

LIVING LABS

Definition and context

The term *living lab* has emerged in parallel from the ambient intelligence research communities¹ and from the discussion on experience and application research (EAR). The emergence of the term is based on the concept of user experience and ambient intelligence (AmI).

There is no standard definition of the concept of living lab. It has been defined as a methodology, an organization, a system, an arena, an environment, and/or a systemic innovation approach. In general, living labs deal with user-centered, open innovation ecosystem, often operating in a territorial or regional context (e.g. city, agglomeration, region), integrating concurrent research and innovation processes within a *citizen-public-private partnership (C3P)*, also characterized as *Public-Private-People Partnerships (PPPP)* for user-driven open innovation, involving quadruple helix stakeholders (companies, researchers, public organizations and users).

A Living Lab involves four main activities²:

1. *Co-Creation*: co-design by users and producers
2. *Exploration*: discovering emerging usages, behaviours and market opportunities
3. *Experimentation*: implementing live scenarios within communities of users
4. *Evaluation*: assessment of concepts, products and services according to socio-ergonomic, socio-cognitive and socio-economic criteria.

Implementation

Although present under Horizon 2020, it seems that Living Labs were relatively more highlighted in the policy discourse and ad-hoc studies in the previous programming periods (FP6 and FP7).

While some innovation labs are acknowledged as formal and perennial organisations, a number of initiatives take the form of projects / exercises with a specific target and a limited lifespan. The optimal life-time for an innovation lab is approximately 5 years. But it can also be argued that innovation labs must have the capacity for self-renewal and continuously find and adapt to the most cutting edge and appropriate innovation approaches, world-wide. If they are able to do that, they are sustainable.

In terms of implementation, the European Network of Living Labs (ENoLL)³, launched in 2006, is a community of Living Labs with the objective to support co-creative, human-centric and user-driven research, development and innovation. The community of Living Labs comprises 170 active Living Labs members worldwide, including active members in 20 of the 28 EU Member States, extending worldwide, although the majority are based in the EU. ENoLL participated as an association in several EU-funded projects including Smart Cities, Future Internet managed by FP7-funded Concord⁴. One of the issues risen about ENoLL participation in a 2009 report was that some Living Labs had been “cannibalized” by consultancy firms, whereby some consultant companies call themselves

¹ See for instance <http://what-when-how.com/artificial-intelligence/ambient-intelligence-environments-artificial-intelligence/>

² Source : <http://www.openlivinglabs.eu/FAQ>

³ <http://www.openlivinglabs.eu/>

⁴ Full list <http://www.openlivinglabs.eu/news/enoll-strategic-project-involvement>

innovation labs, propose multidisciplinary projects and adopt a user-driven approach but are not multi-stakeholder⁵. This is an aspect to consider while thinking of potential support actions.

A best Practices Assessment was conducted for some of the Living Labs (organized in ENoLL) as part of the CO-LLabs Project⁶ which stands for: "*Community-Based Living Labs to Enhance SMEs Innovation in Europe*". It is a Thematic Network in the ICT-PSP program (CIP) under theme 4.1 "*Sharing Experience on ICT Initiatives for SMEs*". The overall objective of the CO-LLABS Thematic Network is to achieve a European-wide adoption of ICT-based Living lab services and practices to allow SMEs to improve their innovation capabilities and processes and become part of "open innovation" environments.

Funding channels

The 2009 report "Labs for a more innovative Europe"⁵ mentioned that the nature of innovation labs initiatives calls for co-funding, a shared resources mode of financing, and that "public funds are generally not shaped for such objectives". However, Living Labs have benefited from public funding. Under Horizon 2020, *Industrial Leadership*, *Research Excellence* and *Societal Challenges* are the three areas where Living Labs are invited to create innovative consortia. Also, the EIT KICs (Knowledge and Innovation Communities) are dynamic platforms for living labs. For instance, one of Climate-KIC's flagship programmes, the Building Technologies Accelerator (BTA)⁷ focuses on measurable CO2 reduction in the building sector – including both refurbishment as well as new buildings. The international network of Living Labs of the Climate-KIC Flagship Building Technologies Accelerator (BTA) comprises six living labs located in the Netherlands (Concept House Village, The Green Village), Sweden (HSB Living Lab), Switzerland (House of Natural Resources, NEST) and Spain (CIES).

Several Living Lab were funded under FP7, for instance the IREEN project (ICT Roadmap for Energy Efficiency Neighborhoods) which had implications for innovations in ICT for enabling energy-efficiency at the neighborhood scale. It also contributed evidence in support of using ICT to enable users themselves to increase their energy efficiency rather than automating control away from the user, concluding that the former approach can achieve cost-effective, sustained savings that increased automation is unlikely to do⁸. Another example of FP7-funded living lab is ELLIOT (Experiential Living Lab for the Internet Of Things), an ICT collaborative project (4M EUR with a EU contribution of 2.9M).

Possible synergies

In the previous programming periods, several Living Lab initiatives were supported under FP7, CIP ICT PSP programme, Interreg, etc as well as national programmes. There are various possibilities to use synergetic funding with both the research framework programme and structural funds. For instance:

- LILA⁹ (Living labs application for internationalization of start-up companies), co-funded by the program **Interreg** IV-B North West Europe aims at bringing startup companies on the European market by using the transnational application of Living Labs methodology on the business development process.

During the 2015 CeBit exhibition in Hannover, the Italian company Trilogis announced that,

⁵ grips.proinno-europe.eu/knowledge_base/dl/880/orig_doc_file/

⁶ Project duration: 2008-2010: <http://www.ami-communities.eu/wiki/CO-LLABS>

⁷ <http://www.climate-kic.org/programmes/building-technologies-accelerator/>

⁸ ec.europa.eu/information_society/newsroom/cf/dae/document.cfm?doc_id=2649

⁹ <http://www.lilaproject.eu/>

with the support of **EIT ICT Labs**¹⁰, they are going to join the first transnational Living Lab created by the LILA project.

- SusLabNWE aims to set up in North-West Europe a networked infrastructure of houses and 'living laboratories' for studying technology-user interaction in real-life home environments at 5 locations: Rotterdam (NL), Ruhr area (DE), London (UK), Gothenburg (SE) and Zurich (CH). The objective is to become a networked knowledge hub, well-embedded in the local knowledge infrastructure, business and society, that provides testing facilities for industry (large companies and SMEs), knowledge institutes and policymakers, and methodologies for development with actual users, sustainable products and services that are integrated part of the build environment (e.g. heating). Each location will be a public-private partnership networked through a common data sharing infrastructure. The set-up is based on the results of the LIVING LAB Design Study (FP7), but the project is funded under **ERDF / INTERREG IVB North-West Europe (NWE)**¹¹. So this is an example of downstream sequential funding starting with FP7 and continued through Interreg.

Synergies among instruments are also taking place. For instance, the strategic initiative on Embedded Computing Systems, the ARTEMIS Joint Technology Initiative (JTI)¹² funded real-life experiments in Living Labs. ARTEMIS aims to tackle the research and structural challenges faced by European industry by defining and implementing a coherent Research Agenda for Embedded Computing Systems. The ARTEMIS JU will manage and co-ordinate research activities through open calls for proposals through a € 2.5 billion research programme on Embedded Computing Systems. Selected projects are co-financed by the ARTEMIS Joint Undertaking and the Member States that have joined ARTEMIS: *"ARTEMIS recognizes that large experimentation platforms exist at national or European levels, which could provide for some applications domains targeted by ARTEMIS a suitable "real-life" experimentation environment, and which could benefit from the innovative ideas, concepts and artefacts developed by ARTEMIS. It is part of the real-life experiments priority to support the creation of new Living Labs or to participate in established Living Labs as part of or besides the typical R&D projects."*¹³

On a more generic note, Living Labs (among other tools such as small scale testing, large scale demonstrators or innovation platforms) can be considered among the appropriate instruments for regional policy and synergetic funding. Transforming regions through service innovation necessitates policy instruments and platforms which facilitate the interactive development of new business models. For instance the Living lab approach was proposed in Emilia Romagna's Smart Specialisation Strategy, bringing together suppliers and potential users of services to work jointly on new products and services and thus act as an incubator for service innovation¹⁴. It led to the establishment of around 10 living labs aimed at developing transferable demonstrators or platforms in an open environment, on a selected list of topics considered essential for the regional economy and society.

¹⁰ <http://eit.europa.eu/newsroom/eit-ict-labs-entire-testing-platform-smes-boost-international-growth-trilogis>

¹¹ Source: http://www.nweurope.eu/index.php?act=project_detail&id=5368

¹² Artemis merged into the ECSEL JTI on June 2014. See the (forthcoming) fiche on JTIs at <http://s3platform.jrc.ec.europa.eu/instruments-platforms-concepts>

¹³ <http://www.openlivinglabs.eu/news/artemis-joint-initiative-funding-real-life-experiments-living-labs>

¹⁴ http://ec.europa.eu/growth/tools-databases/newsroom/cf/itemdetail.cfm?item_type=251&lang=en&item_id=7321 ; http://ec.europa.eu/growth/tools-databases/newsroom/cf/itemdetail.cfm?item_type=251&lang=en&item_id=7708