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# The role of public funding in the initiation and upscaling of collective innovation trajectories

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## ABSTRACT

Our society is facing big challenges and public organizations have a key role in addressing these, as well as providing public funding for innovation. Many innovation projects however result in a proof-of-concept and deliver initial results but experience issues with upscaling further to realize impact. In the EU, innovation networks are emerging to steer promising innovations towards upscaling and implementation to realize impact. Managing multiple innovation trajectories towards implementation and impact, and allocating funds and other instruments to stimulate the upscaling process is not straightforward. In this paper we propose a process model that can be used as a high-level framework to manage multiple innovation trajectories. The model is developed in the context of the PEN-CP innovation network for customs professionals. Theoretically it builds upon and extends earlier research on upscaling collective innovations.

## CCS CONCEPTS

• **Information systems**; • **Social and professional topics** →  
Computing / technology policy;

## KEYWORDS

Public funding, innovation, collective innovation, upscaling

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## 1 INTRODUCTION

Our society is facing great challenges today such as safety and security, climate change, energy. A collective effort of public and private parties is needed to address these challenges and public funding for innovation plays a key role. Many innovation projects however result in a proof-of-concept and deliver initial results but experience issues with upscaling further to realize impact. Innovation networks are now being set-up in specific domains to speed up innovation. PEN-CP<sup>1</sup> is an example of such a network. It brings customs professionals from different customs administrations in Europe to: (a) identify innovation needs to address issues related to safety and security; (b) identify available technologies; (c) facilitate the matching between customs needs and solutions; and (d) facilitate the upscaling process of promising solutions by deploying funding mechanism available in the PEN-CP network and beyond. The management of these processes however is not straightforward. There are several key challenges, namely: (1) how to do the match-making between the customs needs and potential solutions; (2) how to select which innovation trajectories to support further and prioritize these; (3) how to understand the upscaling process and to ensure smooth progress towards implementation; (4) how to identify a mix of different funding mechanisms (both public and private) to help to advance the upscaling process. To address the above challenges a structured approach is needed to ensure that promising innovation trajectories are identified and their upscaling is managed towards the desired impact.

## 2 THEORETICAL BACKGROUND

Innovations take more and more place in complex network of organizations [Yoo, 2012] and this requires collective efforts. However conflicting interests and business models [Nikayin, 2013] can often block the collective innovation processes and bring them to a stand-still [De Reuver, 2015]; [Markus, 2006]. Such a stand-still can be seen as a project failure [De Reuver, 2015]. Recent research [Rukanova, 2019] indicates that these stand-stills do not necessarily need to be seen as failures but as part of an innovation trajectory where

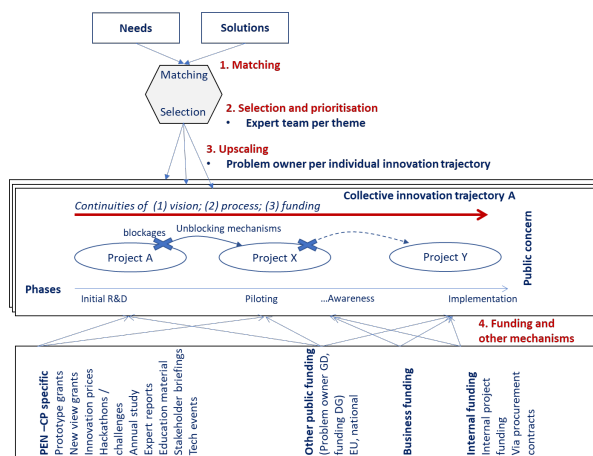
<sup>1</sup><https://www.pen-cp.net/>

different initiatives build-upon each other and progress through stages like: *initial R&D, piloting, awareness, and implementation*. When the process gets blocked, unblocking mechanisms like: (1) *network reconfiguration*, (2) *reframing*, (3) *change of control point configuration* can allow for the initiative to proceed further towards implementation. Furthermore continuities such as: (1) *continuity of process*, (2) *continuity of vision and network*, and (3) *continuity of funding* are seen as important factors in the upscaling process [Rukanova, 2018].

### 3 METHOD

This study is conducted using an interpretative case study approach [Walsham, 1993]. The PEN-CP project provided the context for this study. We took the conceptual lens of collective innovations. Next we also analyzed a past EU-funded R&D project, ACXIS<sup>2</sup>, as a successful example of a project that scaled up beyond the R&D stage by subsequently deploying other funding mechanisms. Based on the theoretical insights, as well as empirical insights from PEN-CP and ACXIS we arrived at a process model that can serve as a high-level framework for identification and management of innovation trajectories and the role of public funding.

### 4 RESULT: A PROCESS MODEL FOR IDENTIFICATION AND MANAGEMENT OF COLLECTIVE INNOVATION TRAJECTORIES TO ADDRESS PUBLIC CONCERNS



**Figure 1: A model for identification, management, and public funding of collective innovation trajectories to address public concerns**

Figure 1 presents our process mode for identification, management, and public funding of collective innovation trajectories to address public concerns. It contains four steps: (1) matching; (2) selection and prioritization; (3) upscaling of selected innovation trajectories; and (4) funding. While the needs and the solutions can be catalogued in computer systems, for the selection and prioritization we highlight the importance to have an expert team per theme

<sup>2</sup><http://www.acxis.eu/>

to identify high potential innovation trajectories. For the upscaling process we propose to have a problem owner that drives a specific innovation trajectory. Individual trajectories may be in different phases from initial R&D towards piloting and implementation. Our model suggests that the trajectories may evolve through a series of project and may experience blockages but it is important to identify unblocking mechanisms and ensure continuities (of vision, of process, of funding). With respect of continuity of funding our model suggests that there are multiple funding instruments that can be deployed in different phases to allow for a smooth transition.

### 5 CONCLUSIONS

For addressing pressing societal challenges it is crucial to ensure that collective innovations initiatives overcome blockages and proceed beyond the R&D phase to realize impact. The model that we developed can help decision makers and policy makers responsible for facilitating upscaling of collective innovations. From a theoretical perspective this model is an extension to earlier research as it looks beyond an individual innovation trajectory and takes into account complexities related to managing multiple innovation trajectories at the same time. In the context of PEN-CP and beyond the model that we presented here can be further developed by analyzing multiple cases of upscaling of innovation trajectories and the role of public funding in the upscaling process.

### ACKNOWLEDGMENTS

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