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**Relating Systems Thinking and Design
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Exploring the Problem-Solution Space for Impact-Driven Collaborative Public-Private Innovation Networks

Frank Berkers, Angela Greco, and Andrea Kerstens

How ‘wicked’ is your mission actually?

In the last few years, many organisations of public and private origin representing the ecosystem (Cobben et al., 2022) have joined forces to combat societal challenges by means of mission-driven innovation (Wanzenböck et al., 2020). Although the organisation and collaboration among such organisations and individuals are already extremely challenging, we noticed in practice that such collaborations consider their environments wicked problems (Rittel & Webber, 1973). Yet, we also found that collaboration leaders also struggle to understand the complexity of the problem context they are facing at a deeper level (Levin et al., 2012; Mohaghegh & Furlan, 2020) and consequently struggle to design an adequate solution development and innovation strategy (Kemp & Loorbach, 2006; Irwin, 2015; Wanzenböck et al., 2020).

However, we also observe that the contexts (Soliman & Saurin, 2017) and ecosystems of these mission-driven collaborations differ. For example, the shift to preventive healthcare has different properties than the shift to a processing industry that is capable of dealing with periods of abundant renewable electrical energy.

Based on the literature, we identified different dimensions that help to identify the complexity of the problem (e.g., convergent or divergent views on problem and solution (Wanzenböck et al., 2020), ecosystem structure, stakeholder complexity, stakeholder interdependence (Cobben et al., 2022)).

In this workshop, we first introduce the context of large-scale public-private impact-driven innovation collaborations (we refer to them as 'orchestrating innovation') and discuss the type of challenges these collaborations are addressing. Next, we explore with the participants the challenges of problem classification and design of solution development and innovation strategies in the context of mission-driven innovations. We introduce and experiment with novel approaches based on evolutions of the Cynefin framework (Snowden & Boone, 2007) and other problem-solution classification approaches (as mentioned above). This interactive part consists of several iterations of 1) stylised problem introduction of different domains, 2) problem-solution classification, and 3) discussion with the participants on their responses.

The workshop is of interest to professionals working in the context of systemic change, mission-driven innovation, innovation hubs and networks aimed at societal change. The workshop outputs contribute to the development of a practical framework to support the strategising in impact-driven collaborative public-private innovation networks.

KEYWORDS: orchestrating innovation, problem classification, complexity

RSD TOPIC(S): Methods & Methodology, Sociotechnical Systems

Orchestrating Innovation

Orchestrating Innovation (OI) as an approach for creating a strategic public-private partnership in which all relevant stakeholders participate in the development and implementation of one or more innovations or the development of a breeding ground for them in the light of a common (societal) challenge. We refer to this as an impact-driven collaborative public-private innovation network. As such, OI strives for problem collectivisation. It does so by reframing societal problems into concrete collaborative opportunities, which are interdependent on multi-stakeholders contributions and ownership before they become crises.

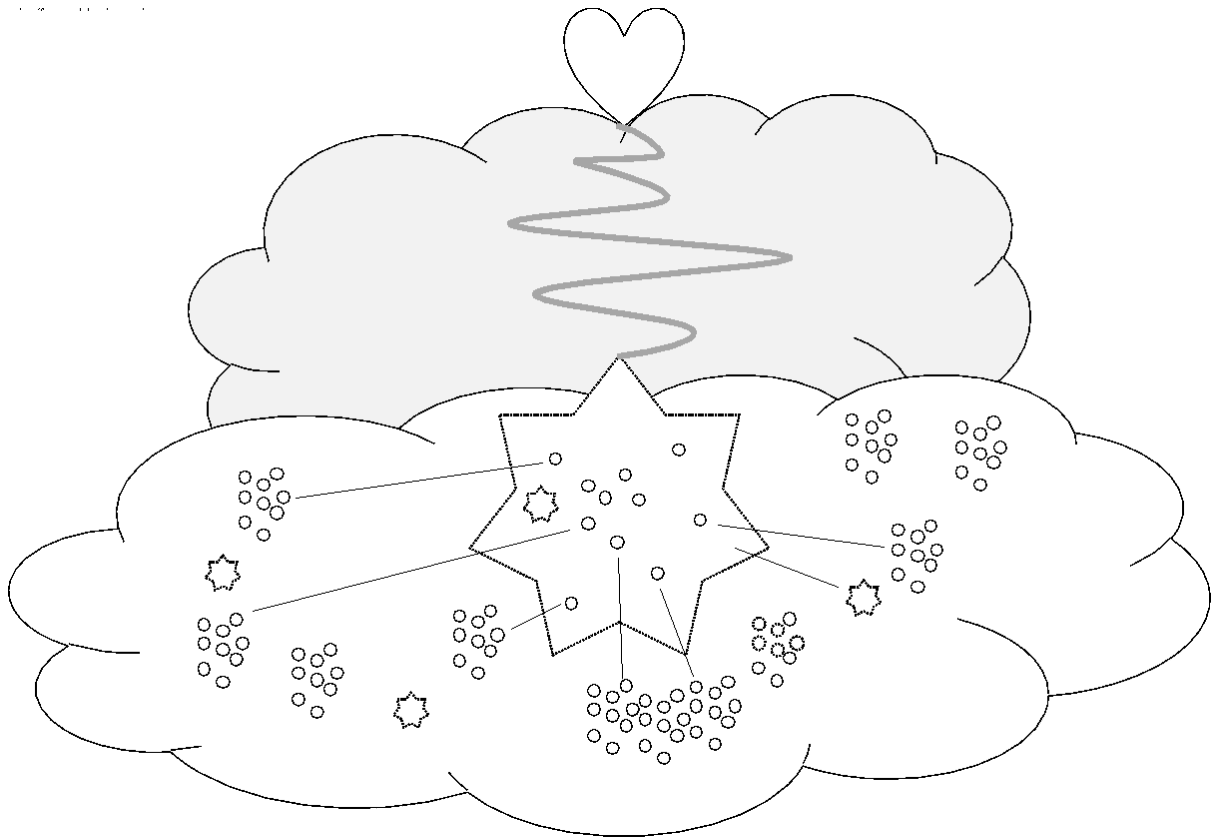


Figure 1: Orchestrating Innovation - conceptual presentation

This approach involves developing a form of organisation for coordinating the network (boundary organisations (Aldrich & Herker, 1977); intermediary organisations (Hargadon & Sutton, 1997; Howells, 2006)) by entering into relationships with selected actors from a wider ecosystem (Adner, 2017; Cobben et al., 2022; Valkokari et al., 2017). This converges in the emerging field of orchestrating innovation ecosystems (Dhanaray & Parkhe, 2006; Provan et al., 2007). In a slightly broader context, this fits into the fields of collaborative innovation management and transition design (Irwin, 2015) and transition management (Kemp & Loorbach, 2006), due to its focus on achieving social objectives through (cooperation on) innovation.

To support the development of such impact-driven innovation networks, we have developed a course¹ aimed at providing orchestrators, the person or group setting up and coordinating the innovation network, the necessary mindset, frameworks and tools (Berkers et al., 2015). We adopt an applied design and experimentation perspective for perceiving and realising such an innovation network. We consider the impact-driven innovation network as a generalisation of concepts such as innovation hub, cluster, field lab, living lab, innovation network, joint innovation centre, etc. We developed a specialisation of the business model canvas (Osterwalder et al., 2011) for designing the impact-driven network and supporting the conduction of business model experiments (Bocken & Snihur, 2020).

The course participants now form a community of over 150 orchestrators. They engage in intervention sessions, peer learning activities and community meetings to advance their professional standards and address common challenges:

Challenges for orchestration and orchestrators

Orchestrators struggle to discriminate problems by their level of abstraction and wickedness, falsely adopting a 'one-fits-all' innovation approach, whether orchestration concerns an early-stage technology (e.g., a device to predict diabetes) or a socially embedded, mission-driven one (e.g., replacing current diesel vehicles with hydrogen ones). They indicate the need for a comprehensive methodology for acceleration, that pairs the assessment of the degree of wickedness of a problem context to a fit-for-purpose orchestration process, allowing to examine – ex-ante for the innovation at hand – the integral context along multiple dimensions, including the societal embeddedness level, the technology readiness level, the market, ecosystem, and transition readiness. Such a methodology goes beyond current scientific and applied knowledge.

¹ <https://ece.nl/orchestrating-innovation-in-public-private-ecosystems/>

Developing an Acceleration Compass for Tailoring Innovation Orchestration

To address the needs of the community of orchestrators, we designed a classification approach as an amalgamation of the Cynefin framework (Snowden & Boone, 2007) and other problem-solution classification approaches (Wanzenböck et al., 2020; Cobben et al., 2022; Levin et al., 2012; Mohaghegh & Furlan, 2020). Next, we conducted focus groups and classification experiments (using brief problem descriptions, as listed in Box 1) with members of the OI community to enhance the classification approach. A preliminary version of the approach is presented in Figure 2.



Figure 2: Preliminary version of Acceleration Compass (Greco et al., 2023)

Workshop description

The workshop is aimed at professionals and researchers working in the context of systemic change, mission-driven innovation, innovation hubs and networks aimed at societal change.

The agenda consists of

- An introduction to problem-solution classification challenges
- An introduction to Orchestrating Innovation
- An illustration of failure cases related to impact-driven innovation networks
- An interactive part in which the audience is asked to classify a number of cases. A preliminary overview of cases from different domains is given in Box 1. We conduct several iterations of
 - Stylized problem introduction of cases
 - Problem-solution classification by participants
 - Discussion with the participants on the classification and considerations

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| <ul style="list-style-type: none"> ● The design and practice gap in energy performance of buildings ● Towards Laser Satellite Communication ● Cyberattacks ● Obesity ● Wind energy production on the North Sea ● Administrative burden ● Industrial symbiosis ● Decline in employee satisfaction ● Deforestation in the Amazon rainforest |
|--|

Box 1: Overview of classification challenges

The workshop outputs contribute to the further development of the practical classification framework to support the strategising in impact-driven collaborative public-private innovation networks.

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