



TRANSFERABILITY OF DIGITAL SOLUTIONS ENHANCING INTEGRATED CARE ACROSS EUROPE:

**IDENTIFYING AND PRIORITISING
BARRIERS AND ENABLERS**



**THE PROACT TRANSFERABILITY STUDY
SUMMARY REPORT**

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This report summarises the result of a European study into factors that impact on the transferability of digital platforms supporting integrated care, conducted by Maite Ferrando as principle investigator on behalf of the Association for the Advancement of Assistive Technology in Europe (AAATE), supported by Asel Kadyrbaeva from the European Association of Service Providers for Persons with Disabilities (EASPD) and Evert-Jan Hoogerwerf from AIAS Bologna's WeCareMore team.

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LIST OF ACRONYMS

AAATE	Association for the Advancement of Assistive Technology in Europe
EASPD	European Association of Service providers for Persons with Disabilities
HSPA	Expert Group on Health Systems Performance Assessment
AIAS	Associazione Italiana Assistenza Spastici
BA	Bachelor of Arts
CEO	Chief Executive Officer
CFIR	Consolidated Framework for Implementation Research
CIHSD	Coordinated/Integrated Health Services Delivery
COCIR	Committee of the Radiological, Electromedical and Healthcare IT Industry
DH	Department of Health
EC	European Commission
EIP-AHA	European Innovation Partnership on Active and Healthy Ageing
EU	European Union
HDI	Human Development Index
ICT	Information and Communication Technologies
IT	Information Technologies
MsC	Master of Science
OECD	Organisation for Economic Co-operation and Development
PhD	Philosophy Doctor
ProACT	Integrated Technology Systems for ProACTIVE Patient Centred Care
UK	United Kingdom
USA	United States of America
WE4AHA	Widening the support for large scale uptake of Digital Innovation for Active and Healthy Ageing
WHO	World Health Organisation



EXECUTIVE SUMMARY

The **ProACT Transferability study** has been carried out as part of the European project *ProACT - Integrated Technology Systems for ProACTIVE Patient Centred Care* (<http://pro-act2020.eu/>). It explores the factors influencing the transferability of digital solutions supporting integrated care and presents guidelines on how to scale up and transfer these solutions from one European region/country to another.

The study is based on three stages. The first stage has involved an analysis of existing literature and best practices in transferring integrated care solutions. During the second stage main factors influencing transferability have been identified, based on a qualitative study involving interviews with experts from different countries representing different welfare and healthcare systems in Europe. The third stage has focused on the validation of the conclusions reached in the previous stages through a Delphi study with the experts involved in the research.

As a main result, the study has identified two different categories of factors affecting the transfer of digital solutions, named (a) *essential factors* and (b) *relevant factors*.

The essential factors include:

- Solution-specific factors: **adaptability, usability & solution design, and trialability;**
- Organisation-specific factors: **organisational culture, learning climate and leadership engagement;**
- Process-specific factors: **engagement mechanisms, management & coordination structure and participatory execution and evaluation strategy.**

The relevant factors include:

- Solution-specific factors: **evidence on potential benefits and cost;**
- Organisation-specific factors: **availability of resources, compatibility (interoperability) of the solution with existing organisational practices and openness to change;**
- Process-specific factors: **engagement of opinion leaders and planning procedure;**
- Individual-specific factors: **self-efficacy of individuals involved in the process.**

The last part of the document provides main conclusions and offers specific recommendations for the effective transfer of digital solutions.



1. INTRODUCTION TO THE RESEARCH CONCEPTS

The **ProACT Transferability study** aims to provide an explanatory model for the transferability of digital solutions supporting integrated care, based on the identification of factors that prevent and/or facilitate the transfer of such solutions. This research allows to develop guidelines for optimising the transferability potential of digital platforms supporting integrated care from one European region/country to another.

The research is designed in a way that ensures the representation of viewpoints from countries with different social welfare and healthcare models in Europe, based on the five models frequently used in literature (Ferrera, M., 2013; Popova & Kozhevnikova, 2013): the Nordic/Scandinavian; Continental (Bismarckian); Anglo-Saxon; Southern European (Mediterranean) and Central/Eastern European Model (also referred in some reports as post-communist countries). We presume that the conclusions might have relevance beyond Europe as well, since many of the identified barriers and facilitators concerning the implementation of e-health solutions in countries such as Canada, USA, Australia, and Israel were found to be similar (Ross, Stevenson, Lau, & Murray, 2016).



WHAT DO WE CONSIDER AS DIGITAL PLATFORMS ENHANCING INTEGRATED CARE?

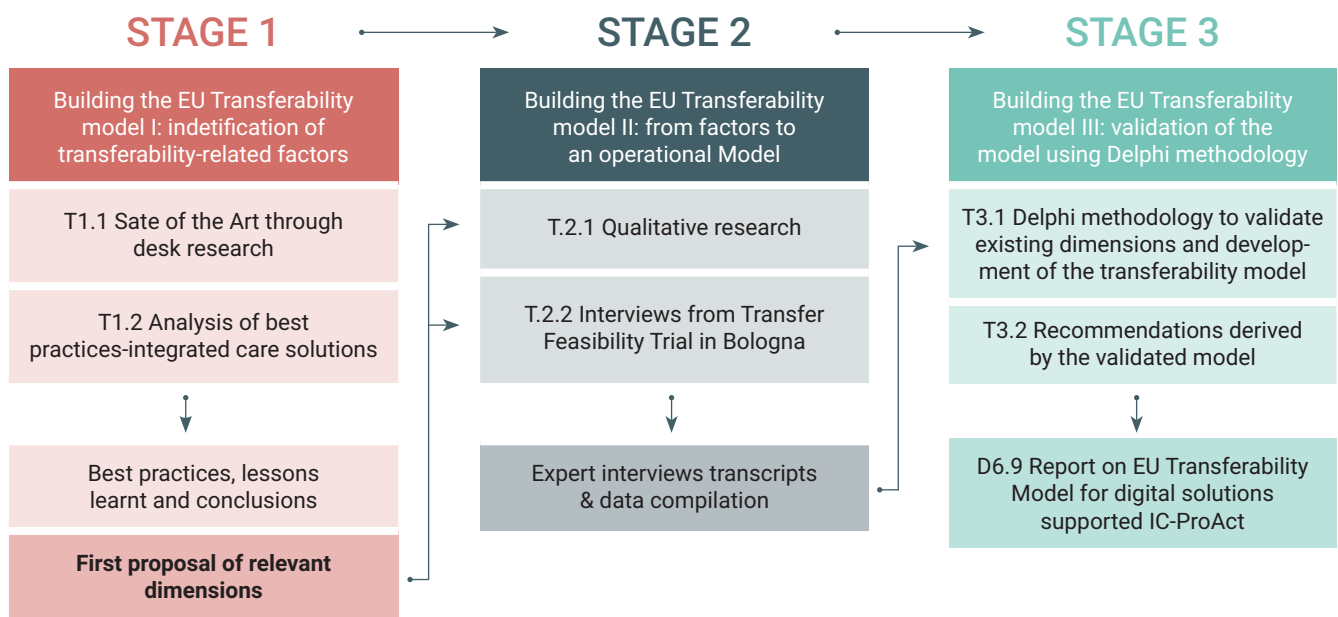
Digital health and wellbeing platforms that enhance the delivery of integrated care, empower the person/patient to self-manage, and contribute to the improvement of collaboration of individuals/stakeholders within the care ecosystem through the management and sharing of patient-generated information. Based on this definition, the object of our research covers a wide range of solutions.



2. RESEARCH METHODOLOGY

The methodology in this study follows a three-stage research plan:

Figure 1 - Stages of research



A. STAGE I: DESK RESEARCH

A comprehensive analysis of existing literature and practices was carried out covering the following elements:

- Literature referring to success factors and/or requirement for integrated care (e.g. organisational factors, change management, etc.);
- Studies into good practices and experiences in transferring existing solutions related to healthcare and wellbeing;
- Literature identifying scale-up models and their relevant factors;
- Other projects and initiatives providing relevant knowledge for the topic.



The following collections of good practices and integrated care initiatives were, among others, part of the analysis.

Deloitte. (2015). Connected health: How digital technology is transforming social and health care. Retrieved from <https://www2.deloitte.com/content/dam/Deloitte/uk/Documents/life-sciences-health-care/deloitte-uk-connected-health.pdf>

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<http://www.euro.who.int/en/health-topics/Health-systems/health-services-delivery/news/news/2013/10/framework-for-action-towards-coordinatedintegrated-health-services-delivery-cihsd-launched>

In addition, several European programmes were included since their aim was to support twinning and knowledge exchange in scaling up integrated care practices and transferring digital solutions (e.g. WE4AHA, Reference Sites).

Our analysis has shown that **there are very few documented experiences related to transferability of digital solutions for integrated care from one European region/country to other, with most of the digital solutions being created ad-hoc to support the implementation of integrated care in the specific settings.** Some private technology providers include in their offer “transferable integrated care solutions” (e.g. the company Orion Health with the product ©*Integrated Digital Care Records*, or the private software and service provider

Egton, with the product ©*Carista* for carers or *Vitrix Solutions*, to mention some).

Due to the complexity of the transferability concept and the multitude of reference frameworks on factors affecting the implementation and scale-up of integrated care, we decided to use the Consolidated Framework for Implementation Research (CFIR) for our further analysis. This framework offers an **overarching categorisation** of dimensions that allows to clarify **what works where and why across multiple contexts** (Damschroder et al, 2009). The CFIR, which has been used in a wide range of studies, is defined by a set of constructs that can be applied when evaluating **barriers and drivers for implementing and also transferring an innovation.** The specific constructs that make up the CFIR are presented in the **Figure 2.**



Figure 2 – Consolidated Framework for Implementation Research

Characteristics of the intervention	Inner Setting	Outer Setting	Individuals involved	Implementation Process
➤ Intervention source ➤ Evidence strength and quality ➤ Relative advantage ➤ Adaptability ➤ Trialability ➤ Complexity ➤ Design quality ➤ Cost	➤ Structural characteristic ➤ Networks and communications ➤ Culture ➤ Implementation climate	➤ Patient needs and resources ➤ Cosmopolitanism ➤ Peer pressure ➤ External policies and incentives	➤ Knowledge and beliefs about the intervention ➤ Self-efficacy ➤ individual stage of change ➤ Individual identification with organisation ➤ Other personal attributes	➤ Planning ➤ Engaging ➤ Executive ➤ Reflecting and evaluating

Source: adapted from: Damschroder, L. J., Aron, D. C., Keith, R. E., Kirsh, S. R., Alexander, J. A., & Lowery, J. C. (2009). Fostering implementation of health services research findings into practice: A consolidated framework for advancing implementation science. *Implementation Science*, 4(1), 50. <https://doi.org/10.1186/1748-5908-4-50>

B. STAGE II: QUALITATIVE RESEARCH

To better capture the relevant dimensions affecting the transferability of integrated care solutions, **qualitative research** was implemented **based on interviews** with experts.

The literature review and the desk research allowed to identify about 40 experts for interviews. All of them had experience in transferring or adapting solutions for integrated care and were invited to participate in the qualitative research. A total of 17 experts agreed to participate in **semi-structured interviews**. These experts provided different perspectives on the object of study. They had diverse



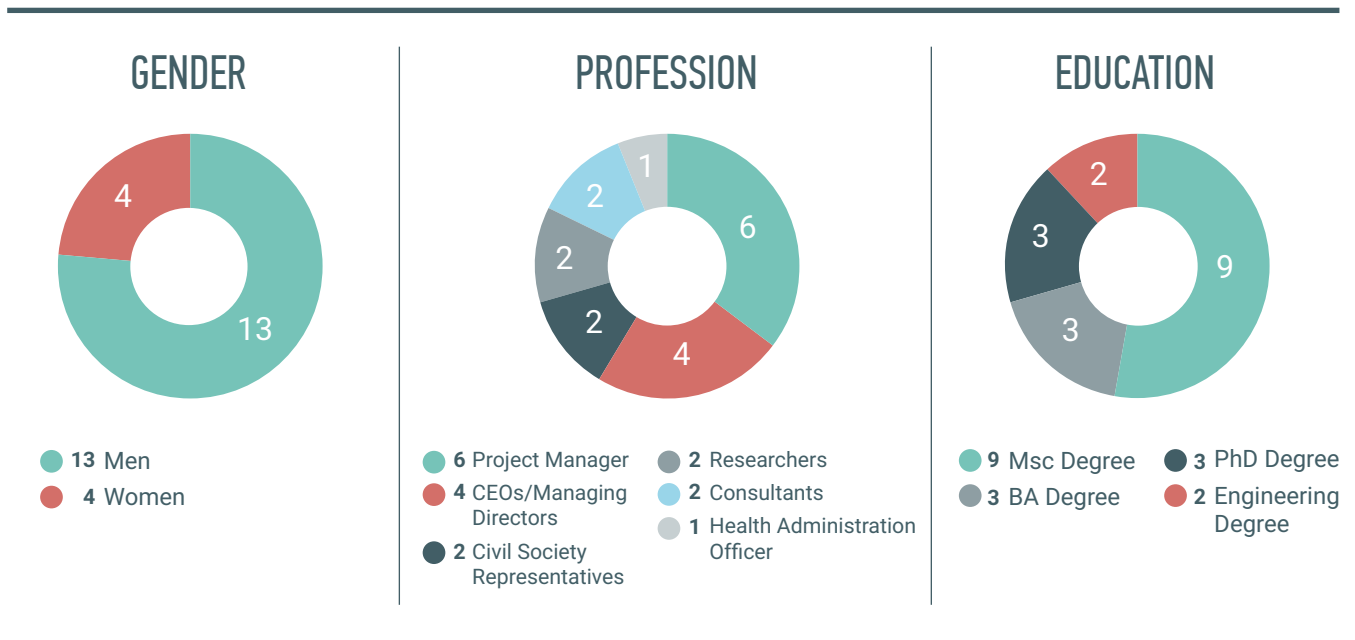


expertise and backgrounds, represented different countries and various types of organisations. The composition of the sample is illustrated in **Figure 3** below.

Audiotaped interviews were transcribed ver-

batim and transcriptions were coded iteratively using the MAXQDA software. Codes were attributed following the **CFIR**. The content analysis showed a high level of convergence across experts from different backgrounds, countries and experiences.

Figure 3 – Interviewed stakeholders



C. STAGE III: DELPHI SURVEY

The data obtained through the interviews were consolidated and further validated by the experts in **two rounds**, following the Delphi methodology. This **first round** focused on asking the experts about the relevance and pertinence of specific factors identified through the interviews. The survey identified 13 transferability factors that were considered as relevant and obtained a high and consistent level of agreement among the experts. Four

additional factors identified as relevant had a weaker level of agreement among experts.

In the **second round** of Delphi, the experts were asked to prioritise the identified factors and to confirm their stance concerning the factors with the weaker level of agreement. The latter was done to reach further clarity on the relevance of the factors for transferability.



3. RESULTS: TRANSFERABILITY MODEL

Based on the results of the previous analysis, the following transferability model was developed (Figure 4). The final model includes nine **essential** and eight **relevant** factors, where **relevant** factors are defined as important but less crucial for the transferability of digital solutions for integrated care.

Figure 4 – Transferability of digital solutions enhancing Integrated Care across Europe - identifying and prioritising barriers and enablers

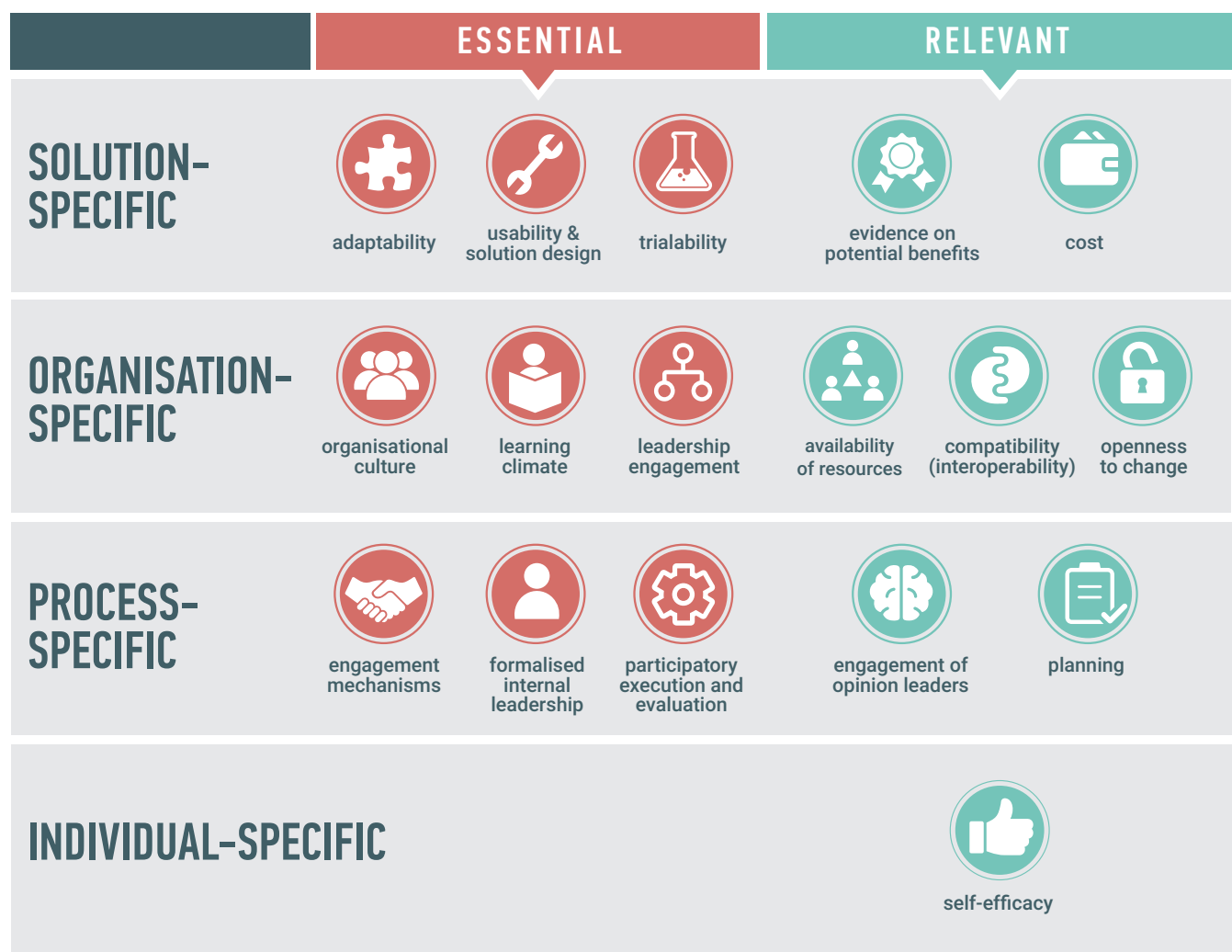




Table 1 – Definitions of factors related to the transferability model

Adaptability	The degree to which the digital solution can be adapted, tailored, refined, or reinvented to meet the local needs
Usability and solution design	Perceived excellence in how the solution is presented and functioning (that is, perceived usability or acceptability of the solution to be transferred) <i>"Design for all & user-friendly interfaces are a must"</i>
Trialability	The ability to test the solution to transfer on a small scale in the organization and to be able to reverse course (undo implementation) if warranted
Evidence on potential benefits	Stakeholders' perceptions of the quality and validity of evidence supporting the belief that the digital solution has the desired outcomes for enhancing integrated care
Cost	Costs of the digital solution and costs associated with transferring the solution including investment, supply, and opportunity costs
Organisational Culture	Norms, values, and basic assumptions of given organizations to accept and adopt the digital solution to be transferred
Learning Climate	A climate in which: a) leaders express their own fallibility and need for team members' assistance and input; b) team members feel that they are essential, valued, and knowledgeable partners in transferring the solution; c) individuals feel psychologically safe to try the new methods; and d) there is sufficient time and space for reflective thinking and evaluation
Leadership Engagement	Commitment, involvement, and accountability of leaders and managers with the transferability of these solution
Availability of resources	The level of resources dedicated to transfer the digital solution and ongoing operations, including money, training, education, physical space, and time
Compatibility (Interoperability)	The degree of tangible fit between meaning and values attributed to the transferred solution by involved individuals and the extent to which the transferred solution fits with existing workflows and systems (<i>this includes the use of standards and interoperability issues</i>)
Opneness to Change	The capacity to cope with change, the receptiveness of involved individuals to use the transferred digital solution
Engagement mechanisms	Attracting and involving appropriate individuals in the transferring process and use of the intervention through a combined strategy of social marketing, education, role modelling, training, and other similar activities
Formalised internal leadership	There are specific individuals from within the organization who have been formally appointed with responsibility for transferring an intervention as coordinator, project manager, team leader, or another similar role (Champions)



Participatory execution and evaluation	Implementing the plan for transferring the solution. Quantitative and qualitative feedback about the progress and quality of the digital solution transferring process accompanied with regular personal and team debriefing about progress and experience <i>"co-creation behind the transferring processes and continuous and iterative evaluation"</i>
Engagement of opinion leaders	Individuals in an organization who have formal or informal influence on the attitudes and beliefs of their colleagues with respect to transferring the solution
Planning	The degree to which a scheme or a method for transferring the existing solution are developed in advance, and the quality of those schemes or methods
Self-efficacy	Individual confidence in their own capabilities to execute actions required by the transferred solution

In short, the overall results of the different rounds of the Delphi study have led us to the following conclusions regarding the categories of factors influencing the transferability of digital solutions enhancing integrated care:

The essential factors include:

- Solution-specific factors: adaptability, usability & solution design, and trialability;
- Organisation-specific factors: organisational culture, learning climate and leadership engagement;
- Process-specific factors: engagement mechanisms, formalised internal leadership and participatory execution and evaluation strategy.

The relevant factors include:

- Solution-specific factors: Evidence on po-

tential benefits and cost;

- Organisation-specific factors: availability of resources, compatibility (interoperability) of the solution with existing organisational practices and openness to change;
- Process-specific factors: engagement of opinion leaders and planning procedure;
- Individual-specific factors: Self-efficacy of individuals involved in the process.

The identification and categorisation of these factors can be instrumental for designing a self-assessment tool for evaluating the transferability potential of a specific solution to a given setting. Due to the limitations and time constraints of the current research, the elaboration of a self-assessment tool will be continued by the authors beyond the ProACT research.



4. RECOMMENDATIONS FOR INCREASING TRANSFERABILITY OF DIGITAL SOLUTIONS ENHANCING INTEGRATED CARE IN EUROPE



Based on the findings of this study, specific recommendations can be made to increase the transferability potential of digital solutions enhancing integrated care.

SOLUTION-SPECIFIC RECOMMENDATIONS:

Ensure usability, adaptability and trialability of the digital solution

To ensure the *usability* of digital solutions, it is important:

- to fully understand the context of its use;
- to identify user requirements for any likely user of the solution (e.g. formal and informal carer, end-user, health and social care

professionals and their organisations);

- to create an optimal design that meets the identified requirements;
- to have the capacity to evaluate whether the requirements are met.

To optimise the *adaptability* of the digital solu-



tions, it is advisable to provide basic features to the core system while enabling the integration and development of specific new modules or applications that respond better to setting-dependent circumstances.

To allow the *trialability* of the solution, it is important to provide possibilities for testing and implementing changes and making adaptations required by the new context. It is key to design “trial” versions of the digital solutions and test them in controlled and representative settings in order to evaluate the solutions and to implement the necessary changes that will increase the likeliness of the solution to work in a given context.

Use co-creation methods to design digital solutions and to adapt them to different settings

Participatory approaches should be employed not only for the design but also for the adaptation of the solutions to different settings, following the iterative cycles of co-creation. This may involve designing solutions that meet the needs of multiple stakeholders and different types of organisations and “sectors” of care (e.g. health, social and informal care).

Demonstrate evidence regarding the impact and benefits of the digital solution

It is important to provide evidence on the effectiveness or positive impact of the digital solution. Adequate and solid evidence on the benefits of the solution to be transferred will enable and facilitate the transfer process. Thus, it is **recommended to communicate the existing research and studies clarifying the expected outcomes and achievements if the solution is to be successfully transferred to a new care context or region.**

Rationalise costs and provide cost-benefit analysis

Costs are a highly relevant factor to consider. It is necessary to evaluate the investment required to transfer the solution, including any additional costs (e.g. training). However, it is always important to show the payback (cost-benefit) associated with the costs, and, in particular, to evaluate the advantage of transferring successful and validated solutions compared to developing new solutions created “ad hoc” in any setting.

ORGANISATION-SPECIFIC RECOMMENDATIONS

Evaluate the local context, care models and legal frameworks

Assess the local context in terms of policies, the role of the public administration, the roles of private and civil society organisations, and legal frameworks. In particular, regulations on data privacy and security are of high relevance since the process involves the sharing and management of data on the health and social conditions of people. The existence of EU-harmonised regulations could facilitate the transferability, although there are still important national differences in their implementation across countries.

Assess the organisation culture/values and engage relevant leaders

Cultural differences in different contexts should be carefully considered when transferring digital tools.



The engagement of leaders in organisations is crucial for the success of the transferability process. Therefore, it is important to identify the relevant leaders and get them to support the common goal. However, leadership engagement can be also developed as part of an adequate transfer process, and as such, it has also been validated as an essential factor.

Encourage learning climate, openness and flexibility towards new tools and positive change

Ensuring enough resources for the required training, support and dedicated time will facilitate the transfer of the digital solution enhancing integrated care. Openness and flexibility of the organisation to cope with change and test new tools should be encouraged and incentivised.

Use standards and common language to facilitate transferability of IC digital solutions

The compatibility and interoperability of existing tools in the organisation facilitate the transfer of digital solutions. There is, therefore, a **need to build integrated care standards used across different regions and countries**. In other words, there is a need to speak the same language in order to be able to exchange knowledge and digital tools generated in different contexts.

PROCESS-SPECIFIC RECOMMENDATIONS:

Elaborate an adequate strategy for the transferring process

The strategy must engage all the relevant stakeholders and include a well-designed methodology for planning the implementation and evaluation.

Use a collaborative approach to engage (formal and informal) leaders

Leaders responsible for the transfer process should be clearly identified, adequately appointed and encouraged to support the process by acting as enablers and drivers of change. Their role will be crucial for addressing the obstacles and barriers to transferability previously identified and assessed.

In addition to formally appointed leaders, it is important to involve existing opinion leaders (formal or informal) in organisations. Their active engagement will have a positive influence on colleagues and will create a favourable environment for the transferability process.

Use continuous evaluation feedback to timely react to the identified barriers and risks

The transfer process should integrate a continuous and formative evaluation, which allows the identification of potential risks and/or underperforming elements and supports the implementation of corrective measures towards the success of the process. Embedding evaluation is also fully aligned with a co-creation approach, while the iterative assessment should involve all relevant users and stakeholders in the context of transfer to better identify beneficial adaptations for the digital solution aims. In addition, an adequate reporting procedure that keeps track of the adaptations and changes required during the process of transfer is highly recommended. It will help to leverage these experiences and



create knowledge for IT developers and companies to make their solutions more transferable in the future.

INDIVIDUAL-SPECIFIC RECOMMENDATIONS:

Address human-related factors that might undermine the self-efficacy from a subjective and individual perspective

Individuals' beliefs and behaviours are complex and culturally mediated. To enhance perceived self-efficacy, interventions must consider a wide range of issues and prejudices,

fear of failure being the most important.

Address fear of failure as a keystone for innovation

In order to address this issue effectively, it is recommended to frame "failure" as a learning element in innovation and change processes.

Consider peer learning and exchange of knowledge as a driver for self-efficacy and motivation

Peer-based coaching programmes have been found to be highly effective when the staff are reluctant to change. They can also apply in cases where members have a low perception of their self-efficacy as individuals.



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ProACT (Integrated Technology Systems for ProACTIVE Patient Centred Care) is an EU-funded Horizon 2020 project in PHC-25-2015. ProACT targets Europe's 50 million multimorbid patients to proactively self-manage and offset the EU's annual €700 billion cost of chronic disease management. ProACT aims to develop and evaluate an ecosystem to integrate a wide variety of new and existing technologies to improve and advance home-based integrated care for older adults with multimorbidity, including associated co-morbidities.
www.proact2020.eu



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