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International Innovation Sprint Bridging the Sustainability Gap between Metropolitan Core and Peripheries

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Abstract

Generally, RDI work takes place at the core of Metropolitan areas where the best innovation resources, Universities, and Research Institutions normally situate. At the same time, the periphery of Metropolitan that provides the core area with many vital resources can itself suffer from migration loss, brain drain, loss of jobs, and the many challenges related to ageing population and long distances or poor logistics. In this paper we aim to contribute to the discussions on the role of science, technology and innovation in society and particularly in making cities and communities inclusive, resilient and sustainable (UN SDG 11). We adopt perspectives and concepts from innovation literature and policy documents to introduce Innovation Sprint as an innovation intermediary tool. We explain how the sprints were designed and experimented first in Taiwan and then in Finland. In both cases, multidisciplinary and international Sprints were taken to a remote community to observe, understand, and then to co-create innovative solutions with and for the local stakeholders. We also discuss the ways the Sprint might bridge the sustainable development gaps between the urban, peri-urban and rural areas where the intensity of knowledge, technology, and monetary resources can vary substantially.

Keywords: *Innovation Sprint; Living Labs; sustainability gap; science, technology and innovation in society; ICT solutions making cities and communities inclusive, resilient and sustainable*

1 Theoretical framework: The role of science, technology and innovation in society

The *role of science and technology in society* has been discussed since 1971, when the OECD report *Science, Growth and Society* (OECD 1971) was published. Since then, science and innovation policies have tried to reconcile the *curiosity driven science* and its inner need of autonomy with the *need driven science* (Wessner 2005) and society's wish (EC 2014, 2016 & 2018) to enjoy the fruits of science. Decades ago, the OECD innovation policy stressed that *the linear science-technology innovation (STI)* was to be replaced by *interactive or systemic innovation* (Miettinen et al. 2006). *The systemic nature of innovation* refers (e.g. Fagerberg 2006) to the collective achievement of innovation through interlinking actors, activities, and innovation system.

As a consequence of the OECD innovation policy, the connections between science, technology and economy, quality of life, and societal challenges have become important research topics. In 2018, the *role of science and innovation in society* is emphasised with such policies as Responsible Research and Innovation (EC 2014), Open Innovation, Open Science Open to the World (EC 2016), Sustainable Development Goals (UN 2015) and Mission oriented research and Innovation (EC 2018).

Moreover, examples as the Innovation Manifesto (ENoLL 2018) show how the locus of emphasis is simultaneously changing from business innovation to social digital innovation.

As urban areas expand and interweave, the role of science and innovation has been discussed in new urban configurations, and urbanization has been considered an open process, determined by constant innovation and inventiveness (e.g. Diener et al 2005). In the urban context, interactive or systemic innovation has emerged parallel to the linear science-technology innovation (STI). Concepts such as Cities as Urban Labs (Evans et al 2016) have been used to illuminate how the ST-innovation can be tested and validated in the urban context. At the same time, *interactive innovation* has been connected to such notions as *Doing, Using and Interacting* (DUI) (Lundvall 1985), *Mode two of knowledge production* (Gibbons & al. 2005), *Quadruple Helix* (Curley & Salmelin 2018) based on Etzkowitz's (2002) *Triple Helix of Academia, Industry and State*, or *Open Innovation 2.0* (Curley & Salmelin 2018), Living Labs (The Helsinki Manifesto 2006), and City as a Living Lab (ENoLL 2016), or the city as an open innovation platform (6Aika).

Finland can be considered an example of sustainable optimization through technology and Living Labs. The Smart and Clean Helsinki Metropolitan (2017) claims the capital is the best testbed or living lab in the world for smart and clean solutions, “providing a unique environment for getting things done”. They aim at changes that will lead to new, permanent processes that will improve quality of life, are carbon positive and value adding, and will boost circular economy with the world’s most resource-wise citizens.

Although such regional policies as the Regional Cities Programme (2018) rely on effective cooperation between the regional cities and the state, less attention has, however, been paid on how science, technology and innovation can help to bridge the sustainability gap between Metropolitan agglomerations and their immediate hinterlands, where the leading science and innovation organisations seldom exist or have any activities.

2 Methods and Case Studies

In this chapter, we will introduce the method Innovation Sprint as a living lab and two cases bringing international experts with scientific knowledge to the Metropolitan periphery to collectively solve hinterland challenges with the local stakeholders. The Sprint also epitomizes how education, science, and innovation in society can be successfully re-contextualised.

Living Labs with and for sustainable ICT solutions making cities and communities inclusive, resilient and sustainable

With Living Labs and sustainable ICT solutions making cities and communities inclusive, resilient and sustainable we refer to the UN Agenda 2030 and the Sustainable Development Goals (SDGs) - a global sustainability agenda with 17 ambitious goals, agreed in 2015 by 193 countries within the United Nations framework.

Westerlund and Leminen (2011) define Living Labs as “physical regions or virtual realities, or interaction spaces, in which stakeholders form public–private–people partnerships (4Ps) of companies, public agencies, universities, users, and other stakeholders, all collaborating for creation, prototyping, validating, and testing of new technologies, services, products, and systems in real-life contexts”.

Making ICT deliver sustainability - Co-design for sustainable lifestyles (G-Stick conference 2017) emphasized the importance of testing, experiencing, and co-creating innovation through Living Labs as intermediary orchestrators in

multidisciplinary and cross-polluting sectors, by making citizens the driving factor of innovation creation. The conference defined Living Labs as user-centered, open innovation ecosystems based on a systematic user co-creation approach. They integrate research and innovation processes in real life communities and setting, placing the citizen at the center of innovation. Living Labs have in this way demonstrated their ability to better mold the opportunities offered by new ICT concepts and solutions to the specific needs and aspirations of local contexts, cultures, and creativity potentials.

In this paper, we consider Innovation Sprint as a full-scale urban, peri-urban or rural living labs, proving ground for learning, inventing, prototyping, analyzing, assessing, and creating market opportunities for new digital social innovation or ICT technology applications.

Due to the crosscutting nature of ICT and Living Labs, they jointly have the capacity to create and support systemic transitions leading to an inclusive, safe, resilient and sustainable 'smart' city development. This capacity is based on the fact that Living Labs are based on trust capital whereas the citizens are perceived as innovation actors or prosumers, not as research factors. Prosumers refer to consumers who become involved with designing or customizing e.g. digital products for their own needs as consumers.

Living Labs capturing the needs of a broader range of users ensures a higher rate of inclusion of technology. They collaborate with the lead users to face the market needs months or years before the bulk of that marketplace encounters them. They also co-create with the vulnerable users or users at-risk parts of the society with a poorer access to services and technologies and therefore are at the risk of exclusion. Often Living Labs aim to provide equal learning, innovating, and capacity building opportunities for all citizens; therefore, they create trust-capital into the society and local communities.

The original idea of Living Labs was with the help of co-creation and rapid experimentation to shorten time between digital development and market deployment. Living Labs can be utilized as a tool for changing behaviour towards sustainable actions of consumers.

Innovation Sprint as an innovation intermediary tool for Living Labs

Innovation Sprint is based on the idea of Living Labs as an open innovation ecosystem or a platform allowing sharing and seamless interaction between all stakeholders such as cities, citizens, companies, and academia (Curley & Salmelin

2017). The Sprint offers a physical place and virtual space bringing together the different stakeholders. During the Sprint, co-creation and real-time experimentation is conducted in real-world situations, allowing simultaneous technical and societal innovation.

As we explain in this paper, international university students are a crucial element of the Living Lab based on Sprint. During the Sprint, the students link the scientific knowledge from the Universities to the market-based knowledge from the hinterland citizens and local authorities. However, the Sprints sometimes have received negative feedback from students, when run by big corporations. A Sprint can be seen as a way of drafting a lot of unpaid talent to solve a problem for the financial gain of the corporation while leaving the Sprinters with nothing but warm thanks for their ideas.

To avoid this problem, our Sprints focused on creating public good. Sprint, when internalizing the challenges related to making cities and communities inclusive, resilient, and sustainable and externalizing public good, makes it easier for everyone to find inspiration without the risk of feeling that one's intellectual property rights have been exploited.

Next, we will briefly introduce the two Innovation Sprints, both of which were based on service design thinking (Ramaswamy and Gojallart 2010; Ojasalo, Koskelo, Nousiainen, 2015). Moreover, they applied Wenger's (1998) Social theory of learning and Living Lab approach to integrate international universities' scientific and innovation know-how to the real-live challenges and resources situating in the hinterlands of Metropolitan areas.

Innovation Sprints as a transdisciplinary and agile development process

An Innovation Sprint is a transdisciplinary and agile development process where design thinking and co-creation play a key role. In a Sprint, a team or teams are working on tackling a real-life challenge through rapid prototyping and testing, making the problem-solving process considerably faster and more human-centric than in traditional project work. Sprint teams are multidisciplinary to optimise benefitting from each team members' diverse individual knowledge and skills as well as from the multidisciplinary co-creation as a team. A Sprint can follow service design, design thinking, or other agile development and innovation processes. It is important that the participants will be provided with enough information on both the challenge at hand and the way of working, as well as the reasons for selecting the process in question, so that even in a short time of the Sprint they can trust the chosen methods and their functionality in the process.

The Asian Smart Living Sprint

The first case comes from Taiwan. The first Asian Smart Living Summer School was organised in 2011 in Taiwan and the Sprint title was “Innovation and Connection: Crafting Smart Journey in Formosa.” The design of the Sprint was based on the double diamond method with 4Ds: discover, define, develop, and deliver (*British Design Council*).

First, the Sprint took the participants on a Journey to observe and understand the challenges and opportunities related to the communities situating at the Metropolitan hinterlands. Three communities were selected to facilitate creative connections between cultures and technologies, the young and the elderly, and people and the environment: 1) a Taiwanese community of aboriginals reviving traditional industries with innovation, 2) an ageing village outside Taipei, offering an ageing life without limitation on body, mind and spirit, and 3) a Zen Buddhist community integrating cutting-edge technology and rich cultural content.

In Taiwan, the aim was to create a prototype of a new program modernising academic education and design-based innovation and to experiment the program in practice. Therefore, the Ministry of Education of Taiwan sponsored the program. It was jointly organised by the Talent Cultivation Program for Smart Living Industry and National Taiwan University, National Chiao Tung University, and Dharma Drum Buddhist College. Laurea University of Applied Sciences and ENoLL joined the prototype development and its experimentation.

The first, 5-day edition of the Sprint offered an organised innovation and learning program for almost 100 people from Finland, Japan, Malaysia, Russia, Singapore, Taiwan, USA, and Vietnam. Forming six teams, the participants defined and then worked on the challenge they deemed most important and most viable to be solved with the resources they had access to during the one-week encounter with the mentoring university professors and staff, other students, and with the locals. As a result, six technology-enhanced prototypes and their value propositions were introduced to the jury and the representatives of the local communities, researchers, and companies. (Sung & Jou 2011)

The European Digital Wellbeing Sprint

The second case is from Finland, where a small municipality situated at the outer skirts of Helsinki Metropolitan hosted a Digital Wellbeing Sprint in 2017. In Finland,

the Sprint was initiated by Laurea and jointly organised by the strategic alliance of three Universities of Applied Sciences (Laurea, Metropolia and Haaga-Helia).

In the 6-day Sprint, students, the municipality at the outer skirts of Helsinki Metropolitan area, and the organising UASs worked in collaboration to tackle the municipality's challenge "Living well all the way". The purpose was to gather deep understanding of the every-day life and challenges of the inhabitants, especially those with memory disorders, and then ideate and prototype proposed solutions based on the gathered understanding. The teams followed the Service Innovation process introduced by Ojasalo et al. (2015): Map & Understand; Forecast & Ideate; Model & Evaluate; and Conceptualize & Influence.

More than 30 Bachelor and Master students from the 3 UAS alliance and partner universities, as well as exchange students, formed eight Sprint teams. The participants were from Finland, Romania, Germany, Vietnam, Morocco, Philippines, Chile, China, Kenya, and Pakistan; with their fields of study ranging from Healthcare to Service Design, and Business to IT. The Sprint teams had more senior Masters students as well as staff members of the three UASs as Sprint mentors. Part of the teams spent the majority of the Sprint in the challenge owner municipality, immersing themselves in the inhabitants' life and environment in practice.

At the end of the Sprint, each team pitched their proposed solution to the jury consisting of members of the municipality administration, a member of staff in a local care home, and a UAS teacher and facilitator of the Sprint. Each proposed solution pitch was evaluated on the criteria of 1) the usability, potential of realisation in reality, and originality of the team's idea or concept; 2) how the team delivered the pitch; 3) how the team had used the different methods and followed the Sprint process, especially paying attention to consideration and usage of Futures Thinking and Value Proposition Design; and 4) focus and attention on customer, the municipality's resident with memory disorder. The scalability of the teams' propositions was also considered. As the end result, the municipality gained 8 diverse prototyped service propositions and concepts that the municipality could further refine.

3 Results

An Innovation Sprint can work as a means for bridging the sustainability gap between a Metropolitan area and its peripheries. The Sprint offers an invaluable opportunity for the periphery to gain access to a skilled, motivated workforce with fresh ideas and proposed solutions to their challenges. The process being facilitated by a University ensures the quality of theoretical background and novel approaches. The participants

gain a learning experience in a multidisciplinary team, learning-by-doing in a real-life setting. The collaboration between the stakeholders enables the periphery to benefit from the Metropolitan higher intensity of knowledge and technology without expenditure of their monetary resources.

For an Innovation Sprint to produce potentially usable proposed solutions to real-life challenges, it is vital that all stakeholders share the mindset of open innovation. The challenge provider is prepared for collaboration and sharing of information with both the organisers as well as the participants of the Sprint; the organiser provides a space and time to connect the stakeholders and offers theoretical and facilitative support on the process, and the participants do their best in sharing and using their individual strengths to work together effectively. In our example cases, besides helping formulate the challenge to suit a short Sprint, the challenge owners provided Sprint organisers and teams with the time of some of their key staff as well as with the opportunity for participants to immerse themselves in the local life in the real setting of the challenge. Part of the teams were working the majority of the Sprint in the hinterland municipalities where they not only observed the general setting but also attended visits organised by the municipalities to observe the daily life of e.g. local service providers and to interview their inhabitants and staff. This provided participants with invaluable insight into the challenge and led to prominent proposed solutions for the challenge owner peripheries.

In total, the example case Sprints offered the small municipalities on the outskirts of Helsinki, Taipei, and Hsinchu Metropolitan areas about 700 full days of work by motivated, multidisciplinary, and multi-cultural participants. Besides the working hours, expertise, and insights gained by the municipality during the Sprint, even a short Sprint can also help build longer relationships between different stakeholders, benefitting all parties involved. Some of the concepts or ideas that result from a Sprint could immediately be developed further or spark ideas for prototyping and testing others, and the Sprint participants – already immersed in the challenge – could be perfect for the job. Ideas and concepts born during a Sprint can also grow into Start-ups or improved products or services of an existing organisation. Typically, start-ups are concentrated in Metropolitan areas, however their operation can benefit a wider audience and in turn continue to take part in revitalising the periphery.

Innovation Sprints can help universities develop their operation and its effectiveness by actively facilitating open collaboration and its benefits for the various stakeholders. As for the roles of universities, Innovation Sprints have clear benefits also on both pedagogic and regional development level: Sprints help generate opportunities and obtaining of new competences for both the student participants as well as the region as a whole. A Sprint also enhances the university's competitiveness, contributing to regional development objectives and showcasing the utilizing of methods such as

open innovation, co-creation and rapid prototyping – skills indispensable to modern working-life and its development. The results imply that innovation-in-interaction between and within higher education, science, and society can be fruitful to all parties while supporting positive social and economic links between the Metropolitan and its peripheries (UN SDG 11).

Benefits for the periphery

Through collaboration with Sprint participants, the municipality providing the challenge has the opportunity to gain both out-of-the-box new solutions as well as potential development ideas of current situation with a fresh outlook. At the end of the Sprint, in Taiwan 6 and in Finland 8 prototypes or concepts were introduced to the jury and for the stakeholders to utilize.

Besides the presented end results of the Sprint in the form of a pitch or similar, a Sprint can work as a valuable base for longer, productive relationships between its stakeholders. In the case of the Sprint 2017, together with the Finnish municipality two student participants have continued working further on one of the concepts born in the Sprint. Another student started their Master's thesis on a topic related to the Sprint theme: their thesis topic was redefined based on the Sprint experience in the real-life setting, and the connection with the municipality staff established during the Sprint enabled them to conduct their thesis research with the actual inhabitants. Also, the inhabitants of the municipality who were part of the Sprint process e.g. in the role of interviewees or observees reported gaining a feeling of inclusiveness in being seen and heard in a process of tackling the challenges that affect their every-day lives.

Benefits for the Metropolitan

Solutions born as a result of innovation Sprints can generate commercial activities and tax revenue that benefit the society as a whole – both in the Metropolitan area and its peripheries. Start-ups are born both on ideas sparked during Sprints as well as a result of the Sprint collaboration: two team members from the winning team of Digital Wellbeing Sprint 2017 went on to attend an international entrepreneurship and start-up accelerator bootcamp where teaming up with 2 others they founded a health-related start-up company.

Method Development

Innovation Sprints as a new Living Lab method integrate University's curricular and RDI activities with its stakeholders' needs and resources. Through Sprints, Universities can offer their theoretical knowledge and facilitation skills to enable a meaningful and practical learning experience for students, and at the same time offer

valuable resources and input for the other stakeholders and the region as a whole. Innovation Sprints can also facilitate longer-term relationships between the stakeholders, benefitting them and the local area long after the Sprint has finished.

Innovation Sprints create spaces for dialogue and orchestrate co-innovation among academy, industry, SMEs, Civil Society Organisations (CSOs), and policy makers. This contributes to sustainable regional development and allows the peripheries of Metropolitans to benefit from the higher intensity of knowledge and technology traditionally typical of the core area.

If integrated into Universities' other Living Lab orchestration activities, Sprints can effectively explore systematic and institutional adaptation models to future regional priorities and synthesise new solutions.

Benefit for the participants

Innovation, co-creation, and experimentation with different national and international stakeholders provide students and other participants with excellent learning and employment opportunities with a potential of new Start-ups. Participants attending Innovation Sprints gain skills and practise vital in the modern working-life: open innovation, rapid prototyping and testing, and co-creation. They can practise these skills in a real-life environment with a real challenge with skilled facilitators, and take their learnings – as well as the connections they have gained – into their studies or working life.

Reconciliation of curiosity driven and need driven science

The Innovation Sprint brings the curiosity and need driven science into mutual interaction. An Innovation Sprint organised in the outer skirts of Metropolitan area provides a wide variety of observations and data on inclusion, resilience, and sustainability, allowing the researchers to decentre their focus of analysis to illuminate the wider context of an urban territory. The Sprint, intertwining the interactive and iterative need driven approach with the curiosity driven science is an additional tool to bridge the sustainability gap between the Metropolitan centralities and peripheries.

Challenges and Limitations

To succeed in producing viable proposed solutions to real-life challenges, innovative operative methods such as co-creation and innovation Sprints and Living Labs call for innovative leadership and freedom within framework from all stakeholders. Additionally, to succeed these methods call for professional facilitation. An academic

institution or another impartial organisation is in a prime position to create trust and facilitate gathering of relevant stakeholders to be involved, as well as to provide needed background theory and support on the chosen framework. Whereas some scholars (for example Kivistö and Pihlström 2018) are sceptical about agile methods to be used for research and innovation purposes, a viable Business Model can be created thanks to the fact that the Sprints provide a learning opportunity to the University students. However, the costs related to trips, accommodation, venues and equipment is a challenge. Different Business Models has been applied for different challenges; the most common ones are based on external project funding or the challenge owners' compensations.

4 Conclusions and Further Suggestions for the practitioners, researchers, and policy makers

During the physical Innovation Sprint, the collaboration between the stakeholders enables the periphery to benefit from the Metropolitan higher intensity of knowledge and technology without expenditure of their monetary resources. Today, the multiple disruptive technologies, all arriving at the same time, can be used in the Living Labs and to improve the Innovation Sprint's benefits to all stakeholders. With the following three suggestions based on the EC (2016) and OECD (2017) policies, we anticipate to balance the sustainable development between the Metropolitan periphery and core areas.

Firstly, the Sprint stakeholders and participants should be equipped with basic knowledge on the possibilities provided by different disciplines of computer science (such as Artificial Intelligence (AI), Data Mining, Bloc Chain, or Cloud Computing) relevant to the Innovation Sprint. Whilst, during the Innovation Sprint, the computer scientists carry the responsibility to compose the actual algorithms for digital innovation, creating innovation in multidisciplinary Sprint teams would become easier if all the participants shared an intuition of the potentials related to digitalisation. That is, all the participants should understand what is possible and not possible through programming, and what are the challenges and major implications of the major digital innovations such as AI or Block Chain. Therefore, we would recommend such knowledge to become a prerequisite for all the Sprint participants. Such virtual courses are available on internet free of charge¹.

Secondly, as big data and data-driven innovation is creating significant business opportunities, data should also be used to solve the sustainability challenges of the municipalities situating in the outer skirts of the Metropolitan areas. Aligned with the Findable, Accessible, Interoperable and Reusable (FAIR) Data policy

¹ <https://www.elementsofai.com/>

(Implementation Roadmap for the European Open Science Cloud), the Innovation Sprints should create and agree on the Data Management Plans, to help the Sprint participants in different countries and times to collect, share, and use data before, during, and after the Innovation Sprints. Innovation Sprints and Living Labs sharing data would leverage better solutions for local authorities responsible for urban, peri-urban and rural areas to become inclusive, resilient and sustainable. Therefore, Digital Innovation Sprints should be included into local, regional and EU strategies to support science based economic, social, and environmental links between the Metropolitan cores and peripheries and to promote territorial inclusion within EU. Moreover, FAIR Data provides new Business opportunities for the Living Labs contributing and sharing data on same phenomenon.

Thirdly, based on the previous two suggestions we recommend transnational co-creation and experimentation Innovation Sprints to be organised simultaneously in different countries and to connect them digitally. With the help of internet connections, the Innovation Sprint participants in urban, peri-urban, and rural areas could create and exchange more data to develop better solutions and to receive immediate feedback from the rapid experiments in different legislative, cultural, language, climate, and logistic conditions. Internationalization would have one further benefit. The delocalized but simultaneous Innovation Sprints would decrease the travel costs of the Innovation Sprints without losing the access to cultural diversity. The data collected during the various Innovation Sprints could operate as an attraction factor for the world's leading researchers. Their involvement before, during, and after the Sprints would create better conditions for the cities and rural areas at the hinterland to benefit from the combination of the agile and fast face-to-face Innovation Sprints and their permanent connections to fundamental research and innovation institutions in any global metropolis. Moreover, continuous research is needed to assess the impacts of the Digital Innovation Sprints on learning and innovation results.

With these recommendations, we believe the Digital Innovation Sprint will promote Commissioner Carlos Moedas' (2017) vision: "The year is 2030. Open Science has become a reality and is offering a whole range of new, unlimited opportunities for research and discovery worldwide. Scientists, citizens, publishers, research institutions, public and private research funders, students and education professionals as well as companies from around the globe are sharing an open, virtual environment called The Lab".

References

- 6Aika. *Six Finnish cities join forces to become better and smarter*. <https://6aika.fi/in-english/>
- British Design Council. *The Design Process: What is the Double Diamond*.
<https://www.designcouncil.org.uk/news-opinion/design-process-what-double-diamond>
- Curley, M. ja Salmelin, B. (2018). *Open Innovation 2.0. The New Mode of Digital Innovation for Prosperity and Sustainability*. Springer, Cham.
- Diener, R., Herzog, J., Meili, M., Meuron, P., & Schmid, C. (2005). *Switzerland – an Urban Portrait*.
- EC (2006). The Helsinki Manifesto 20.11.2006. We have to move fast, before it is too late. Finland EU Presidency
http://elivinglab.org/files/Helsinki_Manifesto_201106.pdf
- EC (2014). Rome Declaration on Responsible Research and Innovation in Europe. Italian Presidency of the Council of the European Union
- EC (2016). Open innovation, open science, open to the world - a vision for Europe. Produced by European Commission's Directorate-General for Research & Innovation (RTD).
- EC (2018). Mission-oriented research and innovation policy. A RISE perspective – Study. Directorate-General for Research and Innovation.
- EC Committee of the Regions. *Innovation Camp*.
<http://cor.europa.eu/en/news/Pages/citizens-dialogue-in-gabrovo-building-trust-in-europe.aspx>
- ENoLL (2018). *The Manifesto for Innovation in Europe*.
<https://manifestoforinnovationineurope.org/>
- Evans, J., Karvonen, A. & Raven, R. (Eds.) (2016). *The Experimental City*. Routledge research in sustainable urbanism. New York: Routledge.
- Etzkowitz, H. (2002). *The Triple Helix of University - Industry – Government Implications for Policy and Evaluation*. Science Policy Institute Working paper 2002,11.
- Fagerberg, J. (2006). Innovation: A Guide to the Literature. In Fagerberg, J., Mowery, D. C. & Nelson, R. R. (Eds). *The Oxford Handbook of Innovation* (pp. 1-26). Oxford: Oxford University Press.
- Gibbons, M., Limoges, C., Nowotny, H., Schwartzman, S., Scott, P. & Trow, M. (2005). *The New Production of Knowledge: The Dynamics of Science and Research in Contemporary Societies*. London: SAGE
- G-STIC 2017, key conference findings. <https://2018.gstic.org/insights/2017-key-findings>
- Hirvikoski, T. & Saastamoinen, K. (Forthcoming). *Innovation Sprint – Manual for organisers*. Laurea publications.

- Kivistö, S. & Pihlström, S. (2018). *Sivistyksen puolustus*. Miksi akateemista elämää tarvitaan? Talinna: Gaudeamus
- Lundval, B-Å. (1985). Product innovation and producer-user interaction. *Industrial Development Research Series*, 31, 79-91. Aalborg University Press.
- Miettinen, R., Tuunainen, J., Knuuttila, T. & Mattila, E. (2006). *Tieteestä tuotteeksi? Yliopistotutkimus muutosten ristipaineessa*. Helsinki: Yliopistopaino
- OECD (1971). *Science growth and society: a new perspective*. Report of the Secretary-General's Ad Hoc Group on New Concepts of Science Policy.
- OECD (2017). *Making Innovation Benefit All: Policies for Inclusive Growth*. Paris: OECD Publishing.
- Ojasalo, K., Koskelo, M., & Nousiainen, A. K. (2015). Foresight and service design boosting dynamic capabilities in service innovation. In *The Handbook of Service Innovation* (pp. 193-212). Springer, London.
- Ramaswamy V. and Gojullart, F. (2010). *The power of cocreation*. New York: Free Press.
- Regional Cities Programme secretariat and advisory group (2018). *Regional cities programme – Independent development and multilateral partnerships*. Ministry of Finance publications 21/2018. Helsinki. <http://urn.fi/URN:ISBN:978-952-251-956-6>
- The Smart and Clean Helsinki Metropolitan (2017). www.smartclean.fi
- Sung, T. J. & Jou, S.C. (2011). *2011 Asian Smart Living Summer School Report*. Innovation and Connections. The Talent Cultivation Program for Smart Living Industry. Ministry of Education R.O.C.
- UN (2015). *The 2030 Agenda for Sustainable Development*. <https://sustainabledevelopment.un.org/post2015/transformingourworld>
- Wenger, E. (1998). *Communities of Practice: Learning, Meaning, and Identity*. Cambridge University Press.
- Westerlund, M., & Leminen, S. (2011). Managing the Challenges of Becoming an Open Innovation Company: Experiences from Living Labs. *Technology Innovation Management Review*, 1(2): 19-25.
- Wessner, C. W. (2005). Entrepreneurship and the Innovation Ecosystem Policy Lessons from the United States. In Audretsch, D.B., Grimm, H. & Wessner W.C. (Eds.). *Local Heroes In the Global Village: Globalization and the New Entrepreneurship policies*. New York: Springer science & Business media.