The eHealth Innovation Staircase

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Abstract. In this research we contribute with an eHealth Innovation Staircase that
represents innovation processes in healthcare based on service-dominant logic as a
complement to the traditional goods-dominant logic view on innovation. The eHealth
innovation staircase is useful for practice and research to better understand and evaluate
innovation processes. Improved understanding will also contribute to better use of
opportunities and benefits offered by eHealth innovations in practice.

Introduction

In the work with establishing an eHealth innovation lab at a large Swedish
hospital we have identified the need for a strong conceptualisation of the
innovation process(es) in order to enhance understanding and collaboration in
eHealth innovation projects. We have developed an eHealth innovation staircase
that can be used to better understand the innovation process from a health service
perspective where value for patients is the most important driver for innovation.
This perspective differs from the traditional innovation perspective where
diffusion of products on a market and financial profit are the implicit endpoints.
When healthcare cooperates with industry in innovation it is important to
recognise different actors anticipated results in order to navigate the process.

The eHealth innovation lab

The lab was established late 2013 as a temporary program, a testbed, at a large

Swedish hospital with the goal to establish processes and methods for design and pre-assessment of innovative IT-solutions for future healthcare. During the first year of operation the lab has been involved, in different roles, in 34 projects in four areas; Big Data, Care Flows, Patient Centred Information Structures, and Innovation Infrastructure.

The key strategy in the lab is co-production of innovation in Triple Helix constellations. The purpose is to carry out innovation projects in Triple Helix constellations in order to learn how to better carry out such projects and to understand what structures and processes are needed. The innovation projects in the lab then serve as means to build innovation capacity by developing knowledge through the projects and establishing processes, methods and other reusable components for faster, more useful and more effective innovation. The intended outcome from innovation is healthcare that: provide better health outcomes, is more patient centred, is more integrated and can provide for more patients.

"The Triple Helix thesis postulates that the interaction in university-industry-government is the key to improving the conditions for innovation in a knowledge based society. Industry operates in the Triple Helix as the locus of production; government as the source of contractual relations that guarantee stable interactions and exchange; the university as a source of new knowledge and technology" (Etzkowitz, 2003 p. 295). Operations are conducted in the projects with participants from information technology partners in industry, healthcare professionals in clinics and researchers from academia. The projects in the lab involve collaboration between actors from different knowledge disciplines from research and practice. This multidisciplinary knowledge content and collaboration in combination with the technical, social and political composition in the healthcare organisation entail high complexity in the projects which in turn require strong models for conceptualising design, implementation and outcomes.

Conceptualising innovation processes

After searching the literature for a useful model for conceptualising innovation processes we identified one model (figure 1) developed by Eriksson et al. (2014) that matched our context and conceptualisation needs. This model represents innovation process stages based on a modified TRL staircase (based on NASA's Technology Readiness Levels). Eriksson et al. uses this model as part of the evaluation method to evaluate healthcare innovation projects funded by the VINNOVA[1] program "Innovations for Future Health". One problem we found with this model is that it describes the innovation process from an industry

[1] VINNOVA, Sweden's innovation agency (http://www.vinnova.se/en/)

perspective only, where "products on the market," financial profit and growth are the overarching drivers for innovation. This perspective represents a traditional perspective on innovation based on a goods-dominant logic. The goods-dominant logic reflects production of tangible goods and the separation of producers and consumers in order to efficiently produce standardised products to be transported and offered to consumers on a market (Lusch and Nambisan, 2015).
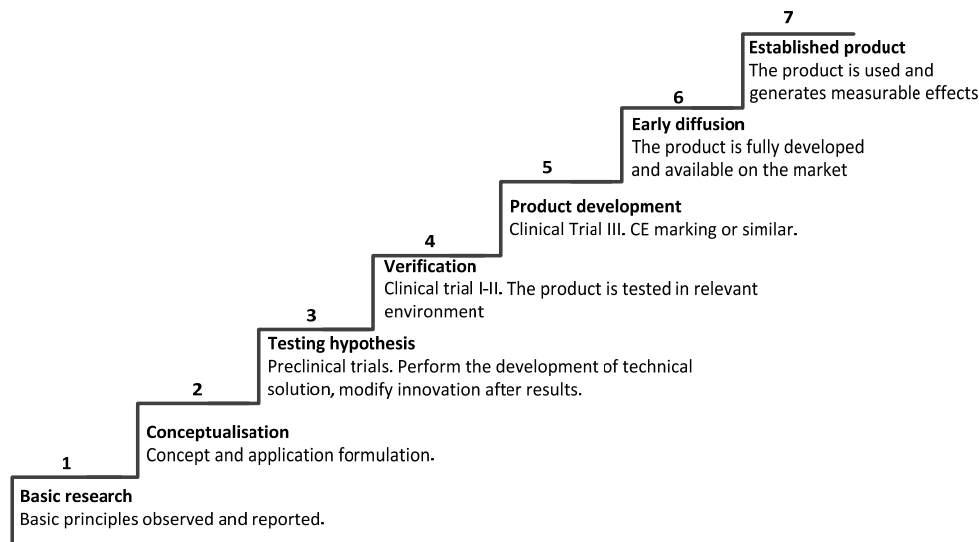

Figure 1. The innovation process as an innovation staircase based on a modified TRL staircase by Eriksson et al. 2014 (our translation from Swedish).

With this perspective profit and economic growth become the drivers and anticipated results of innovation. From a health service perspective, where the goal is to better center care around (more and more) patients, important dimensions are missing. With newer thinking on innovation we can understand healthcare organisations as independent players in innovation work, an innovator with the goal of developing better care that is valuable for the patient. To express care service needs and perspectives, we therefore need a complementary model, an innovation staircase that expresses the care service momentum. Consequently we have developed a complementary "eHealth Innovation Staircase" with the overall goal for innovation to improve health and quality of life for patients, see figure 2. In the new eHealth innovation staircase, stages 1-5 are the same as in figure 1 but the final stages are different expressing procurement, implementation and finally clarifying that the service/product should offer value for the patient.

Conclusions

We present an eHealth innovation staircase in order to conceptualise the innovation logic from an eHealth service perspective, emphasising a service-

dominant logic. Service-dominant logic concerns the exchange of service where one actor uses its skills for the benefit of another and where the products being only vehicle for delivering service (Lusch and Nambisan, 2015). More recently the discussion on innovation in public sector and its character appeared on research agendas and in policy debates extending the understanding of the character of innovation in public sector organisations.

8 Service/product offers value for patients
The service/product is used in clinics and generates measurable effects.

7 Implementation
The service/product is pilot implemented In clinics and available for use.

6 Procurement
Procurement project is carried out.

5 Verification Prototype
Clinical Trial II. Test prototype in a production environment. Evaluation of prototype at the clinic with real patient data.

4 Proof of Concept
Clinical trial I. Prototype development in test environment in cooperation with the clinic.

3 Testing hypothesis
Preclinical trials. Perform the development of technical solution, modify innovation after results.

2 Conceptualisation
Concept and application formulation. Early design and architecture.

1 Idea
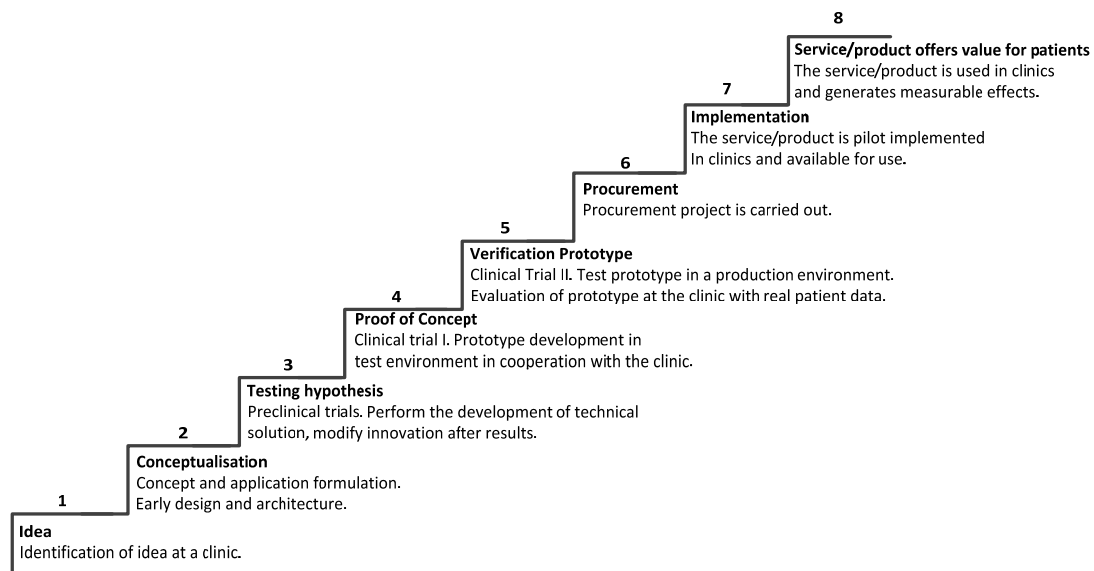Identification of idea at a clinic.

Figure 2. The eHealth Innovation Staircase

New understanding of innovation perspectives, as social innovation and service innovation, is shedding light on a broader spectrum of dimensions of innovation. We believe that the traditional mindset, based on a goods-dominant logic, still heavily influences practical innovation work in healthcare organisations. With this new model we hope to influence on the discussion and join with other researchers and practitioners in order to develop better understanding and management of innovation processes in healthcare.

References

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