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CCO Co-creation Orchestration

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# Co-Creating and Orchestrating Multistakeholder Innovation

# 21. Co-creation at the heart of human-centric data economy – Experiences and visions from Kuopio Living Lab

Tiina Arpola, Arto Holopainen & Marko Jäntti

## INTRODUCTION

The European Single Market is among the world's largest economies. Europe's growth potential is connected to the digital and data-driven economy, innovations, new technologies and business models (European Comission 2015). The EU aims to be the global leader in the digital economy, and this aim was included in Finland's Presidency Programme during its presidency of the Council of the European Union, 1 July – 31 December 2019 . Finland's vision is that a comprehensive, future-oriented single market that builds on a human-centric data economy by promoting the availability, interoperability and use of data while also respecting the rights and privacy of individuals.

Cities and municipalities play a role of key stakeholders in this digital revolution by adapting data and platform economy possibilities at all levels of actions. Cities can transform into open innovation living labs, places to experiment with and co-create creative solutions for improving people's health and wellbeing. For a city, an open innovation living lab is one step towards a smart and healthy society. Such a goal requires bold political choices, a strategic-level approach, open-minded governance and new operational models.

The city of Kuopio, the ninth largest city in Finland (with a population of 119,000), is one of Finland's leading cities in the fields of health, wellness and safety. Kuopio's strategic vision is to be the capital where the good life lives. Digitalisation, internationality and partnership are three themes integrated into all levels of that vision. Kuopio has put the open innovation living lab concept, namely Kuopio Living Lab, into action together with Kuopio University Hospital and Savonia University of Applied Sciences. Kuopio Living Lab is a good example of the practices cited in the city's award as a four-star European Innovation Partnership on Active and Healthy Ageing Reference Site (n.d).

The European Network of Living Labs (ENoLL) (n.d.) describes living labs as follows: 'Living Labs are defined as user-centred, open innovation ecosystems based on systematic user co-creation approach,

integrating research and innovation processes in real life communities and settings. Living Labs are both practice-driven organisations that facilitate and foster open, collaborative innovation, as well as real-life environments or arenas where both open innovation and user innovation processes can be studied and subject to experiments and where new solutions are developed. Living Labs have common elements but multiple different implementations'.

## MATERIALS AND METHODS

Kuopio Living Lab makes it possible for companies and entrepreneurs to co-create and test products in authentic customer and expert environments. This opens up the opportunity for co-operation with the public sector, academia, industry and citizens (Quadruple Helix Open Innovation model) for innovations (Carayannis & Rakhmatullin 2014). This is realised through close co-operation between different stakeholders in the ecosystem. Kuopio Living Lab provides services on a one-stop-shop basis, whereby a living lab coordinator working with a company can also contact other organisations. Kuopio Living Lab environments range from Social and Health Services (including social care, primary health care and specialised medical care), Urban Environment, Growth and Learning (including day care and schools), and Wellbeing Promotion (Business Kuopio n.d.).

In addition to the physical environments, Kuopio Living Lab aims to provide a channel for different data sources, such as open data, smart city data, and real-life wellbeing and health data for the development of future human-centric digital services. Kuopio Living Lab can collect data, validate solutions and act as an interface, involving end-users in the co-creation and feedback process. The process supports service and technology providers' business development, innovation, co-development and co-operation activities, as well as marketing activities.

## RESULTS

All three Kuopio Living Lab ecosystem organisations have or are planning a platform to collect different types of data. Savonia University of Applied Sciences operates an open-source platform for collecting and sharing continuous measurement data from the environment or automation process. Savonia is also committed to open science and research and has prepared to make information produced by public funding as open as possible, within limits of research ethics and legislation.

The City of Kuopio has initiated a development project to create a smart city data platform that handles many types of data, such as data related to urban planning, the environment, wellbeing, internet of things

(IoT) sensors, finances, schools and pre-schools, and culture, as well as MyData produced by citizens. This development is part of Kuopio's aims to be the forerunner in digitalisation. This aim is being realised by systematically raising the maturity level of digitalisation in all processes. Kuopio uses the municipal digitalisation maturity model to plan digitalisation measures and targets. The goal is to be at the highest level (five) in the coming years, at which point the city will act as a service platform, Living Lab, for new digital solutions.

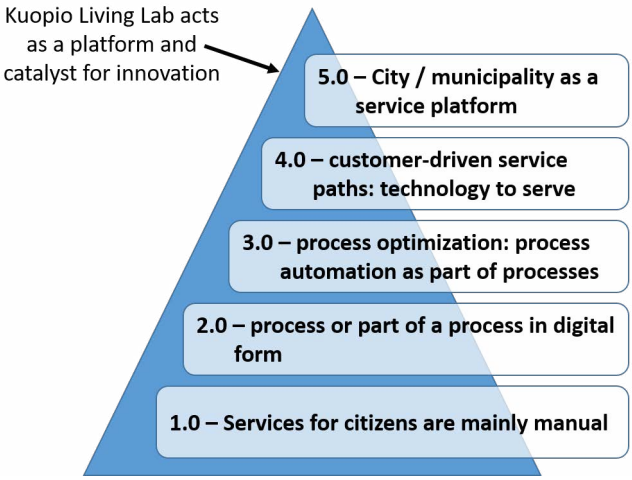


**Figure 1.** *The five-level maturity model for municipal digitalisation. (Based on Tiihinen & al 2019, © Arto Holopainen, City of Kuopio)*

Kuopio University Hospital holds one of Finland's health data lakes, which aims to connect health data from different sources, such as the National Genome Center, the National Neuro Center, the Eastern Finland Biobank, the Cancer Center, Kuopio University Hospital, the University of Eastern Finland and the City of Kuopio.

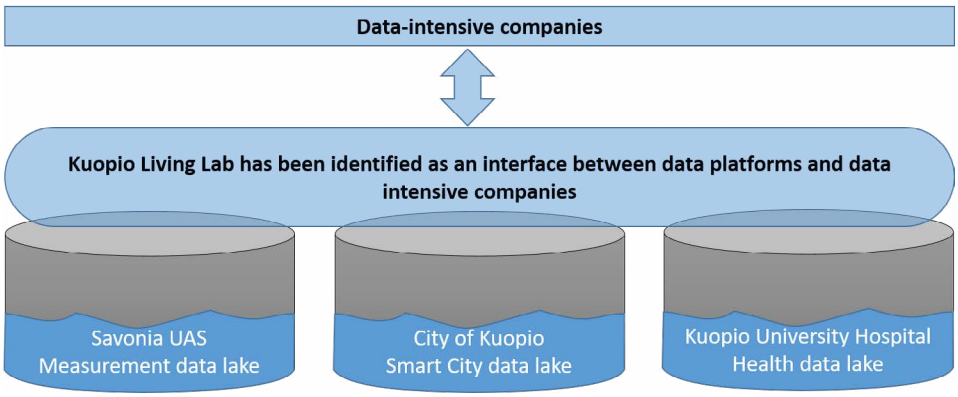


**Figure 2.** *Kuopio Living Lab role as a channel for different data sources (© Arto Holopainen, City of Kuopio)*

The operational model for utilising data through Kuopio Living Lab must include not only privacy (General Data Protection Regulation, GDPR) and legal perspectives but also ethical use of data, especially when related to individuals. In this context, three MyData principles (human-centric control and privacy, usable data and an open business environment) provide a human-centric approach in personal data management, which combines industry needs for data with digital human rights (MyData Working Group 2015). In addition, the six guiding Data Economy Principles (Access, Share, Act, Trust, Innovate and Learn) that

were drafted during Finland's Presidency of the Council of the European Union in 2019, serve as a balanced, coherent and interoperable data-policy framework of a human-centric and thriving data economy (EU2019.fi). To support data economy development, Sitra, the Finnish Innovation Fund, has launched IHAN, an initiative on a 'human-driven data economy' that aims to build the foundation for a fair and functioning data economy. Implementation of the IHAN operating model in practice includes developing a governance model and specifying data formats to support data exchange use and service standards for real-time data transfer (Ilves L. K., Osimo D & Project Team 2019).

The use of combined data in, for example, health promotion and prediction has raised new questions: How can one ensure the data is reliable? What kind of data is primarily needed? How can meaningful outcomes from the combined data be achieved? At best, Kuopio Living Lab can help identify needs and find solutions. Related to health data, Finland has passed the Act on the Secondary Use of Health and Social Data (Laki sosiaali- ja terveystietojen toissijaisesta käytöstä 552/2019). The legislation will make it possible to use health and social data not only in research and in the compilation of statistics but also in development and innovation activities, teaching, knowledge management, supervision and steering in the social welfare and healthcare sectors, as well as in official planning tasks. The legislation has created a new data permit authority, Findata (www.findata.fi), which will be a one-stop shop for the secondary use of social and health data. Findata started its operations in early 2020. This provides interesting opportunities for health data usage when data is collected from multiple healthcare organisations.

Kuopio Living Lab acts also as a platform for matching new products or service needs arising from everyday life with companies and entrepreneurs. One example is the City of Kuopio's need to automate and use novel data analysis in the city's annual wellbeing report. The wellbeing report compiles essential data on municipal residents' wellbeing. The wellbeing report is used as a basis for planning, allocation of city resources and service development (e.g., related to health promotion). The data for the report is mainly collected manually in collaboration with different municipal sector experts and stakeholder groups as well as residents. Kuopio Living Lab has initiated the analysis of data sources needed for the wellbeing report to advance the city's need for automation and data analysis. During the process, data will be evaluated and made available as open data, when possible, for further use. Kuopio Living Lab will also arrange joint events such as hackathons and open-data seminars with other stakeholders in order to engage entrepreneurs to develop solutions for needs using open data.

Living labs are real test beds and experimentation environments where users and companies can co-create innovations for the real needs of society. Living labs can improve individual and human-centric understanding and the use of data resources. Organisations in the living lab ecosystem can also collect data to improve their own services and offer better data for customers, as well as learn how other organisations operate and share their best practices with others.

In the Kuopio Living Lab ecosystem, all three organisations have their own coordinator whose responsibility is to orchestrate the living lab process in co-operation with other participants. The coordinators meet on a weekly basis to go through new contacts and cases with a promise to reply within one week. After that, a meeting is arranged with co-creation partners and the planning of the requested services begins, which includes defining the concrete goals of collaboration as well as each participant's responsibilities during the planning, implementation and evaluation (Holopainen, Kämäräinen, Kaunisto, Kekäläinen & Metsävainio 2018).

## DISCUSSION

Collaboration between all ecosystem stakeholders has made it possible to provide better products and services that can improve the health and wellbeing of the community in all sectors of life. This also promotes citizens' participation and supports the co-creation of new ideas arising from the community and the growth of a healthy city.

However, Kuopio Living Lab needs to evolve with its stakeholders to keep its customers on the edge of the future. A living lab should be a demonstrator of best practices on how to collect, manage and utilise information about a product or service development. A living lab should also be an influencer concerning open data and should generate possibilities related to data usage.

To support local companies during their digital transformation journeys, Savonia University of Applied Sciences and the University of Eastern Finland have established DigiCenter North Savo. This Digital Innovation Hub monitors and maintains up-to-date information on digital technologies and their maturity levels, performs research and development projects on digitalisation and solves demanding business problems together with customers. DigiCenter North Savo is a growing ecosystem that builds relationships between start-ups, SMEs, large companies and other stakeholders such as other digital innovation hubs.

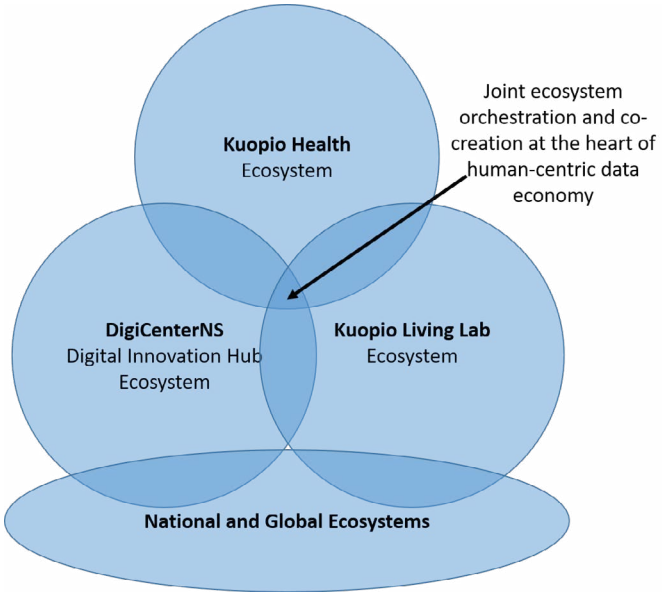


**Figure 3.** *Joint ecosystem orchestration and co-creation at the heart of the human-centric data economy. (Figure: © Arto Holopainen, City of Kuopio)*

Kuopio Living lab creates an ecosystem for co-creation that connects to other ecosystems. For example, Kuopio Living Lab connects to the Kuopio Health ecosystem , which promotes wellbeing, food industry and health-care technology competence, research as well as business life both locally, nationally and internationally. Again, Kuopio Health connects to Finland's nationwide health testbed ecosystem. Kuopio Health conforms to an open innovation model in combining the public sector, academia, business and end-users, enabling new solutions and networks. These sectors have such a strong commitment to the open innovation

ecosystem that they formed the Kuopio Health co-operative, whose goal is to create predictability, continuity and efficiency for research and development projects by bringing together different actors. (Kuopio Heath n.d.)

Kuopio Living Lab also connects to the DigiCenter Northern Savo Digital Innovation Hub ecosystem, which in turn connects to a national and European digital innovation network. DigiCenterNS received digital innovation hub status on 16 January 2020 and is now in the official digital innovation hub catalogue of the European Commission (DigiCenter North Savo n.d.). Digital innovation hub operations are based on daily collaboration with regional companies, and currently there are 10–12 research, development and innovation pilot projects (e.g., artificial intelligence, digital transformation, service development, open data) being run with companies.

DigiCenterNS also helps other regional ecosystems (health, food, water, manufacturing) in digital transformation. This cross-domain collaboration started well but understanding complex challenges related to each domain requires domain knowledge and a lot of resources and effort from DigiCenterNS specialists. Additionally, DigiCenterNS has an active role in networking regional companies through events (seminars, workshops and technical working group meetings).

While Kuopio Living Lab focuses on supporting the city as a capital where the good life lives, it also empowers its residents to develop the new products and services they need. Kuopio Living Lab also co-operates with regional development projects in order to acquire new ideas and needs from residents. These fast prototyping experiments, such as co-creation events like hackathons or placemaking pilots, open up the community to developing knowledge and expertise but also challenge living labs to think outside the box and generate new services to meet the community's needs.

Hackathons are also methods for living labs to add knowledge about available data and enhance its use. By organising hackathons, living labs can generate innovative applications and services for the public. For example, Kuopio Living Lab, together with DigiCenterNS and Kuopio Health ecosystems, organises hackathons for the use of open data provided by the City of Kuopio. These hackathons can provide important information for the city by analysing and developing new services (for example, the usage of e-city bikes and public traffic).

As a conclusion, in the future our living environment – i.e., cities – will be self-aware and able to reconfigure services based on what is happening, and what might happen, in the immediate future. The information surrounding us and flowing from the city will be a huge asset for the human-centric data economy, which enables more personalised services and a strong foundation for management and business growth. A critical success factor is the involvement of all stakeholders in co-creating together, with a seamless and open management chain.

Kuopio Living Lab experiences demonstrates the tangible role of co-creation at the heart of the human-centric data economy.

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- Co-creation
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**WE ARE LIVING** in a world that is changing at a rapid pace. Globalization and technological development are bringing about many benefits. However, the challenges we meet are often complex, inter-connected and systemic, so-called *wicked problems*. The challenges are no longer local or one-dimensional.

Addressing wicked problems requires new rules and new ways of thinking that are determined by collaboration, inclusiveness and openness. These global challenges call for updated models that both help to enhance involvement of multiple stakeholders in *co-innovation* and *value co-creation*, and help stakeholders to benefit from them.

The set of articles within this book demonstrate how such concepts as *multi-stakeholder partnership, co-production of research* and *participatory Research, Development and Innovation* take place in practice. The articles epitomise how new collaborations, dialogues and partnerships are being formed among academic, public and private partners, and civic society. As the described collaboration is characterised by impactful interdisciplinary and creative methodological experimentation, this publication seeks to engage a wide audience of researchers, educators, policy-makers, practitioners and others with an interest in combining collaborative academic, business and public expertise.

These articles introduce research results, methodological considerations and practitioners' experiences on multi-stakeholder collaboration allowing for and benefiting from open research, innovation and educational processes. They make apparent the wide range of practices, tools and benefits of co-creation in the context of *Open innovation, Open science* and *higher education*. The articles shed light on the prerequisites of purposeful multi-stakeholder partnership and collaboration in different thematic and regional contexts.