# Twinning activity report

## IN-4-AHA Project - *Innovation Networks for Scaling Active and Healthy Ageing*

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More information about the project can be found on the IN-4-AHA webpage and social media pages:
https://innovation4ageing.eu/
https://www.facebook.com/IN4AHA
https://twitter.com/EIP_AHA
https://www.linkedin.com/groups/8912125/

More information about the EIP on AHA community and FUTURIUM platform:
https://Futurium.ec.europa.eu/en/active-and-healthy-living-digital-world
https://digital-strategy.ec.europa.eu/en/policies/eip-aha



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# 1. Executive Summary

The “Twinning Activity Report” showcases the history, development, and implementation of the twinnings program by the IN-4-AHA consortium. It starts by laying a historical framework, describing past twinnings, while also exploring the lived experiences of former participants. Then it presents the planning and methodology behind the program, focusing on the selection criteria, timeline, and management tools. Finally, this report outlines a general overview of the innovations being shared and their respective originators and adopters, followed by a critical discussion of its results and impacts.

This document is aimed at the overall IN-4-AHA and Active and Healthy Ageing community, especially at those more interested in innovation transfer and cross-border knowledge exchange programs.

# 2. Introduction

The Innovation Networks for Scaling Active and Healthy Ageing (IN-4-AHA) is an EU (European Union) project that ran from January 2021 until December 2022 and was funded under Horizon 2020. The project focused on the engagement of existing and needed mechanisms to empower the European Innovation Partnership on Active and Healthy Ageing (EIP on AHA) ecosystem and the cross-border scale-up of tested and ready-to-use applications towards healthcare.

The IN-4-AHA project built upon the legacy of the EIP-AHA ecosystem to advance digital innovation for the benefit of the silver economy. It also aided in coordinating and supporting the further scale-up of the mechanisms developed by EIP on AHA and its stakeholders towards a more efficient uptake of innovation in active and healthy ageing. The project was also tasked with and bringing together new supply and demand actors and provide avenues for stakeholders to test and share their innovations. In this regard, Work Package 4 (WP4) “Service testing ad adoption” has developed various activities such as

the testing of solutions in Living Lab settings[1], Matchmaking events[2], and twinnings. This document represents an activity report for the twinnings program.

## 2.1. Overview of the past twinnings (2016 – 2020)

"Twinnings" are a European instrument to facilitate the cross-border transfer of knowledge and technology. At an EU policy level, they have been used for institutional cooperation between Public Administrations of EU Member States and of beneficiary or partner countries. Quoting "*Twinning(s) aims to provide support for the transposition, implementation, and enforcement of the EU legislation. It builds up capacities of beneficiary countries' public administrations throughout the accession process, resulting in progressive, positive developments in the region. Twinning(s) strives to share good practices developed within the EU with beneficiary public administrations and to foster long-term relationships between administrations of existing and future EU countries.*"[3] They are international cooperation programs, that allow knowledge exchange and technology transfer between different European regions, one being the originator (the developer of the initiative/innovative solution) and the other being the adopter. Participants establish an action plan to learn and/or implement the innovation/good practice, which typically involves in-person meetings between them, among other activities.

Twinnings can be grouped into different subtypes according to the main objective of the exchange, ranging from knowledge transfer to a full acquisition. These categories vary across projects, so for the purpose of keeping a point of comparison with past CSAs (Coordination and Support Action projects) managing the EIP-AHA/IN-4-AHA community, the classification previously described in the Scale AHA (2017) project's study was kept[4] [1]:

1. **Knowledge exchange:** Focus on knowledge (know-how) and training, a central aspect of the innovation are the required staff skills.

[1] LIVING LAB TESTING AND INNOVATION SCALE-UP PLAYBOOK (tehnopol.ee) https://innovation4ageing.tehnopol.ee/wp-content/uploads/2022/08/D4.1-Living-Lab-testing-and-innovation-scale-up-playbook-FINAL.pdf

[2] IN-4-AHA online matchmaking: Successes from the first edition – in4aha (tehnopol.ee) https://innovation4ageing.tehnopol.ee/2022/02/04/in-4-aha-online-matchmaking-successes-from-the-first-edition/

[3] https://ec.europa.eu/neighbourhood-enlargement/funding-and-technical-assistance/twinning_en

[4] Scale AHA, Study on support to scaling up of innovations in active and health ageing, Final report; EMPIRICA, 2017

2. **Adaptation**: A mature innovation is being adopted by adjusting it to local conditions (eg: translation into a local language).

3. **Partial adoption**: Elements or aspects of the innovation (product, service, methodology, and strategy) are being implemented using locally available infrastructure.

4. **Full adoption**: The innovation (product, service, methodology, strategy) is being implemented in its full scope by using local infrastructure i.e., the innovation is transferred and managed fully by the adopter

5. **Acquisition**: The innovation is being implemented in its full scope, using the originator's infrastructure (paid for or free of charge) i.e., the originator still has primary ownership, but a licence for use is granted to and acquired by the adopter

In past iterations of this program, the selected innovations where a part of the EIP-AHA good practices repository or a part of the work being developed by Action Groups (AGs) and organized in good practices compilations. In the beginning of 2021, the EIP-AHA portal was discontinued, and a large portion of this knowledge was made unavailable. The IN-4-AHA consortium has uploaded a pdf file with the repository's database to Futurium, for reference[5]. Furthermore, early in the consortium's mandate (2021) was decided that action groups should continue their work in a more informal manner, not directed by IN-4-AHA. Concurrently, the EC developed Futurium, an online forum-based platform for stakeholders to share their news, events, and best practices. The "Active and healthy living in the digital world" is the specific forum withing Futurium that was created having the EIP-AHA and whole AHA community in mind. In this sense, IN-4-AHA gave participants the freedom to share and adopt practices, with no obligation to have them shared in a nenetwork-affiliated database or work group. Nevertheless, an aspect that was maintained from previous twinnings was the strong focus on regional knowledge and technology exchange between EU regions. The active work relationship between IN-4-AHA and the Reference Sites Collaborative Network (RSCN)[6] was mirrored in this activity, where participants had necessarily to be a part of a Reference site to be considered eligible.

The EIP on AHA was a multidisciplinary community of experts dedicated, among other things, to developing and sharing innovative practices in the field of health and care, digital health, and ageing. The

[5] The EIP-AHA repository of innovative practice is available, in pdf form, here: https://Futurium.ec.europa.eu/en/active-and-healthy-living-digital-world/ecosystems-and-reference-sites/library/eip-aha-repository-innovative-practices-reference-sites

[6] http://rscn.eu/

sharing part in this equation was facilitated by twinnings. They have been deployed in 4 waves: a first one, for the 2016-2017 period, with 20 twinnings; a second in 2019 with 5, then another 5 in 2020, and finally 10 pairs in 2022. The 2022 twinning activities were organized by IN-4-AHA.

*Table 1:* ***Twinnings (2016-2020)***

| Time period | Nr of twinnings | CSA |
|---|---|---|
| **2016-2017** | 20 | Previous EIP-AHA CSAs |
| **2019** | 5 | |
| **2020** | 5 | |
| **2022** | 10 | IN-4-AHA |

## 2.2. Scale AHA study (2017)

The Scale AHA study is a comprehensive document that maps the implementation of the first 20 twinning pairs, while also studying their general activities and achievements. Table 2 showcases an overview of these projects.

*Table 2:* ***Studies in the Scale AHA study (adapted)***

| Reference sites | | Innovative practice |
|---|---|---|
| Originator | Adopter | |
| MACVIA-France Network | Campania, Catalonia, Porto, Olomouc, Lodz 4 Generations, Medical Delta, Northern Ireland, Piemonte, Southern Denmark, GARD Regional Network Turkey | MASK (MACVIA-ARIA Sentinel network) Allergy Diary |
| Northern Ireland | Catalonia | "STEPSelect" system for selection and procurement of medicines for the elderly |
| Campania | Asturias | "ADD protection" home-monitoring system |
| Basque country | Nouvelle-Aquitaine | Predictive modelling system for risk stratification |
| Pays de la Loire | Porto4Ageing | ALOHA system for prevention of infectious diseases for the elderly |
| Andalusia | City of Zagreb | City of Zagreb |
| Northern Ireland | Olomouc | "STEPSelect" system for selection and procurement of medicines for the elderly |
| Republic of Ireland Regional Network COLLAGE | Campania, Catalonia, Porto4Ageing | "screening application (Qmci) within the RAPid Community COGnitive screening Programme – RAPCOG |
| Basque country | Liguria | Predictive modelling system for risk stratification |
| Lazio | Porto4Ageing | Porto4Ageing |
| Northwest Coast of England | Oberbergischer Kreis | "Teleswallowing" service delivery model to improve the assessment of swallowing |

| | | |
|---|---|---|
| Campania | Olomouc | "ADD protection" home-monitoring system for early and protected hospital discharge |
| Twente | Campania | "Telerevalidatie" self-management platform for patients with chronic diseases and older adults |
| Scotland | Andalusia | "Living it Up" online hub for selfmanagement of health and wellbeing and digitally enabled community (LiU) |
| Northern Ireland | Northwest Coast of England | "STEPSelect" system for selection and procurement of medicines for the elderly |
| Andalusia | Kraljevo | Adopting elements of the Andalusian Telecare Service (SAT) |
| Scotland | Basque country | "Living it Up" online hub for selfmanagement of health and wellbeing and digitally enabled community (LiU) |
| Basque country | Scotland | Predictive modelling system for risk stratification |
| Galicia | City of Zagreb | Adopting elements of the " IANUS" regional EHR system and ePrescription solution |
| Medical Delta Rotterdam | Campania | Digital modular gastrological platform to prevent and treat malnutrition |

## 2.3. 2019-2020 twinnings

The information presented in the following tables was collected from the EIP-AHA's archived website, that was salvaged beforehand, but no longer accessible online. A more thorough report with details from these activities hasn't been made available to the public. Nevertheless, tables 3 and 4 present a summary of the 2nd and 3rd wave of the twinnings program.

*Table 3:* ***2019 Twinnings***

| Reference site/Organization | | Innovation | Results |
|---|---|---|---|
| Originator | Adopter | | |
| Oulu (Finland) | Trento (Italy) | Both RS have ecosystems encompassing stakeholders from academia, researchers, and industry partners. The twinning had the objective of adapting innovative solutions from the Oulu ecosystem, adapted for Trento's needs<br>"Originators-adopters mutual exchanges" model instead of a classic twinning scheme | transferring innovation testing environment<br>Establishing a solid relationship that will result in new projects and exchange activities. |

| | | | |
|---|---|---|---|
| Center for Gastrology of Leuven (Belgium) | Federico II University Hospital (Campania ,Italy) | Gastrological Approach to Malnutrition - digital Modular Gastrological Platform (MGP) | Transferring of a good practice<br>Creation of a regional network to exchange knowledge on a Gastrological Approach to Malnutrition and improve the food service for patients and older adults<br>Raising awareness |
| University College Cork (Ireland) | Italian Alzheimer's Disease Association, Naples (Italy)<br>Diataraxwn Nomou Hraklei (Greece)<br>Agaplesion Bethanien Hospital in Heidelberg (Germany) | Quick Mild Cognitive Impairment Screening Tool - screening instrument for mild cognitive impairment (digital software) | Technology transfer (ongoing at the time of the report)<br>Testing the good practice in different cultural contexts |
| Hospital Clinic de Barcelona (Spain) | Olomouc (Czech Republic) | ICT-supported integrated care services as a set of interrelated practices that implemented patient and citizen centered care based on a population-health approach | Technology and knowledge exchange<br>Potential technology transfer |
| Andalusia | Basque country | Common language between the health and social fields, and the possibility to develop a shared evaluation of these needs has resulted in the creation of InterRAI-CA tool, which is the acronym for Resident Assessment Instrument (in its Inter version); Electronic Health Record from Nursing Homes. | Transferring solutions to foster coordination between health and social care system |

*Table 4:* ***2020 Twinnings***

| Reference site | | Innovation | Results |
|---|---|---|---|
| Originator | Adopter | | |
| Galicia - A. Falkiewicz Specialist Hospital (Spain) | Lower Silesia region (Poland) | Telemedicine and telemonitoring (TELEA telemonitoring system) | Technology exchange<br>Identification of possible barriers to the regional implementation of the technology |
| Utrecht (Netherlands) | Cantabria (Spain) | Self-management platform to support people with COPD (EmmaCOPD) | Technology exchange<br>Starting point for a possible implementation of the innovation (pilot) |
| Scotland | Oulu (Finland) | Model of digital care, ARMED (Advanced Risk Modelling for early Detection), in relation to EU frailty | knowledge exchange<br>Publishing of an handboook with key findings |

| | | | |
|---|---|---|---|
| Andalusia (Spain) | Heraklion/Crete (Greece) | Digital solutions supporting Palliative Care based on the Andalusian eHealth Strategy – AeHS/Diraya- includes a single shared eHealth Record, ePrescription, centralised appointment, online patients' access, e-lab and the x-ray modules | Knowledge exchange: Translation and dissemination of documents, such as the Andalusian Comprehensive Plan and Integrated Care process on Palliative Care, guidance to digital solutions needed to provide better palliative care for patients in need of these services. Further assessment of the relevance, feasibility and acceptance of these approaches, methodologies, and solutions in the Crete setting |
| Scotland | Basque Country (Spain) | Video consultation services (Near Me platform), with a primary focus on the Scottish business model and service redesign | Adaptation of the NearMe to fit the Basque's country "Expert patient" iniciative (patient empowerment) but – elements the program will be considered for adaptation / implementation in the Basque Country's video consultation service. |

Some trends cand be observed in tables 3 and 4, that showcase varying patterns from different stakeholders in the AHA domain:

- The country with most twinnings participations until 2020 was Spain, with 18 participations from its represented regions (Andalusia, Galicia, Catalonia, Asturias, Cantabria, and the Basque Country). They were followed by the UK (Northern Ireland, Scotland, and England) and Italy (Trento, Campania, and Liguria) with 12 and 11 participations, respectively.
    - Southern European countries are well represented in these types of activities. This also includes 4 participations from Portugal, 2 from Croatia and Greece, and 1 from Serbia. On the other hand, northern and European countries have been underrepresented, with 2 participations from Finish regions.
    - France had the innovation with the highest number of adopters - MASK (MACVIA-ARIA Sentinel network) Allergy Diary - 10 in total. This was followed by the Irish innovation "Quick Mild Cognitive Impairment Screening Tool/ RAPCOG", with 6 adopters across two different twinning calls – 2017 and 2019.
- Out of the 30 twinnings, 9 were knowledge transfer based, 7 were based on technology adaptation, 13 were partial or full adoptions, and 1 ended up in an acquisition.
- These twinnings were strongly focused on digital innovations, such as:
    - 5 Telemonitoring and telecare services (TELEA, Teleswallowing, the Andalusian telecare service, ADD protection platform, and the Near Me platform)

- 4 Health apps/platforms (MASK: MACVIA-ARIA, Telerevalidatie, Living it up platform, Emma COPD)
- 2 e-prescription and health record (IANUS and Diraya)

## 2.4. The Twinnings Experience – accounts from past participants

The IN-4-AHA has held 2 public events focusing on the topic of twinnings, mainly highlighting the experiences from participants. The first one was held in November of 2021, named “IN-4-AHA: "Cross-border cooperation: Lessons from twinning and matchmaking events" and had the purpose of serving as an introduction to the consortium’s twinning call that was opened in the following month. It also coincided with IN-4-AHA's 2021 matchmaking event. The objective was to present the perspective from a participant, showcasing the benefits and challenges of participating in this type of program. The specific innovation that was the target of the presented twinning case is the Rapid Cognitive Assessment Tool, or RAPCOG, developed in the University of Cork, Ireland. Its main function is the ability to screen mild cognitive impairment before more serious dementia symptoms can set in, allowing for early detection, treatment, and hence, better outcomes for the patient. Since it can be employed at the community level it multiplies this benefit to a wider population. The twinning allowed RAPCOG’s validity and sensitivity to be tested, cut-of scores to be set, IT solution to be developed to upscale it, as well as translate it to other languages and cultures. The action plan for the twinning included: a timeline to scale up the intervention, to translate it, and culturally adapt it into the languages of the adopting countries, which included a stage of feedback incorporation from an initial trial, validation of the tool, and evaluation of its transformation into an app for smartphones and tablets. The meetings scheduled were used to plan the intervention, and then to assess its implementation protocols – validation workshops, for example. The 6 months of the initiative weren’t enough to fully validate the tool, but they provided a good start for the process. Another barrier was the costs since the twinnings can only cover travel and accommodation expenses. For an IT solution to be fully materialized, significant funding is needed. Also, clinicians aren’t often interested in IT innovations regarding their work, and in that sense, other events such as matchmakings, where they can be paired up with solution providers can be an asset in this matter. Differences among the participating members’ health care systems also posed an added difficulty. So, the RAPCOG was partially adopted. Larger studies are still needed to confirm RAPCOG’s accuracy.

The importance of knowledge exchange can’t be understated in twinning programs. Not only for the development of the innovative solutions but also on a personal, career-development level, for the

participants. Cultural and academic ties were strengthened which led to multiple collaborations spanning across many years.

During the Q&A it was shared that since the twinning in 2017, RAPCOG has been translated into many other languages including Korean, Japanese, and Turkish, and was the basis of numerous scientific publications. These efforts have added up to the task of fully validating the instrument for usage at the community level. The main challenge for the IT application has been the need to secure funding, to properly work in the functionality of the app. The app is not freely available, which causes constraints to its usage. Getting sponsorships to fund that would be important. There are hopes that this project can be revisited in a more meaningful way, after the pandemic. The twinning had a long-term effect on the development of RAPCOG in the form of cultural exchange, which helped undercut language and distance barriers, understand different ways to apply these models, and the contrasts between health care systems across Europe. Having an informed idea of the challenges associated with implementing innovation in multiple EU countries is another benefit. As for the patients and the community, improvements in RAPCOG allowed the diagnosis of a larger number of patients, in a standardized fashion, and in an earlier stage, implemented in primary care.

The recording of the event is available on youtube[7] and in the project's page[8].

[7]https://www.youtube.com/watch?v=u8UisHhMUKs&list=PLqkgmmqacH0NRkDAEOUoWUniYocufmaoU&index=15
[8] https://innovation4ageing.tehnopol.ee/tools-and-outputs/project-outputs/

*Figure 1:* ***slide from RAPCOG's presentation from IN-4-AHA's webinar***


A second event, a workshop to present and discuss the value of twinning programs, was developed with two new objectives: a) present the experience from both the perspectives of "originator" and the "adopter" participants, and b) advertise the second call for the IN-4-AHA twinnings.

The first presentation focused on the experience of the Adopter (Region of Crete Reference site). The adopted innovation was developed by partners from Andalusia (Regional Ministry of Health and Families of Andalusia (RMHFA)) and regarded innovative digital solutions to support palliative care. This exchange happened during 2020, meaning it was highly impacted by the COVID-19 pandemic. Twinnings were described as not only as an exercise, but also as experience, as in a transfer of experience between regions. The objective of this twinning was transferring know-how in palliative care, emphasizing communication skills/ compassionate communication. This was achieved by training undergraduate students, medical practitioners, and general citizens via educational materials and courses. This was a current practice in Andalusia, and was adapted for Crete's background, with specializing in palliative care.

The plan was to 1) translate the material, 2) assess the relevancy of the materials to the needs of the target groups (students, doctors, citizens) and adapt/synthesize the information, 3) adopt and assess the feasibility of the innovation, 4) strengthen the relationship between originator and adopter. The methodology on how to do this was qualitative (focus groups) and qualitative, despite the covid-19 pandemic difficulties. The main achievements from this twinning were practicality guidelines for the implementation of the innovation (from focus groups), and the knowledge that these types of activities

(one-day course on palliative care added to the curriculum) were highly accepted by students. The impact on citizens is still untested. Also, motivating relevant stakeholders to discuss the issue of palliative care was another key benefit. The twinning also laid the foundations for future collaborations, such as joint education activities for students of both RS, developing E-training activities and motivational training, and preparing a proposal for a pilot implementation study of this practice in Heraklion primary health care units.

This presentation was followed by the experience of an Originator, in this case, of the Andalusian Telecare Services (SAT). This innovation was adopted by the Reference Site Kraljevo, Serbia. SAT is a part of the regional ministry for social policies in Andalusia for more than 20 years, with 235.000 users in the region. It provides a service for vulnerable populations, with low social interactions, but also provides emergency care, based on local call centers – users can call or press a button in case of emergency. They also provide follow up calls, services for gender violence, loneliness for the elderly, among many others. Kraljevo wanted to learn more about how the system worked, to assess how it could be implemented. The Andalusian system is proactive, by calling users at least once a month, to assess their needs: conversation/social interaction (32%), technical assistance (25%), health emergencies (24%), and information (19%). When it comes to outgoing calls, the vast majority regards follow ups (89%) to users. The SAT provides a personalized service – based on details on how patients feel, GP appointments, medication, how much they want to be reached – this allows users to stay at home longer, and in a safe manner. They have an annual satisfaction service that proves that users are very happy with the services, and a good percentage of them even want to be called more often!

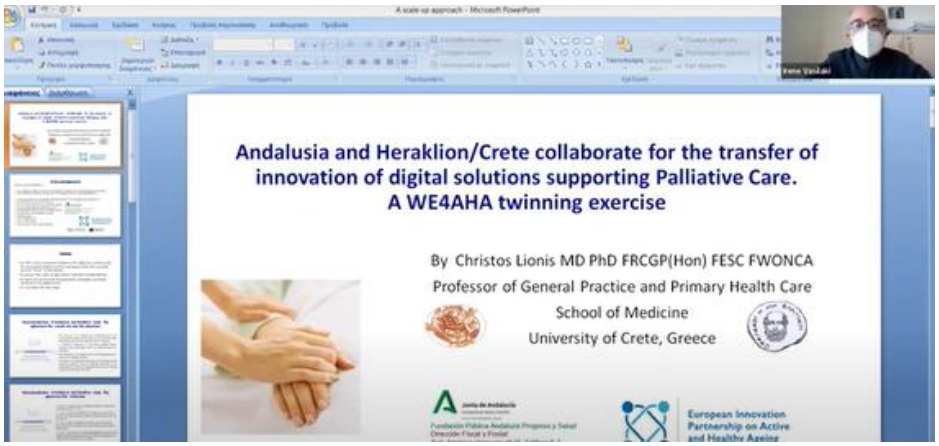
As originators, the Andalusian partners benefited from of feedback on their service, especially when it came to their large scope and proactive approach. They saw another perspective on how the service could be provided on a different country, where these programs are often more local and privately funded. They also got new improvement ideas from adopters regarding data processing, adaptation to new devices, mobile telecare, making different platforms interoperable, training, and how to integrate programs such as SAT with other health services. The Andalusian and Serbian partners are currently working on a joint proposal for a Horizon Europe call.

This presentation sparked a debate within workshop attendees, where an important comment was posed – Around 32% of incoming calls had the objective of “just talk”, and during the satisfaction survey it was found out that a significant proportion of users wanted to be called (follow up outgoing calls)

to be more frequent. This pointed to the prevalence of loneliness in the target population, meaning that a wider governmental/health care strategy should be developed to target the issue. Loneliness and isolation were worsened by the pandemic, due to restriction on social interaction, so Andalusia was trying new things, such as apps and healthy lifestyle programs to help this problem, with some success. But what most people look for is "someone at the other end of the line" – another human to listen, and to talk to. The "chance to press a button, and someone will be there". Managing the time that workers can expend in these services is also another added challenge, that impacts the reach of these initiatives. Also from the audience, came some practical questions on how to develop and implement an action plan to transfer knowledge about SAT to the adopters – being on site (adopters) allowed them to see the software used and how the calls were handled, so they were able learn from this example.

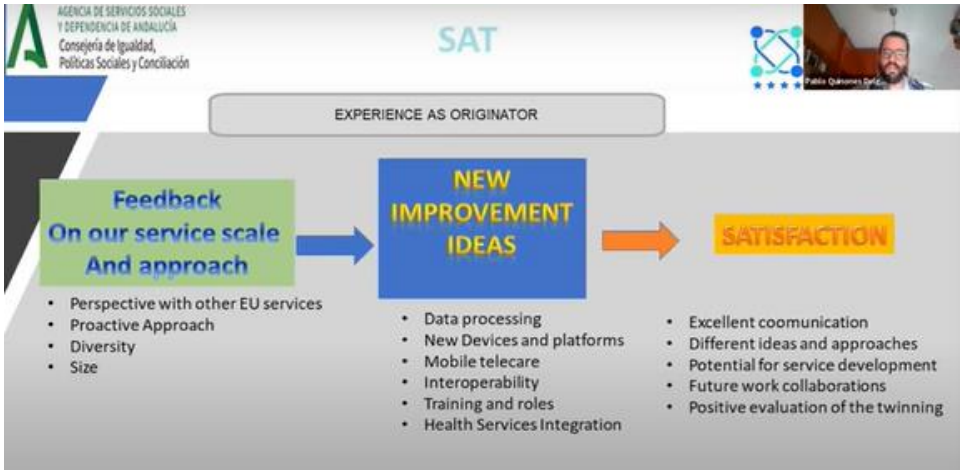
The recording of this event is available on youtube[9] and on the project's page[10].

*Figure 2:* ***slide from the Adopters' presentation from IN-4-AHA's webinar***




[9] https://www.youtube.com/watch?v=4oiKKZZyH6U&list=PLqkgmmqacH0NRkDAEOUoWUniYocufmaoU&index=19
[10] https://innovation4ageing.tehnopol.ee/tools-and-outputs/project-outputs/

*Figure 3:* ***slide from the Originators' presentation from IN-4-AHA's webinar***




## 3. The IN-4-AHA twinnings

As per the IN-4-AHA proposal and mandate, the deployment of innovative solutions for person-centered care was supported, among other mechanisms, through matchmaking and twinning support schemes. These schemes, targeting organizations who held Reference Sites status (2019 call), promoted the uptake of new solutions from an originator into an adopter. The twinning schemes officially started in January 2022 as soon as the applicant pairs were selected, and funding was attributed. The process was finalized in October of the same year.

There were 10 twinning schemes approved and that focused in one of 5 typologies: a) knowledge exchange and training, b) adaptation, c) partial adoption, d) full adoption and e) acquisition. The IN-4-AHA twinning schemes were specifically designed, in criteria, classification, and but also in their process, to provide solutions aligned with key priorities for Horizon Europe. This is achieved by planning to assist the transfer of mature solutions, with scientifically proven significance, but also to do so with the support of value-driven ecosystems (Reference Sites). This was the only criteria for their admissibility in the call - that the organizations applying had to be connected to an EIP on AHA Reference Site. This requirement was justified due to the project's focus on enhancing the uptake of innovation and cross-border cooperation. Additional preference criteria were set to prioritize the submitted innovations that were most aligned with the consortium's goals and key actions, and to ensure the success of the twinning scheme. Ideally, solutions should be technically good, user-friendly, digital in nature (if possible), and meeting a need to boost the actual adoption and scaling of an already existing innovative practice. The

development of innovations in cooperation with end users (co-design of innovations) was expected and recommended. Also, solutions that tackled key societal problems and could have measurable socioeconomic impact were preferred, and the benefits of integrating said technological innovation within existing care systems should be made clear.

Then, on a conceptual level, the preferred solutions should also comply with goals aligned with the next European partnership's ambitions to transform health and care systems[11]:

1. **improved monitoring of health and care systems performance**.
2. **increased availability of practical solutions co-created with end-users** and stakeholders as well as ecosystem wide business models.
3. **improved capacity to plan and carry out efficient investments** in health and care systems at national/regional level.
4. **evidence-based strategies and policies** on transforming health and care systems.
5. **increased leadership of European researchers** in the relevant field by **increasing digital and health literacy** among citizens and health and care practitioners.
6. **increased capacity-building efforts to facilitate the use of a common language** among relevant stakeholders.
7. **faster and wider dissemination of research results** to society and relevant stakeholders based on an **Open science policy**, and **established value-driven ecosystems at different levels** and multi-actor value chains based on triple aim principles.

The selection of twinning projects was made in two different calls. A first one in December, that yielded 7 admissible applications, and a second one in January, for the final 3 slots. From the valid (non-excluded) applications, the 10 were awarded entrance into the twinning programme. The principles for selection are described in table 18 in the annexes, and all applicant pairings were evaluated based on it.

An evaluation committee/jury was selected by the University of Porto and consisted of at least three additional evaluators from the IN-4-AHA consortium (WP leaders), and one external evaluator (from

[11] European Partnership under Horizon Europe, Transforming health and care systems (2020), available at: https://ec.europa.eu/info/sites/default/files/research_and_innovation/funding/documents/ec_rtd_he-partnerships-health-system-transform.pdf

the RSCN) that have joined the Porto4Ageing Competence Centre in evaluating the results. All decisions were made unanimously.

After the evaluation was completed and the classification was done, submissions were organized into a list, and presented to the rest of the consortium for validation. The winners were then be contacted individually to sign the contract and become twinning contactors. Since 10 valid applications were submitted for the 10 possible twinning slots, this evaluation was performed as a quality control and transparency measure. Whenever needed, participants were asked to reformulate their proposal and then re-submit it.

The total budget for all activities was 50.000 euros, a maximum of 5.000 euros per twinning (10 twinning schemes). The amounts were awarded regardless of twinning type, and it was up to stakeholders to submit activities/expenses up until the set limit. The funds were then allocated at the responsibility of Originator and Adopter that organized among themselves to ascertain the costs associated with each activity. The set of costs covered are presented in the following table:

*Table 5:* ***Costs supported by the IN-4-AHA Twinning schemes***

| Type of costs eligible | Description of costs |
|---|---|
| **Travelling Expenses** | Costs with travel, accommodation, public and private transport in and from the nearest airport and hotel or the Originator/Adopters address. |

As for reporting, it was expected that each twinning pair would submit an application form stating the general outline of their work plan, followed-up by a midterm report on the tasks already executed, and lastly, a final report with the outcomes, benefits, and challenges of the program.

For impact evaluation, the usage of MAFEIP was advised. Resources for MAFEIP's[12] procedures were shared in the application process. Furthermore, on the introductory report, Twinning participants were asked to fill in a self-assessment scale to evaluate their preparedness to participate in the activity. This scale was based on the Scale AHA (2017) study's findings regarding the main difficulties felt in past twinning activities. The objective was to give the applicants the opportunity to course correct, if needed, in an early stage of the project, if any of the stated hindrances was diagnosed. Lastly, a summary of the required reports/deliverables is presented as follows:

[12] MAFEIP Resources: https://www.mafeip.eu/ , https://www.mafeip.eu/supporting-materials, https://www.mafeip.eu/the-mafeip-community; https://digitalhealtheurope.eu/resources/mafeip/; IN-4-AHA's webinar on the subject matter can also be viewed here: https://www.youtube.com/watch?v=yWXaG6yfX68

*Table 6 :* ***Milestones and deliverables***

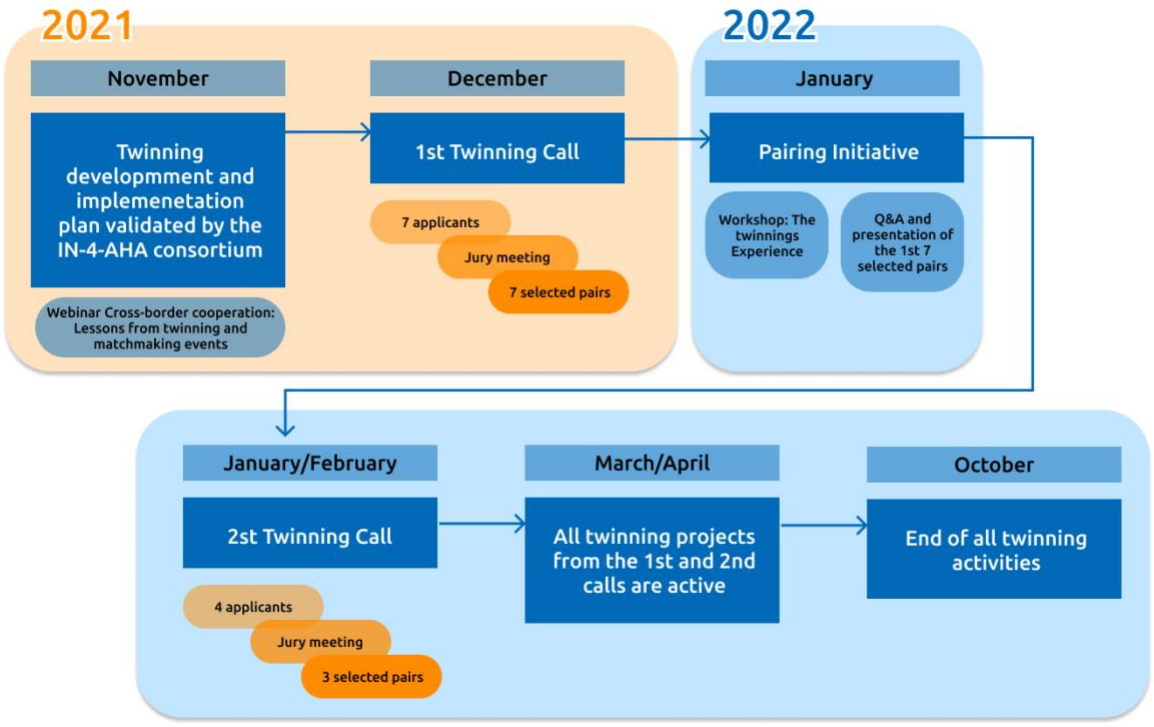
| Number | Deliverable | Submission deadline |
|---|---|---|
| 1 | Twinning **Introductory report/ Application form** from the participants | 10/12/2021 for the 1st call<br>04/02/2022 for the 2nd call |
| 2 | Twinning mid-term | 31/03/2022 for the 1st call<br>31/05/2022 for the 2nd call |
| 3 | Twinning final report | 31/07/2022 for the 1st call<br>30/10/2022 for the 2nd call |

The templates for deliverables 1, 2 and 3 are presented in **the annexes**. These templates feature mostly legacy questions from previous twinnings to ensure some level of comparability with previous years' initiatives

## 3.1. Planning and deployment

The IN-4-AHA twinnings were organized mostly within the actions of WP4, but reaching out to the wider consortium whenever possible, while also considering the legacy of the EIP-AHA and the activities developed by and for the community across the years. The first action in the twinnings' development and implementation plan was to gather information on past calls to develop materials and a language that would be familiar to long term members (of the EIP-AHA and IN-4-AHA), but also understandable to new ones. A general plan containing a) the objectives of the call, b) selection criteria and methodology, c) timeline, and d) reports/deliverables, was presented for consortium validation in late November, and the call for twinning tenders was officially opened in December of 2021.

*Figure 4:* ***Twinning activities deployment***




As seen on the figure above, there were 2 different calls: one in December, and another in February. Both calls were open for around 1 month and were finalized with a twinning jury meeting to discuss and decide on applications, before launching the results. The first call was accompanied by a series of informational documents[13,14,15] and a promotional campaign based on IN-4-AHA's mailing list and social media channels, but also leveraging the matchmaking event. The theme association between matchmaking events and twinnings was due both activities having a strong networking and cross border component. A large percentage of matchmaking events is held in person, but due to COVID-19 restrictions and the fact that IN-4-AHA, as a consortium, had the overall goal of promoting scaling up across different EU regions, its matchmaking event was held exclusively online, in a specialized platform. This had negative and positive repercussions. On one hand, having such a short span of time between matchmaking and twinning events made communication more difficult, and some stakeholders felt trouble in distinguishing between the different timelines and approaches of matchmakings and twinnings. On the other hand, one

[13] List of reference sites, 2019 call, available here: https://Futurium.ec.europa.eu/en/active-and-healthy-living-digital-world/ecosystems-and-reference-sites/library/eip-aha-repository-innovative-practices-reference-sites

[14] Q&A and application materials, available here: https://Futurium.ec.europa.eu/en/active-and-healthy-living-digital-world/forum/4-aha-twinning-call-applications-0

[15] Call opening posts on IN-4-AHA website, for the 1st call: https://innovation4ageing.tehnopol.ee/events/?29461 and for the 2nd call: https://innovation4ageing.tehnopol.ee/events/?31258

pair of twinning applicants had its first interaction in the matching event. One of the underlying objectives of the matchmaking events was to foster relationships that could feed into the twinning activities, which ended up happening in this case. Since only 7 out of 10 slots were filled in the 1st call, a second one was held in February of 2022. Informal feedback[16] collected during the first call, which in conjunction with the socio-economic analysis of late 2021 indicated that a few changes should be done on a second call, mainly:

1. **Allowing for a hybrid model for twinning visits**. During late 2021 – early 2022, COVID-19 restrictions were still being imposed in many European countries. The climate of uncertainty when it came to the practical need to book flights without knowing if travelling would be allowed or not, made the original twinning model based on "in person meetings" more challenging. Nevertheless, the appeal of travel to in-person meetings, to foster a connection with new potential partners, is one of the main enticements to participating in twinning activities. The new call featured the possibility to add virtual meetings whenever an in-situ visit wasn't possible.
2. **Ensuring that no other events coincided** (or were too close, time wise**) with the launch of the second call for twinnings**. In addition, arrangements were made for the succeeding event to the twinning call to be the twinning workshop. This meant that stakeholders who still had unsolved doubts on the process, could join the workshop and ask them live. Plus, they would get a clear presentation of the benefits of participating in twinning activities from past participants, and to get to know the first 7 selected pairs.
3. **Setting up a "Pairing Initiative"**[17]. One of the issues reported during the first phase, was that some participants wanted to be a part of the program but had no "partner". To bridge the gap between "adopters" and "originators", the second call started with the dissemination of two online forms: a) one for those who wished to adopt an innovative practice, and b) another for those who wanted to share their innovation with another institution. If a match was made, then the two parties were put in contact. Nevertheless, at the end of the "Pairing Initiative", all interested stakeholders were given access to the full list of potential originators and adopters, to assess a potential connection. This effort yielded 1 extra application, that later was selected for the program.

The second call, held from early January to early February yielded 4 applications, one being disqualified due to one of the participants not being a part of a Reference Site. One of the selected

[16] Collected via emails with inquiries regarding the twinnings' process
[17] See more about the pairing initiative here: https://innovation4ageing.tehnopol.ee/2021/11/24/the-pairing-initiative-part-of-the-twinning-call/

twinning pairs had already applied for the 1st call, but were asked, after review from the twinning jury, to work on some aspects of their application and resubmit it - which they have successfully done on the 2nd call.

As already stated, the IN-4-AHA twinnings call happened during a particularly challenging time, especially for an activity that relied heavily on national and European mobility, which was hindered first by the COVID-19 restrictions, and later, by fuel and overall inflation increases. During both calls informal feedback from emails and meetings was collected and compiled in the table below.

*Table 7:* ***twinning program challenges***

| | Problem | Solution(s) | Takeaway |
|---|---|---|---|
| 1 | COVID-19 pandemic – new wave in the winter months<br>• Less willingness to travel<br>• Doubts about travel reimbursements in case of restrictions | Allow hybrid model – with in-person and online activities | Travel as a selling point of twinnings may be dangerous in times of economic uncertainty. Focusing on networking and knowledge exchange between like-minded partners is a sure bet. |
| 2 | Difficulty in finding information about Reference sites | Having the most recent information about RS on a permanent page<br>• IN-4-AHA website<br>• RSCN website<br>• Futurium<br>• Having the call for twinnings after the 4th call for RS (not possible)<br>Having a previous campaign on RS, to define their scope of action and value<br>• Webinar (before the call, not during)<br>• Promotion campaign | When defining an exclusion criterion, the information in which the criterion is based upon needs to be:<br>• Accessible<br>• Complete<br>• Understandable |
| 3 | Misalignment between target population of the program and the objectives and design of the program<br>• SMEs may not be interested in twinnings where only travel is funded<br>• Experts may not be interested in twinnings where subcontracting | Having a more targeted campaign of dissemination of twinnings towards its more traditional interested parties (EIP-AHA community), based on the word to mouth<br>Allowing more flexible management of the allotted funds – via subcontracting agreement instead of cooperation agreement | When defining the scope of action of a twinning program (especially when it comes to the decision of "what to fund") have the expectations of the target stakeholders in mind. This means starting by defining what stakeholders are being attempted to reach and defining the scope accordingly.<br>Revise the twinning structure to allow adaptation to the expectations and needs of stakeholders. The first phase |

| | | | |
|---|---|---|---|
| | 3rd parties is not allowed<br>• Experts may not be interested in twinnings where the logic of Adopter-Originator is too rigid and won't a allow for a two-sided knowledge exchange<br>• Experts may not be interested in twinnings if only high TRL innovations are accepted, and not proof of concepts (more exploratory, based on scientific research) | Having different programs for enterprises and experts | of this program would be accessing the needs of stakeholders, and collecting information on how they would like to invest the funds |
| 4 | Timeline issues | Start the preparations for twinnings with 6 months in advance<br>• Gather stakeholder composition, needs and interests<br>• Co-create the call in a workshop<br>• Publish all details of the call in advance before it opens (1 month, to allow stakeholders to resolve any doubts beforehand)<br>• Have a smaller call deadline (2 weeks) | Twinnings should have a larger timeline – of 1 year, to allow the execution of bureaucratic tasks, communication and information to stakeholders, co-creation of the twinnings call, and then have more than 6 months for activities |
| 5 | Funding issues - Some stakeholders have indicated that 5000 euros aren't enough for them to participate; others didn't realize that the funds would be awarded via reimbursement, not directly | • Having fewer twinning pairs and awarding for funding (especially for SMEs)<br>• Having more funding for the program to start with<br>• Include other services in the program (MAFEIP or others) | When pointing out the benefits of the program, the amount awarded, and the method of payment need to be at the forefront of the promotion campaign |
| 6 | Communication issues | • Avoid mis messaging<br>• Avoid having other large events running at the same time as the opening of the call (egg: a matchmaking event) | Preparing and communicating the call needs to be done 6 months in advance |

| | | | |
|---|---|---|---|
| | | • Have the call materials available before the call opens (point 2) | |

The information presented in the previous table showcases the impediments felt accompanied by their possible solutions/takeaways that can be useful for future iterations of the program. Hence, finding inspiration in the challenges faced by the IN-4-AHA twinnings may help the development of prospective twinning activities that are more flexible and aligned to the interests and availability of future stakeholders.

## 3.2. About the twinning projects

This chapter features a quick snapshot of the major characteristics of the 10 twinning pairs and their innovative practices. All the information presented was self-reported and taken directly from the materials provided by participants' reports, regarding a) country, b) stakeholder type, c) twinning type, d) innovation type, and e) TRL.

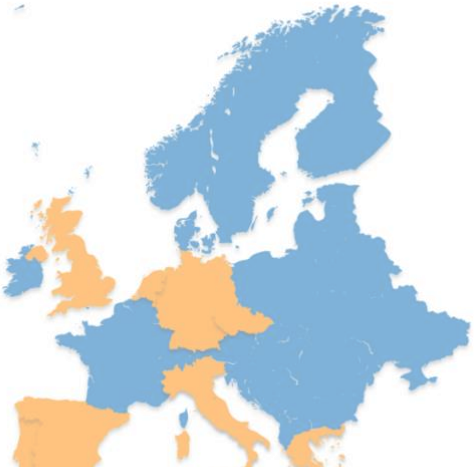
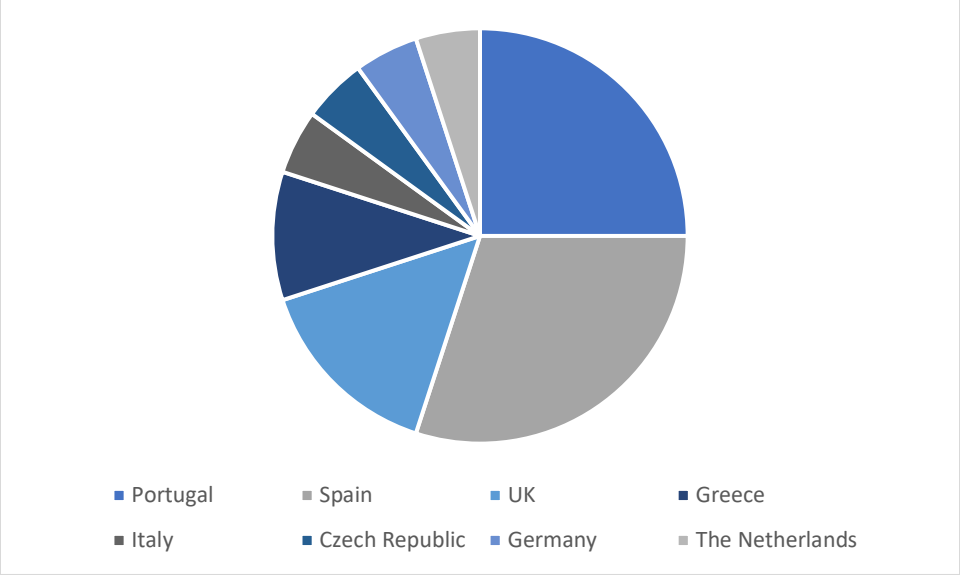


*Figure 5:* ***Countries (in orange) with participants enrolled in twinning activities***

Stakeholders from 8 different European countries participated in the twinnings. Following a trend that has already been seen in IN-4-AHA, southern European countries are over-represented in the twinnings. Spain has 6 participations, while Portugal has 5. In Spain, the regions of Galicia (n=3), Andalusia (n=2), and Catalonia (n=1) are represented, while in Portugal, Coimbra (n=2), Algarve (n=2), Lisbon (n=1), and Porto (n=1). This is followed by the UK, with 3 different participations, 2 from Northern Ireland, and 1 from Scotland. Stakeholders from other countries such as Estonia also shown interest in participating in the activity, but their application was not considered because they were not a part of any Reference Site.

*Figure 6:* ***Country distribution (n=20)***




Three institutions participated more than once, always sharing and adopting different innovative practices. The participant's regions are a part of a local reference site. The country/reference site distribution for the IN-4-AHA twinnings was as follows:

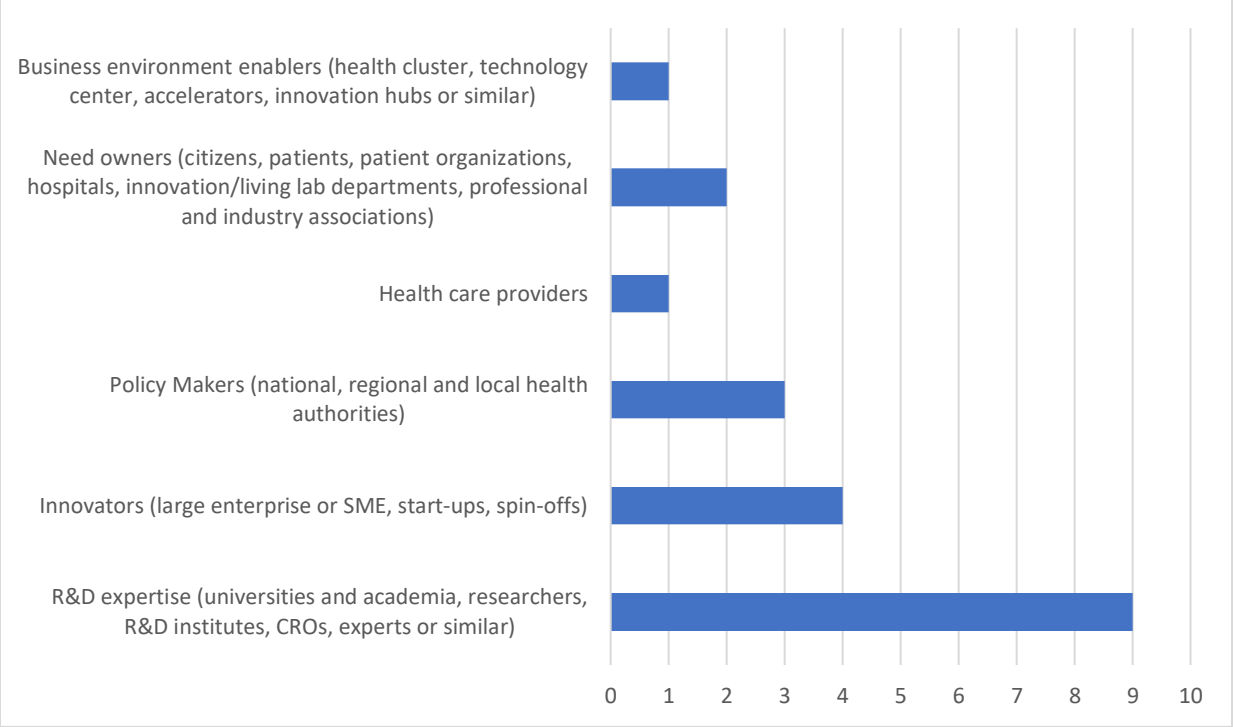
*Table 8:* ***Reference sites (2019 call) participating in the IN-4-AHA twinnings***

| Country | Region | Reference site |
|---|---|---|
| Spain | Galicia | Galician Health Cluster |
| | Catalonia | Catalonia Reference site |
| | Andalusia | Andalusia Reference site |
| Portugal | Coimbra | Ageing@coimbra |
| | Algarve | Algarve Active Ageing |
| | Lisbon | Lisbon AHA |
| | Porto | Porto4Ageing |
| United Kingdom | Northern Ireland | Department of Health, Northern Ireland |
| | Scotland | Scotland Reference site |
| Greece | Crete | Coalition of the Foundation for Research and Technology – Hellas (FORTH) |
| | Athens | Active Healthy Ageing 4 Attica |
| The Netherlands | Amsterdam | HANNN & GGD A28msterdam ( Consortium Active & Healthy Ageing Metropool Region Amsterdam) |

| | | |
|---|---|---|
| Czech Republic | Usti Region | Digital Health Platform of the Usti Region |
| Italy | Campania | Campania Reference site |
| Germany | Baden-Württemberg | Ministry of Social Affairs and Integration Baden-Württemberg |

As for stakeholder types, the most prevalent by a large margin, was research and academia, with a significant number of participants from different European universities. Innovators, as in companies and enterprises overall, had 4 different participations, followed by 3 from organizations ranked as policymakers. The classification is based on IN-4-AHA's stakeholders database criteria and the full overview of stakeholder types present in the twinnings can be seen below.

*Figure 7:* ***Stakeholder type (n=20)***

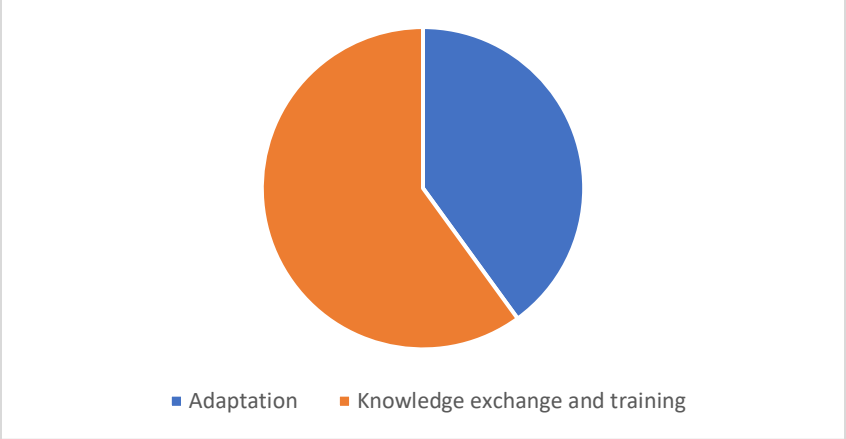



Based only one country and stakeholder type, a portrait of one of the most active member groups in IN-4-AHA can be drawn: university personnel and researchers, from southern European countries. Having this information beforehand – based on data from IN-4-AHA's Stakeholder Engagement Plan (D2.1) – it was (mostly) possible to avoid activity pressure during summer months, where university staff is

usually less available. These types of stakeholders appear to have previous experience with other expert exchange activities, and a more flexible schedule that allows for travelling. On the other hand, a different community with a larger expression of *Innovators*, would probably need to have twinnings tailored differently, by, for instance allowing for the reimbursement of the participant's daily rate in the company (see table 7 – twinning program challenges)

As for type, no adoption (full or partial) or acquisition activities were developed by the twinning pairs. The majority classified themselves as "Knowledge exchange and training" types, and/or "Adaptation". In fact, out of the 10 twinning pairs, 3 have claimed to be both types. Nevertheless, 60% (n=6) of participants have classified their twinning as "Knowledge exchange and training", while 40% (n=6) as "Adaptation".

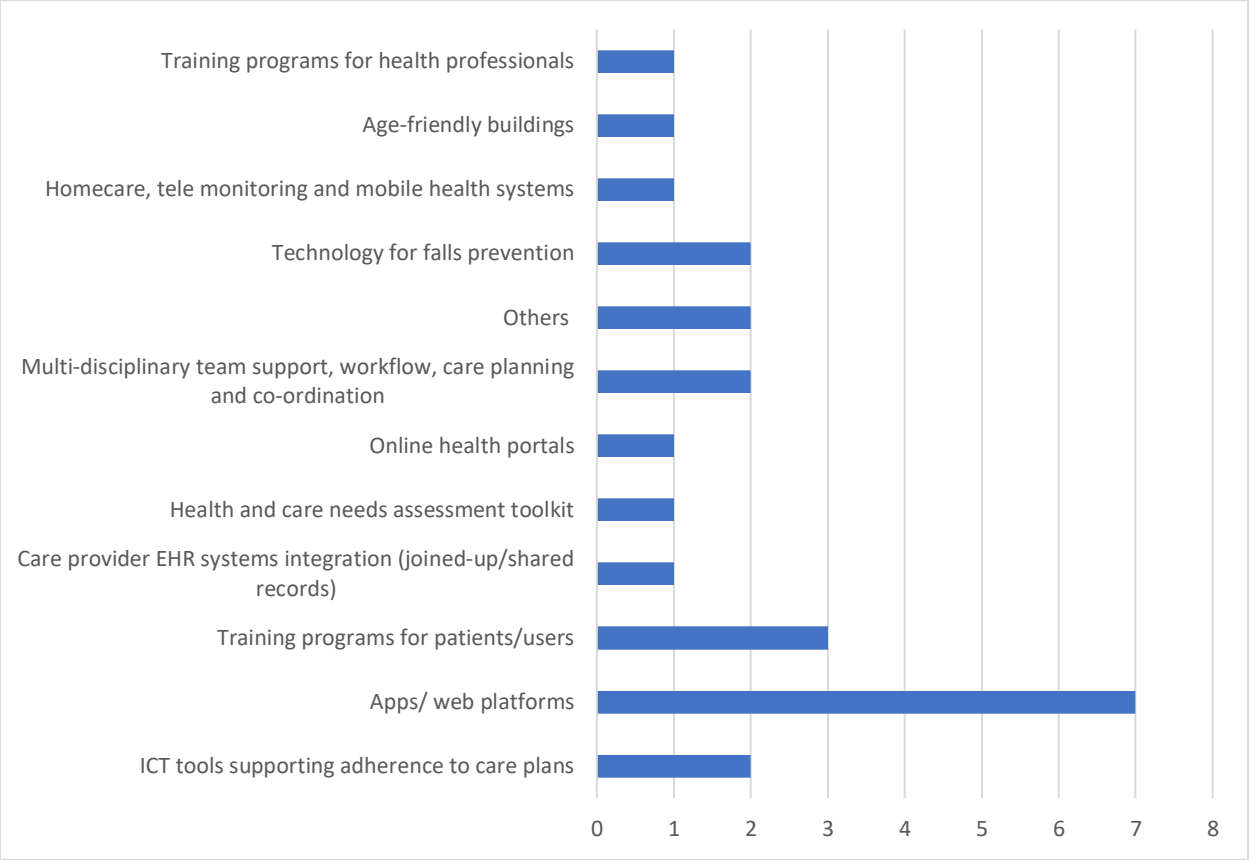
*Figure 8:* ***Twinning type (n= 15)***




This information tracks with the personal testimonies during IN-4-AHA's events (November webinar and January workshop) were one of the most valued experiences from participating in twinning activities, was building mutual learning. Twinnings have a prominent networking and relationship building feature, that highly correlates with knowledge exchange activities.

As for innovation type, the general distribution by categories can be seen in the graph bellow.

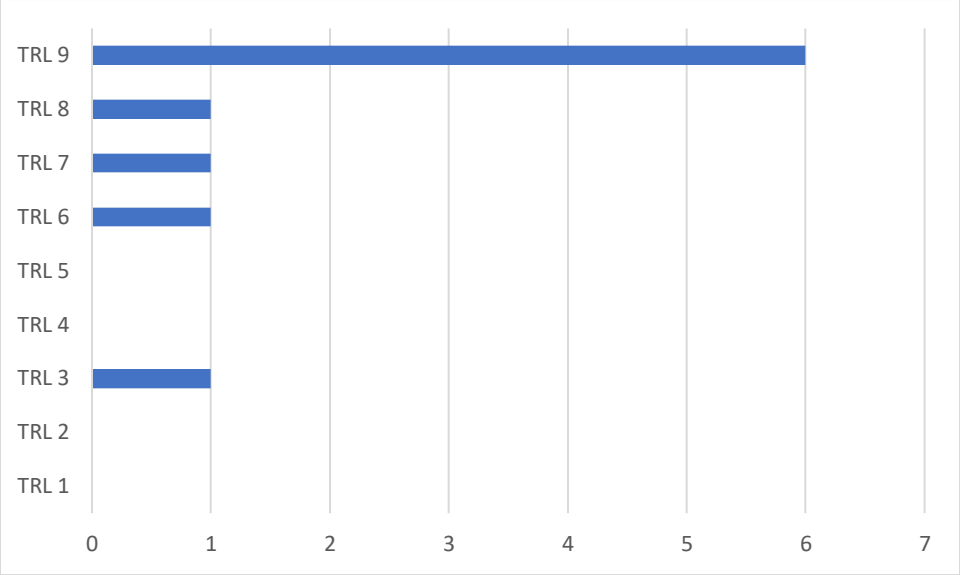
*Figure 9:* ***Type of innovation (n=24)***




As figure 9 indicates, most innovations shared were classified as "apps/web platforms" (n=7), followed by "training programs for patients/users". For the most part, the twinning pairs choose more than one option to describe their innovative practice. The "apps/ web platforms" was often coupled with another category to provide it with more specificity. Nevertheless, it is obvious that the IN-4-AHA twinnings had a strong focus on digital health solutions.

To finalize this general snapshot of the IN-4-AHA twinnings it is important to assess the general maturity of its innovative practices. Overall, the innovations featured in the program can be classified as mature, with a TRL 7 or higher. In fact, 6 (n=6, 60%) of the twinning innovations were stated to be at a TRL9.

*Figure 10:* ***TRL of the innovative practices (n=10)***




As for each individual project, a quick overview is presented in the following subchapters.

## 3.3. Innovative practices

### 3.3.1. Actif platform


Nursing home staff is often overwhelmed with work to provide the best care to elders, spending several hours preparing PowerPoints and presentations for entertaining and stimulating their guests

physically and cognitively. Paper and pencil exercises are not always engaging for the population, especially with cognitive limitations and dementias. On the other hand, gaming solutions in the market generate frustration, need staff supervisions, and are not adapted for group activities. Actif platform provides ready-to-use content that has physical and cognitive benefits and is entertaining. In addition, it helps institutions plan activities to improve their service to their guests, giving them more time for individual care and exceptional cases. It also provides the same tool for people at home that don't have enough guidance during the ageing process where we recommend and offer activity plans to keep them healthy and active. Actif had 20 pilots during 2021 in Portugal, reaching more than 600 final beneficiaries. Have been developing the MVP for the past 6 months including more than 40 hours of recorded classes, and different 6 modalities. It is in negotiation with the biggest potential clients in Portugal and has partnered with different institutions such as promoters and academic partners to validate the solution.

From these pilots and interactions with final beneficiaries it was learned that users love to see activities organized by different people, there was an increase in engagement. Moreover, people that usually were not motivated to do cognitive stimulation exercises were more available to participate when *different people and faces* were shown, and that the human factor was crucial for increasing empathy. The content in the innovation is *like a TV show* - but healthy - reducing the pressure of correct answers and consequently decreasing frustration and anxiety.

| Originator | | Adopter | |
|---|---|---|---|
| Name | Reference site | Name | Reference site |
| Actif Age | Lisbon AHA | Atendo | Galician Health Cluster |

| | |
|---|---|
| **Website** | www.actif.online |
| **Twinning type** | Adaptation |
| **Innovation type** | ICT tools supporting adherence to care plans<br>Apps/ web platforms<br>Training programs for patients/users |
| **Main objectives of the twinning** | The main objective of this twinning was to get to know the innovation shared by the Originator and its possibilities of use in a real environment in a different region (Galicia – Spain), as well as to assess (by the Adopter) the introduction of this type of innovations for its users. This type of technology is not yet widely introduced in real |

| | |
|---|---|
| | environments and users may express reluctance to use it, in the same way, health professionals need to develop new work protocols for their implementation, that is why this type of twinning is so important. |
| **Start Month** | January 2022 |
| **End Month** | July 2022 |

### 3.3.2. Andalusian Health Population Database


The successful good practice of Servicio Andaluz de Salud "The Andalusian Health Population Database (BPS)" is a Health Information System (SIS) based on Population that collects clinical data and the use of health resources of each of the individuals that are part of a population. The Andalusian Health Population Database has many objectives, manly: improving the monitoring of health and care systems performance; evidence-based strategies and policies on transforming health and care systems and increasing capacity-building efforts to facilitate the use of a common language among relevant stakeholders. The Algarve Active Ageing reference site has recently launched with the Porto4ageing and Lisbon-AHA references sites the Nacional Observatory for ageing (ONE), This initiative of twinning aims to provide a shared experience with the good practice already established in the Andalusia Reference Site.

| **Originator** | | **Adopter** | |
|---|---|---|---|
| Name | Reference site | Name | Reference site |
| Regional Ministry of Health and Families of Andalusia / Andalusian Health Service | Andalusia | AD-ABC Associação para o Desenvolvimento do centro académico de Investigação e formação | Algarve Active Ageing |

| | | | |
|---|---|---|---|
| | | biomédica do Algarve (Universidade do Algarve) | |

| | |
|---|---|
| **Website** | https://www.juntadeandalucia.es/servicios/estadisticacartografia/actividad/detalle/175396.html<br>https://www.sciencedirect.com/science/article/pii/S0213911119301074<br>https://Futurium.ec.europa.eu/en/active-and-healthy-living-digital-world/wel |
| **Twinning type** | Knowledge exchange and training<br>Adaptation |
| **Innovation type** | Care provider EHR systems integration (joined-up/shared records)<br>Health and care needs assessment toolkit<br>Apps/ web platforms |
| **Main objectives of the twinning** | The main Objective of this twinning Scheme is to try to adopt and implement a successful good practice of the region of Andalusia, in the region of Algarve. Based on the data collected of senior population they (the participants) hoped to be able to perform estimates on health, user's behavior in relation to health and/or social services and stratification of population in order to obtain data to guide the provision of these services. With this data, they would be able to have estimations about general health, lifestyles habits, relation with health services, and stratification of the population in order to improve services. Additionally, they would be able to conduct longitudinal studies to estimate the incidence of several pathologies and projections of population health and needs. Moreover, Algarve and Andalusia are cross-border regions of Portugal and Spain, working together and exchanging good practices, population data and health and social care strategies will strengthen relationships, which may lead to further joint ventures and collaborations, in particular in under the Interreg POCTEP or the euro cross-border cooperation region Alentejo-Algarve-Andalusia. Under this Twinning Scheme they proposed to implement, as possible, the same principles and variables to allow exchange of information between Algarve and Andalusia cross-border regions, because several similarities exist within both. |
| **Start Date** | April 2022 |
| **End Date** | September |

### 3.3.10. SoCaTel



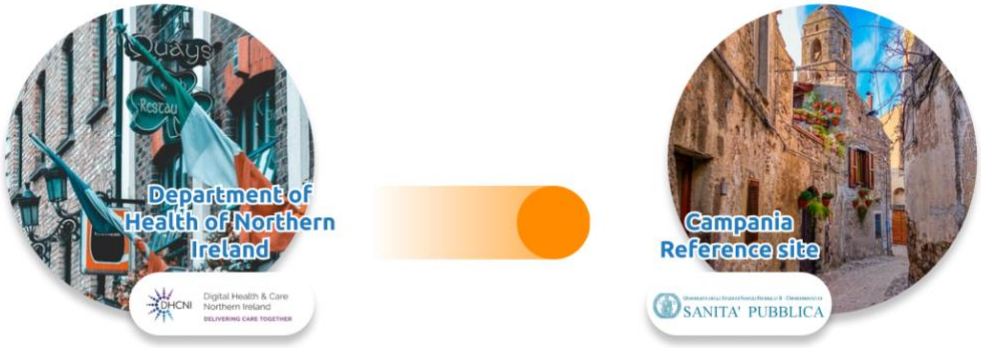
The SoCaTel project proposes an approach that cater to the needs of the growing ageing populations in Europe by improving the accessibility, responsiveness, efficiency, transparency, and transferability of social and care services. The SoCaTel team has developed a useful, transparent, and easy-to-use platform following a quadruple-helix (QH) approach, in which service users, care professionals, researchers and innovators can collaborate throughout the process. It is based on the first-hand knowledge of the needs of all the people involved and they can choose how to receive or give these services. They have the control to define the outcome of the platform because they are part of the decision-making process.

| Originator | | Adopter | |
|---|---|---|---|
| Name | Reference site | Name | Reference site |
| Rovira I Virgili University | Catalonia | Innovation Centre of the Usti Region | Digital Health Platform of the Usti Region |

| | |
|---|---|
| **Website** | https://www.SoCaTel.eu/ |
| **Twinning type** | Adaptation |
| **Innovation type** | Apps/ web platforms |
| **Main objectives of the twinning** | Primarily, the adopter aspired to learn about the SoCaTel platform and proper implementation and prepare to transfer this co-creation tool to their regional context mainly by adaptation (translation) so they could create the conditions to undertake a constructive dialogue with citizens, patients, and |

| | |
|---|---|
| | caregivers, having the opportunity to better reach and understand their needs and to co-develop solutions based on the exchange and interaction. |
| **Start Date** | January 2022 |
| **End Date** | June 2022 |

### 3.3.3. Apps4Dementia




Apps4dementia library is a new digital service offering support for people living with dementia and their carers. It hosts a selection of safe and trusted mobile apps which provide people affected by dementia and their carers with information and guidance on the condition, advice on self-care and how to carry on with their day-to-day activities for as long as possible.

Developed in conjunction with app evaluator, ORCHA, the site offers a range of applications which have been independently checked and reviewed for data privacy, clinical assurance, and user experience. Users will find the best rated apps that provide guidance and information to help with sleep, communication, keeping minds active, and reminders as well as apps that support carers to care for their loved ones. The library has been developed alongside people living with dementia and their carers, as well as health professionals, who have provided feedback on design and content. The initiative is part of the Dementia eHealth and Data Analytics Pathfinder Programme, which uses data and technology to inform better services, support people with dementia and help plan for the future

| Originator | | Adopter | |
|---|---|---|---|
| Name | Reference site | Name | Reference site |
| Digital Health & Care NI, Public Health Agency obo Dept of Health N Ireland | Department of Health, Northern Ireland | Department of Public Health, University of Naples “Federico II” | Campania Reference Site |

| | |
|---|---|
| **Website** | https://apps4dementia.orcha.co.uk |
| **Twinning type** | Knowledge exchange and training |
| **Innovation type** | Apps/ web platforms |
| **Main objectives of the twinning** | The main objective of this Twinning Scheme was to adopt and implement a successful good practice into the Campania Reference Site, Italy, developed by Digital Health and Care Northern Ireland (DHCNI), which would greatly benefit seniors. More specifically, there was knowledge exchange and training, regarding the apps4dementia library, the evaluation process by ORCHA and the co-design process with local dementia charities. Through the twinning program, it was hoped that the Campania Reference site would be able to have the knowledge and learning on tackling barriers to using apps by healthcare professionals, how to use apps to support people living with dementia and their caregivers to self-care and have a more independent and healthy life. The twinning activity would also enable sharing of other best practices, strengthen networks with EU partners, which could lead to further joint ventures and collaborations |
| **Start Date** | January 2022 |
| **End Date** | June 2022 |

### 3.3.4. ClicSalud


ClicSalud+ is the portal for citizens' secure access to personal health information, for both administrative (e.g. center and professionals assigned) and clinical (reports, medication, analytical test results, etc) purposes, facilitating common procedures (requests for or changes to appointments, choosing centers and professionals, renewing health cards, etc). Diraya is the Electronic Health Record

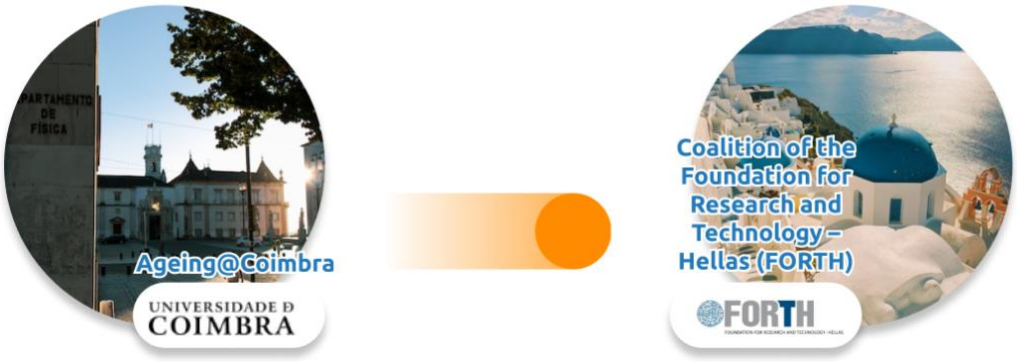
(EHR) system within the Andalusian Public Healthcare System (APHS) that integrates the healthcare information for each patient into a single regional record. The system is based on a single Health Record Number that links all patient information in the corporate health information system (Diraya), including electronic prescriptions, telemedicine, e-government, radiology, laboratory tests, appointments, etc. Primary care centres, specialist outpatient clinics, hospitals, emergency units, ambulances and private pharmacies in the region are connected to this system. ClicSalud+ is integrated into Diraya and provides services to the entire population, regardless of the point of care. The first Andalusian citizen service portal, called InterSAS, was created in 2002. It allowed users to change their assigned doctor and update their personal data. Over time, other channels were offered with the launch of the call center "Salud Responde" (Health Responds). Its appointment service was implemented in 2006, with a very good level of public acceptance. In 2018, ClicSalud+ began operating, replacing InterSAS. This involved technological renovation and redesign to improve usability.

| **Originator** | | **Adopter** | |
|---|---|---|---|
| Name | Reference site | Name | Reference site |
| Regional Ministry of Health and Families of Andalusia / Andalusian | Andalusia | Health Service Scottish Government, Digital Health and Care Directorate | Scotland |

| | |
|---|---|
| **Website** | https://www.juntadeandalucia.es/servicioandaluzdesalud/ciudadania/clicsalud<br>https://www.juntadeandalucia.es/servicioandaluzdesalud/clicsalud/ |
| **Twinning type** | Knowledge exchange and training<br>Adaptation |
| **Innovation type** | Online health portals<br>Apps/ web platforms |
| **Main objectives of the twinning** | The objective of this twinning is to progress collaboration and knowledge exchange between these two 4-star Reference Sites to enhance their approaches to citizen access to personal health data. The twinning had specifically focused on digital citizen portals (known in Scotland as Digital Front Door) enabled citizens to access their own personal health data, health information and health and care services. Operational objectives: a) Provide detailed information / insights into Andalusia's citizen health portal, ClicSalud+, to enable Scottish stakeholders to acquire new knowledge, with a primary focus on system architecture, services offered and |

| | |
|---|---|
| | citizen engagement in the design of the portal; b) Assess the feasibility of transferring this learning into the context of Scotland's Digital Front Door program, c) Develop an Implementation Plan detailing how the different elements of the good practice could be adapted and transferred; d) Promote inter-regional partnerships between stakeholders in the two regions. |
| **Start Date** | January 2022 |
| **End Date** | June 2022 |

### 3.3.5. Healthy Lifestyle Assessment toolkit




The Healthy Lifestyle Assessment toolkit has been built following a cocreation exercise developed by an interdisciplinary panel of experts, technology developers and end users to implement a technology assisted 8 dimensions containing survey designed to extract (by replying to queries or interacting with technologies) data into a toolkit database. At the end, the user is offered with a lifestyle recommendation report. The Healthy Lifestyle Assessment Toolkit has been implemented in a successful EIT Health funded project (HeaLIQs4Cities) in Coimbra, Porto, Seville, Paris, and Groningen.

Ageing@Coimbra Reference site's development is urged by the need of developing scalable disruptive innovation across Europe, and is a local coalition of partners that develop good practices to support AHA. Ageing@Coimbra is an example of how this can be achieved at a regional level. The consortium comprises over 90 institutions that develop innovative practices to support AHA in Portugal. Ageing@Coimbra partners support a regional network of stakeholders that build a holistic ecosystem in health and social care, taking into consideration the specificities of the territories, living environments and cultural resources (2,243,934 inhabitants, 530,423 aged 65 or plus live in the Centre Region of Portugal). Good practices in reducing the burden of brain diseases that affect cognition and memory impairment in older people and tackling social isolation in urban and rural areas are among

the top priorities of Ageing@Coimbra. The inspirational mission that guided this twinning proposal with FORTH, sharing the Healthy Lifestyle Toolkit to consolidate two four stars European Reference Sites.

| Originator | | Adopter | |
|---|---|---|---|
| Name | Reference site | Name | Reference site |
| Ageing@Coimbra | Ageing@Coimbra | FORTH, Foundation for Research and Technology – Hellas and University of Crete | Coalition of the Foundation for Research and Technology – Hellas (FORTH) |

| | |
|---|---|
| **Website** | The Ageing@Coimbra Case Study Front Med (Lausanne). 2018; 5: 132. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5952223/<br><br>Development of a Healthy Lifestyle Assessment Toolkit for the General Public Front Med (Lausanne). 2019; 6: 134. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6610478/<br><br>Unhealthy lifestyles, environment, well-being and health capability in rural neighborhoods: a community-based cross-sectional study BMC Public Health. 2021; 21: 1628. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8422758/ |
| **Twinning type** | Knowledge exchange and training |
| **Innovation type** | Multi-disciplinary team support, workflow, care planning and co-ordination |
| **Main objectives of the twinning** | Ageing@Coimbra – Understand the organizational structure of FORTH and identify synergies with Consortium stakeholders FORTH – Understand the organizational structure of Ageing@Coimbra, identify synergies with Consortium stakeholders and pilot the Healthy Lifestyle Assessment Toolkit developed by Ageing@Coimbra |
| **Start Date** | April 2022 |
| **End Date** | September 2022 |

### 3.3.6. Inspire D and Clear Dementia apps



As part of a wider dementia ehealth pathfinder programme HSCNI commissioned two separate apps to support people living with dementia and their carers:

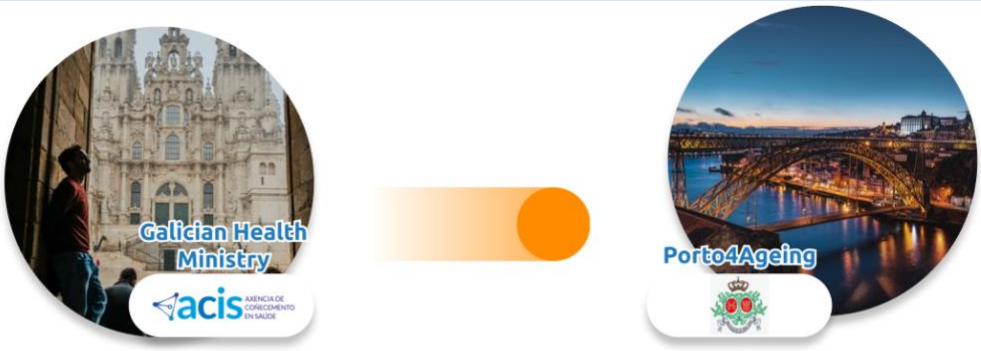
a) **InspireD Reminiscence App** - this is an App developed by Ulster University that supports people living with dementia and their carers to record their life, their story on an app specifically designed for smartphones and tablets. People living with dementia who have problems with their short-term memory often find it easier to remember things about their past. Reminiscence draws on this strength by supporting people to share their life experiences, memories, and stories and in doing so to maintain or build connections with other people. Research has shown that reminiscence can improve mood, wellbeing, quality of life and relationships for people living with dementia.

b) **CLEAR Dementia Care App** is an App developed by a clinical psychologist in the Northern Health & Social Care Trust. A person with dementia is trying to make sense of the world and to meet their needs. Their dementia sometimes means that they attempt to meet their needs can sometimes lead to behaviours that others find difficult to understand. This causes increased stress and distress for the person with dementia and those who love and support them. Occasionally, without intending to, carers respond in a way that increases confusion and distress. Carers want to know more about dementia and how to support the person with dementia. The CLEAR Dementia Care App provides accessible information and support. Because the information is on an app, it is always available when it is needed regardless of location. The information is presented in bite sized chunks to make it easier to understand and follow. The App uses both text and colorful illustrations to help users to see the world from the perspective of the person with dementia. When we do this quality of life improves for both the person with dementia and those who love and support them. To understand behavior, it can be helpful to look for patterns. The App also includes a function to help record and chart behavior.

| Originator | | Adopter | |
|---|---|---|---|
| Name | Reference site | Name | Reference site |
| Digital Health & Care NI, Public Health Agency, obo DoH NI | Department of Health NI | Greek Carers Network EPIONI (NGO) | Active Healthy Ageing 4 Attica |

| | |
|---|---|
| **Website** | InspireD App - https://www.theinspiredapp.com<br>Clear dementia app - https://www.northerntrust.hscni.net/services/dementia-services/clear/clear-dementia-care-app |
| **Twinning type** | Knowledge exchange and training |
| **Innovation type** | ICT tools supporting adherence to care plans<br>Apps/ web platforms |
| **Main objectives of the twinning** | The main purpose of this Twinning Scheme was to adopt and implement a successful good practice to the Metropolitan Region of Athens, Greece developed by Digital Health and Care Northern Ireland (DHCNI), which would greatly benefit seniors. More specifically, there will be knowledge exchange and training, regarding two apps related to the management of dementia symptoms: the InspireD Reminiscence App and the CLEAR Dementia Care App, that target both the patients and their caregivers. Thus, under this scheme, it was aimed to enable patients and caregivers to have a more active and healthy life, through the implementation of an innovative ICT-based solution. Also, this twinning activity should enable an upscale of best practices, has strengthen the relationship between originator and adopter, which may lead to further joint ventures and collaborations. |
| **Start Date** | January 2022 |
| **End Date** | June 2022 |

### 3.3.7. LabSaud




The innovative practice to be transferred was be based on the experience of a successful Galician Living Lab to the North of Portugal (and nationwide): the innovative practice – LABSAÚDE. This living lab integrates an innovative approach to the care of elderly and chronic patients, introducing new technologies user-driven and tested in real-life contexts. This initiative aims to empower patients, families, caretakers, and health professionals by involving them in product development and testing and improving healthcare practice in general through research and the introduction of new technologies.

| Originator | | Adopter | |
|---|---|---|---|
| Name | Reference site | Name | Reference site |
| Axencia Galega de Coñecemento en Saúde (ACIS) | Galician Health Cluster | Centro de Investigação, Diagnóstico, Formação e Acompanhamento das Demências (CIDIFAD) da Santa Casa da Misericórdia de Riba d'Ave. | Porto4Ageing |

| | |
|---|---|
| **Website** | https://acis.sergas.gal/cartafol/LABSAUDE-in-English |
| **Twinning type** | Knowledge exchange and training |
| **Innovation type** | Multi-disciplinary team support, workflow, care planning, and coordination<br>Other, specify – Living Labs |
| **Main objectives of the twinning** | The main objective of this twinning scheme was to learn and adopt a good practice to the North of Portugal to improve the life of senior citizens in particular people with dementia. The two reference sites worked together by exchanging ideas and |

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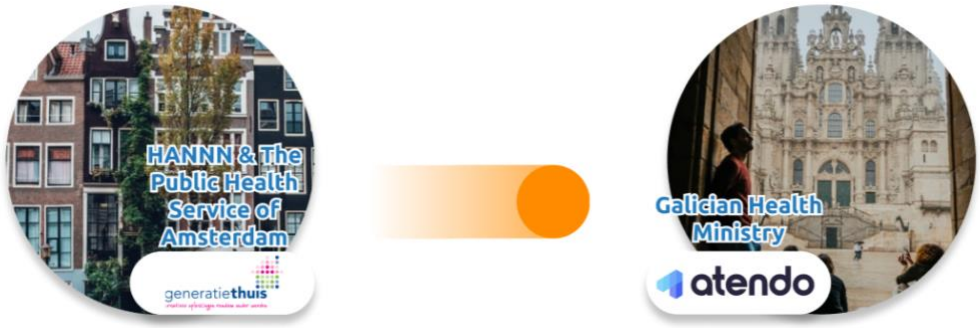
|---|---|
| | good practices with the objective of improving projects already running in Galicia and in the North of Portugal and strengthening relations with the goal of securing further cooperation and future joint ventures. Under this scheme, they aimed to learn about the organization and functioning of Galicia's living lab, sharing practices that can lead to the improvement of the quality of technologies available for elderly care through user-centered design and co-creation, as well as to accelerate the lab to the market timeframe for new technologies. |
| **Start Date** | January 2022 |
| **End Date** | June 2022 |

### 3.3.8. My home fits & Smart Library




Older people in the Netherlands are ageing in place, in their own individual houses. When they start to deal with challenges and possible illness due to their age they are supported mainly by professional, formal care and informal care through neighbors and relatives. There are also many technologies on the market which can support older people in this situation. However, these are not well known among their target group neither among professional carers. While staff shortages in care, and overburdening of informal carers are increasing, the uptake of solutions for this through the implementation of technology is developing too slow. Barriers for this uptake need to be lowered. In its previous activities GeneratieThuis has recognized the need for both professionals and older people to try things, to experience the possibilities of new technology in their daily lifework settings, to learn from each other from these experiences. The '**Smart Library'** enables older people and their (professional or informal)carers to get neutral information (not a sales pitch) as well as to lend these smart technologies for a few weeks to experience the use and value of this in their regular daily lives. They are supported by a volunteer who helps them overcome small barriers in this first period of using it. This way older people are enabled to experience the value of a technology. After a few weeks they

need to return the technology and can decide for themselves if they want purchase it or not for longer use. The smart library is started by GeneratieThuis in cooperation with a local network of partners facilitating housing of the library, staffing of the library, publicity. Recently it has started in 9 locations in the Netherlands with 4 different local consortia. Currently the first evaluations of its daily practices and user reviews on the products are received and shared in between the locations. Older people, their (adult) children, professionals are very enthusiastic about the low barrier approach and the broad collection of technological products on loan. Reviews are returned and shared through the website.

**My Home Fits** is developed because older people in the Netherlands would benefit from small and large adaptations to their houses, but most people do not do anything about this until a 'crisis' situation arises (they fall, they feel unsafe, mobility diminishes, and they can no longer use bathroom or other parts of their home). These 'crisis' situations are not only extremely unpleasant for the people that experience this but also are more expensive to society/health care. My home fits provide users with a series of home improvement tips and tools to avoid these crisis situations, in the "House Tests" performed via online platform, and then can be implemented by in-person volunteers.

| Originator | | Adopter | |
|---|---|---|---|
| Name | Reference site | Name | Reference site |
| GeneratieThuis | HANNN & GGD amsterdam ( Consortium Active & Healthy Ageing Metropool Region Amsterdam) | Atendo | Galician Health Cluster |

| | |
|---|---|
| **Website** | www.generatiethuis.nl<br>www.mijnhuisopmaat.nl<br>www.slimotheek.nl |
| **Twinning type** | Knowledge exchange and training |
| **Innovation type** | Technology for falls prevention<br>Homecare, tele monitoring and mobile health systems<br>Age-friendly buildings<br>Training programs for patients/users<br>Training programs for health professionals |
| **Main objectives of the twinning** | Galicia is one of the most aged regions in Europe and its care system that has already started to grow in terms of home care services. Atendo is a home care service |

| | |
|---|---|
| | provider with more than 20 years of experience in Galicia and one of its main goals is to help people stay at home as long as possible, keeping them in touch with their community. In order to achieve this goal, they needed to make a rational usage of home-tech solutions for the elderlies. But it was also important to approach these technologies to elderly people and institutions. GeneratieThuis has developed an innovation in The Netherlands to show people home based tech solutions and home adaptations for ageing in place. The adopter believed that this model could be replicated in other regions like Galicia. The main goal was acquiring the Originator's knowledge to understand how to adapt it to the Adopter's local culture. Secondary objectives are knowledge exchange between these two regions in order to make a better impact in their local ecosystem |
| **Start Date** | January 2022 |
| **End Date** | September 2022 |

### 3.3.9. Protein Fortified Bread



The increase of plant-based protein and other beneficial constituents in baked goods have been evaluated before, for example the implementation of chia seeds on bread[18] as well as protein supplementation with sunflower meal (All Organic Treasures GmbH, Wiggensbach, Germany) has been conducted on whole wheat bread[19]. A protein (+1.5 g/100 g) increase and a decrease in carbohydrates (9.2 g/100 g) was the resulting bread, with a 10 % substitution of flour by sunflower protein (milled residuals of the sunflower oil production with 56g protein/100 g). In gluten free bread the sunflower

[18] Zettel, V.; Krämer, A.; Hecker, F.; Hitzmann, B. Influence of gel from ground chia (Salviahispanica L.) for wheat bread production. In: European Food Research and Technology, 2015; 240 (3), S. 655–662.

[19] Zettel, V.; Moll, S.; Hitzmann, B. Evaluating the influence of sunflower protein on bread Part 2. In: cereal technology, 2018; (4), S. 234–242.

protein was used as hydrocolloid and improved the bread texture[20]. The substitution of wheat or other cereal flours by legumes or other protein rich plant materials offers challenges. However, the nutritional quality of pulses and chia seeds are well known [21]. Therefore, the aim will be to surpass some of these challenges by optimization of the cereal-based functional food products enriched in plant-based protein, particularly EAA, that will be used in this product. The goals for the optimization will be defined together with the Adopter and the optimized product tested in the adopter region by introducing it into the diet of a cohort of community dwelling older persons (>65 years old) in the Sertã municipality (Center region of Portugal) that will be submitted to an exercise and diet intervention. This will provide the proof of concept for the use of this novel baked goods product, in healthy ageing. For older populations, new protein enriched baked-goods product combined with exercise have the potential to significantly impact muscle strength decreasing the risk of falls, their metabolic health and overall quality of life

| Originator | | Adopter | |
|---|---|---|---|
| Name | Reference site | Name | Reference site |
| University of Hohenheim, Process Analyics and Cereal Science | Ministry of Social Affairs and Integration Baden-Württemberg | University of Coimbra, Faculty of Sport Sciences and Physical Education | Ageing@Coimbra |

| | |
|---|---|
| **Website** | http://repository.dkut.ac.ke:8080/xmlui/handle/123456789/1294 |
| **Twinning type** | Knowledge exchange and training<br>Adaptation |
| **Innovation type** | Technology for falls prevention<br>Training programs for patients/users<br>Other, specify. Creation, development, and implementation of novel baked goods, nutritionally rich in plant-based proteins |
| **Main objectives of the twinning** | The main objective of this Twinning project was to develop and introduce the novel protein enriched plant-based baked goods into the traditional diet of the Portuguese population. This will be of particular significance for the health and wellbeing of the elderly population, given that with age they become sarcopenic/frail due to the |

[20] Zettel, V.; Zachert, N.; Hitzmann, B. Improving gluten free bread quality by usingsunflower protein. In: cereal technology, 2019; (2), S. 84–94.
[21] Ayerza, R.; Coates, W. Protein content, oil content and fatty acid profiles as potential criteria to determine the origin of commercially grown chia (Salvia hispanica L.). In: IndustrialCrops and Products, 2011; 34 (2), S. 1366–1371.

| | |
|---|---|
| | significant loss of muscle mass. Many studies, by the twinning partners and others, show significant improvement of cardiac and skeletal muscle function, in the older population, after ingesting in the diet, cocktails of amino acids. In addition, the same studies have shown a significant reduction in the circulating and liver lipids, improving glucose tolerance and the inflammatory profile. This is very impactful and significant for the life of the older adults, since many suffer from being overweight or obese, and have dyslipidemia, shown by increased triglycerides and cholesterol in circulation. A diet enriched in amino acids, will therefore, greatly improve the health and the overall quality of life of this population. |
| **Start Date** | April 2022 |
| **End Date** | September 2022 |

## 4. Midterm report findings

A light management approach was applied to IN-4-AHA's twinnings. Considering that the community was comprised by experts from various organizations within the Active and Healthy Ageing field, a decision was made to assume that participants knew their work the best and were better suited to set up their own schedules and agendas. As seen in the sections describing the framework for the twinnings, only 3 major reports/deliverables were demanded from participants – an application form, a midterm, and a final report. While the application form featured a general overview of the objectives and workplan, and the final report a summary of the work developed and future plans, the midterm report was thought out as a midpoint milestone, for participants to self-assess the degree of completion of the twinning activities. No formal meetings to check the progress of the work plan were required, as to avoid putting even more pressure in the participants' busy calendar. Nevertheless, whenever invited, IN-4-AHA representatives made an appearance, mostly to clarify administrative procedures or provide feedback. Also, participants were free to share meeting minutes, presentations, itineraries, and other documentation developed during online or in-person discussions.

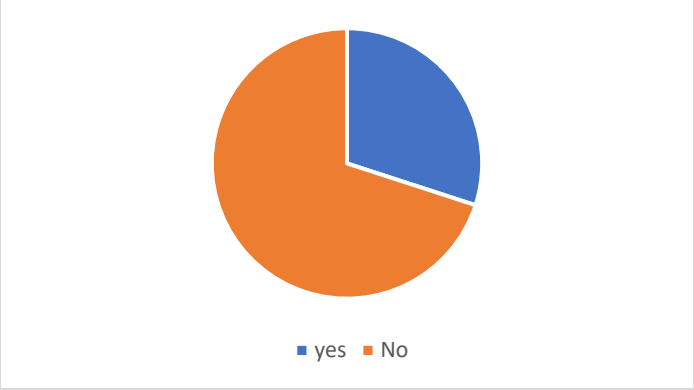
To buttress the point on light management and flexibility, the IN-4-AHA had an open-door policy for participants, that were encouraged to share doubts and problems as soon as they arise.

In summary, midterm report was simply a tool for participants to inform IN-4-AHA on their progress and leave some informal commentary. There were 2 different deadlines (as stated on table 7):

the 31st of March for twinning pairs selected during the 1st call, and the 31st of May for twinnings from the second call.

The most important takeaway from this exercise was that most twinning pairs had not implemented their programmed activities by the time of the report:

*Figure 11:* ***"So far, all the programmed activities from your side have been executed?"***




The stated reasons for not being able to complete the planned (n=7)[22] work were:

- Meetings having to be postponed due to COVID-19 restrictions and COVID outbreaks (n=3)
- Bureaucratic delays in signing contract documentation (n=2)
- The nature of work itself – having work being reliant on specific travels that didn't happen at the time (n=1)
- Unforeseen personal circumstances (n=2)

Once more, the impact of COVID-19 on the twinnings was clear – not only it difficulted the application process, but also had significant impacts in the practical execution of the activities. In many Europeans countries, such as Portugal, travel restrictions were active until mid-February. Furthermore, COVID outbreaks further delayed the process, making visitations impossible due to sickness or quarantine. Nevertheless, some twinning pairs referred having mitigation measures for this instance, holding preparatory online meetings (hybrid twinning activities), and postponing in person-ones. Other

[22] Some participants referred more than one reason

participants asked to change the work plan, which was allowed if activities didn't extend beyond the maximum established deadline.

As for progress done, the twinning pairs have stated to have:

- *Experience sharing* internal webinars
- Draft publication for an article regarding of the impact the innovative practice on its target audience – older adults
- Preliminary activities to start the knowledge transfer process – beginning of translations, assessment questionnaires, work roadmaps, requests for ethical compliance protocols and other administrative approvals, and the beginning stages for future translations
- Travel arrangements
    - Work agendas, participants, and objectives for the visits

Hence, regardless of the hindrances, by the mid-term report period, all twinnings partners had achieved at least some level of progress. Finally, the last section of the report had a facultative space where participants could leave comments, suggestions, or observations. Despite some roadblocks, all feedback provided was positive and participants indicated to be making the best out of the activity. Here follows a few direct anonymous quotes from participants to sum up this sentiment:

> *"The twinning experience is always a highly rewarding one - we gain new contacts and information that helps to inform our own thinking and new service developments"*

- Participant from **ClicSalud** twinning

> *"Excellent experience so far, for highly professional peers involved in the twinning activity. Great flexibility in the organization of the activities. Light administrative load, that is very important to define local case study and implement the adaptation and transfer"*

- Participant from **Apps4Dementia** twinning

> "*It has been an excellent experience that will open up new avenues for collaboration and for submission of projects for funding not only at the national levels but also of the international level*."

- Participant from **Plant-based protein enriched baked foods for older persons** twinning

*"Due to the changes done in the project's schedule, namely in the in-situs visits, the contacts with the originator were limited. However, we are excited to learn from the originator experience, to exchange ideas and good practices in order to improve the quality of life of people with dementia"*

- Participant from **LabSaud** twinning

## 5. Final report findings

The final report was developed in a similar format to the application form: with open ended and multiple-choice questions[23]. Participants were given the freedom to share as much information as they wished, and no character limitations where imposed. For data analysis however this posed some challenges when it came to the need to find major trends in mostly qualitative information. This qualitative content taken from the open-ended questions was interpreted, starting with the unaltered answers form respondents, that were then grouped into logical thematic categories based on stochastic decision lists. Highly prevalent keywords and sentences were coded into categories and interpreted [24,25,26]. Hence, when presented in frequency distribution the "n" means the number of times a specific category or keyword was referred in the raw data: the final reports themselves. Due to the low statistical relevance of the total number of answers (from 10 for originator/adopter specific questions, to 20 for questions for both parties), in this report a choice was made to present most results in graphic form, via images or tables. Hence the following isn't an extensive list of all answers provided, but a snapshot of general tendencies to help illustrate the characteristics of IN-4-AHA's twinnings program as a whole. In addition, this decision to showcase twinning results in bulk, avoiding individualizations, was made to protect any possible intellectual property transactions or personal information shared in the reports. Still, when relevant, specific projects are referred by name to represent particular points in the discussion.

This section organized into the following subchapters: 5.1) findings from originators, 5.2) findings from adopters, 5.3. findings from both twinning partners, 5.4) impacts, and 5.5) budget execution.

[23] The full report template can be accessed in the appendix

[24] Yamagishi, K., & Hang Li. (2002). Mining open answers in questionnaire data. IEEE Intelligent Systems, 17(5), 58–63.doi:10.1109/mis.2002.1039833

[25] B. Lent, R. Agrawal, and R. Srikant, "Discovering Trends in Text Databases," Proc. Int'l Conf. Knowledge Discovery and Data Mining (KDD97), ACM Press, New York, 1997, pp. 227–230.

[26] R. Swan and J. Allan, "Extracting Significant Time Varying Features from Text," Proc. Int'l Conf. Information and Knowledge Management (CIKM99), ACM Press, New York, 1999, pp. 38–45

## 5.1. Findings from originators

The main questions posed at originators regarded their "processes and time for adoption", "costs and outcomes", and "business case for sustainability or scaling" for the innovation. Finally, originators were asked on how the activity has benefited their organization and/or the individual participants.

When it came to the question of "processes and time for adoption (post-development), originators have answered it in three different ways by: a) providing general information on how long their innovation took to develop, and hence, how long it could take for the adopter to do the same (n=3), how long it took for the innovation to be launched, in general (n=2), and c) how they envisioned that the innovative practice could continue to be implemented by the adopters in the foreseeable future (n=3). In this final group we can find SoCaTel, Protein Fortified Bread, and the Apps4Dementia library. SoCaTel has been successfully adapted to the adopter's ecosystem, which was the only attainable result in the months of *hands-on* activity. Nevertheless, there were plans for full adoption, which in their perspective, would take from 6 to 12 months to achieve. The Apps4Dementia library twinning had a pilot planned for October 2022, and the adopter has received knowledge on how to perform evaluation of mobile tools for cognitive training, as well as on how to set up a library of validated apps. Then the Protein fortified bread innovation will likely continue to be developed, under more scientific route with both participants applying for further funding to continue their works. So, for the last two cases, while a timeline hasn't been so clearly defined, future activities have been planned and the proper learnings to continue the project have been shared. In all 3 cases there was the implied notion that not all the objectives were met, but there was a willingness to continue to work to together in towards the improvement and/or implementation of the shared innovation. More on the activities performed contrasted with the one that were initially planned, as well as future plans for development, can be seen in the following section "findings from adopters".

On the issue of costs and outcomes, some originators chose to focus on costs (n=5) while others on the outcomes of the implementation of the innovative practice (n=2). Three projects have provided unrelated data. This information mostly concerned general costs and outcomes of the innovation that could only be partially extrapolated to the context of the twinnings – keeping in mind the small time and budget scale of the program. For those who focused on costs, they ranged from 5-10 euros per person/month to several million euros. This was expected due to the varied scope of twinning innovations that included both digital platform and apps, but also government programs. Table 9 shows the estimated implementation costs for the twinning originators that chose to disclose these numbers.

*Table 9:* ***Twinning innovation implementation costs***

| | |
|---|---|
| **Actif age** | 1-10 euros person/month |
| **Healthy lifestyle assessment toolkit** | 500.000 euros total |
| **LabSaud** | 45.000.000 euros |
| **Slimotheek** | 14.000 euros + 3.000 euros for yearly maintenance |
| **My Home Fits** | 2500 euros /year |
| **SoCaTel** | 2.000 euros total (varying with country fees and cloud capacity) |

Then, on the topic of innovation outcomes, originators described numbers and perspectives on the usage of the innovation by its key demographic, either by tasks performed, downloads, or scientific impact. For instance, the Andalusian Health Population Database has collected data from 13 million people (users of the tool since 2001), including 601 million diagnoses, 2 million functional assessments, 65 million vaccines, and 1 billon lab tests. The Clear Dementia apps is a free to use apps, with 6000 downloads from 178 countries, and the Inspire D Reminiscence app has shown to significantly increase its users' quality of life, including people with dementia and their carers[27] - it has been evaluated in 10 research papers, and features in a chapter of an international book on reminiscence and life review. The twinning outcomes themselves are evaluated in the next chapter "findings from adopters".

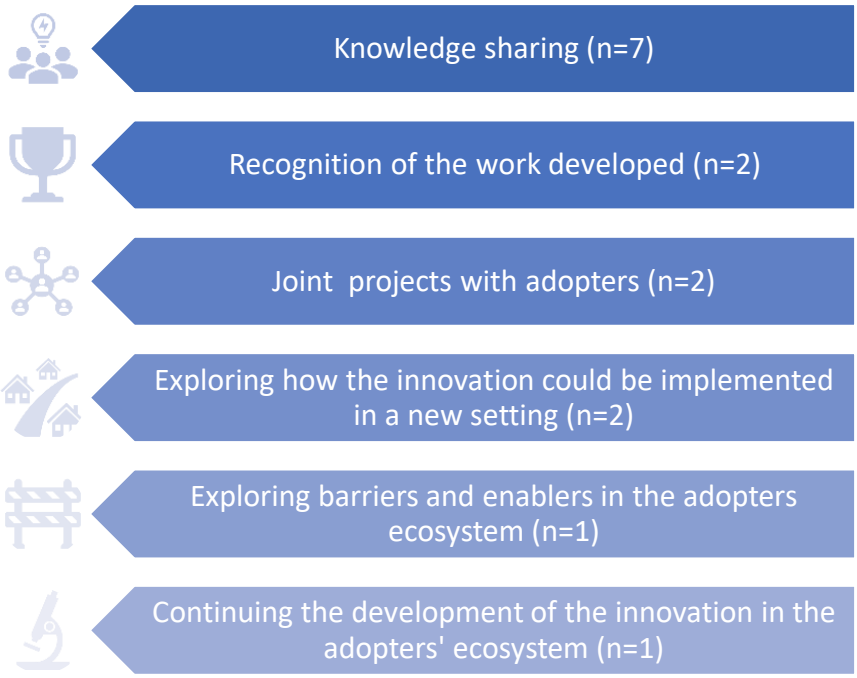
As for the "business case for sustainability and scaling up", most adopters have stated that no study has been prepared as of the time of the finishing of activities (n=7). From these cases, three were related with governmental innovative practices that were regionally or nationally based and with wide implementation – ClicSalud, Andalusian Health population database, and LabSaud. The scaling up of these practices was never foreseen or considered in drafting the twinning activity plan. On the same group, another originator referred economic reasons and the need to continue working on the innovation before launching it to a new market – Actif age platform – and another that no business plan had been made to the difficulty of proving the efficacy and impact of the innovation on its own, regardless of the "gut feeling" from those who interacted with it that it was an "interesting and cheap" solution – Slimotheek and my home fits. Then, 3 adopters referred that while no formal business case had been made, there were exploitation avenues being considered for the continuation of the project – and foreseeably, only then, such plans could be made. Work groups to develop persona profiles and preliminary scenarios for upcoming pilots (Apps4Dementia Library), implementation of the innovation in already existing regional

[27] The originators' final report refers a study with 30 participants

platforms (SoCaTel), are examples of just that. For those originators that claimed to have developed a business plan (n=3), one was based on EU frameworks (Horizon Europe Excellence Hub - Healthy lifestyle assessment toolkit), and another by continuing the improvement of the product with stakeholders from the adopter's region (Protein Fortified Bread) and, integration of the innovation in international social prescription platforms (Elemental) and engaging with future users such as care homes and health students (Inspire D and Clear Dementia apps).

Finally, on the benefits felt in the originator's organization and participants, most of them have referred the ability to share their knowledge with a likeminded partner. This is unsurprising since it has been a staple benefit felt across the different twinning projects and into previous editions (EIP-AHA). See figure 12 for a visualization of the benefits stated by originators, felt as a consequence of participating in the twinnings:

*Figure 12:* ***Twinning benefits for Originators***




The generosity of originators in sharing their time and expertise has been internalized as a benefit from participating in the twinnings, which is a positive indicator for the maintenance of the Active and Healthy Ageing community in the upcoming years.

## 5.2. Findings from adopters

The relationship of the adopters with the innovative practices and their impact on their ecosystem, but mostly, the organization itself, was assessed with 7 questions designed to evaluate; a) why was the innovation chosen, b) what needs did it meet, c) what benefits did it bring to stakeholders (external and internal), d) what were the outcomes, e) financing options, f) scale, and, g) implementation status of the twinning project.

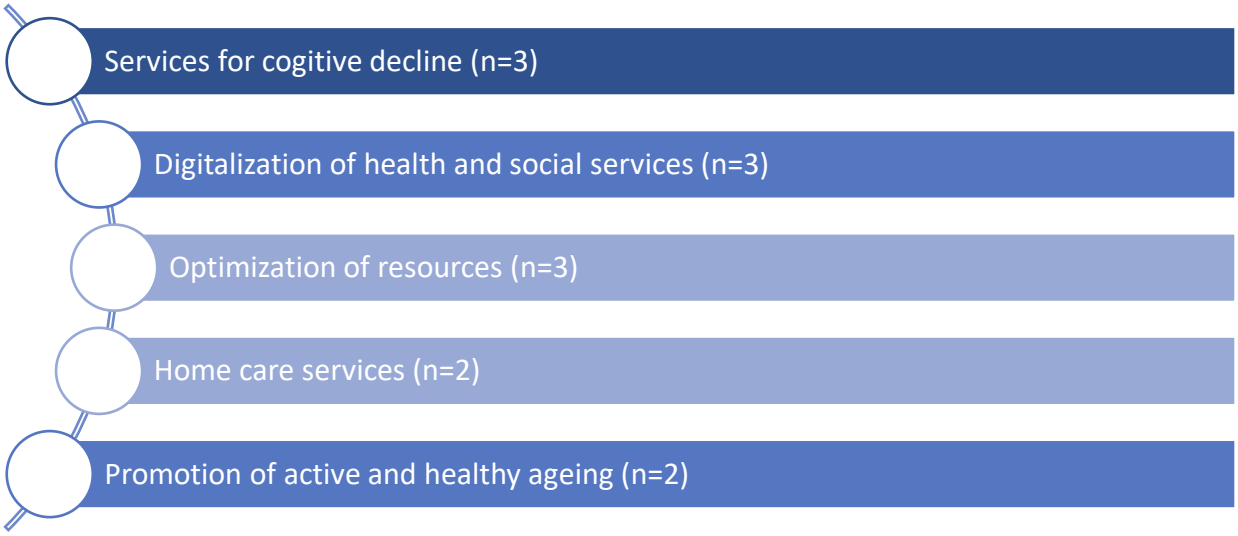
When it comes to the rationale for choosing the specific innovative practice shared in the twinning, 3 twinning pairs have indicated that "learning from an innovation to complement services already being provided", "gaining knowledge about international AHA ecosystems", and "learning from an innovation to develop new services and projects" were the main reasons. Figure 13 illustrates the most referred motivations for the participants' choice of innovation:

*Figure 13:* ***Interest in the good practice***


Hence, adopters mostly looked for symbiotic partnerships, with access to a complementary innovative practice to learn from – either to improve their services or develop new ones. In some cases, an alignment with regional and national health and care strategies.

As for the needs being addressed, some twinning partners directly referred a national health policy document that detailed priorities and strategies in health care investments. For instance, the interest in developing better health and care interventions for citizens with dementia has been inspired by the "National Plan for Dementia" and the "National resilience plan", for the Italian partners, while Algarve's partners concern with health population databases steams from documents such as the "Algarve operational program 2030", and the "Algarve regional development strategy 2021-2027". For other stakeholders who may not be as aware of these overarching policy instruments, their regional needs assessment was mostly based on their own empirical observation and the work being developed by their organizations – especially true for companies. Regardless, some aspects were more frequently referred as regional needs, highlighting some trends:

*Figure 14:* ***Regional, local, and/or national needs being addressed by the twinning***




This is not an exhaustive list, but a clear tendency towards looking for partners to gain knowledge on how to improve services for the cognitively impaired population can be seen. Two twinning adopters (EPIONI and University of Naples Federico II), based on their own needs, choose to learn from Northern Irish (Digital health and Care NI) innovative practices: the Apps4Dementia library and the Inspire D and Clear Dementia apps. In a similar note the Santa Casa da Misericordia de Riba d'Ave is in the final stages of implementing the first Portuguese living lab in the field of dementia, in the Porto4Ageing reference site, taking knowledge from the Galician LabSaud (living lab). As for the digitalization of health care services, the Scottish upcoming Digital Front Door project is a digital health records innovation that has a lot of similarities with the already established Andalusian ClicSalud. Also from the same Spanish region,

the Andalusian health population database has served as an inspiration to potentially develop similar projects in the area of influence of the University of Algarve.

Then, different stakeholder types have experienced varying benefits from interacting with the new innovative practices being implemented in their region, and especially, in their organization. When describing the benefits of the innovation, twinning participants mostly stated their own experience with the project, while others also extrapolated it to a broader population, keeping the ecosystem approach in mind. All twinning participants (adopters) can be classified based on the quadruple helix concept, and this information helps visualize which types of benefits derived from the twinnings were most valuable for each type:

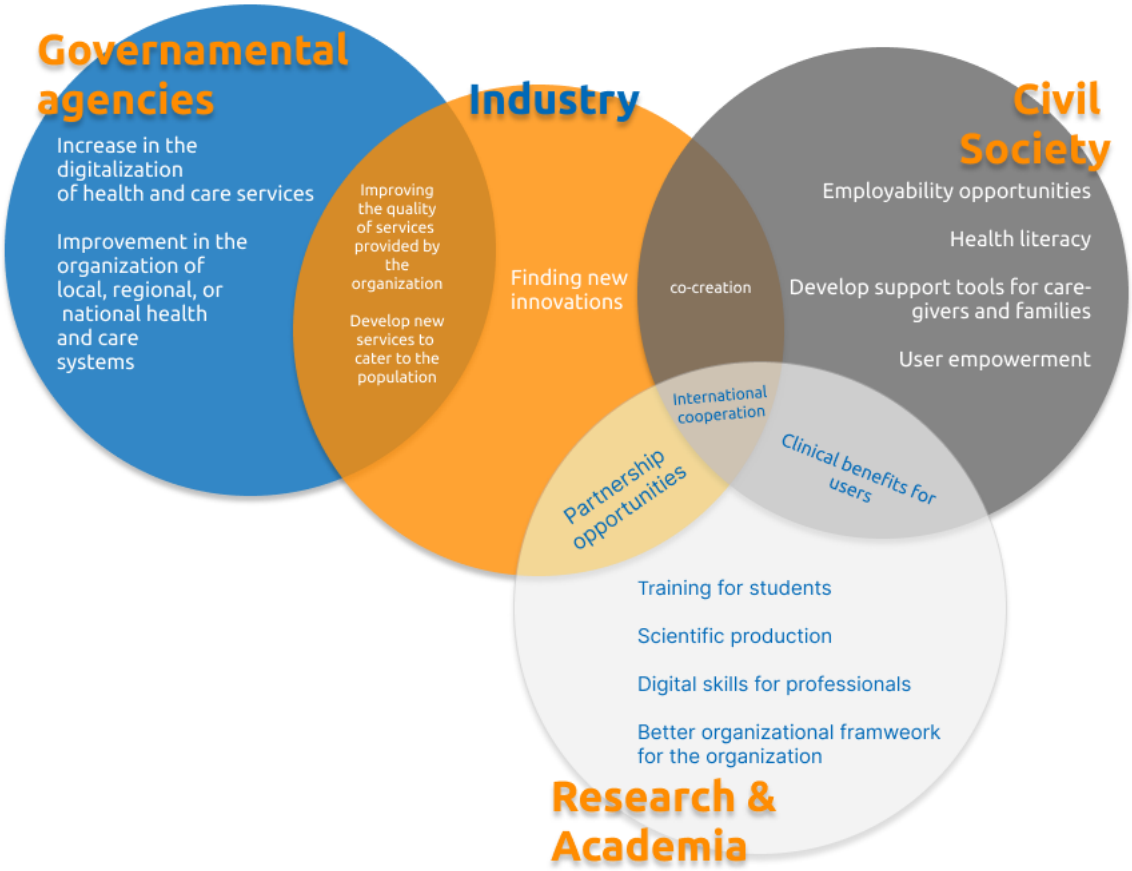
*Table 10:* ***Twinning adopters, by stakeholder type***

| | Research and academia | Industry | Civil society | Policy makers/Government agencies |
|---|---|---|---|---|
| Twinning project | SoCaTel;<br>Andalusian health population database;<br>Health lifestyle assessment toolkit;<br>Protein Fortified Bread;<br>Apps4dementua library; | My home Fits and Slimothek<br>Actif Age platform | Inspire D and Clear reminiscence apps;<br>LabSaud | ClicSalud |

The next image provides a matrix of the adopters' perspectives on how the innovative practices shared in the twinnings have provided them with positive outcomes. Some perspectives were based on personal experience with a short-term impact – the time of twinning activities – or medium-term impact – with prospects of future collaborations with the originators. Others presented a more long-term view on the influence of the knowledge sharing that happened in the twinnings, pointing out hypothetical benefits the innovation could bring in the future for health care systems as a whole, or for the local population, if the implementation of the practice where to reach full adoption/acquisition.

To reiterate, as has been referred in this "final report findings" section, the following points are based on the participants' subjective evaluations, categorized into stakeholder types and thematic similarities in the answers provided.

*Figure 15:* ***New benefits that can be potentially derived from the shared twinning innovation***




As seen on figure 15, some stated benefits overlap between stakeholder types. For instance, both industry and governmental agency adopters found the twinnings beneficial as they provided opportunities to develop or improve on the services they already provided. On the other hand, new partnership opportunities were a positive impact shared between industry, research and academia, and civil society stakeholder types, and co-creation moments with users were stated as positive outcomes by both industry and civil society. As it would be expected, the different participants, according to their organizations of origin, found different prospective value in participating in the twinnings, so developing these types of programs with flexibility in mind, ensuring that different stakeholders are allowed to design their interventions as needed, seems to be a probable method to increase community participation.

Then, as the midterm reports already lead to predict, there was a significant gap between planned and performed activities for most twinning projects. In these cases, the smaller implementation scale of the project was due to similar reasons as to smaller budget executions performed during the program – see figure 19, in the "budget execution" section. Half of the twinning pairs (n=5, 50%) reported having based their activities solely on in person meetings and informal knowledge exchange. Other than that, two pairs have reported to have developed workshops/webinars, and three of them referred training sessions for stakeholders from the adopter organization. Two pair claimed to have performed a small-scale study (n > 15) to gather more user feedback on the innovation (Actif age platform and My Home fits& Slimotheek).

Since most activities were reliant on in-person exchanges, and/or an adequate time frame to set up small scale initiatives, most participants found themselves unable to comply with the plans stated in their proposed activity plan. So, when it comes to the number of people directly affected by the twinnings, it was mostly limited to the number of organization representatives participating in the in-person knowledge transfers.

*Table 11:* ***Twinning outcomes: planned and executed activities***

| Project | Planned | Executed |
|---|---|---|
| Actif age platform | In person-meetings<br>Training sessions with adopters<br>Training sessions with users<br>User studies | In person-meetings<br>User studies/Small scale pilot |
| Andalusian health population database | In person-meetings<br>Translation | In person-meetings |
| Apps4Dementia Library | In person-meetings<br>Workshops/webinars<br>Online conference | In person-meetings<br>Workshops/webinars |
| ClicSalud | In person-meetings<br>Training sessions with adopters<br>Policy, program, or technical discussions | In person-meetings<br>Training sessions with adopters<br>Policy, program, or technical discussions |
| Healthy lifestyle assessment toolkit | In person-meetings<br>Workshops/webinars<br>Scientific papers | In person-meetings |
| Clear Dementia Care and Inspire D Reminiscence App | In person-meetings<br>Workshops/webinars<br>Online conference | In person-meetings<br>Training sessions with users<br>Workshops/webinars |

| | | |
|---|---|---|
| | Scientific work | Scientific work (posters) |
| LabSaud | In person-meetings<br>Training sessions with adopters | In person-meetings |
| My home fits and slimotheek | In person-meetings<br>Workshops/webinars<br>Training sessions with adopters | In person-meetings<br>User studies/Small scale pilot |
| Protein fortified bread | In person-meetings<br>Training sessions with adopters<br>User studies | In person-meetings |
| SoCaTel | In person-meetings<br>Training sessions with adopters<br>Workshops/webinars<br>Translation | In person-meetings<br>Training sessions with adopters<br>Workshops/webinars<br>Translation |

These activities were mostly held in private. Some meeting documentation such as webinar preparation documents and travel and visitation itineraries/objectives were shared with IN-4-AHA management for feedback, when appropriate. Nevertheless, some activities have left a digital trail, and the participants' experience was documented in their social media pages and/or institutional websites. An overview of this public domain information can be accessed in the "social media" section.

On the topic of other funding options to continue with implementation of the innovative practice, other than the 5.000 euros awarded by IN-4-AHA for travel expenses, most twinning pairs have claimed to not have sought any sort of funding so far (n=4, 40%), or to be thinking of applying for other EC funded projects (n=4, 40%). Then, three adopters referred being able to use funds from their national or regional budgets (n=3, 30%) and one (n=1, 10%) to have used money from their own organization to continue the implementation of the innovative practice. One of the pairs stated to be able to access both national and EC funds to continue the implementation of the project. From those who have not sought to find other financing options, one has shown interest to know more about funding opportunities. In cases such as this, being an active part of communities that frequently share open calls for funding and activities, such as IN-4-AHA, and most recently the Futurium platform, can bring real value to stakeholders. Non-governmental agencies, or institutions with lesser positive lobbying influence with decision-makers, often must rely on EC funded projects to continue their activities.

As for the scale of the twinning, it is described in two points: scope and size. Scope considers "who was directly affected by the twinning activities?", while size concerns "how many people were engaged in the activities?". When it comes to scope, the totality of participants stated to have involved

stakeholders from their organization of origin. From those, 30% (n=30) referred having involved potential users. Specifically, as stated before, the Active age and My Home Fits twinning pairs held a small user study to gather feedback on the innovations, and the Inspire D and Clear reminiscence apps have been presented to an audience of 65 caregivers in a webinar organized by the adopter. As for size, table 12 presents an estimation of the number of people involved/directly benefiting from the IN-4-AHA twinnings. These values include observed and potential estimate (the later presented separately).

*Table 12:* ***Twinning size***

| Twinning size | n | % |
|---|---|---|
| No information provided | 3 | 30 |
| Between 1 and 5 persons | 1 | 10 |
| Between 5 and 10 persons | 2 | 20 |
| More than 10 persons | 3 | 30 |
| Only potential estimates provided | 1 | 10 |

The "*potential estimate*" in table 12 relates to ClicSalud's twinning, whose learnings will aid the development and implementation of Scotland's Digital Front Door program – a project with similar functionalities to ClicSalud, that is already in development and funded by the government. When fully deployed it will potentially target millions of individuals in the region.

On the issue of implementation, most innovations featured in the twinnings were not fully deployed. Nevertheless, the Inspire D and Clear Reminiscence apps (dementia apps) have been referred to have been partially adopted or adapted, in tune with their respective activity plans (or even a bit beyond that). These dementia apps are being introduced to health care professionals and users; the protein fortified bread is being produced by a local bakery in Coimbra, and SoCaTel has been translated to the Czech language and is waiting for additional funding to reach full adoption. Other twinning projects that were planned for adaptation (Actif age platform and ClicSalud) can now be more easily classified as pure knowledge exchange activities. For these types of twinnings (knowledge exchange and training) the implementation of the innovation in itself was not an aim, by default. These projects were designed to be expert exchanges for the most part, where adopters took the opportunity to learn from a well-established innovative practice, hopefully to then include this new information in their own products and services.

## 5.3. Findings from both twinning partners

For the final section of the twinnings report, participants were asked to answer together a couple questions regarding the impact and benefits of the program and provide feedback for improvement. The first question was related to the measurement of the degree of success of the implementation of the innovative practice. No twinning project has stated to have accurately measured this criterion. It can be inferred that the usual barriers – lack of time and resources – haven't allowed for proper data collection. In addition, some participants have stated that their twinning project was based in knowledge sharing, hence any success measurements would mostly be qualitative in nature. Having established a local work group for implementation that will last beyond the twinning – that includes the COO of the institution (Apps4Dementia) - continuing to learn from the innovation shared (ClicSalud), and the development of plans for larger scale pilots (Apps4Dementia/My home fits & Slimotheek) are examples of such measurements. Other projects have claimed to have had collected internal reports from the visits and feedback from participants (Actif age). On the more quantitative side a project referred having access to download data that can be filtered to results for the adopter's country (InpireD and Clear dementia apps) and another to have measured the success of implementation by the number of participants included in the process (Apps4Dementia Library).

In a similar manner to the "degree of success in the implementation", no twinning has performed standardized measurements for impact assessment regarding the innovation's transfer process. This includes the non-usage of MAFEIP, which is discussed in the "Further considerations" chapter. Most participants claimed to have not performed this assessment because the practice was not implemented in the adopter's region (n=7), because the process is still in its early stages of development and will continue after IN-4-AHA's tenure (n=2), or because they already processed the clinical and research data to support the value of their innovation (n=1). Nevertheless, the adopter of the Clear Dementia and Inspire D apps (EPIONI) has referred to have sent a feedback questionnaire to the 65 caregivers and health care professionals the innovations were presented to – and they received mostly positive feedback from them.

When it came to the development of a concrete action plan to transfer the solution from the originator to the adopter's ecosystem, most twinning projects had not developed one (n=6). Since a significant percentage of projects in this program where "knowledge exchange" based, this was to be expected. For instance, as it has already been referred, the full adoption of the innovation was never considered to begin with to some twinning projects (n=3). Also, two twinning project participants were

unsure if they would continue with the adoption of the practice, so a transfer and implementation plan would make no sense. Then, on the side of projects that developed these transfer pans, there were those who shared their general outlines, and others that presented a more concrete plan. For example, the Inspire D and Clear Dementia apps twinning claimed to be looking for EC funding to continue the work, mainly on the Greek translation of the Inspire D app, and the Protein Fortified Bread twinning referred to be taking a new developmental approach, improving on the innovation with the support of local infrastructures in the Adopter's ecosystem (as referred in previous sections). As for concrete plans, the Healthy Lifestyle Assessment toolkit will be transferred to the adopter's region thanks to the CHAngeing project (https://www.uc.pt/en/article?key=a-6402180223) This project is a research CSA on Active and Healthy Ageing, funded by Horizon Europe, that included both twinning partners (University of Coimbra and FORTH) and starts on January 2023. Then, a detailed and fully actionable plan was presented by the SoCaTel project. This plan included 3 distinct phases, two of which had been successfully executed during the IN-4-AHA twinnings. Phase 1 "transfer and co-creation know-how" included: co-creation methodologies in the SoCaTel model, change management techniques, and technical knowledge transfer (software, infrastructure, content translation, and facilitator preparation). Phase 2 was the implementation of the co-creation innovation, that consisted of innovation dissemination, site visits, validation, and testing of services. The final phase, phase 3, was planned for the 2022-2023 period and includes the preparation of a project proposal, finding suitable resources for development, integration of the innovation into its IT framework (Portabo) and training of facilitators. After all these steps are completed, a full adoption of the SoCaTel platform between the Reference sites of Catalonia (Spain) and Usti (Czech Republic) will be completed.

Then the participants were asked to reflect on the anticipated/felt barriers to implementation and suggest concrete policy propositions. There was a strong link in the responses that pointed financial constraints as the main barrier and the improvement of budgets allocated for these types of projects as policy guidelines.

*Figure 16:* ***Policy recommendations from twinning participants***


As seen on figure 16, to improve the uptake of innovative practices across EU regions and countries, the main suggestion is to increase the funds awarded to these types of activities. Not only programs such as the twinnings should receive higher budgets, but more resources should be given to regions willing to adopt or export innovations in general. Also valuing these international exchange activities as a positive element for performance evaluation associated with internalization efforts, and the importance of regional cooperation and knowledge transfer programs, was another suggestion. Then some projects referred the barriers and how they intended to overcome them. When the engagement with users was considered a problem, the solution was the investment in more co-creation activities, and when there was a recognition of linguistic differences, professional translation was needed. Furthermore, the issue of barriers and challenges is addressed in more detail in the "Further discussion – twinning readiness assessment" section.

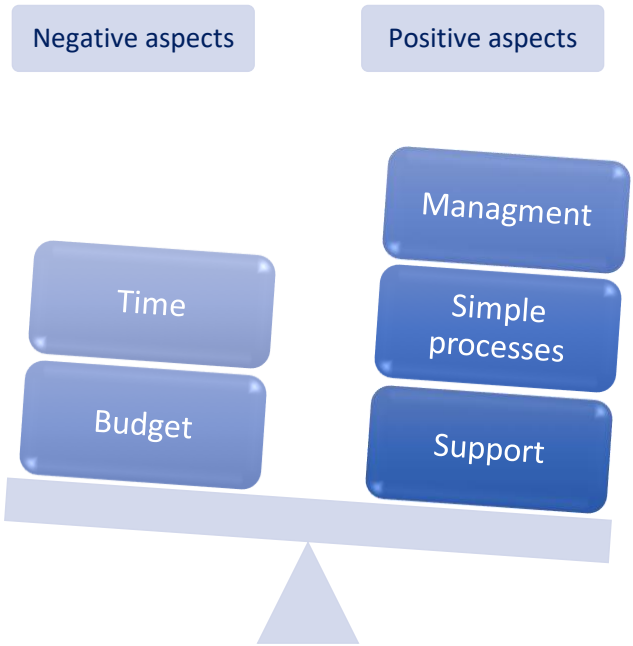
On the question of "how has the twinning contributed to the adoption of the practice", participant's answers varied mostly according to the level of implementation of the innovations. Hence, some twinnings referred that the program contributed by allowing knowledge transfer between parties (n=3). This included learnings that would continue to be used in the development of upcoming similar

innovations (ClicSalud – Digital Front Door), but also knowledge on the possible barriers and priorities to account for when planning the scaling up of the innovation (Inspire D and Clear Dementia apps). Others have claimed that the twinning had been valuable tool to set the groundwork for the innovation's adoption (Aps4Dementiaadoptionhy Lifestyle assessment toolkit), to set up contacts and provide inspiration to stakeholders (My Home Fits and Slimotheek), and to improve and increase awareness about the innovation (Protein Fortified bread). As for a fully realized completion of project activities resulting in the adaptation of an innovative practice, SoCaTel was the major example. SoCaTel is already implemented in several countries, and the transfer to the Czech Republic will be a solid example of scaling up that was facilitated by the IN-4-AHA's twinnings program.

One project wasn't sure if the program had contributed to the transfer of the innovation, since they were hesitant in affirming that the process would continue in the future.

Finally, participants were invited to share feedback for future program improvements. Both positive and negative aspects were shared, as seen in figure 17.

*Figure 17:* ***Feedback from participants***




Seven out of ten twinning project participants referred the lack of time to implement activities as an issue to be improved upon. Bureaucratic tasks such as contract signatures take time, and that should be accounted for in developing these types of programs. In addition, unforeseen circumstances such as

epidemic outbreaks and personal changes can delay the execution of an action plan. With this in mind, future twinning activities should aim to allow activities to be planned in the span of a full year. Suggesting 9 months for activities followed by 3 months of buffer period do deal with any externality could be a mitigation factor for this issue. The IN-4-AHA twinnings were planned for 6 months, but the time that has been actually allocated for the activities varied widely across the different projects, based on their stakeholder type (governmental agencies and universities often have longer contract vetting processes) and if they started in first group (1st 7 selected pairs that were hindered by Covid-19 restrictions) or the second one (the final 3 pairs, that fell close to the summer vacation period). As for the budget, the suggestions were as expected: that the amounts could be larger and there should be more flexibility in the management of the funds. One project even referred that since the only expenses covered were the ones related to travel and accommodation, it only partially reimbursed the experts, since their daily allowance rates (for example) were not accounted for. These findings are in line with those already presented in table 7: Twinning program challenges.

On the flip side, participants seemed to be appreciative of the support and management provided, which is a point in favor of straightforward and uncomplicated procedures that allow stakeholders to plan, implement, evaluate, and continue their projects at their own pace.

### 5.4. Twinning impacts

The 10 twinning pairs – except for one, that got a 1-month deadline extension for extraordinary reasons – were given 6 months to perform their activities. This time frame has proved to be insufficient to implement all the planned tasks and was made worse by the socio-economic and epidemiologic conjecture of late 2021 until 2022. Even if the 6 months period was fully realized, it would still be difficult to gauge at medium to long term impacts without relying on speculation. For a more accurate evaluation, twinning pairs would have to be reassessed after the tenure of IN-4-AHA as to gather more evidence of what extra activities had been developed. This is not possible, since the IN-4-AHA project closes its own activity on the 31st of December 2022, and that no support or extra funds were allocated to be awarded afterwards – or even after the official deadline for each twinning project. In addition, the total amount budget awarded could only support small scale endeavors, covering exclusively travel and accommodation costs. Any other activities such as webinars, workshops, papers/posters, and translations were only possible due to in kind contributions from the participants and their organizations of origin.

Nevertheless, the twinning program has had some impacts that can be inferred from the participants' accounts and from a general analysis of the overall activities

### Short term

The major contribution twinning participation, as proven by accounts from participants from the IN-4-AHA and previous EIP-AHA editions was networking and knowledge sharing. Twinnings have allowed a continuous sense of community, and for IN-4-AHA stakeholders to continue working together in a format they were accustomed to. Some of the Reference sites (RS) and institutions participating in this edition of the program had already participated in past ones (RS Andalusia, RS Scotland, RS Campania, RS Porto4Ageing, RS Catalonia) while others did so for the first time. For this last group, some adaption to the benefits and limitations of the project was necessary, and larger more ambitious projects were not accepted or had to be reformulated as to comply with the time and budget for activities. Furthermore, the majority of twinnings were "*knowledge exchange and training based*", hence participants were aware of this program as a tool to gather learnings and experiences, but also build relationships and future partnerships. Hence, so far, the twinnings have achieved:

- 10 finalized twinning projects (10 applications, 10 midterm and 10 final reports)
- 3 partially adopted/implemented innovative practices (SoCaTel, Inspire D and Clear Reminiscence apps, Protein Fortified Bread)
- 7 knowledge exchange activities between 14 different EU regions from 5 countries (Spain, Portugal, The Netherlands, Italy, and the United Kingdom)
- 1 future pilot – planned for late 2022 (Apps4Dementia Library)
- 1 upcoming scientific paper – 2023 (Protein Fortified Bread)
- 2 twinning pairs looking for opportunities to run together for other EU projects/funding opportunities (Inspire D and Clear Reminiscence apps, SoCaTel)
- 2 small scale pilots (Actif age/ My home fits and Smart Library)

### Long term

Looking at the twinning projects themselves, the one with the most potential for long term impact, even if indirectly is ClicSalud. This twinning was a "knowledge exchange and training" type, included in a larger effort to develop a service in the adopter's region – RS Scotland. The Scottish government is already developing an innovation like ClicSalud, the Digital Front Door. In summary the Digital Front Door will allow for the storage and access of digital health records, but also perform

administrative tasks without the need to physically visit a health care provider location. In a similar manner, the implementation of SoCaTel in the Chezch Republic seems to be dependent on available funding only since both parties (originator and adopter) seem interested in continuing the process. If successful in the mid-term period, this implementation will widen the cultural and geographical scope of the innovation and serve as an illustration of a fully realized scaling up project, which had its inception with the support of the IN-4-AHA project.

## 5.5. Budget execution

Fifty thousand euros, to reimburse expenses regarding travel and accommodation were allocated for the twinning tasks. Each twinning pair was awarded 5000 euros in this regard. At the end of all activities, the overall budget execution was 50%, which roughly translated to 25.000 euros. Table 13 has a breakdown of the expended amounts broken down by project.

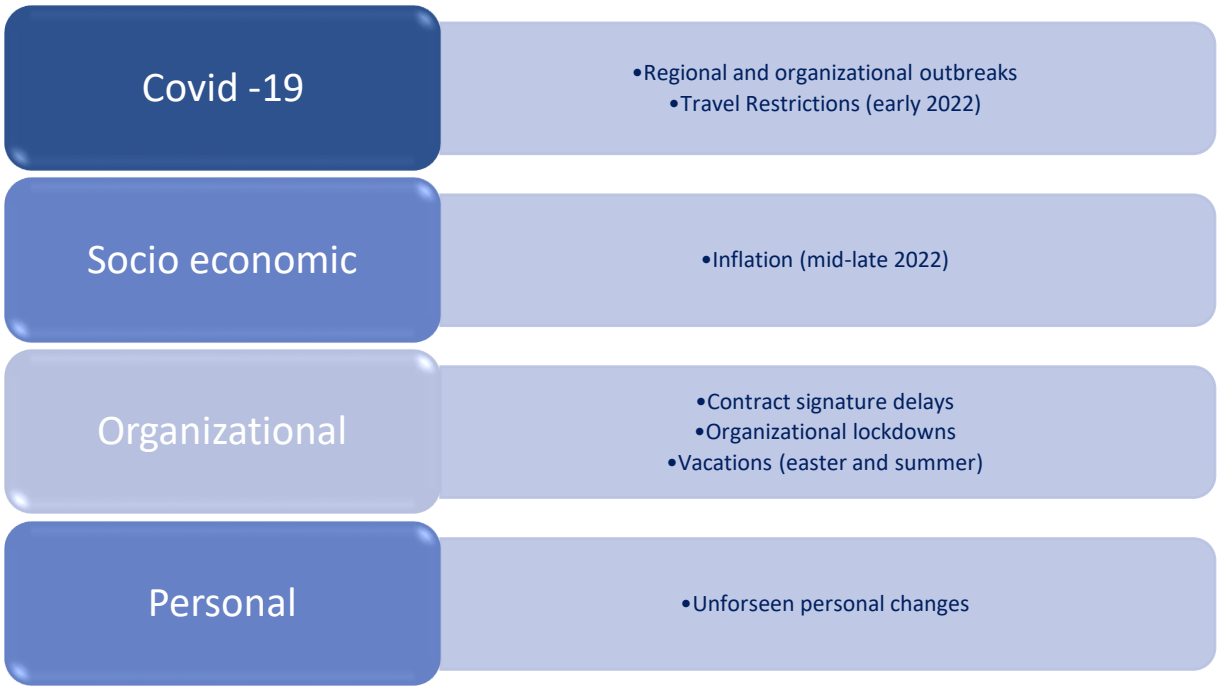
*Table 13:* ***Budget execution, per twinning***

| | | Predicted | Executed | |
|---|---|---|---|---|
| | | n (euros) | n (euros) | % |
| Actif | Originator | 3660 | 535,15 | 14,62 |
| | Adopter | 1300 | 1118,8 | 86,06 |
| Andalusian Health population | Originator | 0 | - | - |
| database | Adopter | 4990 | 251,6 | 5,04 |
| Apps4dementia | Originator | 2500 | 394,59 | 15,78 |
| | Adopter | 2500 | 1874,37 | 74,97 |
| ClicSalud | Originator | 0 | - | - |
| | Adopter | 50000 | 5000 | 100 |
| Healthy Lifestyle assessment | Originator | 2454 | 1058,59 | 43,13 |
| toolkit | Adopter | 2480 | 0 | 0 |
| Inspire D and Clear Dementia apps | Originator | 2850 | 2188,03 | 76,77 |
| | Adopter | 2150 | 2124,58 | 98,79 |
| LabSaud | Originator | 2500 | 275,24 | 11,01 |
| | Adopter | 2500 | 303.45 | 12,14 |

| | | | | |
|---|---|---|---|---|
| My home fits & Smart Library | Originator | 2200 | 2224,51 | 101,11 |
| | Adopter | 2600 | 2452,69 | 94,33 |
| Protein Fortified bread | Originator | 3000 | 2960,47 | 98,68 |
| | Adopter | 1920 | 1045,38 | 54,44 |
| SoCaTel | Originator | 2500 | 2019,83 | 80,79 |
| | Adopter | 2500 | 1576,85 | 63,07 |

As seen on table 13, most twinning participants have not fully executed their allocated budget – except for ClicSalud. Furthermore, 7 out of 20 participants have used less than 50% of their predicted budget. The reasons behind this fact are connected to the wider global socio-economic and public health framework during 2022, the inner workings of the organizations themselves, and other personal factors. There has been a similarity between these factors and the hindrances stated in the midterm report. Figure 18 illustrates the reasons provided by participants for not utilizing the full scope of the budget they have allocated for activities

*Figure 18:* ***Reasons for not using the planned twinning budget***




Therefore, adjustments to individual project plans had to be made, and were accounted for in the final reports. Either the scope of the project was restructured as to center on the main activities, as travel frequency and length had been reduced.

# 6. Further discussion

## 6.1. Twinnings' integration into a scaling up strategy

Testing innovative practices in distinct European countries offers stakeholders a unique moment to learn from the know-how of other likeminded partners, improve the quality of their work and the services they provide, but also iterate on their innovations. This takes a very specific space in any scaling up model, related to test phases and finding complementary partners. Projects across all TRL levels can benefit from these activities – either for learning, testing, adopting, or selling innovation – that can be adapted to fit the different twinning types. The EIP on AHA scaling up model (2015) takes this into consideration. The two parts in the model are deciding on what to scale up, and then, how to scale up. Since the network was highly devoted to compiling and disseminating its good practices, it's no surprise that 3 out 5 steps are related to these matters.

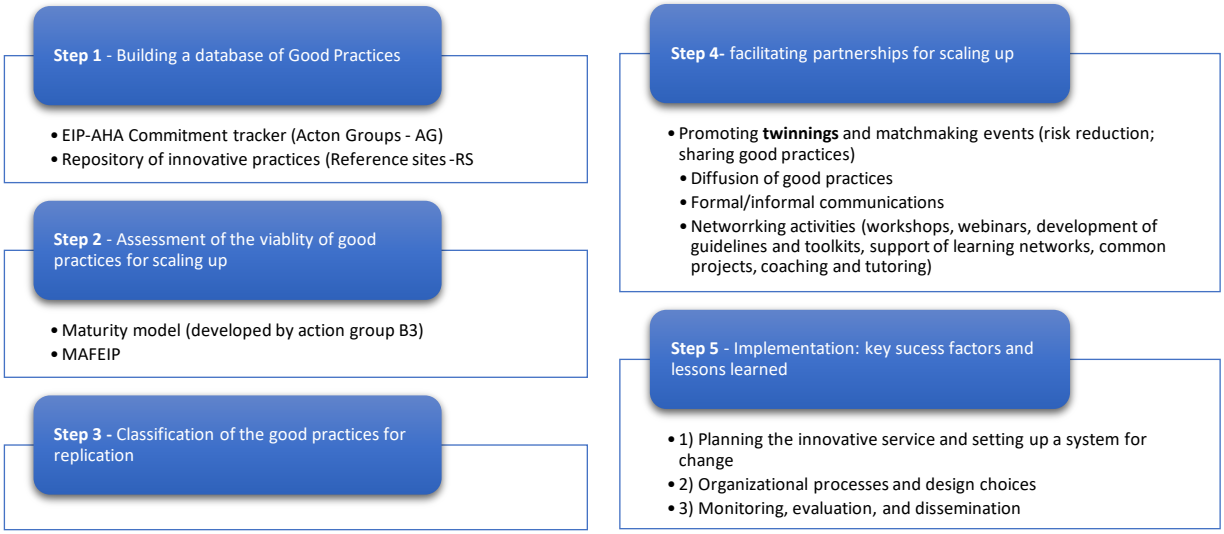
*Figure 19:* ***EIP on AHA scaling up model (2015)***


Adapted from European Scaling-up Strategy in Active and Healthy Ageing (2015) European Innovation Partnership on Active and Healthy Ageing

The more practical part regarding field work, of bringing practices to the public starts by facilitating partnerships, and then implementation. Image X shows a summary of what it takes to start scaling up any given practice, given the EIP on AHA's framework.

*Figure 20:* ***The 5 steps of the EIP-AHA's scaling up model***

**What to scale up** **How to scale up**




Adapted from European Scaling-up Strategy in Active and Healthy Ageing (2015) European Innovation Partnership on Active and Healthy Ageing

As seen on step 4, figure 20, twinnings are an essential part of the scaling up process. In a general sense, they set up partnerships between stakeholders from different regions, but on a more practical sense, they also provide them with an opportunity to test their innovative practices. Both the Scale AHA study (2017) and this IN-4-AHA Twinnings activity report (D4.3) highlighted just that, by showcasing the fact that many of the difficulties felt while trying to implement their practices during the twinnings, were context related, and can be at least partially mitigated if there is extensive knowledge and previous interactions with the ecosystem stakeholders wish to scale up to.

For the duration of the IN-4-AHA's CSA, twinnings served a similar purpose. They also provided the space for cross border transfer of innovative practices. In addition, they also served the purpose of community engagement, by being aimed exclusively at Reference Sites.

Parallelly, the IN-4-AHA continued pursuing one of its major objectives: the development of a new scaling-up model. IN-4-AHA's scaling up model targets companies and service providers. In that sense it has a more business centric approach. It has 5 different stages and two horizontal pillars. These pillars are a) strategy, and b) stakeholders, highlighting the importance of proper planning and keeping the individual front and center when designing a scaling up plan. The model has 5 steps: Learn, Plan, Pilot, Prepare, and Ramp-Up. These sequential (but fluid) steps are divided into different categories, to which the innovator must pay attention before deciding to move on to the next step. Furthermore, these categories highlight key components that must be continuously assessed to ensure success: Problem, Environment, Solution, Recourses, Risks, Monitoring, and evaluation.

*Figure 21:* ***IN-4-AHA's Scaling up model***[28]


This model supports stakeholders in evaluating if the need, the context, the innovation, the risks, and the resources are kept in mind in each phase. A series of rhetorical questions are associated to each phase in the model, as to support self-evaluation. A positive response could indicate that the reader is ready for the next step, while a negative one may point to a weakness to be addressed in their scaling up plan.

*Table 14:* ***IN-4-AHA Scaling up model***[29]

| | Learn | Plan | Pilot | Prepare |
|---|---|---|---|---|

[28] The Innovation Scale up and Roadmap is available at IN-4-AHA's website in the outputs section, here: https://innovation4ageing.tehnopol.ee/wp-content/uploads/2022/10/Final_IN-4-AHA-scale-up-model-and-roadmap-22-10-27_final.pdf

[29] Adapted from IN-4-AHA's scaling up and roadmap, here: https://innovation4ageing.tehnopol.ee/wp-content/uploads/2022/10/Final_IN-4-AHA-scale-up-model-and-roadmap-22-10-27_final.pdf

| | | | | |
|---|---|---|---|---|
| **Problem** | What is the problem that the solution is designed to address in the current market? | Should the problem be re-defined? | Does the problem appear the same as defined in the earlier stages? | Is the problem to be addressed consolidated? |
| | Is the problem same in the target market? | Which aspects of the problem will be addressed in the pilot? | With new information gained during the pilot, are there any additional venues for the solution opening up? | |
| | Who is the need owner? And who are other groups impacted by the problem? | | | |
| | What is the problem's impact? | | | |
| **Environment** | What is the regulatory environment? | What are the legal settings for the pilot? | Which environmental factors had the most impact? | Does the company have extensive comprehension of the market they will operate in? |
| | What are the trends and demographics? | What is the health and care setting for the pilot? | Was any environmental factor overlooked? | |
| | What are the end users and other stakeholders? | What is the cultural and behavioral aspects that might influence the pilot? | | |
| | What are the infrastructures and processes in place? | What are the main actors in the field, relevant for the testing? | | |
| | What are the competitors' alternatives? | | | |
| **Solution** | What is the solution | What is the value proposition for the target market? | How have the stakeholders accepted the solution? | Are there well-established aims and goals, to define what it means to successfully scale up? |
| | Does the solution address the needs at the target market? | What is the aim of the pilot? | Which features proved to be most significant? | After user feedback, is the solution market ready? |
| | What is the primary target group? | | | Is there a clear value proposition for stakeholders? |
| **Resources Risks** | What are the available finances? | What is the scope and scale of the pilot? | Is there a difference between the planned versus the needed resources? | What will be the pace of the scaling up? |
| | What are the available competences and capacity? | What are the regulations in place for the pilot? | | What effort is necessary to ensure the solution will be integrated and running in the target market framework sustainably? |
| | Who are the partners? | What effort is necessary to integrate the innovation into the target market framework? | | Does the company possess the necessary competences and capacity to run the scale-up, or they must include stakeholders and additional resources? |
| | What is the infrastructure and supply chain? | Which resources are necessary to adapt the solution for the pilot project? | | What is the long-term strategy for financing the scale-up? |
| | What are the needed licenses and permits? | Which partners are needed to implement the pilot project – host sites, service providers, medical professionals etc.? | | |
| | | What kind of activities are necessary for a successful pilot? | | |

| | | | | |
|---|---|---|---|---|
| | What are the clinical/ market/ regulatory/ technical risks? | What is the estimated budget for the pilot project? | | |
| **Monitor and Evaluate** | - | Are there data governance guidelines in place? | - | Has a constant monitoring and evaluation plan been enacted? |

Activities such as twinnings are particularly relevant for some steps in the scaling up model. Evaluating the network of potential partners in the "Learn" phase is clear example. Smaller companies often don't have enough scale to compete with larger enterprises, meaning that they can find great value in synergies with complementary partners. Even for large companies, knowledge exchange can be beneficial, notwithstanding the issue of corporate secrets, which often forces them to work in silos. Relying on specialist communities, such as the EIP-AHA/IN-4-AHA community, allows startups and SMEs to informally get to know likeminded partners, and allow them to find common ground to collaborate on future projects. Twinning participants were supported to do just that. Most twinning partnerships were based on knowledge sharing or innovation adaptation, and hence, there was no actual scaling up of a good practice. Nevertheless, participants were able to develop international connections, and develop future collaboration plans. In addition, during the evaluation of the environment for the pilot suggested in the "Plan" stage, stakeholders can benefit from having previous contextual information. Participating in twinnings can be a first step into a new environment and allow stakeholders to gather empirical data to prepare a pilot/test their solution on a new setting.

In summary, this report has shown that twinnings are highly regarded as community-building and knowledge-sharing activities. There are clear advantages for companies and other stakeholder groups to engage in these types of activities. Hence, including twinning activities has proven benefits for companies and projects that have a strong need for community building and innovation transfer. Nevertheless, as already discussed in Table 7 "Twinning program challenges ", there are some steps to make twinnings more appealing to companies. Allowing more budgetary flexibility and widening the timeline for activities are probably ways to achieve this goal and should be considered by projects attempting to plan and implement twinning programs for companies in the future.

## 6.2. Futurium

Amongst most relevant activities developed in the context of the EIP-AHA were those connected with the Action Groups (AG) and the repository of innovative practices. The AGs provided a semi-formal structure where stakeholders could commit to activities, submit, and share their respective works. This came in the form of commitments, periodic action plans (the most recent ones from 2018-2020), and good practices compilations. But, since the EIP-AHA website is no longer active, and the repository has been archived, these activities had to be moved. The EC-supported solution for the moment is Futurium (https://Futurium.ec.europa.eu/en/active-and-healthy-living-digital-world/ ) .

Futurium is a forum-based platform, where members can freely sign in, view and post in thematic subpages organized according to relevant Horizon Europe priorities. This differs from the type of work and management implemented by EIP-AHA's action groups, but allowed for the upload, for future reference, of some of the community's achievements such as personas (https://Futurium.ec.europa.eu/en/active-and-healthy-living-digital-world/library/eip-aha-blueprint-personas ), and the repository of innovative practices (https://Futurium.ec.europa.eu/en/active-and-healthy-living-digital-world/ecosystems-and-reference-sites/library/eip-aha-repository-innovative-practices-reference-sites ). To ease this change, the IN-4-AHA consortium developed a specific plan to promote and animate Futurium. These activities included a) the good/best practices months, and b) the monthly newsletter (https://ec.europa.eu/newsroom/livingdigiworld/newsletter-archives/view/service/2217 ).

The Best Practices month was developed to boost the usage of the platform, by inviting stakeholders to share their work in Futurium's simple posting format. During the period of one month, Futurium posts in the "best practices section", identified with the IN-4-AHA tag were entered into a selection pool to participate in a showcase webinar. The IN-4-AHA consortium held two best practices months, one in June 2021, and another in May 2022, with 14 and 4 participants each. The recordings of the webinars where selected participants presented their innovative practices can be seen in the consortium's page, under "project outputs – event recordings" (https://innovation4ageing.tehnopol.ee/tools-and-outputs/project-outputs/ )

The most important contribution from Futurium to the twinning activities was embedded in its' design. Building from the work already developed by previous CSA's, IN-4-AHA aimed to promote best practices developed by the community, but since the EIP-AHA portal was unusable, and the members of the Action Groups were transitioning to new roles and responsibilities, Futurium turned out to be the only

feasible mean for stakeholders to share best practices. Furthermore, it was expected that the consortium's activities would naturally feed from one another. Hence, matchmaking activities and the collection of best practices were meant to be a *warm-up* to the twinnings. That ended up happening, but not in the scale it was expected to. As it was previously mentioned, one of the twinning pairs had participated in the matchmaking event, and similarly, one of the best practices selected as one of the "winners" of the best practices month, ended up being shared in a twinning. Diraya – ClicSalud, the Electronic Health record system from the Andalusian Health Care system has already been posted in Futurium, and is available for consultation. (https://Futurium.ec.europa.eu/en/active-and-healthy-living-digital-world/wellbeing-and-health-promotion/best-practices/diraya-clicsalud-corporate-health-information-system-andalusia).

Furthermore, another best practice from Andalusia can be explored in Futurium , the Andalusian Health Population Database (https://Futurium.ec.europa.eu/en/active-and-healthy-living-digital-world/wellbeing-and-health-promotion/best-practices/andalusian-health-population-database-base-poblacional-de-salud) which is also the basis for another twinning. Despite being open form, not allowing for refined post categorization and search, or quality control, Futurium is a simple and quick resource for all types of stakeholders to share their best practices. Promoting platforms in which stakeholders are allowed to share their work in advance, can help projects and companies do a previous screening of the innovations they wish to select for future activities, such as the twinnings

## 6.3. MAFEIP

The usage of MAFEIP was recommended to evaluate the twinnings' impact, whenever applicable. Nevertheless, none of the projects choose to use it. The reasons stated for this fact were:

a) The innovative practice hasn't been implemented (knowledge exchange twinning)
b) Impact assessment was done informally (via feedback forms and other methods)
c) The twinning was too early in development
d) Not enough data was produced to use MAFEIP

Nevertheless, one twinning pair has referred interest in implementing MAFEIP in their organization.

As it would be expected, evaluating the impact of short-term projects is a tricky question. For the projects stating to have performed some kind of impact assessment (n=3, 30%) it was generally based on small samples – the innovation's users (patients, health care professionals, informal carers). To truly have a grasp on the implementation of a best practice in twinning activities, ideally, more time should be awarded to implement the activities. This would allow for more data collection, for example.

Finally, it is important to reiterate that not all twinnings are suited for impact evaluation. Knowledge exchange twinnings can't be measured from that point of view. Likewise, for other twinning types that do not result in implementation. Once more the issue of time, in these cases, is key: 6 months may not be a realistic time frame to implement an innovative practice in a new ecosystem.

## 6.4. Twinning readiness assessment

One of the questions featured in the application form for the twinnings regarded a "readiness assessment". This assessment was based on the Scale AHA (2017) study, mainly the parts where the benefiting and hindering factors to scaling up were listed. The negative factors were turned into a multiple-choice question if twinning applicants could do a previous assessment of their project before moving forward. The objectives with this were two-fold: a) to provide participants an opportunity to diagnose a possible hindrance before the beginning of the project, and b) to add a point of contact and with previous works targeting twinnings developed for the EIP-AHA/IN-4-AHA community.

*Figure 22:* ***Twinning readiness assessment***

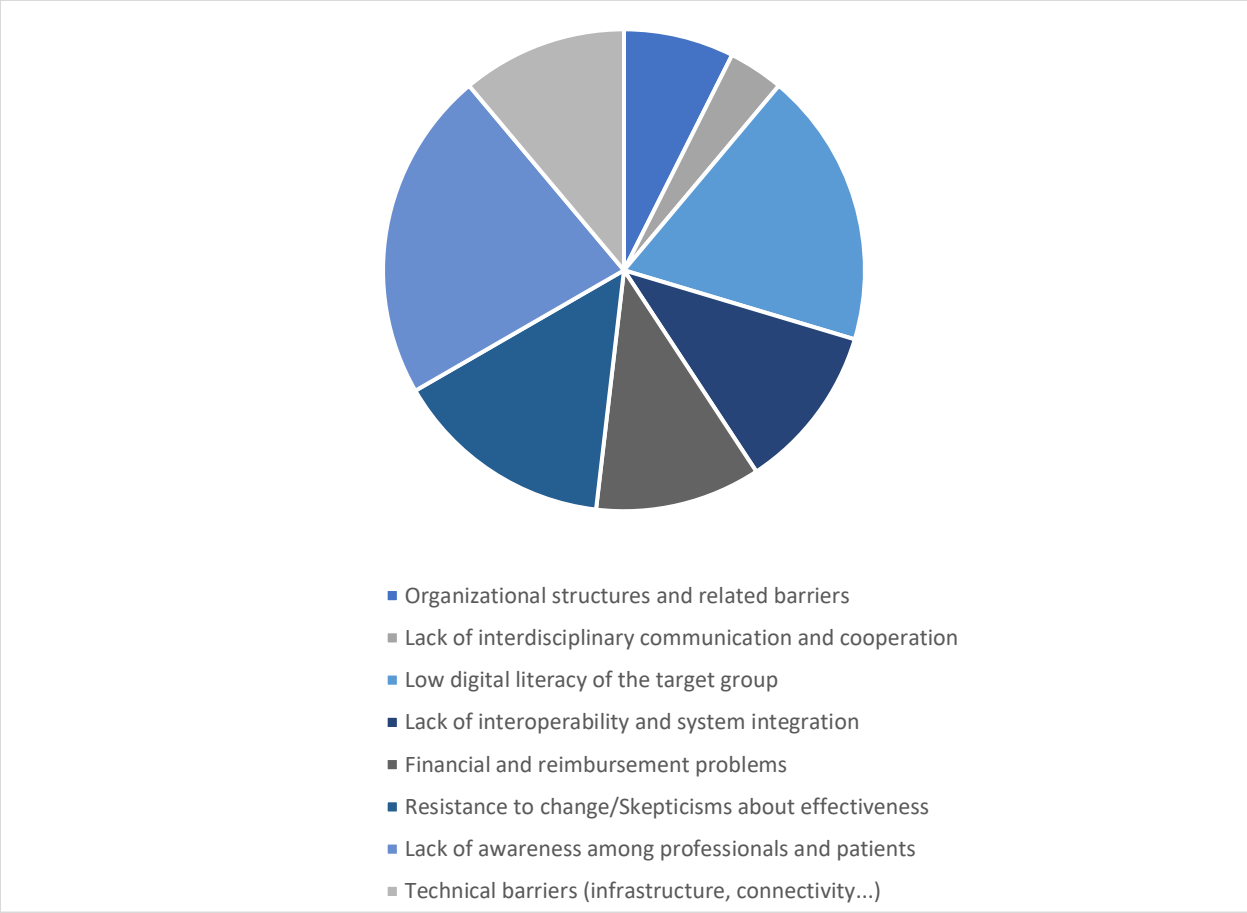



Figure 22 covers the answers provided by participants – multiple answers where accepted. Interestingly the factors mostly associated with hindrances to twinning implementation were those related with final users – mostly health care professionals and patients – "lack of awareness among professionals and carers" and "resistance to change/skepticisms about effectiveness". Having buy-in from these types of stakeholders has been flagged as important to ensure the success of these types of activities. This question was posed as a self-reflection activity, but participants were asked to re-think this issue after the activities were completed.

*Table 15:**Twinning barriers and mitigation measures/factors – insights from the Final report***

| Barriers | Mitigation factors |
|---|---|
| Language | Translators allocated from other projects |
| End of support from the H2020 | Finding new financing sources (new EU funded projects) to keep financing the innovative practice |
| No standardized measurements for success (innovative practice in development) | Non applicable |

| | |
|---|---|
| Covid-19 pandemic – HCPs where unable to participate in the activity | Non applicable |
| Pre-requisite ethical protocols | Co-create with users can help the process |
| Short implementation period | Ensure twinning activities have a buffer time of a couple of months to account for administrative processes |
| Weak user usability | Increase and incorporate user feedback |
| Resistance to change from management | Mitigating factors are represented by the possibility to focus on university departments rather than on the hospital at least for the proof-of-concept stage of the project |

Hence, while having answered this readiness assessment had no impact in the planning or development of the twinning activities, it still pointed out several negative factors that have influenced many iterations of the program. For instance, the issue of funding for innovation transfer and the need to translate technologies to ensure usability is often a barrier that needed to be overcome. Still, the IN-4-AHA twinnings were faced with unique challenges – mainly the pandemic – that would not be possible to have been anticipated.

Finally, when it comes to Twinning success factors, insights from the Final report, indicate as positives:

- motivation of the adopter to learn, experiment and scale up, and adapt already existing solutions prior to developing unique and tailor-made solutions
- Implementing solutions in regions with experience implementing EU funded projects
- Connections and experience of Adopter and/or Originator
- The quadruple helix put in place in their respective Reference site
- The innovative practice fits the regional demography and based on social demand
- National funding for the innovative practice
- Involvement of knowledgeable stakeholders
- Involvement of a multidisciplinary team
- The positive response from users to the innovation
-

## 6.5. Social media presence

The IN-4-AHA twinnings had some social media visibility. Participants organically shared their experience in the twinnings, *mostly* on LinkedIn and twitter, and/or on or their own organization's page.

The Actif – Atendo twinning pair has taken particular care into documenting their activities online. Not only have the participants shared personal posts in their professional accounts, but dedicated pages have been added to their institutional websites. These testimonials present empirical evidence to contextualize the practical importance of twinnings. Has highlighted in other data sources, such as the workshops/webinars IN-4-AHA dedicated to the matter, twinnings bring high value network building, especially for stakeholders wanting to branch out of their regional ecosystems. The following examples are illustrative and do not mean to showcase the full extent of the twinnings' social media presence.

***Figure 23**: Content card in Atendo's website relating to the twinnings*


Full article available at:
https://atendo.es/proyecto/twinnings-in-4-aha-actif-portugal-atendo/

***Figure 24:** Content card in Actifs' website relating to the twinnings*


Full article available at:
https://www.actif.online/blog/article/actif-em-vigo

*"This week Actif and ATENDO project was selected for Twinning applications under the IN-4-AHA framework. With this project we will validate the need of Actif solution in the spanish market together with a great player that is leading the implementation of innovation in senior care. We are excited about this opportunity and we thank ATENDO team, Luis Barros Ríos, Héctor Robles Santalla and Angel Rodriguez Cerdeira for trusting our team and solution to implement this project together.*

*#seniorcare #digitalhealth #stayactif"*

- Sara G Gonçalves (2022, April), IInkedIn https://www.linkedin.com/posts/sggoncalves_Futurium-active-and-healthy-living-in-the-activity-6879805634427006976-AkIs?utm_source=share&utm_medium=member_desktop

*This week we have been informed that ATENDO has been selected to participate in the IN-4-AHA twinning, this represents a unique opportunity for the #Atendo innovation department to share experiences with companies from other regions such as GeneratieThuis and Actif.*

*#Atendo is a member of the Cluster Saúde de Galicia, CSG, which allows us to integrate as a Living Lab and participate in exciting projects that will undoubtedly contribute to generating a better health and care ecosystem.*

*Two Projects led by Josephine Dries and Sara G Gonçalves are two examples of the great things that can be done to promote active aging.*

*In addition, for the development of these tasks, the innovation department will work together with the digital transformation department led by Angel Rodriguez Cerdeira. #innovation #digital transformation #projects #aicp #CSG*

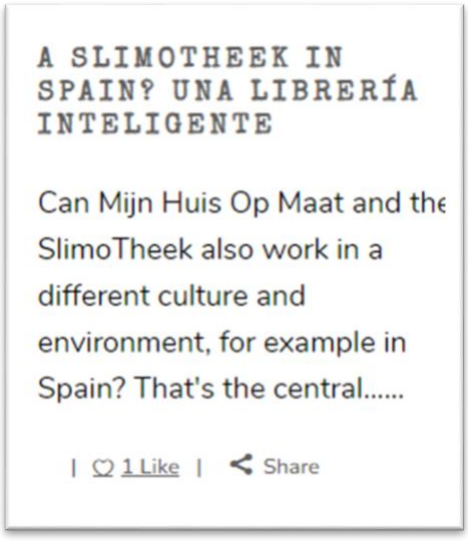
- Hector Robles Santalla (2022. April) LinkedIn, https://www.linkedin.com/posts/hectorroblessantalla_Futurium-active-and-healthy-living-in-the-activity-6879725944228114432-cPjD?utm_source=share&utm_medium=member_desktop

Same for the Atendo-Generatie Thuis twinning, where the same documentation steps were taken, as seen bellow:

***Figure 25:*** *Content card in Atendo's website relating to the twinnings*

***Figure 26****: Content card in Generatie Thuis' website relating to the twinnings*


Full article available at: https://atendo.es/proyecto/twinnings-in-4-aha-generatie-thuis-holanda-atendo/




Full article available at: https://www.generatiethuis.nl/2022/01/10/een-slimotheek-in-spanje-una-libreria-inteligente/

*Today ATENDO visits GeneratieThuis in Sneek as part of the IN4AHA and Cluster Saúde de Galicia, CSG twinning. With this visit we will not only share knowledge and learn about the Generatie Thuis initiative, but we will also learn about the the day care centers models for the elderly in the Netherlands and the concept of active aging and the use of technology. Thanks Josephine Dries Mieke Koot*

*#aicp #IN4AHA*

- Hector Robles Santalla (2022. September) LinkedIn, https://www.linkedin.com/posts/hectorroblessantalla_aicp-in4aha-activity-6917113066371301376-bYf8?utm_source=share&utm_medium=member_desktop

*'Una librería inteligente'*
*GeneratieThuis without boundaries! Together with care organization ATENDO from Vigo, Spain, we will explore whether our SlimoTheek concept can also support the elderly in Galicia ('las personas mayores' check) in living independently at home.*

*This exchange was made possible with the support of the Twinning project of the Innovation Network for Active and Healthy Aging. Super fun of course and thanks also to #HANNN and the Consortium Active & Healthy Aging Amsterdam Metropolitan Area (CAHA-AMA) for pointing this out.*

*Mieke Koot Héctor Robles Santalla Angel Rodriguez Cerdeira Luis Barros Ríos Daan Bultje Anke Heijsman @sabina van der veen*

*https://lnkd.in/dA4fv4js*

- *GeneratieThuis (2022, September) https://www.linkedin.com/posts/generatiethuis_hannn-activity-6886326586048573440-v4WI?utm_source=share&utm_medium=member_desktop*

Not all participants have chosen to showcase and promote the twinnings, Nevertheless, other twinning pairs have chosen to publish articles describing their respective visitations. The following table has a quick preview such online documents.

***Table 16**: Website articles and pages showcasing twinning activities*

| Organization | Title | Link |
|---|---|---|
| ACIS | PERSONNEL OF THE UNIVERSITY HOSPITAL OF OURENSE AND ACIS PARTICIPATE IN A VISIT TO THE DEMÊNCIA RESEARCH, DIAGNOSIS, TRAINING AND SUPPORT CENTER (CIDIFAD) WITHOUT THE FRAMEWORK OF THE EUROPEAN IRMANDAMENT BETWEEN GALICIA AND THE PORTUGUESE REGION OF PORTO | https://acis.sergas.es/cartafol/Persoal-do-Hospital-Universitario-de-Ourense-e-da-ACIS-participan-na-visita-ao-Centro-de-Investigaco-Diagnostico-Formac |
| Universitat Rovira I Virgili – Department of Anthropology, | SoCaTel In-4-AHA Twinning | https://www.antropologia.urv.cat/en/research/projects/SoCaTel-twinning-czech/ |

| | | |
|---|---|---|
| philosophy and social work | | |
| EPIONI – Greek careers network | IN-4-AHA's Twinning Schemes 2021-2022 – EPIONI attends a meeting in Northern Ireland | https://epioni.gr/en/in-4-ahas-twinning-schemes-2021-2022-epioni-attends-a-meeting-in-northern-ireland/ |

Finally, another popular social media channel to share insights regarding twinning experiences was twitter. Table 17 has a summary of publications made by twinning participants, to promote joint events (webinars) or the visitations themselves.

*Table 17:* ***Other social media twinning mentions by participants***

| Project | Page | Link |
|---|---|---|
| SoCaTel | Twitter | https://twitter.com/bdeusdad/status/1513894936273428488 |
| SoCaTel | Twitter | https://twitter.com/bdeusdad/status/1513894936273428488 |
| ClicSalud | twitter | https://twitter.com/DonnaTECScot/status/1523983198123921411 |
| ClicSalud | twitter | https://twitter.com/TECScotland/status/1524026236070252544 |
| Inspire D and Clear Dementia | twitter | https://twitter.com/epioni_ngo/status/1515223910115127301 |
| Inspire D and Clear Dementia | Twitter | https://twitter.com/soo_cchsc/status/1515202526710312970 |
| Inspire D and Clear Dementia | Twitter | https://twitter.com/soo_cchsc/status/1540267537837211648?cxt=HHwWgIDSvcfKkOAqAAAA |
| Apps4dDementia | Twitter | https://twitter.com/duffy_frances/status/1537162062065020928?cxt=HHwWgMC9-YmwjNUqAAAA |

## 7. Final notes

The IN-4-AHA twinnings were a knowledge and technology exchange program aimed at supporting the community in its endeavors, by facilitating the tools for international cooperation. The IN-4-AHA project - Horizon 2020 programme, Grant Agreement No. 101017603

main objectives were to provide the means to allow participants to upscale their solutions, and/or learn from the expertise of others as to adopt a new solution or improve the services already being provided by their institution. Both originator and adopter organizations played a central role in this effort, the first by providing the grounds for the exchange, and the second by reciprocating with feedback and the experience of implementation in a new setting.

But still, improvements to these types of programs can be made, to ensure they are tailored to the needs of a specific stakeholder community. This report has gone into some detail on how this can be achieved in a successful manner for future projects.

Regardless of the challenges felt throughout the process, the feedback shared by participants has pointed that the twinnings experience is a highly rewarding one. The main takeaway for twinnings is that they are still a modern tool bolster community building and the cross-border transfer of expertise and collaboration.

# ANNEXES

*Table 18:* ***Principles for the evaluation and selection of twinning applicants***

| Criteria | Evaluation levels | Points |
|---|---|---|
| **Relevance to IN-4-AHA CSA** | | |
| **Scope within the "Preferred Solutions" topics** | No | 0 |
| | Yes | 1 |
| **Originator proposes a mature solution (=/> TRL4)** | TRL 1 - 4 | 1 |
| | TRL 5 - 7 | 2 |
| | TRL 8 - 9 | 3 |
| **Originator proposes a solution developed in based in co-design with users** | No evidence of co-design | 0 |
| | Evidence of co-design in the early development stages | 1 |
| | Evidence of co – design in the implementation and evaluation stages (feedback loop) | 2 |
| | Evidence of co-design in the early development, implementation, and evaluation stages | 3 |
| **Originator proposes a person-centric solution** | No evidence of patient empowerment[1] after implementation of the solution | 0 |
| | Significant evidence of patient empowerment[4] after implementation of the solution | 1 |
| **Originator proposes a solution that can be translated into the adopter's context, considering their target population** | No | 0 |
| | Yes[2] | 1 |
| **Contractors planned to use MAFEIP to conduct impact assessment after the twinnings** | No | 0 |
| | Yes[3] | 1 |
| **Max Total** | | **10** |
| **Socio-economic benefits** | | |
| **Positive social impacts[4] for users/patients** | No evidence of positive social impacts for users/patients | 0 |
| | Evidence of positive social impacts for users/patients | 1 |
| **Positive health impacts[5] for users/patients** | No evidence of positive health impacts for users/patients | 0 |
| | Evidence of positive health impacts for users/patients | 1 |
| | Evidence cost-benefit improvements to the services provided by the Originator, after implementing the solution | 1 |
| **Positive impact in the Adopters country/region health care systems' resilience[8] (capability to withstand crisis,** | Does not provide an estimate of the solutions impact in the Originator country/region health care systems' resilience (capability to withstand crisis) | 0 |

| | | |
|---|---|---|
| **better expenditure control in terms of health care costs)** | Provides an estimate of the solutions impact in the Originator country/region health care systems' resilience (capability to withstand crisis) | 1 |
| **Reduction in regional disparities in terms of access to health care** | Not stated | 0 |
| | Stated | 1 |
| **Other benefits (environmental[9], positive impact on work conditions or work years[10], intergenerational solidarity[11], reducing other regional disparities such as education or digital literacy, for example)** | Not stated | 0 |
| | Stated (1 point if any benefit if present, 2 points if more than one) | 2 |
| **Max Total** | | **7** |
| **Implementation** | | |
| **Presentation of a complete work plan, and needed steps, with task details, result descriptions, and specific costs and budget.** | No – incomplete information (application excluded) | 0 |
| | Yes – but the work plan has inconsistencies; all sections are filled but some confirming evidence is missing | 1 |
| | Yes – The work plan is completed, all sections are filled and are accompanied with verifiable proof or data, when required. The implementation steps are not totally clear | 2 |
| | Yes- Both the working plan and implementation steps are clear, well filled and accompanied with verifiable data, when required. | 3 |
| **Max Total** | | **3** |
| **Overall Total** | | **20** |

[1] Impact on digital skills, health knowledge, chronic disease management, adherence to prescription, healthy living lifestyles, or independent living.

[2] A solution that can be translated to another language, can feasibly be taught to the users or, health professionals, carers, family members, and management workers; that can be applied to the technical (internet availability and speed, physical infrastructure, available personnel) environment of the adopters.

[3] To be stated in the application form

[4] Impacts seen as improved/increased social interaction opportunities; increased capability to live an active life, and have an active role in society (work, political participation, informal citizen organizations)

[5] Impacts seen as measurable health gains; quality of life indicators; mental health indicators; physical exercise and mobility indicators

[6] Cost reduction with same quality or quality improvements at the same relative cost, *ceteris paribus.*

[7] Quality improvements can be measured, for example, by: Reduction in the number of hospitalizations; reduction in the time of hospitalization; reduction in the overall costs of the services provided by the Contractors that are publicly financed; other positive impacts to the national/regional health care system

[8] Does the solution consider Europe's health care systems need to withstand crisis such as (or similar to) the COVID-19 pandemic, climate change, migrations their related demographic changes?

[9] Waste reduction; decrease in carbon footprint (ex: by eliminating unnecessary travels that would predictably require fossil fuel vehicles); inclusion and compliance with the Contractors' region/country overall environmental policies

[10] Can the innovation allow citizens to increase their active work lives? Can the improve work environments and work conditions for older people?

[11] Bolstered relationships between different generations, as a direct consequence of the implementation of the solution. Intergenerational knowledge exchange and mutual help.

## Annex A – Application form/ Twinning Introductory report

**IN-4-AHA twinning schemes 2022**

The IN-4-AHA twinnings are innovation exchange programs, where a solution developed by an Originator institution is implemented in by an Adopter organization.

Our main objective is to promote innovation scalability, by providing an opportunity to test and apply products in new geographical settings.

Solutions can range from technology-based ones, to training programs and innovative management practices. As for organizations, they must hold Reference site status.

> Applications are open until the XX/XX/XX. Twinnings are set to start early 2022 and warp up by the end of the same year.

Google forms link (alternative to this document) available here: https://docs.google.com/forms/d/1RXHSs5P4GPBpUYMY0K3ekcI9aIRUCtus1j49_09HL2U/edit?usp=drive_web

Or contact us via email at cscampos@reit.up.pt

| | | |
|---|---|---|
| **Adopter** | Contact person (name and surname) | |
| | Email address of the contact person | |
| | Organisation name | |
| | Address of the organisation | |
| | Name of the reference site | |

| | | |
|---|---|---|
| **Originator** | Contact person (name and surname) | |
| | Email address of the contact person | |
| | Organisation name | |
| | Address of the organisation | |
| | Name of the reference site | |
| | Tittle of the good practice | |

| | | |
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| **Innovative practice** (to be filled in by the Originator) | Practice description<br>Please why the practice was developed, what problems does it attempt to solve, its development methodology (research, testing, implementation) and what have | |

| | | | |
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| | been its most relevant outcomes. | | |
| | Please specify the type of innovative solution for AHA is being shared in this twinning (Mark one option with an X) | Regional/national HER systems and summaries | |
| | | Care provider EHR systems integration (joined-up/shared records) | |
| | | ePrescription system | |
| | | Integrated medicines management | |
| | | ICT tools supporting adherence to care plans | |
| | | Technology for falls prevention | |
| | | ICT-supported integration of health and social care services | |
| | | Homecare, tele monitoring and mobile health systems | |
| | | Multi-disciplinary team support, workflow, care planning and co-ordination | |
| | | Health and care needs assessment toolkit | |
| | | Tele-mentoring and virtual consultations | |
| | | Telecare service / call centre | |
| | | Online health portals | |
| | | Age-friendly buildings | |
| | | Robotics | |
| | | Apps/ web platforms | |
| | | Training programs for patients/users | |
| | | Training programs for health professionals | |
| | | Other, specify. | |
| | Which region(s)/country(s) developed the practice? (Mark one option with an X) | Regional | |
| | | National | |
| | | European | |
| | | Trans-continental | |
| | | other | |
| | What is the scope of the practice? (Mark one option with an X) | TRL1 | |
| | | TRL2 | |
| | | TRL3 | |
| | | TRL4 | |
| | | TRL5 | |
| | | TRL6 | |
| | | TRL7 | |
| | | TRL8 | |
| | | TRL9 | |
| | | Unsure (will update later) | |
| | Was the practice designed to? | Allow co creation with users (development phase) | |

| | | | |
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| | (Select all that apply) | Take into account user's feedback promoting a feedback loop of improvements | |
| | | Have a positive impact on users' health knowledge and empowerment | |
| | | Have a positive impact in users' digital skills | |
| | | Have a positive impact in users' employability and/or work conditions | |
| | | Be translatable (language; flexibility to allow iterations) to other settings | |
| | | Have a positive impact on user's social opportunities | |
| | | Have a positive impact on user's health outcomes | |
| | | Present a beneficial cost-benefit ratio for the institutions that have implemented the practice | |
| | | Present a beneficial cost-benefit ratio for the overall health care system | |
| | | Have a positive impact on health care systems resilience | |
| | | Have positive environmental impacts | |
| | | Take into account regional disparities when it comes to access to health care and education | |
| | Please, provide links that corroborate the previous answers<br>Examples: Links to good practices repositories, to regional websites with documentation on the practice, and, scientific papers relating with the development and implementation of the solution. | | |
| | Is impact evaluation going to be performed during this activity?<br>(Mark one option with an X) | No | |
| | | Yes, using MAFEIP | |
| | | Yes, using another tool | |
| | | Uncertain (will update on a later stage of the process) | |

| | | |
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| **Budget breakdown**<br>(to be filled in by the Adopter) | What is the estimated budget for investment in the procurement/implementation of innovative solution(s) | |

| | | |
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| | proposed for this twinning activity? | |
| | What is the estimated budget for travel expenses?<br>State the number of trips and their expected costs<br>(Travel and accommodation), as well as expenditures with public and private transport in and from the nearest airport and hotel or the Originator/Adopters addresses) | |
| | Please, provide an overview of the networking expenses estimated for the duration of the twinning.<br><br>Costs with events, networking or meetings organized to allow for information, know-how and knowledge to be shared | |
| | Provide an overview of the implementation costs estimated for the duration of the twinning.<br><br>Costs with registration fees, solution development, communication services, organizational costs, among similar costs. | |
| | Provide an overview of other costs estimated for the duration of the twinning.<br><br>Other costs if it will have a positive effect with the implementation of the solution | |
| | Describe the problem you aim to address and/or the identified need that your planned investments in this activity should meet | |

| | | | |
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| **Twinning details**<br>(to be filled in by the Adopter) | Objectives of the twinning | | |
| | Twinning type<br>Mark 1 option with an X | Knowledge exchange and training | |
| | | Adaptation | |
| | | Partial adoption | |

| | | | |
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| | | Full adoption | |
| | | Acquisition | |
| | What types of activities are expected to be developed? | Webinars and/ or Workshops | |
| | | In person conferences | |
| | | Online conferences | |
| | | Joint scientific papers | |
| | | Training sessions for adopters | |
| | | Training sessions for users | |
| | | Testing and development activities | |
| | | Studying user or user-solution interaction | |
| | | Policy, programme, or technical discussions | |
| | | Language, translation and similar activities | |
| | Action plan description<br>Provide us with an overview of the resources (staff, travel, infrastructure) and the prospective activities required to execute the Action plan. | | |
| | Action plan implementation<br>Provide us with a timeline and steps for the implementation of said activities and usage of the before-mentioned resources. | | |
| | Twinning readiness self-assessment scale: What challenges you believe that the Adopter will face in this activity?<br>(mark with an x all options that apply)<br><br>This scale presents the perceived challenges from former twinning participants, as described in the Scale AHA (2015) study (https://www.scale-aha.eu/fileadmin/documents/scaleaha_d5.4_finalstudyreport.pdf ), by Empirica. Select the difficulties you are anticipating to face in implementing the proposed twinning in your region. Answers in this question will not be used to evaluate the merits of the application but serve as a point of reflection on possible challenging aspects that may still be addressed early on in the activity. | Organizational structures and related barriers | |
| | | Lack of interdisciplinary communication and cooperation | |
| | | Low digital literacy of the target group | |
| | | Lack of interoperability and system integration | |
| | | Financial and reimbursement problems | |
| | | Resistance to change/Scepticisms about effectiveness | |
| | | Lack of awareness among professionals and patients | |
| | | Technical barriers (infrastructure, connectivity...) | |
| | Provide a timeframe for procurement / implementation until end of 2022. | | |

| | | |
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| | How do you expect to implement the innovation by the end of the year - please state the major milestones, time wise, to achieve? | |
| | Expected outcomes of the twinning activities<br>What are the expected changes and improvements to be gained from this activity, and how will they be measured or compared? What can both Adopter and Originator gain from this twinning activity? | |

| | | | | |
|---|---|---|---|---|
| **Other requirements** (to be filled in in agreement between Originator and adopter) | Is the adopter or originator benefiting from the EU Structural Funds in the field of active and healthy ageing? | Originator | Yes | No |
| | | Adopter | | |
| | Is the adopter financially committed to procuring or implementing the innovative practice until late 2022? | Yes | | |
| | | No | | |
| | I (Contact persons) confirm that the content of this joint application has been agreed between the adopter and the originator applicants. I further provide my contact details (name, email) in case of any questions relating to the application | I confirm (2 persons – originator and adopter) | | |
| | | Contact names<br>Contact email addresses | | |

## Annex B- Mid-term report

**IN-4-AHA Twinnings mid-term report**

This small report is meant to assess the degree of execution of the activities presented in the application form. Its main objective is to diagnose any potential hindrances in the process, and devise a path to overcome them, if need be. It is also a vehicle to provide the IN-4-AHA consortium with feedback on the activity's development and how the experience can be improved, to be more fruitful for participants.

Google form version (alternative to this document) available here:
https://docs.google.com/forms/d/1ezh82SwD7gSbcwAlmAkEpmRku5uYXUcWxUBMsnBUgs0/edit

| | | |
|---|---|---|
| **Originator** | So far, all the programmed activities have been executed? | |

| | | |
|---|---|---|
| | If not, please describe which ones and why. | |
| | What still needs to be done in this regard? | |

| | | |
|---|---|---|
| **Adopter** | So far, all the programmed activities have been executed? | |
| | If not, please describe which ones and why. | |
| | What have been the challenges in implementing the innovation, so far? | |
| | What mitigation measures (if needed) are being developed to resolve these issues? | |
| | So far, as the target population expressed any feedback regarding the impact of the innovation in their lives? | |

| | | |
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| **Additional feedback**<br><br>What has been your experience | Comment Box | |

| | | |
|---|---|---|
| with the Twinnings so far? Leave your comments, ideas, and suggestions for improvements in the comment box below | | |

## Annex C- Final report

**IN-4-AHA twinning Final Report**

As the end of the IN-4-AHA Twinning activity approaches, comes the need to reflect on the work that has been developed, what lessons have been learned, and what steps can be taken in the future to ensure collaboration and the continuation of the implementation of the innovations.

Sustainability is anchored in continuous learning, planning, evaluation, and impact assessment. Hence, this activity has been prepared taking the teachings and framework from over a decade of experience of EIP on AHA twinning's, was well as others from related AHA networks, that also served as inspiration.

We would like to take this moment to thank your participation, in hopes of seeing you in future endeavours!

Google form version (alternative to this document) available here:
https://docs.google.com/forms/d/1TxzVDS9sHT1LS0k77nLANZu7AZ3SdYydkEbKn79OMWQ/edit

Contact us via email at cscampos@reit.up.pt

| | | | |
|---|---|---|---|
| **Originator** | Please provide the name and brief description of the digital solution / the innovative that was the object of this twinning | | |
| | Please describe the evolution of how the digital solution / innovative practice was established at your site, including: | a. background, motivation/need, the health or healthcare problems that your innovation addresses | |
| | | b. process and time for adoption (post-development) | |
| | | c. costs and outcomes (are there any data available from evaluation(s)?) | |
| | | d. has a business case for sustainability or scaling up of adoption been made (by the healthcare entities or by the solution developers, or others)? | |
| | What were the barriers (e.g. political, organisational, technical, etc.) you experienced? What were the mitigating factors for overcoming the experienced problems? | | |
| | What were the success factors (e.g. incentives, use of champions, new models, | | |

| | | |
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| | etc.) that facilitated the implementation of the digital solution / innovative practice? | |
| | How has this activity benefited the stakeholders that directly took part in it, and the overall Originator organization? | |

| | | |
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| **Adopter** | What triggered your interest in adopting the digital solution / innovative practice of the originator? | |
| | What needs in your environment does this digital solution / innovative practice address? How does it relate to the vision and strategy of your region/city? How does it fit into your investment plans and availability of funding and organisational support? | |
| | What benefits and new opportunities for different stakeholders will the digital solution / innovative practice offer once implemented? What changes will it invoke (e.g. new care pathways, new business models, new roles, etc.)? | |
| | Please describe the observed and expected outcomes of the twinning activities. How many citizens have/will benefit from the adoption of the digital solution / innovative practice in your region/city? | |
| | Have any barriers to the adoption been identified, and how do you plan to overcome them? | |
| | What benefits and new opportunities for different stakeholders will the digital solution / innovative practice | |

| | | |
|---|---|---|
| | offer once implemented? What changes will it invoke (e.g. new care pathways, new business models, new roles, etc.)? | |
| | What budget was spent (or will be spent, please also specify the time horizon) in total for adopting the innovation practice? | |
| | What other financing / funding instruments at EU (e.g. ESIF), national or regional level were enacted (or will be enacted, please specify) to support the twinning and / or the implementation of the innovative practice / solution? What were the challenges faced when seeking such funding? | |
| | Please highlight the scale of the twinning, providing figures such as number of citizens affected or potentially affected by the twinning work, number of professionals recruited, etc. | |
| | Did the twinning result in implementation (adaptation, partial or full adoption, acquisition) of the innovative practice in the adopting region? | |
| | If the twinning did not result in implementation: What were the reasons not to move towards implementation of the digital solution / innovative practice? | |
| | How has this activity benefited the stakeholders that directly took part in it, and the overall Adopter organization? | |

| | | |
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| **Originator and Adopter** | How do/will you measure and evaluate the degree of success of the implementation of the digital solution / innovative practice? Have/will you apply any tools, metrics, or indicators to continuously evaluate the expected outcomes? | |
| | Please describe the concrete plan (with milestones) to transfer the digital solution / innovative practice from the originator to the adopted | |
| | Please update and elaborate further on the information provided in your application | |
| | Considering the identified and/or anticipated barriers to adoption, please provide concrete suggestions for policy decision makers how to address these at regional, national and EU level. | |
| | Please, give us some feedback on your experience with the IN-4-AHA Twinnings, and how to improve them in the future | |