hardware, software and scripts) for SMS. By then, SMS will have access to the models of the platform and the complete process to be reproducible.

MENUDO - Child obesity support solution for healthcare providers and families Solver: Healthy BlueBits		
NAME / PARTICIPANTS	**DATE**	**DESCRIPTION**
Kick-off individual meeting (Solver and Intrapreneurs)	24th May 2018	First meeting between company and challenger in which the objectives, framework and milestones to be reached are established. Unfortunately, intrapreneur team that proposed the challenge were not able to attend the meeting and were substituted by the SMS Innovation Manager and an appointed professional from the Paediatrics Unit.
Co-creation Table (Solver, Users, Intrapreneurs and Challenger)	28th May 2018	Co-creation table with users: 3 children, 5 doctors, 1 nutritionist, 1 nurse. Took place in the Hospital Arrixaca. The bases of the solution were established: it would be a gamified app for the whole family. The objective was to select the approach for the gamification of solution and to gather the main requirements that the solution had to contain.

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Prototype 1 (Solvers, Users, Intrapreneurs and Challenger)	11th July 2018	SMS Innovation Personnel, intrapreneur team and Solver got together to review the schedule of milestones and deadlines. The prototype 1 was presented and validated by the co-creation group. Integration requirements for SMS systems and prototype security were defined. Confirmation of commitment to create content, as agreed in 5 previous meetings among the co-creation team members, was granted.
Prototype 2 (Solver, Users, Intrapreneurs and Challenger)	21st September 2018	The prototype 2 was presented on September 21st to the Challenger and intrapreneurs teams but also to families of obese children that could become users of the application. This was done in the so-called Esporti Family Party, where activities for children, including a healthy show cooking were organised. The aim was the training of the final users regarding the app usability as well as to disseminate the solution in the community. Top management of the Challenger organisation as well as the media attended the event.
Users Training & Pilot (Solver, Intrapreneurs and Challenger)	Sep-December 2018	The solution was tested by 30 families from October until mid of December, for 2.5 months.
Presentation of Results (Solver, Intrapreneurs and Challenger)	13th December 2018	Results of the solution measuring usability and usefulness were presented, including quantified indicators on the economical, clinical and organizational benefits.
Other discussions (Solvers, Intrapreneurs and Challenger)	Constant	These meetings have been complemented with weekly follow-up sessions by Skype. The daily follow-up was carried out through the collaborative work platform that brought together all those involved.

Table 10 MENUDO Challenge Co-creation Interactions

Figure 15 Solvers and Users of the MENUDO Challenge during Co-creation in Hospital La Arrixaca (Murcia)

EPICO - Digital patient-doctor communication channel for epilepsy management Solver: Answaretech		
NAME / PARTICIPANTS	**DATE**	**DESCRIPTION**
Kick-off individual meeting	24th May 2018	At the first meeting between the company and neurologists, the work plan and milestone calendar were agreed upon. It was also agreed to change the name of the EPITIC solution to EPICO.

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(Solver and Intrapreneurs)		
Co-creation Table (Solver, Users, Intrapreneurs and Challenger)	29th May 2018	The first co-creation meeting was attended by 4 people from the Solver organisation, 3 neurologists, 4 patients and 6 family members. The use cases required for the application were established. Answaretech listed all the use cases and all of them were prioritized by doctors.
Prototype 1 (Solvers, Users, Intrapreneurs and Challenger)	11th July 2018	The prototype 1 was presented as an app with limited functionalities and validated by the group, including 4 patients. This version of EPICO has chats and crisis events for patients and a view for professionals on website. The patients checked EPICO app and doctors did the same with EPICO web (and help also testing EPICO app). Besides, a meeting was arranged with Hospital Santa Lucía Management to present EPICO and facilitate its implantation in Neurology in September.
Prototype 2 (Solvers, Users, Intrapreneurs and Challenger)	5th October 2018	The final prototype included a pillbox, surveys, statistics, resources and events through the app as well as smart bands to exploit the API of sleep quality. It was presented to a total of 30 patients. It was decided to hold a first meeting between the Neurologists and their patients to explain the solution and the app, and later, another meeting between Answaretech team and patients were carried out to receive feedback and solve doubts.
Users Training & Pilot (Solver, Intrapreneurs and Challenger)	Oct-Dec 2018	Pilot period started in September and included 30 patients. Training sessions for patients were organised, together with the presentation of Prototype 2. Firstly, patient-guide and doctors participated in the training of these new users, with the support of Answaretech. Secondly, to show EPICO to new users, install it in their smartphones and show how to use it, a face-to-face meeting was organised. During this time, mobile and web app was continuously updated with new features.
Presentation of Results (Solver, Intrapreneurs and Challenger)	12th December	Results of the solution measuring usability and usefulness were presented, including quantified indicator on the healthcare and user satisfaction benefits.
Other discussions (Solvers, Intrapreneurs and Challenger)	Constant	The agreed method of work was SCRUM with face-to-face meetings every two weeks and daily follow-up at real time through the collaborative work platform.

Table 11 EPITIC Challenge Co-creation Interactions

Figure 16 Solvers and Intrapreneurs of the EPITIC Challenge during Co-creation in Hospital Santa Lucía (Cartagena)

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HEAT - Healthcare Training Management Platform Solver: Costaisa		
NAME / PARTICIPANTS	**DATE**	**DESCRIPTION**
Kick-off individual meeting (Solver and Intrapreneurs)	24th May 2018	First meeting between company and challenger in which the objectives, framework and milestones to be reached are established. It was agreed to name the co-created solution "Domand".
Co-creation Table (Solver, Users, Intrapreneurs and Challenger)	4th June 2018	First co-creation table with targeted users to define the use cases and scope of the pilot. The meeting took place at the Reina Sofía Hospital with the guide users.
Prototype 1 (Solvers, Intrapreneurs and Challenger)	11th July 2018	The company presented a first prototype to the users for their validation and suggestions for modifications.
Prototype 2 **(Solver, Intrapreneurs and Challenger)**	20th September 2018	HEAT was ahead of schedule compared to the rest of challenges. The final prototype of the solution was presented in the middle of September, first to the co-creation group and after to 70 users, following the agreed training plan.
Users Training & Pilot **(Solver, Intrapreneurs and Challenger)**	September – December 2018	Pilot and users training took place between September and December. Users were provided with user manuals. The training meeting included a presentation and demo showing the main features of the residents and tutors' environment as well as an explanation on how to introduce the main activities and follow-ups.
Presentation of Results **(Solver, Intrapreneurs and Challenger)**	12th December	Results of the solution measuring usability and usefulness were presented, including quantified indicator on the economical, clinical and organizational benefits.
Other discussions (Solvers, Intrapreneurs and Challenger)	Constant	Periodic follow-ups by phone, email and Google Handouts.

Table 12 HEAT Challenge Co-creation Interactions

Figure 17 Solver and Intrapreneur of the HEAT Challenge during the kick-off in Murcia

Business Support Management in Murcia

Business Support in Murcia started, together with Co-creation, the 24th May 2018 with the organisation of a Business Modelling Workshop during the kick-off meeting. The activities

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continued with an access to markets and funding workshop in July. From September to December the efforts were put in individual meetings with companies to assess their specific needs and plan the commercialization of the co-created solution. Business Support ended the second week of December with a final meeting to present the solution Go-to-market Plan.

Therefore, during the first interaction, Solvers have received group and individual coaching, support and resources on Business Modelling, Access to Funding and Access to Markets. Regarding access to Funding, it is important to note that not all Solvers in Murcia were interested in funding for several reasons such as stage of development of the company. Therefore, Ticbiomed decided to provide a general presentation focusing on resources of interest for start-ups. It appears that Solvers place the greatest importance in the creation and boost of the Commercialization Strategy of the developed solutions.

Further details on the meetings held are provided below.

Figure 18 Business Modelling Workshop in Murcia

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BUSINESS SUPPORT MANAGEMENT IN MURCIA				
NAME	**DATE**	**TYPE**	**DESCRIPTION**	**OUTCOMES**
Kick-off general meeting	24th May 2018	Group	A joint event with co-creation kick-off to present inDemand Business Support. This part was presented by TICBioMed.	Companies were made aware of the Supporter role in inDemand, Business Support services and materials.
Business Modelling Workshop	24th May 2018	Group	A first business modelling workshop was scheduled during the kick-off meeting. Lean Canvas was presented as a tool to assist in the process, how to complete it and common pitfalls. Then, time was devoted for entrepreneurs to complete their own Canvas. Secondly, it was explained to Solvers the importance of testing the hypothesis in their canvas with potential customers, to validate or invalidate them. Solvers were trained on how to conduct validation interviews. The Lean Start-up and Customer Development Methodologies were followed during the process.	Companies appreciated the training following the Lean Start-up Methodology as only one of them had previous experience on this. Although the Solvers are in different development stages, the tool allowed to consider several areas to fine-tune their business model.
Access to Funding Workshop	11th July 2018	Group	3 hours group training focusing on two aspects: access to funding and business modelling. **Access to Funding**. TICBioMed explained the different funding possibilities available for start-ups. A summary of public and private funding opportunities in Spain and Europe was presented. Training on how to approach private investors including how to make a good pitch. **Business Modelling**. Solvers presented the evolution of their initial Lean Canvas, sharing their learnings. Supporters gave feedback and reinforced previous encounter concepts, emphasizing the need for further customer discovery and validation. **Access to Markets**. Go to Market Plan was presented as the key deliverable to be completed at the end of the process. Guidelines on how to fulfil it were provided. Further individualised support will be provided on this regard.	Not all Solvers in Murcia were interested in funding for several reasons such as stage of development of the company. Therefore, TICBioMed decided to provide a general presentation focusing on resources of interest for start-ups. Furthermore, Solvers were made aware that further support on the topic was at their disposal, if interested. Regarding Business Modelling, an evolution in the solvers' business model was observed but further effort is required until building a sound business model.
Targeted needs and access to markets	MENUDO 10TH Sept HEAT 10TH Sept EPITIC 21st Sept ACRA 8TH Sept	Individual (x4)	Individual meetings with each of the Solvers to provide a personalised support, lasting approximately 1 hour and a half. Prior to the meeting, Solvers shared with Supporter their Lean Canvas updated with their new findings regarding customer validation, as well as some other concerns they would like to discuss in the session. Supporter provided feedback offline and went deeper during the meeting. Regarding access to markets, Supporter and Solvers started to draft the Go2market Plan to be presented in December.	Outcomes of the meeting were varied due to the differences among the Solvers (different maturities, different type of payers, etc.) Still, the tendency was in general to discuss how to commercialize the solution after inDemand, either to sell it to SMS and/or to other customers. Events to attend, resources to explore and ideas to approach customers were provided by Ticbiomed.

Access to Markets	MENUDO 13TH Dec HEAT 13th Dec EPITIC 13th Dec ACRA 14TH Dec	Individual (x4)	Individual meetings with each of the Solvers to provide a personalised support, lasting approximately 1 hour and a half. Prior to the meeting, Solvers shared with Supporter the initial version of their Go2market Plan. Supporter provided feedback offline and requested Solvers to modify the weaker points. During the meeting, Solvers presented the updated version of the Plan. These areas of improvement were the core of the discussion. Solvers were requested to make the final updates to the plan before submitting it as a deliverable.	The Go2market template appeared to be an adequate tool to make Solvers brainstorm about commercialization aspects that seem obvious yet need a thoughtful strategy, together with those not-so-obvious aspects such as regulatory compliance. Still, it was up to Solvers to make the most of this plan. The reason behind this is that they can either choose to make a nice plan to present to Supporter and that will be never put in place OR elaborate a real strategy that will be implemented in the short term. In general Solvers in Murcia presented good plans, with EPITIC and MENUDO being the most outstanding.
Final event	26th February 2019	Group	The second edition of the "Innovation gala" was organised this year. This event is held by SMS to present all healthcare professionals the new inDemand Challenges launched. The novelty this year was the presentation of the co-created solutions and results from the first iteration. Intrapreneurs and Solvers of the Challengers made a joint presentation, stressing the beneficial aspects of co-creation.	More than 160 participants attended the event, including the president of the Regional Ministry of Health (as well as other regional government authorities), SMS and INFO top management. Solvers obtained a huge visibility during the event, including the press.

Table 13 Murcia Business Support Interactions

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Evaluation and Payment in Murcia

In December 2018, Solvers were sent an email from the Funder (INFO) with the required documents and process to follow for reporting. Once Solvers submitted the requested information, Ticbiomed as the Supporter and SMS as the Challenger reviewed their assigned papers. This was done for MENUDO, HEAT and EPITIC, since ACRA was granted an extension of the pilot. All three of them fulfilled the conditions of the grant, and therefore, Funder was informed to proceed with the payment.

The full payment (there was not advance payment in Murcia) was released in the following dates:

- MENUDO 13th February 2019
- HEAT 13th February 2019
- EPITIC 13th February 2019

Regarding ACRA challenge, a request to extend the co-creation period was submitted by BigML the 15th December. The reason behind this extension was a misestimation of the time required to extract and process the data by the company. Due to incidents in the processing of data and its ulterior resolution, the subsequent milestones could not be reached on time. As a result, the company requested an amendment of the Sub-grant agreement to extend the co-creation period until the 30th April 2019 in order to deliver the agreed solution with the required quality (see the request in ANNEX 7). A new realistic planification was created and deadlines were agreed with SMS prior to the amendment signature.

SMS and INFO reviewed and accepted the request due to the advanced state of the solution and co-creation process considering that the search of a new Solver would do more harm than help to inDemand as a project but also to SMS and healthcare professionals involved in the co-creation. Significant lessons learned have been extracted from this experience, which will be explained in a latter section of the document.

Finally, on the 28th of January a meeting was organized with SMS Central Services to assess the results of inDemand co-created solutions in Murcia. Potential for scalability was also discussed. The outcomes of the meeting were the recognition of a great effort from professionals involved. However, it was stressed that the time to validate the outcomes had been very short. Therefore, it was suggested to extend the pilots (by signing new contracts, out of inDemand scope) before taking the decision of a final procurement. The participants were General Director, Deputy Directors, Regional Coordinators and Head of Units of different areas from SMS.

Assessment and Contribution to the Knowledge base in Murcia

Ticbiomed ensured to gather the key learnings after each of the activities was carried out in Murcia. For this, Solvers were asked for feedback frequently, especially during the meetings. All these inputs were put together with the own Supporter experiences during the implementation. This was shared periodically with Consortium partners during the online meetings held every month.

From this insights, Murcia regional conclusion has been built, which discussed with the rest of regions, has finally resulted in the consolidated lessons learned and recommendations included in this document that will be incorporated into the inDemand knowledge base in order to improve the model for the next interaction.

3.1.3 Results of the co-created solutions

The results of the four co-created solutions in Murcia are presented below:

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ACRA - Avoiding Care Re-Admission Solver: BigML (DEADLINE EXTENDED TO 30TH APRIL)		
Initial organisational challenge	Servicio Murciano de Salud (SMS) has the need to reduce the risk of patients having a re-entry to the Intensive Care Unit (ICU) within the next 72 hours after discharge. Unscheduled re-entry of the patient in the ICU is an adverse event that causes an increase in morbidity, mortality and consumption of hospital resources. A recent meta-analysis has reported an average re-entry rate between 4 and 7%, although it can reach up to 14%. The average mortality of patients with unintended readmission in the 72 hours after discharge from the ICU is 33%. This type of patients is likely the most complex and costly. Therefore, knowing what factors are key to their poor evolution would allow the Challenger to improve care processes.	
Description of the co-created solution	The objective is to develop and validate a predictive algorithm or analytical model that allows ICU professional to recognize which patients will be most likely to get complications and facilitate decision making to prevent a readmission. Additionally, the Challenger would like to get insight about what clinical factors are critical in these situations to optimize ICU internal processes.	
Co-creation Participants	1 Healthcare Professional, Intensive Care	
Expected Results	**Healthcare**	The pilot success will be determined by the effectiveness of the predictive algorithm to identify patients at risk when complications can be avoided. The main indicator will be that the algorithm shows an AUC greater than 0.7. All this would subsequently translate into impact on different dimensions of quality of care: decrease in hospital deaths and avoidable complications in these patients admitted to the hospital.
	Satisfaction	NOT APPLICABLE
	Efficiency	Lowered use of resources derived because of the lower morbidity and mortality measured in hospital stays.
Potential for scalability	**To be decided**	It remains to be seen if the solution has potential for scalability. An assessment will be conducted at the end of the extension. Lessons learned and the data lake build are so far valuable assets for the healthcare organisation.

Table 14 ACRA Challenge results at the end of the co-creation period

MENUDO - Child obesity support solution for healthcare providers and families Solver: Healthy BlueBits	
Initial organisational challenge	More than 40% of Spanish children between 6 and 9 years old are overweight or obese with an increasing tendency that could not be reversed despite the interventions made by governments. This makes the Challenger suspect that current strategies deployed are ineffective or, at least, insufficient. Servicio Murciano de Salud (SMS) has the need to create a new intervention focused on the child and his family that address the key aspects: education, motivation, and adherence. The two-fold objective is to demonstrate that a digital solution, in the context of a regional public health service, is effective in the management of children obesity. and, as a secondary objective, Servicio Murciano de Salud (SMS) also wants to learn how to easily integrate 3rd party patient-facing mobile solutions via its corporate systems.
Description of the co-created solution	Esporti Family is a mobile application whose objective is to treat childhood obesity in the context of a public health service with total integration in its corporate information system. It allows sharing information among professionals, patients and families, in a safe and private environment, related to nutrition, physical activity and healthy habits. Through gamification Esporti Family teaches kids and their family's healthy habits and nutrition and encourages them to increase their level of physical activity. Besides, it contributes to their knowledge in health thanks to an AI chatbot that answers to their questions.

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Co-creation Participants	4 Pediatricians 1 Nutritionist 8 male obese children	19 female obese children 17 male relatives 23 female relatives

Results	**Healthcare**	18 patients completed nutritional surveys pre and after intervention. 38% of patients increase the number of hours of weekly exercise and same percentage increased exercise on weekends. Increased sleep hours in 27% of patients. Regarding nutrition: improvement in breakfast habits in 8/14 patients (57.14%), increase in fruit intake in 5/18 patients (27.7%), vegetable intake in 7/18 (38.9%) and fish intake in 5/18 patients (27.7%). Decrease in the consumption of soft drinks (sugary drinks) in 9/18 (50%), of smoothies in 7/18 (38.9%), snacks 7/18 (38.9%), candies / chocolate 8 / 18 (44.4%), bakery 13/18 (72%), and fast food 8/18 (44.4%).
	Satisfaction	Satisfaction survey of patients (16): app utility: excellent 1/16, very good 6/16, good 5/16, not great 1/16, bad 1/16, no comments 2/2. Positive assessment in 12/16 patients, 75%. Average rating in numerical scale 1-10: nutrition workshop 9 points, app 7.9 points, podometer 5.5 points, health professionals assesment 9.21 points, company professionals assesment 8.54 points, party 8.83 points.
	Efficiency	It cannot be assed yet.
Potential for scalability	**YES**	The solution is valid, and SMS is satisfied with the results. Nonetheless, more time is needed for piloting the solution. A new environment will be tested: schools which seem more appropriate to educate about healthy lifestyles than the hospital. SMS is working in a contract to use the solution in a new 4-months pilot.

Table 15 MENUDO Challenge results at the end of the co-creation period

EPICO - Digital patient-doctor communication channel for epilepsy management Solver: Answaretech	
Initial organisational challenge	SMS has the need to facilitate the empowerment of patients with epilepsy, and their convenient communication with doctors. The main objective is to improve the quality of life perceived by epileptic patients by facilitating a more convenient communication with his doctor and empowering him to better manage his disease.

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Description of the co-created solution	Epico is a communication platform that aims to improve the quality of life of epileptic patients and allows doctors to have a broader knowledge about their patients and the epilepsy disorder. EPICO consists of an end user app (EPICO App), a dashboard for the doctor for the management of patients (EPICO Doc) and EPICO Cloud for data communication with the "Servicio Murciano de Salud" (SMS).	
Co-creation participants	2 neurologists 25 male epilepsy patients 29 female epilepsy patients	8 patients relatives (4 male and 1 female)
Results	**Healthcare**	Self-care & communication channel among 54 patients, 8 relatives and 2 neurologists which allows doctors to have a wider knowledge about epilepsy. Another aim was the reduction in number of epileptic crisis in patients (20% in a whole year, based on intervention duration) which cannot be obtained so far due to the short time of piloting.
	Satisfaction	In terms of the qualitative survey sent to patients, satisfaction start point was in average 21,3%, being the median 22% and the maximum 30%. After 2,5 months of EPICO, the parameters change to: Average = 70,6% Median = 74,5% Max. = 80%. In terms of quality of life: an increase of 2.5 points per month of usage in QOLIE-10 (2 of 18 patients) and NNDI-E (214) In terms of response latency in the chat, the median for neurologist is 3,72 min.
	Efficiency	These results are long-term and is not possible to measure them so far. The aims are to reduce the number of emergency consultations related to epilepsy. Reduction in the number of physical visits of patients. A) To the doctor office: min. 15% for the medium of the group of patients involved B) To the emergency room: min. 20%
Potential for scalability	**YES**	EPICO needs more test time and to add some key functionalities. For this reason, a new 4-months pilot has been agreed before scaling it to the whole organisation.

Table 16 EPITIC Challenge results at the end of the co-creation period

HEAT - Healthcare Training Management Platform Solver: Costaisa	
Initial organisational challenge	The Specialized Healthcare Training (SHT) programme in Servicio Murciano de Salud manages medical residents that pursue their medical specialization (the MIR programme). Activities are planned and incorporated in a schedule, that also include the days worked on-duty. The schedule configuration, follow-up and evaluation are usually subject to incidents that require restructuring among the multiple actors involved: residents and their teaching agents (services, tutor, teaching collaborators, Teaching Unit, Teaching Commission, Regional Health Authority and National Health Authority). Residents must register their activities in a Resident's Book. The evaluation of the residents is done periodically through assessment from teachers and tutors, and from exams or tests. The evaluation outputs are incorporated in the Resident's Book. All this chain of actions, changes and incidents represents a communication, confidentiality and efficiency challenge that delay and hinder the process. SMS aims to develop an online platform to help in the planning, monitoring, and evaluation of specialized healthcare education delivered in hospitals, with greater security, convenience and efficiency than the current paper-based approach.

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	 Overall Picture		
Description of the co-created solution	DOMAND is Costaisa and SMS co-created platform.		
Co-creation Participants	1 SMS Administrative Personnel 1 Healthcare Professional, Family Medicine 2 Healthcare Professionals, Internal Medicine 1 SMS Central Services Personnel	1 Healthcare Professional from Training Unit 25 male residents 34 female residents	
Results	**Healthcare**	NOT APPLICABLE	
	Satisfaction	In terms of percentage of patients rating the item 4 or 5 on a scale from 1-5 where 1 is unsatisfied and 5 is highly satisfied, satisfaction results are: User interface (56%) Accessibility of data (56%) Reliability of data (68%) System speed (64%) Easiness to use (60%) Recommend to other users (80%)	
	Efficiency	The great benefit of the application is shown in three aspects: the first aspect is the improvement of communication between the actors. The second aspect is the integrity and security of the data, since there is no possibility of losing them, which in the traditional model was a risk. The third aspect is the immediacy and availability of information easily and 24/7 with the consequent paper reduction. Saving 54 printed sheet of paper per professional & year (>51.000 potential.)	
Potential for scalability	**YES**	SMS is considering launching a procurement to acquire the solution.	

Table 17 MENUDO Challenge results at the end of the co-creation period

3.1.4 Murcia Regional lessons learned after first interaction

In general terms, the implementation in Murcia ran smoothly and participants seem very satisfied, according to the feedback provided by healthcare professionals and companies. Some of the benefits Solvers from Murcia claim are: inDemand gives credibility to the company as it allows them to work with a big institution such as a Regional Healthcare Provider, co-creation changes the way of working and communicating inside their own company and finally, that it ensures a better quality of the developed solutions. However, it remains to be seen which is the future of co-created solutions, for

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instance will they be adopted/implemented in SMS? Or will they be purchased by other potential customers different to SMS?

Figure 19 Testimonial from the Solver *Costaisa*, working in the HEAT Challenge in Murcia

The key learnings from the first interaction of the model in Murcia are presented below-

Co-creation

- The preparation step takes time, so it is important to ensure everything is ready before Solvers start working with healthcare professionals. In Murcia it proved very effective to have the data protection contract ready during the first weeks of co-creation. Another key factor that speeded the process was to have co-creation participants (patients, doctors, etc.) selected beforehand, which enabled us to organise the first session with them just a few days after the kick-off meeting.
- At the kick-off meeting it is important to provide Solvers with as much information as possible about the process/administrative duties. In line with this, we identify as good practices: 1) inviting the Funder to answer questions regarding sub-grant agreements negotiation and 2) having the IT manager from the healthcare organisation on board, as companies need to discuss how to integrate the technology to the organisation systems. On the other hand, an improvement we would like to make for the second interaction is to brief Solvers about reporting materials and dates during the kick-off. This will ease the final phase of co-creation and ensure they have enough time to prepare for it.
- Introducing Solvers to the healthcare professionals working in their challenge proved a good practice as it generates trust and a feeling of shared responsibility in the co-creation of the solution. It also sets clear expectations on each of the roles, including rights and obligations. MENUDO was the only challenge that did not meet the healthcare professionals in advance, as they had another commitment, which difficulted later coordination as stated by the Solver.
- Holiday periods must be accounted for when setting milestones and tasks. Some of the Solvers complained about the lower engagement of healthcare professionals during this time of the year, which is perfectly understandable for them, but shortens the pilot time.
- Ways to keep the healthcare professional engaged during the whole process must be investigated as they have a heavy workload that must be combined with co-creation. Even if they are really motivated, this can be really exhausting, providing that they are participating “for free”. A potential solution to be investigated by SMS is to allocate more resources (e.g. personnel) that can assist them in their daily responsibilities. If this is granted, it cannot be violated under any circumstances. Otherwise, healthcare professionals will become frustrated and disappointed about co-creation.
- Three of the Solvers underlined the fact that healthcare professionals change their minds often regarding solutions requirements, which they believe is understandable as they are not used

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to work in technological developments. Still, a potential improvement would be that SMS Innovation Manager sets them clear expectations about requirements and changes.

- It was suggested by one of the companies to include in the workplan a meeting to sit Solver and Challenger for discussing the scalability of the co-created solution in the healthcare organisation. Making this compulsory does not mean that the public organisation is obliged to adopting the solution but to be more opened about its future. This request will be studied by SMS and the rest of inDemand partners.
- Finally, regarding the ACRA Challenge, which has been granted an extension for the pilot we can extract several lessons learned.
    - The scope of work and planning of task must be realistic and must consider external events that could influence the process. This must be taken into account by both Solver and Challenger.
    - Corrective measures by the Solvers must be put in place in the first months of co-creation. Otherwise, it will be impossible to reconduct the work to be delivered in time and with the expected quality.
    - inDemand partners must be aware that a lack of engagement from the Solver in the starting phases will not improve in later phases of the pilot, and therefore, corrective measures must be put in place from the beginning. If the appropriate measure is to change the Solver, it is preferable to do it as much in advance as possible in order not to harm co-creation.

Business Support

- There should be enough time to meet and communicate between the regional Partners when Solvers are selected (in WP4) and before the first official kick off meeting (handover to WP5). In Murcia this time was quite tight, barely a couple of weeks, which difficulted the coordination.
- In Murcia, Solvers were in different stages of a company life-cycle. This meant that the topics of interest for them regarding business support (funding, commercialization, business modelling) varied and the level of detail required was different for each of them. In this sense, it was a good practice from the Supporter to gather SME's needs during the first months to adapt the business support interactions accordingly.
- Solvers seem mostly interested in business modelling, commercialization, and new networks. In this interaction funding was not a big concern for companies. The reasons behind were varied: 1) funding already available, 2) early stage of the company when asking for funding does not make sense or 3) looking for funding is time-consuming and requires a lot of time from the company management, who were focused in co-creation by the time. Therefore, it seemed a good idea to provide them with resources and references that could be revisited later, when they have the time.
- It was appreciated by Solvers that business support was kept simple yet added enough value, to leave them enough time to focus on co-creation as the scope of work was ambitious for a 7 months period.
- Two of the Solvers suggested to organise more activities involving inDemand participants from the different challenges so that they can get to know all of them better and find potential synergies, at least regionally. To meet this request, a networking event could be organised in the kick-off of the next interaction.

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3.2 Co-creation & Business Support Implementation in Oulu

This part shows the implementation of the co-creation and business support in Oulu (Finland).

3.2.1 Oulu Region – Introduction

Oulu, the capital of northern Scandinavia, is an outstanding blend of a world-class high technology, innovative research and the breath-taking nature of the north. Close collaboration among the city, university, research organisations and the private sector has stimulated the economic growth and supported developing innovations that improve people's lives. The core expertise lies in health and information technologies, e.g. in medical imaging, robotics, printed electronics, artificial intelligence and 5G/6G that enable digitalization of the social and health care sectors. OuluHealth has evolved from a local player into one of the most innovative health ecosystems in Europe that leads the digital health revolution and is the first city to test the 5G network in a hospital environment. Examples of international health related projects include ProvaHealth, Midas, MAGIC, and EU Urban Agenda. Dynamic business life, increasing purchasing power and successful internationalization efforts make it an irresistible location for a wide variety of new businesses.

Oulu University Hospital (NOHD) – Challenger/Intrapreneur

Oulu University Hospital is the northernmost of five university central hospitals in Finland. Oulu University Hospital delivers specialized health care to the Northern Ostrobothnia and provides highly specialized medical services to the entire northern Finland. All medical specialties expect organ transplantation are represented in Oulu University Hospital.

The hospital utilizes the latest international knowledge and equipment in all specialized branches of medicine. Its' various departments, and wards employ a total staff of more than 6,500 highly trained professionals, including world-class surgeons and experts. The hospital has the capacity to handle the most demanding emergencies and the Intensive Care Unit is one the best in Europe. Special emphasis is placed on personal treatment for each patient.

BusinessOulu (BOU) – Supporter Organisation

Business Oulu is the Economic Development Organisation of the City of Oulu, and the Supporter entity in Region of Oulu. It is in charge of implementing the City of Oulu's industry policies. The mission is to enhance innovation led economic growth and improving employment outcomes by supporting entrepreneurship and companies to start and scale up. A comprehensive range of business services are offered to support SMEs, start-ups, and growth companies for rapid business development in different industries. Examples of business services include internationalization and access to market services. The City of Oulu and BusinessOulu have also invested heavily in developing risk finance for growth companies. In 2012, BusinessOulu launched the first Finnish asymmetric fund entity of 15M€ for startups called Northern Startup Fund (NSF).

Finally, BusinessOulu coordinates the OuluHealth ecosystem and the project portfolio of the ecosystem. The ecosystem's main asset, the OuluHealth Labs, is a one-of-a-kind environment composed of three testbeds that are equipped with cutting-edge pilot facilities: OYS TestLab -an authentic hospital testing facility at Oulu University Hospital; Oamk SimLab -a versatile simulation and studio environment; and Oulu Welfare Lab, which allows testing to be carried out throughout the city of Oulu's social and health service network, including in citizens' homes. OuluHealth Labs is the perfect place to co-create, test products and services under authentic conditions with genuine users. As an example, InDemand Oulu Region SMEs were able to perform test trial period utilizing the OuluHealth Labs services, free of charge.

Council of Oulu Region - Funder

Council of Oulu Region is a politically guided development authority with 55 employees. Council is the core organization in ongoing regional, social- and health care reform leading the reshaping of the future social-and healthcare model in the Oulu region. Council composes medium-term regional development plan which steers and coordinates developments for the next four years. Plan defines objectives and priorities and includes Cluster programmes for the most important businesses in the

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region. Priorities raised in development plan are supported by various funding instruments, most important are structural funds programmes.

Council of Oulu Region coordinated preparation of Northern-Eastern Finland ERDF -programme. Council funds innovations, pilots, investment and other development projects. Council is one of the biggest ERDF - funders in Finland. Council has also compiled Smart Specialization Strategy process in interactive, open preparation process in collaboration with broad, diversified networks of stakeholders. Focus areas of the Oulu Region's smart specialization are ICT and software sector, Basic industries' value chains, clean technologies and Healthcare and wellness technologies.

3.2.2 Calendar and Implementation of the activities

In Oulu co-creation and business support activities started in May-June 2018 and ended with the presentation of results on December 11th, 2018. The different activities carried out during this period are explained in the following section by dividing them into the four steps of the Methodology: Preparation, Co-creation Management, Business Support Management, Evaluation and Payment and Assessment and Contribution to the Knowledge Base.

Preparation in Oulu

RELATED ACTIVITY	DATE	DESCRIPTION
Planning Ethical Issues	May 2018	By law, the inDemand first iteration solutions do not require statement from the ethical committee. Development of these solutions is not regulated under research law as they do not include physical intervention. However, a data protection package and code of conduct for Solvers was prepared.
Planning with intrapreneurs	June 2018	Hospital innovation personnel (OYS TestLab) offered support to healthcare professionals (doctors, nurses, administration, IT) whenever needed.
Recruitment of co-creation participants	May 2018	The Hospital personnel (intrapreneurs) suggested the key experts to take part in the co-creation implementation. In practice, the final choices were made by the top management of the hospital units and the participating hospital area.
Inviting solvers to co-creation	June 11st 2018	The Invitation Letters were sent on June 11th via email. The invitation letters were personalized per company. Each SME also received a phone call from the NOHD/BOU.

Table 18 Preparation Step in Oulu Region

Co-creation Management in Oulu

The kick-off on June 18th, 2018 was the first meeting between Solvers and intrapreneurs where the initial co-creation work plan was agreed. The kick-off took place in OYS TestLab in the Oulu University Hospital. The Solvers received information on the co-creation process and business support. In addition, companies and hospital representatives specified the definition of solution requirements. Next steps and milestones were discussed as well as instructions for the gathering and further development work with healthcare professionals. Information on Data Protection was provided to companies and companies signed the needed documents related to Code of Conduct and Data protection.

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Figure 20 Kick-off Meeting with Intrapreneurs and Solvers in Oulu

The next meeting was a one-on-one session in August, gathering the intrapreneurs and Solver of each challenge. It was also supported by the Hospital Innovation Team and Supporter (BusinessOulu). The objectives were to present the current stage of development of the solution, gather the requirements of healthcare professionals and present a not functional prototype.

The next meeting was a one-on-one face to face session in August, gathering the Intrapreneur Teams and Solver of each challenge for deeper understanding and brainstorming of the solution. It was also supported by the Hospital Innovation Team and Supporter (BusinessOulu). The objectives were to present the current stage of development of the solution, gather the requirements of healthcare professionals and present a not functional prototype. Here it must be noted that some companies did not like the fact that co-creation had sort of started in June, but due to holiday period, co-creation was partly slowed down. This was also the main reason that Co-creation Work Plans were signed during Fall period.

In September 10th 2018, NOHD at OYS TestLab arranged the 2nd common co-creation workshop for all SMEs [link]. The day included the 3rd one-on-one co-creation meetings with each Intrapreneur Team, IT department experts and Solver. The Solvers presented their final Co-creation & Business Support Work Plans to the OYS stakeholders, introduced their Prototype 2 solutions and started planning for test trials scheduled for October. The main idea of the fruitful and progressive day was to evaluate and comment on the current versions of the new digital health solutions. Companies felt that the atmosphere was very inspiring and all parties willing to share their ideas, deep expertise and co-develop side by side with the company.

The test trials were running from October until December 2018. The testing was conducted in close collaboration between Intrapreneur teams and Solvers as well as patients as applicable.

The pilot solutions were not integrated into hospital information systems, as they were not ready for this at the time; the OYS TestLab proves an outstanding environment for testing: 300 square metres, testing plan templates to ensure efficient trials, various hospital units can be built into open spaces and it will be easier to deploy just by signing testing agreements between OYS TestLab and companies.

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Figure 21 Solvers and healthcare professionals reviewing the results of the Pilot Phase at the OYS TestLab in October 2018, Oulu

All the follow-up of the co-creation was done through Group emails, phone calls, and Skype meetings in which all relevant stakeholders involved (Solvers, Intrapreneurs, users, IT technical department experts) took actively part. This communication was led by the InDemand Project Manager and the Designer of the Innovation Services.

Oulu University Hospital hosted the Final Event in collaboration with Oulu Region InDemand Group (BusinessOulu, Oulu Region Council) in December 11st 2018. It was a pleasure to gather all project participants together to review the results of the 1st Iteration. The Final Event was divided as follows:

- First, the companies were instructed by the hospital for a future trial period with the Oulu University Hospital.
- Secondly, the results of co-creation were presented to the representatives of the hospital (healthcare staff and administration), and they gave feedback to the development teams. Intrapreneur Teams were given inDemand Diplomas to recognise their much-valued work in the hospital innovation activities, and thus increasing the innovation capacity of the public entity.
- Thirdly, BusinessOulu guided the companies on how to build content for the Visibility Plan (WP5 - WP7 collaboration) to raise awareness of the solutions in the media and relevant stakeholders.
- Finally, the Oulu Region Council advised companies on the Evaluation and Payment process, which will be further described later in this document.

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Figure 22 Oulu Region Final Event. Healthcare professionals, Solvers and Oulu Region inDemand Group, Iteration, 2018.

Further details on the meetings held are provided below for each of the challenges.

Solver: Delfoi Oy Description: Solution supporting resource planning for more efficient implementation of rooms		
NAME / PARTICIPANTS	**DATE**	**DESCRIPTION**
Kick-off meeting (Solver and Intrapreneurs)	June 18th 2018	During the kick-off Solvers also participated in a workshop to brainstorm with healthcare professionals from Oulu University Hospital.
Co-creation Table & Prototype 1 (Solver, Intrapreneurs and Challenger)	August 17th 2018	Concentrated on creating deeper, common understanding of the Challenge, and defining the most important main features for the Solution under development. This meeting gathered the Hospital Innovation personnel, IT department and innovation Coordinator to support the intrapreneur team and Solver. The Solver showcased a TRL9 solution. Co-creation work plan was discussed with fine tuning the details to ensure all the milestones are met on time. Finally, NOHD double checked with Delfoi that each Solver employee had signed Data Protection Docs.
Prototype 2 (Solver, Intrapreneurs and Challenger)	Sept 10th 2018	At the beginning of the event, the development teams were given the opportunity to familiarize themselves with each other's development work and provide feedback and tips to promote development. After the common section the progress of the solution was first evaluated. After that, the hospital experts gave feedback on the further development of the solution and the developer team made a plan for the implementation of the future testing phase.
Users Training & Pilot (Solver, Intrapreneurs and Challenger)	Oct - Dec 2018	Delfoi introduced the developed functionalities of the solution to the healthcare professionals and the Intrapreneur Team. User training was an important part of this phase. Feedback was gathered for further development.
Presentation of the Results (Solver, Intrapreneurs and Challenger)	Dec 11th 2018	Final Event: Presentation of the solution. Planning future collaboration with hospital experts and administration.
Other discussions (Solvers, Intrapreneurs and Challenger)	Constant	Coordination and follow-ups via Group Emails, Skype meetings, phone.

Table 19 Challenge 1 Co-creation Interactions

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Figure 23 Delfoi presenting the new Digital Health Solution for the Efficient Use of Hospital Rooms at the University of Oulu Hospital, 17 August 2018

Solver: Sense4Health Description: Remote controlled mobile solution for hospital clients (case: children's asthma examination)		
NAME / PARTICIPANTS	**DATE**	**DESCRIPTION**
Kick-off meeting including individual meeting (Solver and Intrapreneurs)	June 18th 2018	During the kick-off Solvers also participated in a workshop to brainstorm with healthcare professionals from Oulu University Hospital. This company was accepted to the co-creation project based on their concept phase proposal and the solution was not in TRL7 stage in the beginning of the project. Therefore, the project flow was naturally different compared to other three solutions under development.
Co-creation Table & Prototype 1 (Solver, Intrapreneurs and Challenger)	Aug 20th 2018	Solver introduced 1st Mock-up version in the mobile app to concretise the Solution under development and ensure relevant feedback from the Intrapreneur team experts. Main discussion included system architecture requirements where the Hospital IT department took a fruitful role to help Solver to proceed in the technical development of the Solution. Another key point was the Fine-tuning the Co-creation work plan and initial discussion for the Test Trial Period (October).
Further concept and prototype development (Solver, Intrapreneurs and Challenger)	Sept 10th 2018	At the beginning of the event, the development teams were given the opportunity to familiarize themselves with each other's development work and provide feedback and tips to promote development. After the common section the progress of the solution was first evaluated. After that, the hospital experts gave feedback on the further development of the solution and the team continued to define the desirable functionality for the solution.
Users Training & Pilot (Solver, Intrapreneurs and Challenger)	Oct - Dec 2018	Company and Intrapreneur Teams concentrated on planning a testing phase.
Presentation of Results (Solver, Intrapreneurs and Challenger)	Dec 11st 2018	Final Event: Presentation of the solution. Planning future collaboration with hospital experts and administration.
Other discussions (Solvers, Intrapreneurs and Challenger)	Constant	Coordination and follow-ups via Group Emails, Skype meetings, phone.

Table 20 Challenge 2 Co-creation Interactions

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Figure 24 SENSE4HEALTH 2 presenting the project results

Solver: Buddy Healthcare Description: Electronic guidance and advice pass (case: breastfeeding guidance)		
NAME / PARTICIPANTS	**DATE**	**DESCRIPTION**
Kick-off meeting (Solver and Intrapreneurs)	June 18th 2018	During the kick-off Solvers also participated in a workshop to brainstorm with healthcare professionals from Oulu University Hospital.
Co-creation Table & Prototype 1 (Solver, Intrapreneurs and Challenger)	August 16th 2018	State of the solution was concept finalization. Solver introduced a software link for healthcare professionals to receive personal feedback and ideas for improvement. Based on the Lean Start-up Approach, the Solver rehearsed the 1) Problem 2) Solution 3) Value Proposition and the Customer Path. This session included already preliminary discussion for the Test Trial Period (start date October) and helped the Solver to start preparing for this crucial part of the co-creation process. The Intrapreneur Team was notably dynamic and collaborative speeding up the co-creation process.
Prototype 2 (Solver, Intrapreneurs and Challenger)	Sept 10th 2018	At the beginning of the event, the development teams were given the opportunity to familiarize themselves with each other's development work and provide feedback and tips to promote development. After the common section the progress of the solution was first evaluated. After that, the hospital experts gave feedback on the further development of the solution and the developer team planned for the implementation of the future testing phase. This meeting was especially important as one more user group was defined for the solution and taken into co-creation.
Users Training & Pilot (Solver, Intrapreneurs and Challenger)	Oct - Dec 2018	The previous September 10th meeting had provided good basis for planning, preparing and star for a testing phase. There was strong, successful communication flow between all the stakeholders, and especially the company and the Intrapreneur team to keep in schedule. Successful pilot phase provided the company the needed information to carry on with the further solution development.
Presentation of Results (Solver, Intrapreneurs and Challenger)	Dec 11th 2018	Final Event: Presentation of the solution. Planning future collaboration with hospital experts and administration.

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Other discussions (Solvers, Intrapreneurs and Challenger)	Constant	Coordination and follow-ups via Group Emails, Skype meetings, phone. The company's previous experience in co-creation projects ensured smooth project flow.

Table 21 Challenge 3 Co-creation Interactions

Figure 25 BuddyHealthcare and the Intrapreneur Team with the Oulu University Hospital (Challenger), the Hospital Innovation Team and Supporter (BusinessOulu). August 16, 2018.

Solver: ProWellness Health Solutions Description: Electronic services before and after an outpatient clinic appointment (case: paediatric and adolescent care pathway).		
NAME / PARTICIPANTS	**DATE**	**DESCRIPTION**
Kick-off Meeting with Individual Meetings (Solver and Intrapreneurs)	June 18th 2018	During the kick-off Solvers also participated in a workshop to brainstorm with healthcare professionals from Oulu University Hospital.
Co-creation Table & Prototype 1 (Solver, Intrapreneurs and Challenger)	August 23rd 2018	After June 18th kick-off, Solver had conducted End-User interviews with Families and Children for identifying more in-depth user scenarios. During this one-on-one meeting healthcare professionals and Solver utilized this information in defining the main features for the solution.
Prototype 2 (Solver, Intrapreneurs and Challenger)	Sept 10th 2018	At the beginning of the event, the development teams were given the opportunity to familiarize themselves with each other's development work and provide feedback and tips to promote development. After the common section the progress of the solution was first evaluated. After that, the hospital experts gave feedback on the further development of the solution and the developer team planned for the implementation of the future testing phase to be implemented at OYS TestLab.
Users Training & Feedback (Solver, Intrapreneurs and Challenger)	Oct 15th 2018	Continuing development and designing the testing phase. The testing phase with the healthcare professionals ensured open dialogue of the pros and cons of the current version of the solution. Company was given a roadmap on how to continue with the technical solution development before co-creation ends.

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Presentation of Results (Solver, Intrapreneurs and Challenger)	Dec 11th 2018	Final Event: Presentation of the solution. Planning future collaboration with hospital experts and administration.
Other discussions (Solver, Intrapreneurs and Challenger)	Constant	Solver conducted several end-user interviews with Families and Children for identifying more in-depth user scenarios. Being a local SME based in Oulu, the Solver had also had two meetings with NOHD during the Summer. The fact that the company is based in Oulu made very close collaboration easy with the hospital. Coordination and follow-ups via face2face meetings, Group Emails, Skype meetings, phone.

Table 22 Challenge 4 PROWELLNESS HEALTH SOLUTIONS Co-creation Interactions

Figure 26 Prowellness Health Solutions with Oulu University Hospital Healthcare Professionals in August 23.

Business Support Management in Oulu

Business Support in Oulu started, together with co-creation, the June 18th, when Solvers received group coaching for Business Modelling. Also, BusinessOulu & OuluHealth Ecosystem Services were introduced.

Figure 27 Business Modelling Workshop during the kick off meeting

After the kick-off, the business support continued with a tailor-made approach:

- During August, more individualized needs were identified regarding further business modelling, access to funding and access to markets. Solvers' main interest were on business modelling e.g. pricing, earning logic and internationalization opportunities.

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- Company CEOs and business developers appreciated opportunity for 1-on-1 coaching as they can freely, in confidential setting, brainstorm and make questions that are “troubling” their mind at that moment. Regarding Access to Funding, Supporter discussed with each SME separately for the individual needs. Based on these mentoring and coaching sessions, only one SME identified the need for Access to Funding meeting that took place August 30th.
- From September to December, new individual meetings continued with tailor-made approach. Some meetings took place at the same time when NOHD arranged co-creation activities between healthcare professionals and Solvers. During Fall, the focus shifted to start working on the Go-to-Market Plan. Depending on the SME needs, Supporter and SME had approximately 3 – 10 interactions (F2F, telco, emails) regarding the development of the Plan.
- Solvers have received group and individual coaching, support and resources on Business Modelling, Access to Funding and Access to Markets. At least during the 1st iteration, Solvers valued the most building the Commercialization Strategy of the developed solutions. They also valued the coaching for internationalization, new business development and networks in healthcare.
- Even though Solvers were not interested in access to Funding, they know that the Funding Services provided by BusinessOulu are available also after the inDemand project.
- inDemand companies are active/have attended/will attend OuluHealth Ecosystem and 3rd Party activities: DELFOI: German Markets and HIMMS Europe and Health 2.0, Helsinki, June 11-13, 2019. BUDDY HEALTHCARE: Blog about the Co-creation project with OYS - breastfeeding care pathway in inDemand project. SENSE4HEALTH: attended eHIN Norway 2018 arranged by BusinessOulu and OuluHealth Ecosystem. PROWELLNESS HEALTH SOLUTIONS: attended ArabHealth January 2019 arranged by OuluHealth Ecosystem and Business Finland.

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BUSINESS SUPPORT MANAGEMENT IN OULU				
NAME	DATE	TYPE	DESCRIPTION	OUTCOMES
Kick-off general meeting	18th June 2018	Group	A joint event with co-creation kick-off to present **inDemand Business Support** by BusinessOulu. An introduction to BusinessOulu and Oulu Health ecosystem services for companies was also included.	Companies were made aware of the Supporter role in inDemand, Business Support services and materials.
Business Modelling Workshop	18th June 2018	Group	A first workshop was scheduled for the afternoon of the kick-off day. Solvers had received **Lean Canvas** Templates and Lean Start-up Methodology Material in advance to create their Lean Canvas. In this workshop, they were given time to add new learnings from the morning spent with healthcare professionals and prepare the presentations. Supporter discussed with Solvers the main learnings to develop the solution and the initial Lean Canvas to illustrate its business model. The next steps to understand the customer were discussed.	Solvers learned what is required from them and how to prepare for the August one-on-one meetings. Needs of each Solver were gathered to tailor-made the next coaching and mentoring session.
Targeted needs and Access to Markets	BUDDYHEALTHCARE Aug 16th, 2018 Sept 10th, 2018 Dec 11th 2018	Individual	**Buddy Healthcare** main question concerned pricing and earning logic in the August meeting. **Go-to-market plan** was finalized in December; main ideas for e.g. pricing and earning logic had been identified. SME had also received relevant feedback from healthcare professionals for value creation that they could apply for Go-to-market Strategy. Finally, it was learnt, that co-creation was such an intensive period, that SME will be able to devote more time for business development starting Q1 2019. Visibility Plan explained in the Final Event.	Buddy Healthcare was made aware of the importance of validating business model hypothesis with real potential customers and users. Solver and Supporter worked in the Go-to-market Plan. Ideas on which collaborators/customers to approach, were identified.
Targeted needs and Access to Markets	DELFOI Aug 17th, 2018 Sept 10th, 2018 Dec 11th 2018	Individual	**Delfoi** had defined two main topics for the **tailor-made business support**: new business development in the healthcare industry and opportunities for internationalization. In addition, Go-to-market plan was discussed to ensure SME will allocate enough resources for this task inside the company. After the meeting, Delfoi conducted an internal Company meeting to discuss the next steps in the business development path and communicated those steps to Supporter, BusinessOulu.	Solver and Supporter worked jointly in the Go-to-market Strategy, Delfoi took the Go-to-market Plan in internal use inside their company. Plans for new markets identified, and further understanding of the Ouluhealth Ecosystem future opportunities. Got interested in the InDemand Community.
Targeted needs and Access to Markets	PROWELLNESS 23th Aug 2018 30th Oct 2018 11th Dec 2018	Individual	**ProWellness** Health Solutions main concerns were on **access to markets** and **internationalization**. As an example, the SME is planning to join Arab Health Conference with BusinessOulu and Business Finland in Dubai. In Addition, SME is actively involved in China Mini Silicon Valley Project. It was agreed the next InDemand project will be held on 29th October.	Coaching on access to markets was provided. Solver and Supporter started to work jointly in the Go-to-market template. SME very active in the OuluHealth Ecosystem activities.
Access to Markets **Targeted needs and Access to Markets**	Aug 30th, 2018 Dec 10th, 2018 Dec 11st 2018	Individual	**Sense4Health**'s primary objectives for business support included **access to funding**, internationalization opportunities and Go-to-market planning. Public and private funding instruments were introduced by the by the Funding Expert in BusinessOulu. However, the SME noted that they would focus now on co-creation and set the new schedule for Funding topic for Q1 2019. As a startup, several iterations took place for Go-to-market Plan development.	**Public and private funding instruments** were introduced by the Funding Expert in BusinessOulu. The Solver and Supporter worked jointly in the Go-to-market template. SME participated in other OuluHealth Ecosystem activities (e.g. fairs, exhibitions Norway, Sweden).

Table 23 Oulu Business Support Interactions

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Evaluation and Payment in Oulu

Figure 28 Funder (Oulu Region Council) explains the Final Payment Procedure in the Final Event to Solvers, December 11th, 2018

As part of the InDemand Final Event in December 11th, 2018, the Funder (Oulu Region Council) delivered a presentation to Solvers regarding the reporting schedule and process. In addition, Solvers were sent a follow up email with the required Reporting templates.

Once Solvers submitted the requested information, the Funder carefully reviewed all the assigned reporting material; this was done for DELFOI, SENSE4HEALTH, BUDDY HEALTHCARE, AND PROWELLNESS SOLUTIONS. Also, the Supporter informed the Funder by email communication that each Solver's Go-to-Market Plan had been approved (by mid-January). Each Solver fulfilled the conditions of the subgrant, and therefore, Funder was able to proceed with the final payment.

Oulu Region Council had chosen two-phase payment method; advance and final payment. This was decided to show commitment and support to the Solvers right from the beginning of the co-creation.

The advance payment was released in the following dates:

- DELFOI August 31, 2018.
- SENSE4HEALTH August 31, 2018.
- BUDDY HEALTHCARE August 31, 2018.
- PROWELLNESS HEALTH SOLUTIONS, August 31, 2018.

The final payment was released in the following dates:

- DELFOI February 28, 2019.
- SENSE4HEALTH February 28, 2019.
- BUDDY HEALTHCARE February 28, 2019.
- PROWELLNESS HEALTH SOLUTIONS, February 28, 2019.

At the end of the first round, during weeks 48-49 and Final Event Day 11st December 2018, Hospital Innovation Management Personnel discussed the use of the solutions developed by the co-creation teams and the continuation of collaboration between the hospital and the company. In addition, the solutions developed were evaluated in hospital ICT-department.

The aim of the discussions was to gather feedback on the experiences of both hospital intrapreneurs and the company in co-creation as well as to outline mutually satisfactory, realistic goals for further developing and utilizing solutions in the future.

The trial period after the co-creation and testing process for the solutions developed in the first round was decided to be 6-12 months. Draft for the follow-up plans were presented to the Hospital

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Central Management at the Final event. The Intrapreneurs who presented the Challenges in the beginning of the project will continue receiving support from the Hospital Innovation Management Personnel to carry out and lead the further cooperation with the Solver companies in 2019 beyond inDemand project.

Assessment and Contribution to the Knowledge base in Oulu

Supporter – BusinessOulu gathered the most important lessons learnt throughout the implementation process in Oulu. The experiences were shared the Consortium Partners in the online meetings hosted by TicBioMed in addition to official Consortium Meetings held every six months.

In addition, the University of Oulu, has been responsible for collecting company feedback for the research purposes. They have been participating in each main co-creation activity at the Oulu University Hospital and have asked for feedback frequently.

During September - October 2018, WP2 and WP5 made close collaboration in Oulu by planning and designing the theoretical framework and state of the art research questions for thematic “Where Are We Now” - end of Project Interviews to the Solver Companies in all three pilot regions.

In the Oulu region the project interviews were scheduled and arranged by the Supporter (BusinessOulu). The face-2-face interviews were held with companies during November 30 – December 11, 2018. In three meetings a company CEO was present, and/or accompanied by the key contact person / project management contact person.

Currently, WP2 is working on the topic and waiting for the interview results from other Pilot regions. In short summary, the following findings have come apparent in the Oulu region:

- In the beginning of the project expectations of all four companies were related to 1) getting hospital as an end user for their products/services, 2) developing new products and features, 3) route to faster market entry and 4) route to international market.
- Overall, companies’ expectations have been fulfilled so far. First, companies understand and value the inDemand as a new demand-driven innovation model: it provides a structured way of co-creating new solutions with several pre-set milestones, deadlines, and templates. Secondly, inDemand model provides a highly valued path in creating and developing new Solutions together with end-users and potential client.
- At the same time, it must be noted that most of the iteration time has been concentrating on the technical development of the inDemand solution. Further business development will continue during 2019. Therefore, the fact is that companies, do not yet know if this will result into actual commercial reference and cash flow with the Challenger organisation or some other potential customer.
- Nevertheless, companies in the Oulu region seem to be confident that this project will help them to achieve the goals stated in the beginning of the project. We will learn more about this within 6-12 months.
- The biggest challenges were related to the tight time management; this feedback will be considered when designing the 2nd iteration

3.2.3 Results of the co-created solutions

ROOM - Solution supporting resource planning for more efficient implementation of rooms Solver:Delfoi Ltd	
Initial organisational challenge	In the future hospital, the occupancy rate of rooms shall raise in accordance with space requirements. For instance, at outpatient clinics, the number of rooms will be smaller in future although even now, as it is, the hospital does not always have a sufficient number of rooms available. An electronic application is needed for real-time monitoring of the occupancy rate of hospital rooms so that when staff and patients vacate a

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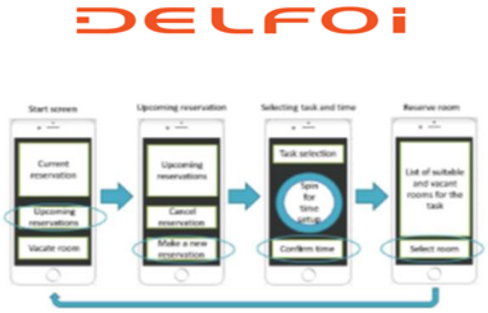
	reception or an operation room, it will be available for others to use. Oulu University Hospital requires such an application as probably do also other hospitals in Finland and in other countries. An electronic application is needed for real-time monitoring of the occupancy rate of hospital rooms. Once staff and patients vacate a reception or an operation room, other users shall be aware of the change of the room status. The information is available in real time and professionals are continuously aware of the available space(s). Public screens and door display in the unit and mobile devices of the personnel should allow the monitoring of occupancy rate of the rooms. Booking of a room can be made on a mobile device. The solution should indicate e.g. if the room is occupied for patient visit, for internal use or if it is free. Also, location information of the professionals is seen as useful feature. This is significant information for a teaching hospital where plenty of consultation requests are made.	
Description of the co-created solution	**The Delfoi Planner SAAS Solution** 1 Enhances the transparency of service production, speeds up planning, and combines planning into one system. 2 The system provides multiple people with up-to-date plans at the same time, reduces manual typing errors, and allows for easy and constant updating of plans. 3 The system helps to improve the quality of operation, productivity and room sharing. This reduces costs and improves customer satisfaction. These typical benefits can be measured through the amount of work put in planning, quality of the plan, room occupancy rate and based on user and customer feedback.  *Figure 3. Mobile interface mock-up for a user to reserve and vacate rooms*	
Co-creation participants	7 nurses 2 MD	1 quality manager 2 secretaries
Results	**Healthcare**	NOT APPLICABLE
	Satisfaction	The co-created solution provided partial fit for the challenge. Total benefit of the co-created solution could have been achieved by integrating the solution to the hospital shift planning systems. At this point of time the integrations were not possible and thus all the features could not be utilized. Challenger organisation was satisfied to the collaboration and co-creation attitude of the Solver company.
	Efficiency	Due to missing integrations the anticipated increase in efficiency could not be achieved.
Potential for scalability	**NO**	At this point of time use of the solution will not be extended beyond in Demand in the Oulu University Hospital. However, Delfoi will add and test the new feature of Delfoi Planner also with existing customer base for the further development and leveraging the results of the solution.

Table 24 ROOM Challenge results at the end of the co-creation period

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REMOTE CONTROL - Remote controlled mobile solution for hospital clients (case: children's asthma examination) Solver: Sense4Health		
Initial organisational challenge	At present, children's asthma tests start with two appointments. The first appointment is with a nurse and contains a lot of important guidance to promote successful diagnostic tests, including guidance on blowing into the PEF meter, two-week PEF monitoring and instruction on taking inhaled medication. The second appointment is for pulmonary function tests and nurse's and doctor's surgery. Some clients could skip the first appointment with the nurse if they had access to high-quality materials and the asthma tests could be carried out in one visit without compromising the reliability of diagnostic tests. The application would be available for the purpose of submitting guidance material in various domestic and international units and organisations. A mobile control application for young clients is yet to be developed for mailing easy-to-use guidance materials (including videos, game apps) without the client having to login. The application should be accessible for various mailing purposes of guidance materials relating to hospital care pathways. In the case of children and young people, login without a banking code or other certificate is important. A mobile apps should include good technical properties for modification of content and adding material. The application shall be clear and easy to use to encourage client's motivation to use it.	
Description of the co-created solution	Sense4Health's Breath Tracker is an interactive smartphone app with a backend cloud solution. The app provides 1 Technical means to quantify the symptoms of respiratory distress. 2 In particular, the app combines interactive guidance using a chatbot and instructional videos, breathing measurements using the phone's motion sensors, questionnaires for self-assessing the patient's well-being, air quality indices, and an optional external digital spirometer to assess the patient's health (Figure 1). An example of the visual appearance in the start view of the Breath Tracker is shown below   	
Co-creation participants	3 nurses 1 head nurse 1 MD	1 female patient 2 relatives
Results	**Healthcare**	The application has useful features and videos for guidance and instruction purposes. Video content has been co-created with health care professionals
	Satisfaction	The application is not yet ready for the patient use. This should be evaluated later.
	Efficiency	TBD when the application is ready.
Potential for scalability	YES	The application will be further developed together with health care professionals. The final version is expected to be useful for young asthma patients. There are no procurement decisions made concerning the final solution.

Table 25 REMOTE CONTROL results at the end of the co-creation period

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BREASTFEEDING GUIDANCE - Electronic guidance and advice pass Solver: Buddy Healthcare Ltd	
Initial organisational challenge	The breastfeeding pass is a tool used by a mother and child clinic and the hospital for implementing breastfeeding guidance and information transfer as a part of the job of caring for a newborn. The breastfeeding guidance pass is a summary of the uniform approach to breastfeeding developed in cooperation with the City of Oulu to promote breastfeeding. For the time being, the card is printed on paper and mothers have it with their maternity card. Health care personnel is unable to carry out the necessary real-time entries regarding the implementation of guidance. Every family is entitled to sufficient breastfeeding guidance as this promotes establishing and sustaining exclusive breastfeeding in accordance with the national and international recommendations. Both the patient and his or her family benefit from access to proof-based information regarding breastfeeding. Detailed discussions take place at the healthcare appointment with a specialist. Breastfeeding guidance pass (in paper) is, at the moment, a tool promoting communication relating to breastfeeding guidance between the hospital (Oulu University Hospital) and mother and child clinic (City of Oulu), and encouraging and supporting families learning to care for their healthy newborn. The objective is to upgrade the breastfeeding guidance pass into a digital guidance method, a mobile application, which is easy to use and provides easy access to all breastfeeding-related material (texts, links and videos). The material may be freely accessible for browsing or it may become available at stages linked e.g. to predetermined healthcare visits at the maternity clinic. It is important that the client can enter his or her notes in the application. The notes could then be discussed during healthcare visits with the healthcare professionals. The application enables sufficient breastfeeding guidance for every family and thus promotes establishing and sustaining exclusive breastfeeding in accordance with national and international recommendations. Development needs lie with the department of obstetrics and women in Oulu University Hospital, but the electronic breastfeeding guidance pass has drawn a great interest in maternity clinics and national healthcare. No similar application exists in Finland, at least not one relating to breastfeeding guidance.
Description of the co-created solution	BuddyCare for Breastfeeding is an application that targets to develop a breastfeeding guidance and advice pass mobile app to support mothers in breastfeeding. The Buddy Care mobile app was used by to-be mothers and mothers who had already given birth. The mobile app included all the information about what instructions to follow on which pregnancy weeks. The structure of the BuddyCare app was already pretty well established for the breastfeeding carepath, so major new development tasks were not required in order to carry out the pilot. However, it was requested in the solution description that the app user must have the possibility to add notes in the mobile app. This feature was developed before the start of the pilot. The user, of course, then has the possibility to remove added notes as well. The purpose of this functionality is that the user may type questions she would like to bring up during the child health centre visits. However, based on the feedback gathered from users during the pilot, it can be concluded that the usefulness of the notes feature was not as obvious as was perhaps initially thought. Only a couple of users out of 15 thought that the feature was useful and others thought that it didn't really bring any additional value to the app. Nevertheless, the feature is important to have for those users who might want to type notes, and it doesn't harm the user experience of those users who don't want to write notes. **Feedback through the app was collected from all users who participated in the trial (N=20).** The feedback received was highly encouraging and it provided the company some valuable insights for future development needs. -**92%** said that the app as an electronic guidance tool either highly or somewhat highly supported the information provided earlier during pregnancy. **92%** said the app was either very or somewhat easy to use. **92%** preferred using the app over a paper format of the breastfeeding guidance pass. **92%** rated the app as **4** (ranking scale 1-5). **100% would either highly or somewhat highly recommend the app to other pregnant women and mothers.** 

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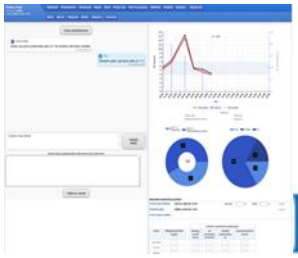
Co-creation participants	4 Head nurses 1 Quality Manager		13 pregnant mothers
Results	**Healthcare**	The solution improves care adherence, operational efficiency and patient experience thus leading to better health outcomes and lower costs.	
	Satisfaction	Pilot users are highly satisfied with the breastfeeding guidance application.	
	Efficiency	The solution improves care adherence, operational efficiency and patient experience thus leading to better health outcomes and lower costs.	
Potential for scalability	**YES**	OuluHealth and Welfare Services agreed to continue using the breastfeeding application for the 12 months trial period. During this time, the solution will be further co-developed. The procurement decisions have not been made.	

Table 26 BREASTFEEDING GUIDANCE results at the end of the co-creation period

DIAMECHAT - Electronic services before and after an outpatient clinic appointment (case: pediatric and adolescent care pathway) Solver: ProWellness Health Solutions Ltd	
Initial organisational challenge	There is a need for an electric notes and communication platform to guide children and young people with diabetes and their families through the initial care practices. Type 1 diabetes, where insulin in not produced in the in the pancreas, is one of the most common long-term diseases in Finland. It is more common in Finland than anywhere else in the world. Lifetime therapy for type 1 diabetes is insulin injections under the skin. The outpatient clinic for children and young people with diabetes at Oulu University Hospital regularly monitors approximately 470 patients who are under 19 years old; moreover, approximately 50 to 60 under 16-year-old children and young people develop the disease every year. In other words, we are looking at a considerable number of new therapy onsets and monitoring appointments (3 to 4 times a year) annually. When a child is diagnosed with diabetes, he or she, when admitted to the hospital, will be transferred from an outpatient clinic to the Intensive Care Unit or to a hospital ward; after the episode at the Intensive Care Unit his or her care continues at a general ward. Diabetes therapy education is started at the ward to the child and his or her family: the introduction includes insulin administration and injection education, education on blood sugar monitoring, diet guidance, exercise guidance, guidance on social security issues and guidance by diabetes nurse and doctor. In addition to this, blood sugar is monitored from your finger tip approximately every 2 to 3 hours, tissue sugar measurements may be started, and daily insulin dosage determined.
Description of the co-created solution	**Results include three main development tools related to DiaMeChat solution** **1 Electronic Follow-up Forms for Blood Sugar Level Monitoring for the Professionals' Use. Example Image of the Professionals' Chat View.**  **2 "DiaMeChat" Mobile-chat Communication Solution between Diabetes Clinic and the Patient's Family. Example Image of the Patient's Chat Application.**

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	 **3 Mobile Diabetes Manual for the Use of the Patient and His/Her Family.** 		
Co-creation participants	6 nurses 3 MD 6 male patients		6 female patients 6 male relatives 6 female relatives
Results	**Healthcare**	The solution enables new communication channel between health care professionals and patients (and their families). New training materials can be delivered to ambulatory patients via chat solution.	
	Satisfaction	The initial feedback from the users has been positive. However, the system is not yet in yet in large-scale use. This should be evaluated later.	
	Efficiency	Mobile diabetes manual for the patients and their families is efficient way of delivering up-to-date information. There is less need for double entries due to chat discussions can be directly saved in the required target systems.	
Potential for scalability	**YES**	The Children's ward / diabetes clinic is currently considering of further use of the developed solution.	

Table 27 DIAMECHAT results at the end of the co-creation period

3.2.4 Oulu Regional lessons learned after first interaction

SMEs and healthcare professionals have considered the implementation in Oulu as successful during the 1st Iteration. Companies describe that they are able to work smoothly with hospital professionals, resulting in solutions that are quite different from those without receiving end-users' feedback. The role of hospital innovation personnel is also seen as significant in managing as well as securing the progress and orientation of these processes:

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Figure 29 Testimonial from the Solver *Prowellness*, working in the DIAMECHAT Challenge in Oulu

The feedback has been encouraging for NOHD & OYS TestLab to continue and further improve the hospital's innovation activities. Health care professionals have stated that **that NOHD provides innovation activity where their opinions are heard in defining development needs and developing solutions give them "voice" and "voting rights"**. When discussing with NOHD professionals, the importance of this matter has become very clear. These opportunities may not have been the case earlier for them because of the conventional organizational culture of public hospitals. inDemand approach also helps to better meet the needs of NOHD customers and patients, which is the most important thing.

Mika Sipilä continues: "In phase 1, we plan to offer the developed solution first to our existing customers who've already got our hospital diabetes management system in use. **Business support may be able to look at markets and opportunities from a new angle** that we may not always notice ourselves, given that we may (unintentionally) be focusing too narrowly on our current strategy, whereas business support might be able to take a fresh look and **see a broader picture** from a couple of feet's distances".

The key learnings from the first iteration of the model in Oulu are presented below:

Co-creation

- Co-creation planning, and preparation takes time, so this phase must be accounted for when replicating the model in other Regions. Furthermore, co-creation in the context of healthcare requires the adequate resources and engagement from all stakeholders involved. Therefore, high-level flexibility and adaptability as well as the ability to work efficiently is needed from the participating stakeholders.
- There should be enough time to meet and communicate between the regional Partners when Solvers are selected (in WP4) and before the first official kick off meeting (handover to WP5). Firstly, it must ensure enough time for the Funder and Challenger for the Sub agreement negotiations. This must be considered for the second iteration, when planning the co-creation interactions with Solvers.
- It is important to make the Solver aware of the hospital's possibilities and restrictions and define the rules in advance. A hospital is a specific environment for developing health solutions. Undoubtedly, hospitals offer companies valuable platforms for product development, but they impose certain restrictions on co-operation, such as data protection, safety regulations, economic sustainability, or ethical considerations in clinical practice. Communication between companies and healthcare professionals occurs for the exclusive purpose of the co-creation initiative and is regulated by the previously defined rules. For instance, in this interaction we have learned that preparing in advance a data protection package for Solvers by the healthcare organisation is a good practice, especially with the

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current GDPR legislation. Moreover, companies may not be able to start working until they have an evaluation of risks & contingency plan.

- Explain the purpose of the co-creation work plan well in advance to the Intrapreneur-team so that they learn to use this tool efficiently right from the beginning of the project. Some terms in the work plan may need redefinition for the 2nd iteration.
- Preparing a co-creation work plan with each Solver during the first month is a good way to ease the co-creation process. It sets a common understanding of what needs to be done and speeds up the process by indicating which are the next steps to move to, including the number and form of meetings. Co-creation interactions (between Solvers and Challenger organization teams) must be well planned as the healthcare professionals are taken out of their other duties (patient work). Furthermore, Solvers must know well in advance the overall project schedule, as they are typically involved in other projects simultaneously.
- Creating "Challenge Teams" (the SME and healthcare professionals) works well. As doctors perceive the duty and responsibility in the co-creation process, they get really motivated and involved which eases coordination with the Solver. Well-timed communication as well as defined roles and responsibilities are one of the keys to succeed in co-creation.
- Having the IT manager from the healthcare organisation on board is a must, as companies need to discuss how to integrate the technology to the organisation systems. However, the involvement of the hospital ICT department might be a challenging task. The motivation to participate in the project arises in the intrapreneur team and not necessarily from this staff. The healthcare unit sees the extra value of the co-creation process more easily. Therefore, the Challenger must get the ICT department on board well in advance.
- Preparing and executing the Test trials / Pilot Phase. Even though Oulu University Hospital and its OYS TestLab have pre-defined process for product testing, special attention should be paid to this topic. Health care professionals' primary duty is to take care of the patients. Technology trials are always after patients in the order of importance. In practice this means that resources for the testing need to be booked three to six weeks in advance due to shift planning process. Another thing to consider are the lead times for workstations and other needed technology devices.
- InDemand project provided Diplomas to healthcare professionals in the end of the co-creation phase. This was highly appreciated by the intrapreneurs and the development teams. Diplomas or certifications are nice gesture to pay special attention for health care professionals' participation to co-creation work.
- It should be investigated if Challenger organisation i.e. public organization could carry out procurement by utilizing inDemand co-creation model. Could co-creation model be equated to Innovation partnership model? Or could it be introduced in addition to Innovation partnership as an official public procurement procedure (due to co-creation aspect makes it different from innovation partnership). In any case the co-creation related procurement process should be streamlined. Our goal is to find suitable public procurement method to enable direct purchases after co-creation, if the hospitals are satisfied (impacts, KPI's etc.) with the new digital solution.

Business Support

- When combining business support and co-creation, the former must be kept simple yet add enough value, to leave both SMEs and healthcare professionals' time to focus on co-creation as time is tight and scope of work is ambitious. Quality before quantity principle regarding business support interactions.

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- The former principle also applies for the replication of the inDemand model in other regions. In order to make the model sustainable, modest but value-added activities must be organised. The model needs to be cost effective so that it is replicable in other regions with Regional Development Funds. On this regard, each region adapting the InDemand model can choose tools and methods to deliver content (e.g. business model generation tools, access to funding, and access to markets) to leverage their existing practices and ecosystem.
- Selected Solver Companies may be in the different stages in their life-cycle. This means that they need tailor-made business support. During the first month, Supporter is suggested to gather SME's needs to adapt the business support interactions accordingly. Supporters and SMEs agree the schedule and the method of communication (e.g. online, face-to-face, phone call). If possible, some of the meetings can be arranged on the same day with co-creation interactions, especially if Solvers come from other regions.
- Regarding the main topics of interests for Solvers, so far, SMEs seem mostly interested in business modelling, commercialization, and new networks. Business support mentoring and coaching have included topics like pricing strategy, earning logic, new business development in the healthcare industry, and internationalization opportunities. Especially, new networks are welcomed by SMEs for new business development.
- As for business modelling, SMEs do not necessarily know Lean Start-up Approach and Lean Canvas, so giving guidance to SMEs with Lean Canvas Preparation is important. Lean Start-up Methodology and Lean Canvas Step-by Step Guide may be sent to SMEs before the kick-off day, so that they can start drafting initial Lean Canvas. This can help to make the most of the Business Support in the Kick-off and experts can give further feedback rather than explaining the general concepts. It is important for supporters to highlight to companies they need to validate with other potential customers whether they would be interested in the same problem/solution than the inDemand Challenger organisation.
- Access to funding services was requested only by one company during the 1st interaction. (Other three companies did not request these services. For one company private funding is not part of their overall funding strategy, and company uses their cash flow to fund InDemand project in addition to InDemand grant. Two other companies had already developed own contacts in investor networks & negotiations were already ongoing/accomplished. It must be noted that Funding is a wide area and requires a lot of time from the Company management level. Depending on the e.g. size and maturity level of the company, Co-creation period many not allow time for this topic. However, the need for funding may arise after the co-creation is over, so it is good that Supporter has made resources and references available for them and that SMEs are aware of the regional ecosystem level Funding activities.
- For the Access to Markets, Solvers appreciate the Go-to-market plan, as it helps them to keep the focus also on commercialization aspect and not only on the pilot testing. However, Supporter must make sure that the Go-to-market Strategy Plan is started early enough because SMEs are heavily involved in the co-creation process with the hospital. Another reason is that SMEs need to involve different internal departments inside their companies, so they must be aware that the activity may require further efforts than expected. Finally, it seems valuable to introduce SMEs upcoming relevant industry related events (exhibitions, seminars, pitching events, etc organised at the local, national, and international level.)

3.3 Co-creation & Business Support Implementation in Paris

3.3.1 Paris Region – Introduction

The regional organisation in the Paris region is slightly different compared to the two other regions. Indeed, the "official" Challenger for Paris region is GIP Resah, a public Central Purchasing Body (CPB). As the CPB doesn't have medical team, they are not the real organisation who define the Challenge and conduct the co-creation. In order to do so, they are working with "pilot hospital(s)" from the Paris

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region. For the 1st Iteration of the model, the Hôpital Foch has been contacted to be part of the project with this specific role and they have accepted it.

This regional specificity is interesting in order to test the model with different regional organisation to see if it can be adaptable and remain efficient. So far, we can already say that this regional organisation with a pilot hospital supported in the project management aspect by the CPB can be a real benefit, therefore the hospital teams can be fully focused on the co-creation aspects and not on the project management aspects.

GIP Resah - Challenger Supervisor

Created in 2007, GIP Resah is a public Central Purchasing Body that leverages the purchasing power of hospitals and nursing homes in France.

GIP Resah is the only CPB specializing in both healthcare and medical-social sectors in France. It offers more than 3000 public contracts in almost all the procurement categories: medical (pharmaceuticals, medical devices, biomedical equipment, etc.) and non-medical (ICT solutions, catering, etc.).

Also active at the international level, GIP Resah has coordinated the innovative European project HAPPI (Healthy Ageing solutions) and participates in 6 other European projects: INNOCAT (Eco-innovative solutions), INSPIRE (Support Procurement of Innovation), PROEIPAHA (Healthy Ageing), inDemand (Co-Creation) and finally PCP project RELIEF (PCP in eHealth sector) as Lead Procurer of the Buyer Group. Resah is also one of the founding members of the European Health Public Procurement Alliance (EHPPA).

Hôpital Foch - Challenger/Intrapreneur

The FOCH Hospital was inaugurated in 1937. This is a non-profit private hospital, participating in the public hospital service (ESPIC). Multidisciplinary medical, surgical and obstetrical hospital for adults, the Foch Hospital pursues three major missions. The first one is a healthcare mission: Foch is a local hospital with a regional establishment being referral centre with many divisions and activities. Foch hospital has also a recognized teaching activity, particularly with the University hospital agreement with the Versailles Saint-Quentin-en-Yvelines University (UVSQ). Finally, Foch Hospital is the first private establishment in the French national ranking of clinical research activity.

Foch nephrology and kidney transplantation department are a multidisciplinary department, linked to the Versailles St Quentin-en-Yvelines University. The medical team consists of 8 nephrologists, under the supervision of Dr Michel Delahousse. There is a 20-bed hospitalization unit, a haemodialysis centre with 12 beds to treat 48 patients per week, and a daily hospitalisation unit of 6 beds. All renal pathologies are treated but the department is specialized in the management of renal transplant patients, from the surgical procedure and during the whole follow-up, in coordination with the department of urology. About 80 kidney transplants are performed each year, and 850 kidney transplant recipients are followed up in an outpatient care. All kidney transplant recipients are proposed a program of therapeutic education by a multidisciplinary team consisting of nephrologists, nurse, dietician, and psychologist. The department of kidney transplantation is also involved in programs of clinical research and education of medical students.

MEDICEN - Supporter

Medicen Paris Region is a leading European life sciences' cluster. With more than 400 members, Medicen is a unique forum connecting all of the stakeholders that innovate in Healthcare: research institutes, start-ups and SMEs, incubators, large companies and physicians.

The role of Medicen is to foster healthcare innovation and the economic development of Paris Region, strengthening the international competitiveness of the French "health and leading-edge health technology" sector. Its activities are structured around 5 strategic areas: In vitro diagnostics, Diagnostic and Interventional Imaging, ICT for Health, Translational medicine and Regenerative Medicine and Biomaterials (including cell, therapy, gene therapy, biomaterials and tissue engineering).

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Paris Region Entreprises (PRE) - Funder

Paris Region Entreprises is a catalyst for business and innovation that supports international companies in their development in the Paris Region.

The agency combines its market expertise with its large local network to help international companies build technological partnerships, formulate their development plans in the Paris Region and then establish a local presence.

Paris Region Entreprises is the international agency for the attractiveness and promotion of the Paris Region. It works in partnership with all the players in the Paris Region to offer international companies a tailor-made support service.

With its team of 80 employees in Europe, the United States and China, each year the agency accompanies a thousand international companies seeking to accelerate their development in the leading region of Europe and thus contributes to making the Paris Region one of the largest regions in the world in terms of economic activity and innovation.

Paris Region Entreprises is also an active member of the Enterprise Europe Network.

It is important to notice that, compared to the other regions, Paris is slightly behind schedule. The Iteration 1 will be completed at the end of March 2019. Therefore, all the planned co-creation interactions and activities are not finished yet. This report presents the interactions and activities performed so far and the plans until the end of the 1st Iteration.

3.3.2 Calendar and Implementation of the activities

Preparation in Paris

RELATED ACTIVITY	DATE	DESCRIPTION
Planning Ethical Issues	July 2018	Regarding the submission of Challenges to the Hospital Ethical Committee, in France there are national Ethical Committees. Inside the hospital, there is a Scientific Committee and after it the challenge needs to be submitted to a national Ethical Committee (depending of the subject). As for the Code of Conduct and Data Protection, all stakeholders of this first iteration of the inDemand project agreed to follow the regular process established by the Foch Hospital. Solvers were informed of these specifications by the Challenger coordinator and agreed to the applicable regulations by signing the Sub-agreement. For this 1st Iteration, neither of the 2 co-creation solutions had to apply to Ethical Committee as no test with real patients were planned during the co-creation phase in the framework of the inDemand project.
Planning with intrapreneurs	Mar 2018	GIP RESAH and Management team of Foch Hospital worked together to prepare Intrapreneurs for the co-creation work as soon as the Challenges were selected after the Call for Challenges, in March 2018. The two Medical teams (Intrapreneurs) were informed regarding the selection of their Challenge, the coming Call for Solvers and the following step of the process, more especially the co-creation phase. Process and partners of the inDemand project were presented to the Hospital participants (physicians, management, nurses, IT department) via email, online and physical meeting.
General Kick-Off Meeting	Jul 10th 2018	The purpose of the General Kick-off meeting is to present, during a physical meeting, the whole inDemand project and inDemand model to the representatives of the 2 suppliers selected. Indeed, at this stage (just after the selection process of the Call for Solver) the companies selected don't have much information on the project, the

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		partners, the general objective, the legal framework, etc. They only have to submit an offer to a Call for Solvers / proposal. The objective was to present them the whole project which include: the European framework (under H2020 project), all partners of the project, the inDemand model in detail and its specificities, the regional partners, their role etc. But specially to answer all their questions to be sure that at the end of the meeting, they fully understand the project and their future role in it. Supporter, Funder, Challenger/Supervisor and Challenger/Intrapreneurs attended the meeting.
Individual Kick-Off meeting	Aug 22nd and 30th 2018	A second Kick-Off meeting is then organised for each challenge. This meeting is dedicated to the planning of the upcoming co-creation phase. In this meeting, the Medical Team/Intrapreneurs and the technical team of the Solver objective was to define together the work plan to ensure a good co-creation phase. The idea is that nothing is mandatory from one part to the other one, but everything is defined conjointly so it limits future risks and unexpected problems. During this meeting the following aspects were defined and written in a document called the Work Plan and signed by all parties: Role of each organisation, Key people involved in the co-creation, Deliverables, Milestones, type of interactions, number of interactions, objectives of each interactions, people involved in each interaction, calendar, etc. This supporting document is regularly used by the stakeholder during the co-creation phase.
Inviting solvers to co-creation	4th July 2018	The Invitation Letters were sent of July 4th via email. The Invitation letters were personalized per company.

Table 28 Challenge 4 Co-creation Interactions

Co-creation Management in Paris

The general kick-off on July 10th, 2018 was the first meeting between Solvers and intrapreneurs to introduce inDemand methodology for co-creation and business support. The General Kick-off meeting was the occasion to present to the selected companies (2) the inDemand project in detail, the inDemand co-creation model, the different partners involved in the project in the Paris region and in Europe.

In addition, the expectations of the Foch hospital for the co-creation phase were presented. All Paris region Partners - Supporter, Funder, Challenger/Supervisor and Challenger/Intrapreneurs - attended to this general kick-off meeting.

The following meetings were the individual kick-off meetings organised on the 22th August for the Challenge 2 - ePrevent and on the 30th August for the Challenge 1 - Astre (before SafeFoch).

Each individual Kick-off meeting gathered the Medical team/Intrapreneurs and technical team from the Solver where the co-creation plan was defined and agreed jointly (see more explanation in the table “Challenge co-creation interactions” above). In this meeting, the Medical Team/Intrapreneurs and the technical team of the Solver had for objective to define together the work plan to ensure a good co-creation phase. The idea is that nothing is mandatory from one part to the other one, but everything is defined jointly in order to limit potential future risks and unexpected problems.

During this meeting the following aspects have been defined and written in a document called the Work Plan and signed by all parties: role of each organisation, key people involved in the co-creation, deliverables, milestones, type of interactions, number of interactions, objectives of each

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interactions, people involved in each interactions and calendar. This supporting document is regularly used by the stakeholder during the co-creation phase.

Figure 30 inDemand kick-off meeting with Solvers in Paris

Once the Work Plan was defined, an "**initial co-creation meeting**" was organised for each challenge. The objective of this meeting was to support the Medical team/Intrapreneur and the Technical team/Solver in the first step of the co-creation process by ensuring a deeper definition of the Challenge (more detailed than in the Challenge description).

To do this, responsible of the Innovation Department of the FHF (French Hospital Federation), Paris region partners (Medicen, PRE and GIP Resah), were invited to animate this co-creation meeting, using their own "ideation methodology". This was needed in helping the Intrapreneurs to define their Challenge in a more concrete way and would help the companies to better address the need. For example, here are the aspects which have been defined in collaboration during this meeting:

- Typical person profiles linked to the actual need/Challenge and who might be users of the co-developed solution in the future.
- Use cases of the actual situation and highlight of the actual problematics.
- General brainstorming to find potential solution to the problematics highlighted.
- Definition of Use Cases of the expected situation, taking in consideration the brainstorming.

At the end of the meeting, the companies informed the project partners that such useful information would have been interesting to have in the initial Challenge during the Call for Solvers. For this reason, the Call for Challenges questionnaire has been updated and 3 sections added: Use Cases definition, Typical profiles and Financial aspects. Besides, the Challenges of the second iteration are more complete than for the 1st one. The Technical team/Solver, Medical team/Intrapreneurs, Challenger/Supervisor, Suporter, Funder and the FHF attended these meetings.

After this deeper definition of the Challenges, the technical development of the solutions started. As mentioned before, the Work Plan of each challenge has been defined jointly by the Medical team/Intrapreneurs and Technical team/Solver. There are common aspects between the two challenges like similar type of meeting, similar Milestones or Deliverables, but also different approaches (e.g. testing phase). You can find the different meetings in the tables below:

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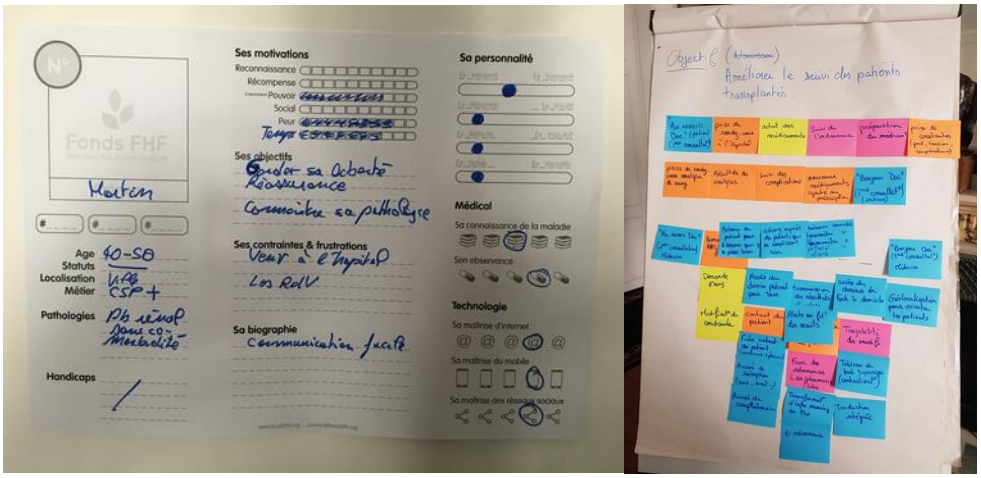

Figure 21 inDemand 1st co-creation meeting in Paris - Outcomes of the meeting.

e-Prevent Solver: Pulsio Santé Description: e-consultations in the management of alcohol dependency)		
NAME / PARTICIPANTS	**DATE**	**DESCRIPTION**
Individual Kick-off meeting (Solvers, Intrapreneurs and Challenger)	27th August 2018	An individual Kick-off meeting was organized with the Solver. Intrapreneurs presented the Challenge and their key problems whereas Solver introduced the proposed solutions. Besides, both parties worked on the Co-creation Work Plan, setting the planned interactions and form of communication.
Intermediate Steering Committee - Physical meeting (Solvers, Intrapreneurs and Challenger top management)	Once per month	Updated presentation of the solution and its abilities, clear and deep definition of the actual need via persona and use-cases. Definition of the technical development to be carried out during the co-creation process.
Phone call meetings (Solvers, Intrapreneurs and Challenger)	Once per week planned, can be cancelled if not relevant.	Weekly phone call to summarize and evaluate the solution. This meeting will allow Q&A sessions and operating discussions between the Solver and his Challenger.
Functional testing of the prototype (Solvers, Intrapreneurs and Challenger)	Feb - Mar 2019	Typical user cases have been defined by the Medical Team/Intrapreneurs. Several collaborators from the hospital (not patient) will test the solution between February and March during dedicated period in order to test the functionalities of the developed solution and to provide feedback to the Solver to improve it.
Users Training & Pilot (Solver, Intrapreneurs and Challenger)	Apr 2019 - At the end of the co-creation phase	Solver introduced the developed functionalities. User training and gathering feedback for further development.
Other discussions (Solver and Intrapreneurs)	Constant	Between these planned activities, the Solver has the right to contact the Challenger team in case of emergency or to request an urgent information. To do so, the Solver can write an email to the following email address: alcoologie@hopital-foch.org

Table 29 ePrevent Co-creation Interactions

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SafeFoch Solver: Sêmeia Description: Remote monitoring of real-life patient data to anticipate the occurrence of complications/degradations in health status		
NAME / PARTICIPANTS	**DATE**	**DESCRIPTION**
Kick-off Individual meeting (Solvers, Intrapreneurs and Challenger)	30st August 2018	An individual Kick-off meeting was organized with the Solver. Intrapreneurs presented the Challenge and their key problems whereas Solver introduced the proposed solutions. Besides, both parties worked on the Co-creation Work Plan, setting the planned interactions and form of communication.
Intermediate Steering Committee - Physical Meeting (Solvers, Intrapreneurs and Challenger top management	Once per month	Updated presentation of the solution and its abilities, clear and deep definition of the actual need via persona, use-cases. Definition of the technical development to be carried out during the co-creation process.
Co-creation "Physicians" Workshops (Solvers and Medical team/Intrapreneurs)	2 Workshops organised during Sept - Oct 2018	Implementation of the co-creation process by the Solver and deeper definition of needs and challenges to be taken up, from the physicians' point of view.
Co-creation "Patients" Workshop (Solvers and "Expert patients")	2 Workshops organised during Sept - Oct 2018	Recruitment of "experts" patients, presentation of the solution to these patients, implementation of the co-creation process by the Solver and definition of needs and challenges to be taken up, from the patient's point of view.
Prototype Development Workshops (Solvers and Medical team/Intrapreneurs)	Every 15 days between Nov 2018 - Mar 2019	Development of the prototype of the solution based on the previous work done between the Solver, the Medical team and Expert patients.
Users Training & Pilot (Solvers, Intrapreneurs and Challenger)	Apr 2019 - At the end of the co-creation phase	Solver introduced the developed functionalities. User training and gathering feedback for further development.
Other discussions (Solver and Intrapreneurs)	Constant	Between these planned activities, the Solver has the right to contact the Challenger team in case of emergency or to request an urgent information. To do so, the Solver can write an email to the following email address: r.snanoudj@hopital-foch.com

Table 30 SafeFoch Co-creation Interactions

Figure 31 Co-creation at Foch Hospital with Solvers and hospital clinicians

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Business Support Management in Paris

Business Support in Paris started, together with co-creation, with the general meeting, July the 10th, 2018. This session was a good occasion to introduce PRE & Medicen Paris Region to all stakeholders. A presentation of the different business support actions proposed for the two selected companies were delivered (e.g. Business Canvas, Lean Canvas, opportunity to meet investors or other actors to facilitate the market access).

Following this first presentation, the two CEOs were invited to think about their priority needs during the summer holiday.

As there were only two companies in Paris Region, it was decided to prepare a tailormade program for each, from September 2018 to March 2019. As the needs of these two companies were rather different, the Supporter decided to focus on individual meetings.

Both Solvers already have a great knowledge of the business strategy; companies did not need coaching on sales and had partnership already concluded and one company had ongoing consulting activity in parallel). Therefore, most of the activities were oriented to facilitate networking with future investors, testers or clients.

The one to one meeting was organized in the companies' offices or took place at the expert's office. Solvers also had the opportunity, thanks to the Supporter, to present their activities during specific events or in front of an experts commission organized by Medicen.

The Solvers had regular interaction with Supporters, almost once a month.

Further information is provided below.

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BUSINESS SUPPORT MANAGEMENT IN PARIS				
NAME	DATE	TYPE	DESCRIPTION	OUTCOMES
Kick-off general meeting	10th July	Group	A joint event with co-creation kick-off to present inDemand Business Support, presented by Medicen with the support of PRE. The Kick off meeting was the opportunity to present inDemand Business Support to Solvers, as well as the different tools available from Medicen to support Solvers need. Finally, the first Business Support workshop was organised.	Companies were made aware of the Supporter role in inDemand, Business Support services and materials.
Business Modelling Workshop	10th July	Group	A first workshop was scheduled on the kick-off meeting to present the different documents and possible actions, which may be varied according to the needs of each SME: Medicen "SME actions" and especially the investor committee which allow a company to pitch in front of 10 specialized Business Angels and VCs. Go to market strategy plan Possible meetings with Key Opinion Leaders and need about networking Opportunity to pitch during events with KOLs, e.g. one company was invited to pitch during a Medicen's event with the Rothschild Foundation. For each company, the first action consisted of working on all the interactions with all kind of different ecosystem actors (clients, regulatory authority, public organization, competitors…).	In Paris Region, we can observe that the two selected companies already have a great knowledge of their Business Model as they already have a lot of partnerships or sales. However, the Business Support is really appreciated and allows the companies to take a step back and consider other forms of development or network.
Individual kick-off meeting	19th Sept	Individual (x2)	**Pulsio Santé** (e-Prevent) main concerns are to reduce time for commercialization, being more known and recognized as an expert and be able to industrialize process to cocreate with each client. The company also wants to identify the decision process in hospitals and better know the public programs who can finance the experiments. Medicen & PRE also helped the company to map all the actors around the SME activity. A Swot analysis was also made. **SEMEIA** (Astre) main interests are to have his business model challenged by experts and to get the opportunity to meet investors. Semeia also indicated the will to get help on public funding (SME instrument and national opportunities). PRE & Medicen presented Business Canvas model and the mapping of the actors concerned by the solution were realized. Medicen presented his specific action to meet investors.	Pulsio Santé did not show any concern about funding but show some interest to get contact with experts or Hospitals who could help to define the better strategy to get in touch with future clients Semeia showed a great interest to present in front of investors. Medicen also invited the company to pitch during an event with the Rotschild Hospital

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Access to Funding	SEMEIA 8th Oct SEMEIA 19th Oct	Individual	At the end of December, Semeia sent a new version of his Business Model and Executive summary in order to present in front of Medicen Investor Committee: October the 19th (format: 10 minutes pitch & 20 minutes Q&A). A large discussion began from these documents in order to adapt the speech to investors. A repetition pitch was organized October the 8th with one of the TOP5 fundraiser in Paris. This 2-hour meeting started with a 10 minutes pitch. Then a complete review of the presentation (strategy and form) has been made. After this challenging repetition, Semeia had the opportunity to present October the 19th in front of several investors (BAs, VCs, public fund…)	Semeia revealed that this challenging process was the opportunity to get precious advices from an expert in fundraising. The pitch and access to market strategy were clearly modified and differently organised. Medicen also sent a synthetic review of investors comments. These comments on the project also gave food for thoughts to the company.
Targeted needs and Access to Markets	PULSIO SANTÉ 15TH Oct 9th Nov 28th Nov 22nd Jan 23rd Jan SEMEIA 7TH Dec	Individual	**15/10** Individual meeting with Pulsio Santé to provide a personalised support in the research of partnership and expertise to: better understand decisions process in hospitals, to co-create and get opportunity to present the solution, anticipate the regulatory rules, access key opinion leaders and profiles of potential. **09/11** Meeting with hospital federation (127 establishment). Presentation of activity and link with some of the establishment (discussions in curse now) **28/11** Meeting with an expert in regulatory: CE Market, to anticipate future costs and development **22/01** Meeting with APHP (greatest Hospital in Europe) to know how to get access to KOL and clinicians **23/01** Pulsio Santé made a presentation to the "DigitalHealth Commission of Medicen" with industrials, SMEs and academics, among others. **07/12** Opportunity to pitch the solution during an event. Semeia participated in a round table during "LabSanté" (audience +150 people)	A selection of contacts was made by Medicen, then, different experts were contacted to organise meetings Pulsio Santé got the opportunity to meet influential people who can orient them to improve relationships with potential partners. Companies are pushed by Medicen to present to the ecosystem. Lack of visibility can constitute a barrier and the aim was to break it.
Access to Markets	PULSIO SANTÉ AND SEMEIA February 2019	Individual	Review of Business Plan and complete the Go-to-market strategy Plan	Solvers presented their questions regarding the main commercialization aspects in individual meetings.
Final Event	June 2019 (planned)	Group	The final event is expected to take place in June at Foch Hospital, once co-creation has finished and the results can be presented. The aim is to have first feedback from users after the use of the solutions.	Regional public organisations, physicians/doctors linked to the topics, specialized press and associations will be invited. The event is expected to showcase the inDemand model and generate interest to implement it. At the same time, dissemination of the solutions in order to accelerate their adoptions by other healthcare organisations will be made.

Table 31 Paris Business Support Interactions

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Evaluation and Payment in Paris

The Funder, Paris Region Enterprises had chosen 2 two phase payment method:

- 30% of advance payment
- 70% of final payment

The reason for this was to show commitment and support to the Solvers right from the beginning of the project even though the signatures of subgrant agreements did take more time than was expected.

The advance payment release dates:

- PULSIO SANTÉ: 9000 euros on January 14th, 2019.
- SEMEIA: 9000 euros on December 12nd, 2018.

There was a delay with an advance payment with Pulsio Sante because Pulsio Sante had no direct employees and a work had to be done with the company's lawyer in order to consider the staff of its parent company as « costs of staff seconded by a third party against payment ».

The final payment release dates:

- PULSIO SANTÉ: planned at the end of April 2019.
- SEMEIA: planned at the end of April 2019.

For the second iteration, a two-phase payment method will also be used in Paris region.

Assessment and Contribution to the Knowledge base in Paris

In Paris, the collaboration between WP2 and WP5 has been as follows.

Regarding feedbacks from the intrapreneurs team of the 2 challenges, a continuous process have been implemented from the beginning of the co-creation: at the end of each monthly steering committees (physical meeting) questions related to the use of inDemand process are asked by GIP Resah to the medical teams and they have the opportunity to give feedback, recommendations and good practices. In addition, they are in continuous contact with GIP Resah and have the possibility to report anything at any time regarding the process. Several of these feedbacks have been already used to improve the Call for Challenges process and tools (for example the Call for Challenge questionnaire used for the 1st and 2nd iteration).

Like in the Murcia and Oulu pilot regions, end of Project interviews will take place after the end of the 1st Iteration (31st March 2019). The common questionnaires will be used by GIP Resah to interview the Intrapreneurs team from the 2 challenges in Hôpital Foch. These interviews will be done in the first part of April 2019. The Supporter Medicen will arrange and perform the Solver / Company interviews and interact with the WP2.

Based on the 1st iteration experiences, Paris Regional Partners, and especially the Pilot Hospital (medical teams, top management) and the Solvers, are very satisfied with the inDemand process, methodology, and tools in general. The region is expecting real innovative new solutions to the markets. Indeed, the Hôpital Foch showed their interest in the second iteration of model and the hospital has identified and submitted more Challenges (in WP3) compared to iteration round 1. In addition, it is highly appreciated that the hospital will financially contribute (around €60,000) in the new solution development for the 2nd iteration.

Finally, there are parallel, ongoing projects between the selected companies and the hospital, which will generate new business opportunities for them.

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3.3.3 Results of the co-created solutions

e-Prevent Solver: Pulsio Santé			
Initial organisational challenge	e-consultations in the management of alcohol dependency		
Description of the co-created solution	Teleconsultation solution for dependent people (alcohol, drugs…).		
Co-creation participants	1 nurse manager 3 MD in Nephrology	3 male patients 3 female patients	
Results	**Healthcare**	The solution will collect electronically first information from the patient regarding his dependency situation via an online questionnaire. This will be useful to "attract" and motivate dependent people who arrive by the emergency service.	
	Satisfaction	After the first test of the solution realised in February, the medical team is really satisfied by the solution and are confident that it will help them for the follow-up and treatment of their patients.	
	Efficiency	It cannot be assessed yet	
Potential for scalability	**YES**	The solution addressing the initial need defined will be finalised by the end of the co-creation process (end of March). However, when working on the solution, the healthcare team realised that additional functionalities might be useful. For this reason, the collaboration might continue after the project to improve the solution.	

Table 32 e-Prevent results at the end of the co-creation period

SafeFoch Solver: Sêmeia		
Initial organisational challenge	Remote monitoring of real-life patient data to anticipate the occurrence of complications/degradations in health status	
Description of the co-created solution	Digital solution to monitor kidney transplanted patient.	
Co-creation participants	2 MD in Addictology 1 Nurse	3 male patients 1 female patients

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	1 Secretary	
Results	**Healthcare**	The solution will considerably improve the quality of the monitoring of kidney transplanted patient by providing important information between 2 consultations. The future AI Algorithm should detect complications in advance.
	Satisfaction	For the moment, the healthcare professional is satisfied with the development stage. Once the solution will be operational, they will be able to make real feedback/evaluation
	Efficiency	It cannot be assessed yet.
Potential for scalability	**YES**	The solution will not be fully developed by the end of the co-creation process, but a first version will be used by the hospital. At the same time, they will continue to improve it. Test with first patient planned in April/May

Table 33 SafeFoch results at the end of the co-creation period

3.3.4 Regional lessons learned after first interaction

The key learnings from the first iteration of the model in Paris are presented below:

Co-creation

- Call for Solvers: Difficult to shortlist only 2 companies based on paper applications. The possibility to have more than 2 companies for the "audition" could be better to make the best choice. In addition, TRL 6 solution/prototype should be accepted.
- Call for Solvers: Important to add a criterion "planned price for the solution". Indeed, a solution/prototype could be interesting on paper, but if the forecasted price is really high, no healthcare organization will buy it.
- Call for Solvers/co-creation: Better highlight the "commercial benefit" which should be granted to the pilot hospital during the Call for Challenges. This will avoid any misunderstanding or negotiation before the co-creation process can start.
- A good lesson learnt is the link created by the selected companies and the hospitals. It seems that they might collaborate on additional co-creation project apart from the inDemand process.
- Another good lesson learnt is that these co-creation projects create new links and interactions inside the hospital. People who never had the opportunity to work together now is

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collaborating. For example, a medical team with the IT team of the hospital. This new work relationships offer them the possibility to solve potential other problems in the future.

- The duration of the co-creation period should be defined during the Kick-Off meeting with the selected companies. Having a range of duration (between 5 months and 10 months maybe) and let the medical team and the selected companies estimate the necessary time to develop the solution. It is impossible to define the duration before knowing the development stage of the selected prototype.
- The companies can complain about the large number of Deliverables because of the public funding and process in this project. This could be too much for “small” and “short” projects like this.

Business support

- Two participating companies had already good Knowledge of Lean Startup Approach and Lean Canvas as well as a SWOT analysis had been already made. But it seems still a good idea to send Lean Startup Methodology and Lean Canvas Step-by Step Guide to SMEs before the kick-off day.
- Companies are in different stages in their life-cycle. Therefore, they need tailor-made business support. Group meeting are not really relevant.
- 1 company really interested in Fundraising (meeting investors & coaching) and 1 company more interested in Networking and building relationship with the hospital.
- Companies have good knowledge of public authorities and competitors but still interested in making a full “actors mapping” to understand the relevant Ecosystem for their business case.
- Need a Go to Market Strategy and interested in more tools to have a systematic commercialization approach.
- One-to-one meetings are well appreciated. Agenda must be adapted according to the thematic and the needs of the companies.
- One-to-one meetings can be done on a specific thematic with the help of an expert (examples include coaching pitch investor with a fundraiser, CE Market expert).
- Company Needs: networking, links with hospital, better knowledge of public funds and European funds.

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4 Iteration 1 – Consolidated Recommendations

This Chapter focuses on a common analysis of the Lesson Learnt and Recommendations from all three pilot regions to improve the inDemand model and process.

Preparation Step 0

- In the coupled open innovation context, co-creation planning, and preparation phase takes a lot of time. Special attention must be paid to this phase when replicating the model in other Regions (e.g. inDemand Community.) Co-creation in the context of healthcare requires adequate resources and engagement from all stakeholders involved. Therefore, high-level flexibility and adaptability as well as the ability to work efficiently is needed from the participating stakeholders.
- When adapting Phase 3 for a new region, regional adaptations are allowed but must follow inDemand methodology and minimum requirements. Besides, preparing a Regional Approach for the whole implementation phase
    - allows Challengers - healthcare organisations - to reserve all the required resources for the whole co-creation (e.g. intrapreneur teams' work schedule and resources for test trials).
    - informs Solvers about the overall/major co-creation milestones already when they are preparing Applications for the Call. This will help them to plan their activities inside their company well in advance in case they are selected to the project.
    - Keep all partners updated and get all views exchanged. In this sense, it is useful to have e.g. regular monthly meetings among Regional Partners (Supporter, Challenger, and Funder).
- Challenger organisations need to plan well Ethical Issues and Data protection procedures prior to o-creation kick-off meeting.
- Planning with Intrapreneurs cannot be skipped as healthcare professionals must have clear understanding and defined expectations on co-creation with companies: they must be extensively briefed about the inDemand methodology and internal processes related to hospital innovation management. It is good practise to train Intrapreneur Teams to work with external companies.
- A common digital workspace facilitates communication among Regional Partners and with Solvers.
- The regions must plan resources for promoting the opportunity for external companies as this requires marketing activities and time to reach the most promising Solvers (WP3-WP4-WP5-WP6 collaboration).

Co-creation Management Step 1

- There should be enough time to meet and communicate between the regional Partners when Solvers are selected (in WP4) and before the first official kick off meeting (handover to WP5). Firstly, it must ensure enough time for the Funder and Challenger for the Sub agreement negotiations. This must be considered for the second iteration, when planning the co-creation interactions with Solvers.
- It is important to make the Solver aware of the hospital's possibilities and restrictions and define the rules in advance. A hospital is a specific environment for developing health solutions. Undoubtedly, hospitals offer companies valuable platforms for product development, but they impose certain restrictions on co-operation, such as data protection, safety regulations, economic sustainability, or ethical considerations in clinical practice. Communication between companies and healthcare professionals occurs for the exclusive purpose of the co-creation initiative and is regulated by the previously defined rules. For

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instance, in this interaction we have learned that preparing in advance a data protection package for Solvers by the healthcare organisation is a good practice, especially with the current GDPR legislation. Moreover, companies may not be able to start working until they have an evaluation of risks & contingency plan.

- Preparing a co-creation work plan with each Solver during the first month is a good way to ease the co-creation process. It sets a common understanding of what needs to be done and speeds up the process by indicating which are the next steps to move to, including the number and form of meetings. Co-creation interactions (between Solvers and Challenger organization teams) must be well planned as the healthcare professionals are taken out of their other duties (patient work). Furthermore, Solvers must know well in advance the overall co-creation schedule, as they are typically involved in other projects simultaneously.
- Creating "Challenge Teams" (the SME and healthcare professionals) works well. As doctors perceive the duty and responsibility in the co-creation process, they get really motivated and involved which eases coordination with the Solver. Well-timed communication as well as defined roles and responsibilities are one of the keys to succeed in co-creation.
- Having the IT manager from the healthcare organisation on board is a must in each challenge, as companies need to discuss how to integrate the technology to the organisation systems. However, the involvement of the hospital IT department might be a challenging task. The motivation to participate in the project arises in the intrapreneur team and not necessarily from this staff. The healthcare unit sees the extra value of the co-creation process more easily. Therefore, the Challenger must get the IT department on board well in advance.
- It should be investigated if Challenger organisation i.e. public organization could carry out procurement by utilizing inDemand co-creation model. Could co-creation model be equated to Innovation partnership model? Or could it be introduced in addition to Innovation partnership as an official public procurement procedure (due to co-creation aspect makes it different from innovation partnership). In any case, the co-creation related procurement process should be streamlined. Our goal is to find suitable public procurement method to enable direct purchases after co-creation, if the hospitals are satisfied with the new digital solution.
- Challenger organisations need to pay a special attention when preparing and executing the Test trials / Pilot Phase, with a focus in securing adequate resources for this activity. Even though hospitals are carrying out important innovation activities, health care professionals' primary duty is to take care of patients. Therefore, it is beneficial to book healthcare professionals working time three to six weeks in advance. This way healthcare professionals can complete the work shift planning process accordingly and have time to participate in the very important Testing and Feedback Session with companies during the Pilot Phase. Another thing to consider are the lead times for workstations and other needed technology devices to ensure smooth Testing and Feedback sessions.

Business Support Management Step 2

- When combining business support and co-creation, the former must be kept simple yet add enough value, to leave both companies and healthcare professionals' time to focus on co-creation as time is tight and scope of work is ambitious. Quality before quantity principle regarding business support interactions must be considered.
- The former principle also applies for the replication of the inDemand model in other regions. In order to make the model sustainable, modest but value adding activities must be organised. The model needs to be cost effective so that it is replicable in other regions with Regional Development Funds. On this regard, each region adapting the InDemand model can choose

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tools and methods to deliver content (e.g. business model generation tools, access to funding, and access to markets) to leverage their existing practices and ecosystem.

- Companies might be in the different stages in their life-cycle. This means that they need tailor-made business support. During the first month, Supporter is suggested to gather companies' needs to adapt the business support interactions accordingly. For instance, in this phase, not all of them wanted support in funding. Then, Supporter must agree with each company the business support actions and update the Co-creation and Business Support work plan accordingly. Therefore, Supporters need to have great flexibility for scheduling the meetings with companies and agree the method of communication (e.g. online, face-to-face, phone call).
- Regarding the main topics of interests for Solvers, so far, companies seem mostly interested in business modelling, commercialization, and new networks. Business support mentoring and coaching have included topics like pricing strategy, earning logic, new business development in the healthcare industry, and internationalization opportunities. Especially, new networks are welcomed by companies for new business development.
- As for business modelling, companies do not necessarily know Lean Start-up Approach and Lean Canvas so giving guidance to companies with Lean Canvas Preparation is important. Lean Start-up Methodology and Lean Canvas Step-by Step Guide may be sent to SMEs before the kick-off day, so that they can start drafting initial Lean Canvas. This can help to make the most of the Business Support in the Kick-off and experts can give further feedback rather than explaining the general concepts. Finally, it is important for supporters to highlight to companies they need to validate with other potential customers whether they would be interested in the same problem/solution than the inDemand Challenger organisation.
- Based on the 1st Iteration, access to funding was not a current topic for most of the companies. Therefore, personalized business support is suggested for this action. Funding is a wide area and requires a lot of time from the company management. Co-creation period may not allow time for this topic. However, the need may arise after the co-creation project is over, so it is good that Supporter has information available.
- For the Access to Markets, Solvers appreciate the Go-to-market plan, as it helps them to keep the focus also on commercialization aspect and not only on the pilot testing. However, Supporter must make sure that the Go-to-market Strategy Plan is started early enough because companies are very heavily involved in the co-creation process with the hospital. Another reason is that companies need to involve different internal departments inside their companies, so they must be aware that the activity may require further efforts than expected. Finally, it seems valuable to introduce companies upcoming relevant industry related events (exhibitions, seminars, pitching events, etc organised at the local, national, and international level.)

Evaluation and Payment Step 3

- Advanced payment worked for two regions but not in Murcia as in this region the Solver was required to provide a valid bank guarantee in order to accede to the advanced payment. The difficulty of the procedure must be reduced so that all Solvers can access to the advanced payment which seems to be a good practice that motivates Solvers and shows commitment from the Regions.

Assessment and Contribution to the Knowledge Base Step 4

- At the end of co-creation, Challengers must evaluate the targets against the results of each Challenge. The Challenger organisations will share the information of the successful solutions in different pilot regions as well as the inDemand Community to enhance the potential scalability of the solutions and adoption of use.

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- It was very fruitful to have face-to-face interviews with Solvers at the end of the co-creation. This gave a more in depth understanding of the company perspective and how much they valued working side by side with healthcare organisations. The interviews also helped to start planning for the 2nd iteration, especially the Solvers' need to receive the overall schedule for the whole co-creation process well in advance.
- With regards to WP5 - WP2 collaboration
  - WP2 have gathered data by expectations surveys, co-creations surveys and interviews at the end of the co-creation. From the data, lessons learnt have been extracted.
  - WP2 have had also focus group interviews for the Supporters, Funders and Challenger representatives.
  - WP2 have planned together with other stakeholders 3 scientific publications to present results from the demand driven open innovation process. (More information in D2.2)

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5 Gender Aspects

Current proportion of women in business, as well as in higher level public administration is still quite low. The health sector is a major employer of women and a source of recent employment growth for them. Women have also made advances in their share in higher position and the professionalisation of their traditional functions. In addition, health care is not just performed through paid work. Considering both home-care and the everyday management of medical appointments, hospital stays and the transitions between different forms of care, family carers who are mostly women take over a considerable part of care and especially bridge the gaps between the various institutions and professions.

In this context, it is essential to address gender during the project. inDemand partners have directed actions relating both to the **participation of women in the project** and to the **gender dimension of the co-creation**.

Improving women's participation in research requires including female participants in teams at all levels while offering gender sensitive working conditions and culture. inDemand partners are applying themselves towards the promotion of the potential of women, as entrepreneurs of the private sector, as Intrapreneurs in the healthcare organisations.

- inDemand has encouraged the balanced participation of women within the co-creation teams. In Table 34 'inDemand co-creation teams' composition in the 3 pilot regions' at the end of this section, the names and gender of co-creation team members have been described. Out of these members, 57% are women who also have leading roles such as Product Manager, Innovation & Strategic Business Development, Medical Director, Software Development, among others.
- Gender-balanced end-user groups in the course of the pilot have also been considered to ensure equal gender representation. In table 35 'inDemand total number of stakeholders taking part in co-creation and/or piloting of the solutions' it can be observed that each gender representation is always among **40-60%.**
- Besides, all partners are committed to promote gender equality by paying attention to: a) Favour the hiring workers in the project; b) make an effort to gender mainstreaming in order to give European women an equal chance of shaping, monitoring and evaluating EU supported scientific projects; c) Flexible working-time arrangements will be promoted to reconcile work and private life, not interfering in terms of income and career perspective.

Addressing the gender dimension during co-creation implies that gender is considered as a key analytical and explanatory variable. If relevant gender issues are missed or poorly addressed, results would be partial and potentially biased. To support this process, inDemand has devoted resources to specific gender research.

- During co-creation, data collection tools, such as questionnaires and interviews, (WP2) have been gender-sensitive, used gender-neutral language, to made it possible to detect the different realities of men and women. During the analysis, data have been disaggregated by gender to provide significant and useful insights.
- Solvers have also considered the co-creation of the solution in a gender-aware way, ensuring that all professions in functions involved in or affected by the pilot are addressed, and that both women and men on various skill levels are included. Again, where patients as stakeholders or users have come in, attention has been paid to the gender dimension and the role of unpaid care work in the process (relatives and carers).
- The needs addressed by the healthcare organisations have also considered women realities, and specific challenges targeting women have been including in co-creation such as Oulu Breastfeeding Guidance.
- Collecting and analysing gender-specific data is not enough if they are omitted from the published results. For the dissemination of inDemand results, the scientific papers produced (WP2) have included the gender dimension as it is as much part of daily reality as any other variable studied. Language used has been gender-neutral.

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INDEMAND CO-CREATION TEAMS COMPOSITION				
GENDER	CHALLENGE	NAME	JOB TITLE	PARTICIPANT TYPE
Male	ACRA	Juan Alfonso Soler	Intensive Care	Healthcare Professional
Male	ACRA	Jaime Bosca,	Partner Development Manager	Solver
Male	ACRA	Cándido Zuriaga	Lead Data Wrangle	Solver
Female	MENUDO	Carmen Vicente	Pediatrician	Healthcare Professional
Female	MENUDO	Lara Cabrera	Pediatrician	Healthcare Professional
Female	MENUDO	Mª José Romero	Pediatrician	Healthcare Professional
Female	MENUDO	Beatriz Garnica	Pediatrician	Healthcare Professional
Male	MENUDO	Roberto Cañada	Nutritionist	Healthcare Professional
Female	MENUDO	M.Ángeles Medina	CEO & Software Engineer	Solver
Male	MENUDO	Manuel Escobar Gómez	Cofounder & Medical director	Solver
Female	HEAT	Mª Elena Esteban	Administrative	Healthcare Professional
Male	HEAT	Manuel Sánchez	Family Medicine	Healthcare Professional
Female	HEAT	Carla Royo-Villanova	Internal Medicine	Healthcare Professional
Male	HEAT	Jacinto Fernández	Internal Medicine	Healthcare Professional
Female	HEAT	Ana Teresa Pérez	Central Services	Healthcare Professional
Female	HEAT	María Solé	Training Unit	Healthcare Professional
Female	HEAT	Inma Roig	Product Manager	Solver
Female	HEAT	Ivón Landa Colacios	Innovation & Strategic Business Development	Solver
Male	HEAT	David Ruiz Romo	Product Owner	Solver
Male	HEAT	Sergio Cordovilla	IT Developer	Solver
Male	HEAT	Juanjo Hernández	IT Developer	Solver
Female	HEAT	Silvina Colmann	Junior Innovation Project Manager	Solver

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Male	HEAT	Eduardo Pérez	Senior IT Project Manager	Solver
Female	EPICO	Irene Villegas	Neurologist	Healthcare Professional
Female	EPICO	María López	Neurologist	Healthcare Professional
Female	EPICO	Raquel Yuste	Product Manager	Solver
Male	EPICO	Sergio Castro	Front-end developer	Solver
Male	EPICO	Jesús Martínez	Back-end developer	Solver
Male	EPICO	Juan José Lozano	Back-end developer	Solver
Male	EPICO	Tonny Velin	Director	Solver
Male	ROOM	Vesa Kiljunen	Head nurse	Healthcare Professional
Female	ROOM	Teija Dunder	MD	Healthcare Professional
Female	ROOM	Paula Huhta	Nurse	Healthcare Professional
Female	ROOM	Riitta Kortelainen	Secretary	Healthcare Professional
Female	ROOM	Leena Juntunen	Nurse	Healthcare Professional
Male	ROOM	Kari Kaunisto	MD	Healthcare Professional
Female	ROOM	Päivi Murto	Nurse	Healthcare Professional
Female	ROOM	Susanna Oja	Nurse	Healthcare Professional
Male	ROOM	Mika Pöytäkivi	Quality manager	Healthcare Professional
Female	ROOM	Mari Sipilä	Nurse	Healthcare Professional
Female	ROOM	Saara Saarela	Secretary	Healthcare Professional
Female	ROOM	Mervi Taipaleenmäki	Nurse	Healthcare Professional
Male	ROOM	Tomi Nurmi	Product Manager	Solver
Male	ROOM	Raimo Puro	CEO	Solver
Male	ROOM	Vesa Paju	Vice President, Operations	Solver
Female	BREASTFEEDING	Pirkko Nikula	Head nurse	Healthcare Professional
Female	BREASTFEEDING	Sirkka-Liisa Hannola	Head nurse	Healthcare Professional
Female	BREASTFEEDING	Tiina Kemppainen	Head nurse	Healthcare Professional
Female	BREASTFEEDING	Leena Lang	Quality manager	Healthcare Professional

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Female	BREASTFEEDING	Seija Miettinen	Head nurse	Healthcare Professional
Female	BREASTFEEDING	Anitta Nykyri	Midwife	Healthcare Professional
Female	BREASTFEEDING	Paula Viramo	Nurse	Healthcare Professional
Female	BREASTFEEDING	Tarja Pölkki	Specialist in Clinical Nursing Science	Healthcare Professional
Female	BREASTFEEDING	Jaana Roininen	Head Nurse	Healthcare Professional
Female	BREASTFEEDING	Terhi Tuomaala	Midwife	Healthcare Professional
Male	BREASTFEEDING	Peter Hänninen	COO, Co-founder	Solver
Male	BREASTFEEDING	Jussi Määttä	CEO, Co-founder	Solver
Female	REMOTE CONTROL	Marjo Lepistö	Nurse	Healthcare Professional
Female	REMOTE CONTROL	Teija Dunder	MD	Healthcare Professional
Male	REMOTE CONTROL	Vesa Kiljunen	Head nurse	Healthcare Professional
Female	REMOTE CONTROL	Marja Lipponen	Nurse	Healthcare Professional
Female	REMOTE CONTROL	Marja Suhonen	Nurse	Healthcare Professional
Male	REMOTE CONTROL	Miika Arvonen	CEO, Pediatrician	Solver
Male	REMOTE CONTROL	Jaakko Yliheikkilä	Finance, SW, male	Solver
Male	REMOTE CONTROL	Simo Särkkä	R&D Director, male	Solver
Female	DIAMECHAT	Päivi Tossavainen	MD	Healthcare Professional
Female	DIAMECHAT	Merja Heikkinen	Nurse	Healthcare Professional
Female	DIAMECHAT	Paula Jansson	Nurse	Healthcare Professional
Female	DIAMECHAT	Marita Jokitalo	Nurse	Healthcare Professional
Male	DIAMECHAT	Kari Kaunisto	MD	Healthcare Professional
Female	DIAMECHAT	Susanna Oja	Nurse	Healthcare Professional
Female	DIAMECHAT	Marja Ojaniemi	Nurse	Healthcare Professional
Female	DIAMECHAT	Maarit Suni	Nurse	Healthcare Professional

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Female	DIAMECHAT	Riitta Veijola	MD	Healthcare Professional
Male	DIAMECHAT	Mika Sipilä	CEO	Solver
Female	DIAMECHAT	Katriina Silvola	Product Manager	Solver
Male	SAFEFOCH	Renaud SNANOUDJ	MD in Nephrology	Healthcare Professional
Female	SAFEFOCH	Albane BRODIN-SARTORIUS	MD in Nephrology	Healthcare Professional
Female	SAFEFOCH	Leila TRICOT	MD in Nephrology	Healthcare Professional
Male	SAFEFOCH	Eddy BONZON	Nurse manager	Healthcare Professional
Male	SAFEFOCH	Daniel Szeftel	Chairman	Solver
Male	SAFEFOCH	Pierre Hornus	CEO	Solver
Male	SAFEFOCH	Mathieu Godart	CTO	Solver
Female	SAFEFOCH	Delphine Leseul	Project Director	Solver
Male	SAFEFOCH	Philippe Bernery	Software team lead	Solver
Female	SAFEFOCH	Clémence Bic	Data Scientist	Solver
Male	SAFEFOCH	Paul Jeannot	Developer	Solver
Female	e-PREVENT	Christine FAIVRE	MD in Addictology	Healthcare Professional
Female	e-PREVENT	Marie-Christine FAGNEN-SYLVAIRE	MD in Addictology	Healthcare Professional
Female	e-PREVENT	Christine DUPRE	Nurse	Healthcare Professional
Female	e-PREVENT	Mougnion Alice AKPA	Secretary	Healthcare Professional
Female	e-PREVENT	Sheeza Rehman	Web developer	Solver
Male	e-PREVENT	Mickaël Saidi	Web developer	Solver
Male	e-PREVENT	Paul Cornec	Web developer	Solver
Male	e-PREVENT	Benjamin Goetz	Lead Devloper	Solver
Male	e-PREVENT	Jean-Luc Venisse	Addictologist, Pr	Solver
Male	e-PREVENT	Marc-Antoine Brochard	CEO	Solver
Male	e-PREVENT	Etienne Dormeuil	Co-founder	Solver

Table 34 inDemand co-creation teams composition in the 3 pilot regions

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TOTAL NUMBER OF STAKEHOLDERS TAKING PART IN CO-CREATION AND/OR PILOTING OF THE SOLUTIONS										
CHALLENGE	Healthcare Professionals			Patients			Number of users other than HCPs or patients (e.g. families, carers..)			
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Description
ACRA	1	0	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A
MENUDO	2	5	7	8	19	27	17	23	40	parents and siblings
HEAT	1	1	2	N/A	N/A	0	25	34	59	residents
EPITIC	0	2	2	25	29	54	3	5	8	parents and siblings
ROOM	10	16	26	0	0	0	0	0	0	N/A
BREASTFEEDING	6	15	21	0	13	13	0	0	0	N/A
REMOTE CONTROL	6	10	16	0	1	1	0	2	2	Family members
DIAMECHAT	9	17	26	6	6	12	6	6	12	Family members
SAFEFOCH	2	2	4	3	1	4	3	4	7	Project manager, nurse manager, Directors, IT team
e-PREVENT	0	4	4	3	3	6	3	4	7	Project manager, nurse manager, Directors, IT team
	37	72	**109**	45	72	**117**	57	78	**135**	
	34%	66%	**100%**	38%	62%	**100%**	42%	58%	**100%**	

Table 35 inDemand total number of stakeholders taking part in co-creation and/or piloting of the solutions

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6 Conclusion

As this work package 5 includes the management of co-creation and business support with the healthcare professionals and companies, this WP is the most demanding and time-consuming work package in this 3-year pilot project.

WP5 requires intensive planning and collaboration among WP3-WP4-WP5 Regional Partners from Preparation Phase to the Evaluation and Payment. To be successful, support and collaboration with all other work packages has proved to be very important too; WP1 to ensure the overall project schedule will be managed, and WP6-WP7 to ensure the visibility of the co-creation results.

The following major challenges were identified during the 1st iteration:

- The public healthcare context in the coupled open innovation is a very demanding environment.
- Phase 3 implementation proved to have a very tight schedule for the first “test” iteration.
- Significant changes were needed to this Work Package 5 compared to the original DoA in the Grant Agreement.
- Main regional differences (e.g. Paris having slightly different schedule, 4 languages English, Spanish, Finnish, French needed for the actualization of the project).

Despite these challenges, the implementation of the first inDemand iteration has been very successful. This has encouraged all Consortium Partners for the 2nd iteration to improve and leverage the model. The main reasons for this are:

- The WP5 plans for Phase 3 were developed into concrete and pragmatic processes, templates, tools, and working methods in planning, managing, and leading complex projects in the coupled open innovation context.
- When considering the replicability of the inDemand model, here are highlights of the most rewarding results from the territorial development point of view:
    - Regional variations during the 1st iterations are considered minor indicating positive feedback for the replicability of the innovation model.
    - Hospitals and their Innovation Management Units/Departments have been given a tool - in the form of inDemand model - to provide healthcare professionals a possibility to address their development needs that they have encountered in the day-to-day patient care. To develop solutions together with companies gives them an opportunity to really influence what kind of solutions will be built, and ultimately taken into use.
- Companies appreciate and understand the inDemand model and the roles of each Regional Partner.
- Companies report that developing new solutions side by side with the client help them to keep the focus on the most important aspects when developing new products and services to the complex healthcare market and can ultimately give them unfair advantage compared to competition.
- Companies have received new potential business opportunities.
- There has been good use and usefulness of the materials that have been prepared in this work package.

Finally, from the lessons learned, partners of the three different regions have defined seven recommendations to improve the model before the second inDemand iteration:

- Step 0
    - A slightly more detailed Regional Approach is beneficial to ensure all the required resources are available in Phase 3.

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- In addition to Monthly Consortium online meetings, it is useful to have for example regular meetings among Regional Partners (Challenger, Supporter, Funder) to keep all Partners updated and all views shared.
- Challenger Innovation Management Units will dedicate more time to prepare and guide Intrapreneur Teams so that they understand the inDemand model and give tips how to work with external companies.
- The Co-creation work plan template will be updated to ensure that each section in the work plan is clearer.

- Step 1 – Co-creation Management
  - Challenger organisations will seek opportunities to have adequate resources to carry out the development work between healthcare professionals and companies.
  - In addition to Monthly Consortium online meetings, it is useful to have for example regular meetings/monthly meetings among Regional Partners (Challenger, Supporter, Funder) to keep all Partners updated and all views shared.
- Step 2 – Business support Management
  - Regional Supporter organisations will offer tailor-made services to the companies during the co-creation in addition to the tools and materials provided in this work package.
  - Regional intermediate organisations are encouraged to leverage their health and innovation ecosystems for business support.
- Step 3 – Evaluation and Payment
  - At the end of co-creation, Challengers evaluate the targets against the results of each Challenge. The Challenger organisations will share the information of the successful solutions in different pilot regions as well as the inDemand Community to enhance the potential scalability of the solutions and adoption of use.
- Step 4 – Assessment and Contribution to the Knowledgebase
  - The methodology, processes and tools created in this work package are now included in the Knowledge base.
  - Work package 2 will next gather the regional lessons learnt in the scientific form.

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7 ANNEXES

7.1 ANNEX 1 Startup Guide for Digital Health SMEs

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7.2 ANNEX 2 Co-creation and business support workplan template

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7.3 ANNEX 3 Go-to-market strategy template

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7.4 ANNEX 4 Lean Start-Up Presentation for the Business Modelling Workshop

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7.5 ANNEX 5 Access to funding Presentation

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7.6 ANNEX 6 Work Performed and Costs Incurred during Co-creation

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7.7 ANNEX 7 BIGML (ACRA CHALLENGE, MURCIA) Amendment to the Sub-Grant-Agreement

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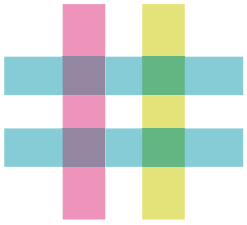

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