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Article

Live LAB environments offer opportunities for RDI activities in ecosystems

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1. Introduction

Universities of applied science engage in applied research, development and innovation activities. These activities serve teaching, promote working life, regional development and renew the economic structure of the region, as well as provide opportunities for continuous learning. (Universities of Applied Sciences Act, Finlex. In practice, research carried out in universities of applied science is often applied research that primarily produces practical applications – for example, it creates new methods and means of solving problems or looks for applications for the results of basic research (Statistics Finland).

Universities of Applied Science reach their helping hand to public and private organizations in their area. Organizations are facing complex challenges and need to constantly innovate to remain competitive. Organizations often have limited access to research and development, so they have adopted different forms of collaboration and open platforms to innovate new things. (Greve et al., 2021.)

2. Living Labs provide diverse real-world information

As one of the ways to implement the reform of working life and regional development, universities of applied sciences have created various living lab environments. These functional working and learning environments provide a platform for research and development that connects business and business actors, educational, research and development organizations, and students.

Living lab environments are significantly different from traditional laboratories, which are used specifically to analyze phenomena in physics, chemistry, medicine, cognitive and behavioral psychology. These living labs created in higher education institutions represent a more dynamic Living Lab operating model that brings together different actors, sectors, disciplines and professions and competences for practical cooperation.

It can be argued that with this diversity that represents the real world, they are better able to embody social reality than traditional lab environments.

The Living Lab operating model enables both experimental setups that are used to test something new and, on the other hand, a new perspective on the development of existing operations.

The end result is often new service, product, experience or social innovation. At its best, research, learning, development work and innovations are naturally linked in lab environments. The Living Lab operating model expands the laboratory into an open and participatory test environment activity, where the main focus is on comprehensive and shared value creation by all parties.

As such, Living Lab is not a unique invention. Philosophers, human and especially cultural scholars have forever left their chambers to study peoples, tribes, and individuals in their natural environments. For field researchers, the behavioral processes of individuals and communities have been important. People have wondered, questioned, interviewed, analysed, compared and structured. Living laboratories, on the other hand, brought with them a culture of experimentation and innovation, rapid testing and bold openings.

3. The operating model of living labs – a platform for cooperation in regional development

The Living Lab operating model seems to work particularly well when it combines the RDI and teaching activities at universities of applied sciences with the needs of the region's business life. It can be considered a good method of bringing together the objectives of regional development and competence development in universities of applied sciences. (Saranne et al., 2011.)

The concept is based on the synergy benefits created by different actors through cooperation. Ideally there is open and user-oriented innovation, in which the users of the lab environment are active and equal actors with the administrators of the lab environment. All actors are seen as key drivers and resources for operations – everyone's perspective is needed to produce innovative solutions. (eg. Nesti, 2018.)

The Living Lab connects organizations, research actors and user-customers. In this case, the research environment is transformative, contextual and real rather than static and delimited. In this kind of living RDI environment users of technologies and devices produce more true information than whitecoat researchers in clinical facilities with their forms. The needs and activities of the dynamic consumer, i.e. the hybrid consumer, are also better reflected in real, natural microenvironments than in stripped-down laboratory spaces that are far from everyday life. In this case, even when simulated, the test environments and test results are more relevant to practice than they would be in more normative settings.

4. Lab environments as a manifestation of ecosystem thinking

Living lab environments provide a functional research, development and innovation platform for various innovation ecosystems. According to a study conducted in 2019 (Laaksonen et al., 2019), living labs provide added value to ecosystems, especially when actors are able to define common goals, the pursuit of which is supported by agreed cooperation structures.

Ecosystems favour a credible locomotive operator and an international business network. Cooperation must also be managed, facilitated and coordinated. The private and public sectors must be coordinated and there must be continuous and consistent action. The activities are also determined by sufficient diversity

and clustering, as well as a diverse and active group of actors related to these. (Laaksonen et al., 2019.)

It is clear that different challenges require different types of competence and different levels of learning – on the other hand, it is clear that the challenges of today's world are very complex. Living lab environments can be used to support individual and team learning, learning organisations and enable movement towards learning ecosystems.

Lab environments are built to support interaction and cooperation between different actors and organisations in an uncertain, multistructured and rapidly developing business environment. The challenges, opportunities and solutions of current operating environments are often extensive and difficult to understand, which means that a single organisation is unable to solve multidimensional challenges or, for example, to seize new market, competition and financing opportunities. In this case, the role of labs as research, development and innovation platforms, even as a recruitment channel, will increase.

The lab environments of universities of applied sciences and the themes discussed in them that are topical for society, project financiers and consumer markets expand the role of higher education institutions among lab infrastructure providers and place them at a central intersection of different actors, where students, teachers, researchers, representatives of start-ups, SMEs and large companies, cities and municipalities, investors and (test) users cooperate. This, in turn, enables the university of applied science's profile and competence to be used to adapt the service offering, support functions and processes around the lab infrastructure that take the university towards ecosystem management and the role of an orchestrator. In this way, the labs support the learning of the actors involved, the emergence of shared understanding and knowledge of the group, and the leadership of the individuals and organizations involved in the topic is strengthened.

All the more often the universities of applied science open their lab environments to the good of he surrounding community. According to a study conducted in 2016 (Viitasaari & Päällysaho, 2016), as many as 92% of the lab environments at universities of applied sciences engaged in business cooperation. However, there was also a lot to develop: in most environments, the number of users was small – almost half of the environments had fewer than 50 users per year. Universities of applied sciences offered opportunities for use outside their own organisation, but this was limited and paid service activities were particularly emphasized. Since then, guided by open science and research policies, lab environments have been opened and further developed, for example, the research.fi website provides a view of the use of 72 different lab environments or research infrastructures in universities of applied sciences (situation on 28.10.2022).

At their best, lab platforms serve as systemic innovations that solve and anticipate business problems. Solution options can be specified, further refined and piloted on the principles of ecosystem building and open innovations with the help of the expertise and experience of different actors. Cooperation between heterogeneous partners in lab environments accelerates the innovation process of organizations and brings new competence to everyone. In addition to tangible outputs such as design, products, prototypes and solutions, living lab

environments can also produce intangible results such as concepts, ideas, information and services. (Greve et al., 2021.)

5. eSignals Research LAB Theme Issue

This LAB theme issue by eSignals Research highlights research carried out in lab environments, its methods and results in the form of individual studies conducted in different lab environments. Each publication describes the possibilities of different lab environments as research, development and collaboration platforms. Drake's and partners' publication describes how Living Labs develop the recognition of competence in virtual reality, Gjerstadt's article reflects on the ethical issues of interaction research using emotional intelligence in a lab environment, and Niemi & Heinonen's article embodies research conducted with new technologies in the lab environment provided by the University of Applied Sciences. All the lab environments described in the articles aim to create a platform that provides value to the innovation ecosystem of universities of applied sciences. The thematic issue offers perspectives on the world of living labs from different angles – the reader gets an overview of the ability of living labs to produce information related to the recognition of competence, ethical issues in a special technology lab environment and, on the other hand, the reader gets a glimpse of how the lab environment is utilized in applied research.

We wish you a fruitful reading!

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