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# Transferability of an Integrated Care Platform

## Use Case

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**Abstract.** The transfer and implementation of digital health solutions from one setting to another can be challenging. This study functioned as a use case to examine the transferability of a digital integrated care platform from research to practice. In 2019, a healthcare facility in Belgium aimed to advance supported self-management and integrated care for patients with Type II diabetes, aged between 18 and 75 years old. **Methodology:** The ProACT integrated care platform was implemented in a healthcare facility that consisted of a multidisciplinary team, monitoring a total of 12 participants with Diabetes Type II for a duration of six months. By using a qualitative method, we conducted interviews with diabetes educators, held focus groups with healthcare providers and used ethnographic documentation. **Findings:** The choice of using the ProACT platform was a top-down decision made by management and the qualitative data showed that the readiness and willingness of the employees to incorporate the platform hindered the implementation. They welcomed the technology, however all employees noted the additional workload they experienced on top of an already full work schedule. As a result, organisation-specific, solution-specific, process-specific and individual-specific barriers were identified. **Conclusion:** The use case on implementing an integrated care platform outside of a research setting, corroborated barriers identified in the ProACT transferability framework. This paper will reflect on the ProACT transferability framework and highlight the practical challenges healthcare facilities could face.

**Keywords:** Transferability, integrated care platform, digital health.

## 1 Introduction

Technological advancements have led to the development of digital health solutions (DHS) for health and well-being management to help patients in monitoring their health and wellbeing, supported by healthcare providers (HCP). In 2018, a digital integrated

care platform called ProACT was developed through a user-centric approach, with the aim to integrate the needs, context and requirements of its users [1]. ProACT was tested in a Proof of Concept trial for people with multimorbidity (covering diabetes, chronic heart disease, chronic heart failure and chronic obstructive pulmonary disease (COPD)) over a 12-month period as part of a Horizon 2020 project [2]. Outcomes of the trial showed the platform to be valuable for home-based self-management. Currently, in the SEURO<sup>8</sup> project the platform development is continued and research is done to further assess transferability and effectiveness in different healthcare settings. Earlier, in 2019, a healthcare facility in Belgium aimed to advance supported self-management and integrated care for patients with Type II diabetes, aged between 18 and 75 years old, using the digital platform ProACT. With this case study we review the relevance of the factors in the Proact transferability framework from research to practice.

### 1.1 Implementation frameworks

Several studies have documented the challenges which can arise when DHS are implemented outside of a research setting [3-6]. With a move towards integrating health and wellness technology into a patient's home, a shift will also be required in the day to day work of HCPs using the technology to monitor patients' health. To get the maximum benefit from a DHS, healthcare organisations are required to change or innovate their care service toward patients. For this reason, practice and research communities have been advocating for more awareness of the implementation challenges that come with DHS, particularly those advancing integrated care.

One of the complexities of implementing an integrated care platform lies in the coordination of multidisciplinary and interdisciplinary collaboration between HCPs and patients. Frameworks have been developed, for instance HSPA<sup>9</sup>, Scirocco Maturity model<sup>10</sup>, The integrated Project Framework<sup>11</sup> to address their implementation challenges. However, they are primarily from a descriptive and theoretical perspective and their applicability requires more insight. Due to limited knowledge on the barriers to transfer a DHS from one healthcare setting to another, a transferability framework was developed as part of the ProACT H2020 project. This framework outlines the factors necessary for successful transferability of digital integrated care platforms (such as ProACT) across health services. Within the framework, key enablers and barriers to implementing digital integrated care solutions are identified. The transferability framework (Fig. 1) consists of four main themes: solution, organisation, process and individual factors that contribute to understanding the implementation challenges in a new setting. A full description of the framework is available elsewhere [7].

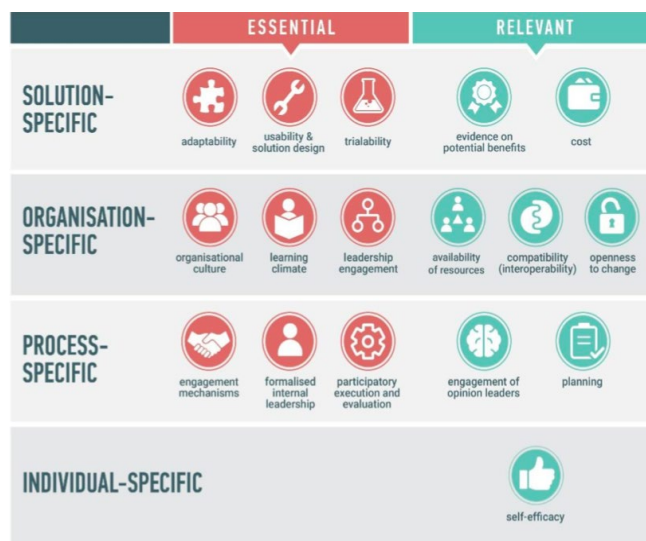
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<sup>8</sup> <https://seuro2020.eu/>

<sup>9</sup> [https://ec.europa.eu/health/health-systems-performance-assessment/priority-areas-hspa\\_en](https://ec.europa.eu/health/health-systems-performance-assessment/priority-areas-hspa_en)

<sup>10</sup> <https://www.scirocco-project.eu/maturitymodel/>

<sup>11</sup> <https://www.projectintegrate.eu.com/>



**Fig.1.** ProACT transferability framework

## 2 Methodology

### 2.1 Implementation Setting and Set-Up

The healthcare facility multidisciplinary team included a health coordinator (nurse), podologist, physiotherapist and dietician, who monitored 12 Participants with Diabetes Type II (PwD) over six months. A researcher from the Belgian Proact team coordinated the implementation including, providing training and trial support to the HCPs in using the ProACT platform. The health coordinator was appointed as the main study coordinator in the facility. Four diabetes educators (DEs) were recruited to visit the PwD to enrol them in the study, train them in using the technology and to be the first point of contact for (technical) help and questions. The DE would follow-up by using the DHS to look at the PwD self-monitored data and contacting them to provide diabetes related education and self-management support. When PwD self-monitored data exceeded thresholds, alerts were generated and processed by triage nurses in a separate call centre, who would then contact the PwD by phone. PwDs were expected by the healthcare organisation to perform weekly self-monitoring of their glucose values, blood pressure, weight, activity and sleep and to engage in one or more types of care provided by the healthcare organisation, such as physiotherapy or nutritional advice.

### 2.2 Data Collection and Analysis

To evaluate the transferability of the ProACT platform into the healthcare facility, we used a qualitative approach. We conducted semi-structured interviews with DEs, focus groups with HCP before and after ProACT implementation, and used ethnographic

documentation of the experiences of the researcher supporting the platform implementation. The ethnographic documentation was captured in emails, notes and observations derived from close collaboration with the health coordinator who was responsible for implementing the ProACT platform in the healthcare facility. The (focus group) interviews covered topics such as usability, adoption and evaluation of the ProACT platform and were audio-recorded, transcribed and coded through an inductive thematic analysis by use of MAXQDA software [8]. Subsequently, the qualitative themes derived from the analysis were arranged within the categories of the ProACT transferability framework.

### **3 Findings**

The ProACT transferability framework aims to delineate the conditions that influence a successful implementation of a DHS. Comparing the qualitative data with the ProACT transferability framework, demonstrated several factors that explain the implementation challenges experienced during the study. Findings aligned with a number of factors are outlined below in the context of the framework.

#### **3.1 Solution Specific - Level**

We saw Evidence of Potential Benefits. HCPs expressed interest in the DHS and saw the value of telemonitoring but there was variation in how HCPs viewed the necessity of adopting the ProACT DHS into their work practice. For some, the usefulness of ProACT was apparent, 'instead of seeing patients frequently, I could follow-up on their activity patterns and discuss the data with them during a consult' (Physiotherapist), so that the consultation was better adjusted to the patient's current needs. However, others felt that the data was not applicable enough for their work or customizable enough to make them use the DHS on a regular basis. As a consequence, the adaptability and the usability and solution design- essential factors were not addressed sufficiently.

#### **3.2 Organisation Specific - Level**

Although not an essential factor in the framework, the Available Resources factor appeared as the theme 'care-cost trade-off' across all HCPs. The DEs (n=4) expressed interest in the study, however all employees noted the burden of the additional workload they experienced on top of an already full work schedule. The additional time required to become acquainted with the technology and learn the protocols did not fall under the regular DE activities and they were not compensated. Although willing to put voluntary effort for the project, they concluded it was too time consuming to be trained and support the PwD in using the devices. The perceived extra effort required to implement the technology was considered to have diminished the time for interacting with their patients and providing diabetes related education.

Within healthcare organisations all actors are ascribed roles to play, with interdependent patient and HCP roles defined by the organisational culture. This is an essential

factor in the framework and is shown to us via the theme ‘user profile’. Concerns were expressed about long term engagement of the PwDs. HCPs suggested that a PwD with a particular profile would be the ideal candidate for the use of the ProACT system / telemonitoring. An ideal user was defined as a PwD who is motivated, has sufficient digital literacy to use the technology or is willing to learn, and has (high) disease complexity. HCPs suggested that PwDs with this profile would be best able to provide data through self-monitoring and that the HCPs can utilise the data for better care provision.

### **3.3 Process Specific – Level**

As expected, several PwDs required additional training and support to enable them to use the self-monitoring technology [9]. There were engagement mechanisms (an essential factor in the framework) within the project to cope with this. Examples of recurring problems included data transfer issues, not knowing how to use the devices, and how to do problem-solving if a device was not working properly (such as replacing the batteries or reconnecting with Bluetooth). This resulted in additional help desk related visits from the health coordinator visiting the PwD and the introduction of weekly check-up calls. The health coordinator took initiative and was dedicated to implementing the DHS in the organisation. However, the additional tasks required to maintain the engagement of the PwD were not in line with the expected time investment. In addition, some technical issues hindered access to the platform, e.g. a firewall that was installed at the healthcare organisation.

### **3.4 Individual Specific – Level**

Self-efficacy is the only relevant factor in this dimension of the framework. Some DEs reported stress related to having the responsibility for the technology. For example, during the set-up of the technology at a PwD’s home, the DE felt insecure when there was an unexpected iPad installation question ‘I am already quite happy when a few installation steps work well, but then I get a follow-up question and I have to make a lot of choices, and that type of hindrance I have all the time’ (DE\_04). The DE described a training situation of a technology set-up at a PwD’s home. ‘I saw how there was suddenly an update [ipad or application] and you [referring to researcher] had to find a way to sort this out, if I was in that situation I would have panicked and I would not have found a solution’ (DE\_04).

## **4 Discussion**

Following the implementation of the ProACT platform to support PwDs by a multidisciplinary team of HCPs, themes were identified aligning with five factors from across the transferability framework. While not all 17 factors were represented in the themes, all four transferability levels were represented in the data; solution-specific, organisation-specific, process-specific and individual-specific factors.

The current study analysed the framework and the qualitative data in retrospect. The findings indicated value in considering the transferability framework factors prospective. Therefore, future DHS implementation cases should include specific protocol elements aimed at determining both the benefits of adopting the DHS and which barriers need to be identified at what stage of the implementation. For example, in line with the trialability suggestions from the framework, the healthcare organisation may have benefited from a longer and slower introduction to the DHS. In such an exploratory phase, HCPs could gradually adapt their personal workflow with the implementation of the DHS, providing time to experience the benefits of adapting work practices to include the DHS.

The choice of using the ProACT platform was a top-down decision made by management, both the readiness and willingness of employees to adopt the platform may have been presumed. While welcoming the technology, all employees noted the burden of the additional workload they experienced. The most significant challenges reported were time resources. As a consequence of this deficit, there was limited capacity to adapt the technology to the local setting of the healthcare organisation. This may have acted as a bottleneck, preventing the ability to overcome the barriers related to adaptability and usability and solution design.

For HCPs and PwDs alike, adopting a new DHS required developing mastery of multiple domains (such as health interpretation and digital technology) as well as new ways of negotiating healthcare relationships [10]. The implementation of a DHS could change or disrupt existing workflows with PwDs and between other HCPs. In particular in the start-up phase, time needs to be allocated to obtain confidence in using the technology, and explore new workflows. The use of the technology for PwDs was set-up by the HCP. This required a level of confidence in using the technology by both the PwD and HCP, and was underestimated at the time of deployment. Additional time and training may have supported HCPs and PwDs alike in transitioning to use of ProACT.

The complex ecosystem of a digital integrated care platform requires in-depth understanding and mapping of the different PwD-HCP and HCP-HCP relationships [11], [12]. In the current study the high variety in HCP specialisms resulted in adaptability requests of the DHS that could not be foreseen with the technical, time and budget constraints. Participatory and collaborative approaches should be deployed to ensure adequate adaptability of the DHS and to manage users' expectations. Furthermore, the inclusion of multiple stakeholders in the analysis of a DHS implementation pilot may offer alternative perspectives on the benefits and barriers experienced. For the framing of DHS pilot studies, using an objective tool such as the transferability framework reduces the potential for decisions to be based on subjective experiences or preconceptions.

To conclude, only the main identified factors derived from the data are discussed. Other factors may have been present in the use case but were not identified. Given their potential importance, and the inter-relationship between factors, further research should endeavour to examine all factors as part of the implementation evaluation.

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