



RI4C2
Research & Innovation
For Cities & Citizens



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Pilot Living Labs for Citizen Science

Report

DELIVERABLE 6.5
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D6.5 – Pilot Living Labs for Citizen

Science

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I. Preamble

The current deliverable aims to create the first three pilot Living Labs in the three existing [EC2U Virtual Institutes](#):

- Virtual Institute for Good Health and Well-being (GLADE),
- Virtual Institute for Quality Education (VIQE) and
- Virtual Institute for Sustainable Cities and Communities (VI SCC).

A **Living Laboratory – Living Lab** - is a type of research and innovation (R&I) facility that allows for the study and testing of new technologies, products, and services in a real-world setting. It typically involves collaboration between research organisations, industry partners and citizens, with the goal of creating solutions that are responsive to the needs and preferences of the community. Living Labs are often used in areas such as urban planning, energy efficiency, transportation, health care, service delivery, digital media, information management and technology. They can also be used to test and validate new technologies before they are introduced to the market.

Living Labs operate as intermediaries or “third spaces” among cities, the business sector and research organisations fostering joint value co-creation, rapid prototyping or validation to accelerate innovation and business development. Consumers and end-users play an important role as powerful sources of innovation for companies engaging in user-driven open innovation. Therefore, these infrastructures constitute a user-driven open innovation ecosystem based on partnership among businesses, citizens, and government.

The “explosion” of user-created content adds yet another dimension to the role of users in the information society. The Living Lab concept plays a crucial role in involving users continuously, monitoring their expectations, and reflecting these insights into the development of better products and services¹.

¹Living Labs for user-driven open innovation- An overview of the Living Labs methodology, activities and achievements. Directorate-General for the Information Society and Media (2009), https://www.eurospordello.eu/sites/default/files/Living%20Lab%20brochure_jan09_en_0.pdf

The Living Labs approach is built on the three core principles of “user-centred innovation”, “real life experimental setups” and “private-public-people partnerships”.

Nowadays, there exist various definitions and conceptualisations of the Living Labs. However, three components are recognisable within the now well-established Living Labs concept, which include (a) co-creation with a large set of stakeholders, (b) in real-life sites and (c) involving the end-user².

There are many aspects to consider when setting up a Living Lab in terms of organisation, operations, resources, business models, users / citizens, openness and value³.

In particular, citizens can be involved at different levels and scales⁴:

- *No engagement* is when citizens are unwilling or not invited to be engaged;
- *Symbolic engagement* is when input from the citizens is requested but not used;
- *Engagement by advice* is when citizens' advice is asked with the help of interviews or questionnaires;
- *Engagement by weak control* is when citizens have more responsibility to be a part of solution development, however they can “sign off” at any stage of the solution development process;
- *Engagement by doing* - when citizens are active participants in the solution development process and influence on the process in all stages;
- *Engagement by strong control* - when citizens have the power of decision making on the solution development process and the outcome is highly affected by the citizens' ideas, needs and expectations.

The first Living Labs experiments⁵ were implemented by Scandinavians when they started using cooperative design with user involvement (in the 1970s). In the rest of Europe, digital initiatives

² Agroecosystem Living Laboratories - Executive Report - https://www.macs-g20.org/fileadmin/macs/Annual_Meetings/2019_Japan/ALL_Executive_Report.pdf

³ Living Lab handbook for urban Living Labs developing nature-based solutions - <https://unalab.eu/system/files/2020-07/living-lab-handbook2020-07-09.pdf>

⁴ Ives & Olson, 1984 - <https://doi.org/10.1287/mnsc.30.5.586>; Living Lab handbook for urban Living Labs developing nature-based solutions

⁵ Guide to Open Innovation - https://healthcarelivinglab.cat/wp-content/uploads/2022/06/Strategic-Report-HCLLC_2022_ENG.pdf



that connected citizens, businesses and policymakers were developed in the 1980s and 1990s. The concept of Living Lab appeared in academic discussions in the 1990s, but it gained momentum only in 2006, when the European Commission launched an initiative to promote and coordinate a Common European Innovation System based on Living Labs.

II. European Commission activities regarding Living Labs

The current European Commission's key funding programme for R&I is Horizon Europe (2021-2027). The programme facilitates excellence and R&I collaboration to tackle global challenges but also strengthens the impact of R&I by developing, supporting and implementing EU policies (European Research Area, ERA, agenda and Forum).

The activities of Living Labs are key to ensuring that R&I find solutions to societal challenges: therefore, their development under Horizon Europe is crucial. For instance, there are 5 main mission areas as part of Horizon Europe (pillar II), among which the mission "A Soil Deal for Europe". This mission is set to be achieved by implementing, among other activities, an effective network of 100 Living Labs and lighthouses to co-create knowledge and test solutions to improve and support healthy soils by 2030. "Soil health" Living Labs will be at the core of cooperation frameworks between multiple partners and different actors, like researchers, farmers, foresters, spatial planners, land managers, and citizens who come together to co-create innovations for a jointly agreed objective.

The Directorate General for Information Society and Media (DG INFSO) of the European Commission is mobilising different types of instruments to support initiatives and actions related to the Living Labs concept. The i2010 policy framework serves as guidelines for all activities on Living Labs in the DG INFSO.

III. The European network of Living Labs

The European Network of Living Labs ([ENoLL](#)) is an international, non-profit, independent association of benchmarked Living Labs. Founded in November 2006 under the auspices of the Finnish European Presidency, ENoLL was strongly focused on competitiveness and the development of new innovation policies and practices aimed at creating an innovation-friendly environment in Europe at that time.

This network promotes Living Labs as real-life test and experimentation environments that foster co-creation and open innovation among the main actors of the Quadruple Helix Model, namely: citizens, government, industry and academia. ENoLL facilitates knowledge exchange, joint actions and project partnerships between its historically labelled +480 members in Europe and worldwide. Its aim is to promote the Living Labs concept in order to influence EU policies, enhance Living Labs and enable their implementation at a global level.

ENoLL offers different types of knowledge materials regarding Living Labs (incl. toolkits, webinars, e-courses, publications and podcasts). Additionally, ENoLL organises a 9-week Learning Lab Programme - [Virtual Learning Lab](#) – that brings together a community of participants and experts to exchange knowledge on the key elements of Living Labs.

The projects presented in the network address topics from different fields such as: Smart Cities, Education, Climate, Creative Industries, Cross-border, Cross-sector Collaboration, Future Internet and Big Data.

IV. Living Lab definitions and concepts

The European Network of Living Labs describes the LL concept as an “open innovation ecosystems in real-life environments using iterative feedback processes throughout a lifecycle approach of an innovation to create sustainable impact”.

In general, the concept of LL is not defined explicitly in national legislations, but it is integrated in different forms as an open innovation activity. The table below describes the definitions and interpretations of LL found in the countries of the RI4C2 partner universities.

Definition in native tongue	EN	Reference
European level		
<p>Living Labs (LLs) are open innovation ecosystems in real-life environments using iterative feedback processes throughout a lifecycle approach of an innovation to create sustainable impact.</p> <p>They focus on co-creation, rapid prototyping & testing and scaling-up innovations & businesses, providing (different types of) joint-value to the involved stakeholders. In this context, Living Labs operate as intermediaries/orchestrators among citizens, research organisations, companies and government agencies/levels.</p> <p>Within a wide variety of Living Labs, they all have common characteristics, but multiple different implementations</p> <p><i>A Living Lab can be initiated and hosted in a university, city, research institute, municipality, or any space where the user is placed at the centre of the co-creation process.</i></p>		<p>European Network of Living Labs https://enoll.org/about-us/</p>
Alexandru Ioan Cuza University of Iași (Romania)		
<p>“Ce sunt laboratoarele vii? Ecosisteme de Inovare deschisă, Facilități de co-creare și testare, Cadru de viață reală, Centrat pe utilizator”</p>	<p>“What are Living Laboratories? Open Innovation Ecosystems, Co-creation and testing facilities, Real-life framework, User-centred”</p>	<p>UVT Digital & Green Living Lab, West University of Timișoara https://www.uvt.ro/cercetare/ce-retare-si-inovare/inovare-si-transfer-tehologic/enoll-prin-uvt-digital-green-living-lab/</p>
<p>Conceptul “Living Labs” - stimularea inovării prin mutarea cercetării din laboratoare în viața reală a orașelor și regiunilor, unde cetățenii și utilizatorii au fost încurajați să coopereze cu cercetătorii, dezvoltatorii și proiectanții pentru a contribui la întregul proces de inovare</p>	<p>”Living Labs” concept - stimulating innovation by moving research from laboratories to the real life of cities and regions, where citizens and users were encouraged to cooperate with researchers, developers and designers to contribute to the whole innovation process</p>	<p>Ion TONCEA, Tudor STANCIU, Steliana RODINO, Vladimir Adrian TONCEA, Gina FÎNTÎNERU. (2022). Laboratoare vii agroecologice (all-organic) din Romania ”Ferma de legume ecologice ”Beleza Store srl –</p>

Definition in native tongue	EN	Reference
		Vâlcelele/Călărași” (studiu de caz). ICEADR International Symposium, 16/03/2023
<p>“2.2 Condiții-cadru pentru inovarea în domeniul tehnologiei profunde 2.2.2 Inițiativa emblematică privind facilitarea inovării în domeniul tehnologiei profunde prin spații de experimentare și achiziții publice</p> <p>(...) va oferi sprijin inovatorilor pentru a identifica domeniile și a stabili un spațiu de experimentare, precum spațiile de testare în materie de reglementare, laboratoarele vii sau bancurile de încercare, care ar putea facilita implementarea tehnologiilor disruptive prin intermediul viitoarelor cereri de propuneri.”</p>	<p>“2.2 Framework conditions for deep tech innovation 2.2.2 Flagship on enabling deep tech innovation through experimentation spaces and public procurement</p> <p>(...) support will be provided for innovators to identify areas and establish an experimentation space, such as regulatory sandboxes, Living Labs or test beds, which could facilitate the deployment of disruptive technologies through future calls”</p>	<p>Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. A new European innovation agenda. (2022) EN - https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52022DC0332 RO - https://eur-lex.europa.eu/legal-content/RO/TXT/PDF/?uri=CELEX:52022DC0332</p> <p>- DECISION no. 85 of December 19, 2022 regarding the adoption of the opinion regarding the <i>Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. A new European innovation agenda. (2022)</i> Romanian Legislation - https://legislatie.just.ro/Public/DetaliiDocument/262901</p>
<p>„Știința deschisă (open science) este o componentă a politicii științei care urmărește atingerea unui nivel superior de integrare a rezultatelor științifice în dezvoltarea societății prin acces liber (open access) la publicațiile științifice și datele de cercetare obținute prin finanțarea din fonduri publice, precum și prin facilitarea unor procese deschise de producere și acumulare de</p>	<p>„Open science is a component of science policy that aims to achieve a higher level of integration of scientific results in the development of society through open access to scientific publications and research data obtained through funding from public funds, as well as through facilitating open processes of production and accumulation of knowledge through innovation (open innovation), education (open educational resources) and collaborative participation of citizens in</p>	<p>CARTEA ALBĂ A TRANZIȚIEI CĂTRE ȘTIINȚA DESCHISĂ (2023-2030)- Document strategic privind Cadru Dezvoltării Științei Deschise în România. (2022).</p> <p>THE WHITE PAPER OF THE TRANSITION TO OPEN SCIENCE (2023-2030)- Strategic document regarding the</p>

Definition in native tongue	EN	Reference
cunoștințe prin inovare (open innovation), educație (open educational resources) și participare colaborativă a cetățenilor la cercetare și inovare în diferite etape ale procesului și la diferite niveluri de implicare, de la dezvoltarea agendelor și politicilor de cercetare, până la colectarea, procesarea și analiza datelor și evaluarea rezultatelor de cercetare (citizen science)”	<u>research and innovation at different stages of the process and at different levels of involvement, from the development of agendas and policies of research, up to the collection, processing and analysis of data and the evaluation of research results (citizen science)”</u>	Open Science Development Framework in Romania. (2022). https://uploads-ssl.webflow.com/615f0ec368dc44a3d513e3ba/63a23b5a3853df2aac215bc1_Carte%20Alba%20OS_18.12.pdf
„Știință deschisă - partajarea timpurie și deschisă a cercetării (...) și implicarea tuturor actorilor relevanți în materie de cunoaștere, inclusiv cetățenii, societatea civilă și utilizatorii finali în co-crearea agendelor și conținuturilor de cercetare și inovare (cum ar fi „citizen science”)”	„Open science - early and open research sharing (...) <u>and engaging all relevant knowledge actors, including citizens, civil society and end-users in co-creating agendas and research and innovation contents (such as citizen science)”</u>	A4_1_Descrierea practicilor științei deschise în cadrul programului Orizont Europa 2021 – 2027. Document informativ. (2022). A4_1_Description of open science practices within the Horizon Europe 2021 – 2027 programme. Briefing document. (2022). https://uefiscdi.gov.ro/
University of Poitiers (France)		
Le Living Lab ou « laboratoire vivant » est un concept créé pour soutenir les processus de développement de technologies de l’information et de la communication (TIC) centrées sur l’utilisateur. Un Living Lab se définit à la fois comme un environnement et une approche. Cette démarche accompagne un processus d’innovation propice à l’élaboration des scénarios d’usage en appartement-laboratoire et aux expérimentations en conditions réelles dans l’habitat quotidien. La démarche consiste à impliquer des usagers dans la conception de futurs outils technologiques et de services. Le but du Living Lab est d’orienter ladite	The Living Lab, or « laboratoire vivant », is a concept created to support the development processes of user-centred information and communication technologies (ICT). A Living Lab is defined as both an environment and an approach. This approach accompanies an innovation process conducive to the development of usage scenarios in a laboratory apartment and real-life experimentation in everyday living environments. The approach includes involving users in the design of future technological tools and services. The goal of the Living Lab is to guide said technology towards simplicity of implementation and usability by considering human-machine interaction within its environment and usage context.	Dimitri Voilmy, « Les Living Labs et la conception participative : l’exemple d’ActivAgeing », Retraite et société 2016/3 (N° 75), p. 125-136.

Definition in native tongue	EN	Reference
technologie vers la simplicité de mise en œuvre et d'utilisabilité, en pensant l'interaction homme-machine dans son environnement et son contexte d'usage.		
Un Living Lab est un laboratoire d'innovation ouverte. L'utilisateur est placé au centre du dispositif afin d'imaginer, développer et créer des services ou des outils innovants qui répondent aux espérances et nécessités de tout un chacun. Les Living Labs participent donc à l'arrivée d'un nouveau système d'innovation où les personnes ne sont plus de simples utilisateurs mais deviennent acteurs et collaborateurs.	A Living Lab is an open innovation laboratory. The user is placed at the centre of the process to imagine, develop, and create services or innovative tools that meet the expectations and needs of everyone. Living Labs contribute to the emergence of a new innovation system where individuals are no longer just users but also become actors and collaborators.	AUTONOM'LAB , Pôle régional d'innovation en santé et autonomie des personnes en région Limousin www.autonom-lab.com
University of Jena (Germany)		
Als Reallabor wird eine neuartige Form der Kooperation zwischen Wissenschaft und Zivilgesellschaft bezeichnet, die das gegenseitige Lernen in einem experimentellen Umfeld ermöglicht. Über seine klassische natur- und ingenieurwissenschaftliche Bedeutung hinaus wird der Begriff des Labors auf einen sozialen Kontext erweitert, da die Wissenschaft Lösungen auf wichtige Zukunftsfragen – vor allem im Bereich einer nachhaltigen Entwicklung - nur noch zusammen mit der Gesellschaft erarbeiten kann. Obwohl die Validität des gewonnenen Wissens nur schwer zu beurteilen ist, wird dennoch erwartet, dass die über Reallabore entwickelten wissenschaftlichen Erkenntnisse von Politik und Wirtschaft antizipiert werden.	The term "real laboratory" refers to a novel form of cooperation between science and civil society that enables mutual learning in an experimental environment. Beyond its classical meaning in the natural sciences and engineering, the concept of the laboratory is extended to a social context, since science can only work out solutions to important future questions - especially in the field of sustainable development - together with society. Although the validity of the knowledge gained is difficult to assess, it is nevertheless expected that the scientific knowledge developed via real laboratories will be anticipated by politics and industry.	German Parliament „Bundestag“ https://www.bundestag.de/resource/blob/550742/8f269b6399b3098eabf9d5b09f31f88f/wd-8-017-18-pdf-data.pdf
Sowohl in der unternehmerischen Praxis, in der Forschung als auch in der Stadtentwicklung wird zunehmend auf Methoden von Open Innovation, partizipative Formate und Ko-Kreation gesetzt. Dabei sind Reallabore ein wichtiges Format, um Innovationen in einem offenen Prozess zu gestalten: Es	Both in entrepreneurial practice, research and urban development, increasing emphasis is being placed on methods of open innovation, participatory formats and co-creation. In this context, reallabs are an important format for shaping innovations in an open process: They serve as test and experiment environments in	Fraunhofer research institute https://www.iao.fraunhofer.de/de/presse-und-medien/aktuelles/reallabore-die-innovationsmethode-der-zukunft.html

Definition in native tongue	EN	Reference
<p>sind Test- und Experimentierumgebungen, in denen neue Technologien, Produkte oder Services unter realen Einsatzbedingungen und unter Einbeziehung von potenziellen Nutzenden gleichzeitig getestet und entwickelt werden können. »Simulationen und Modelle greifen zu kurz, weil sie die Wechselwirkungen der Innovation und ihrer Umwelt nur unzureichend abbilden. Reallabore bieten eine Möglichkeit, die Innovation und ihre Wechselwirkungen mit Gesellschaft, Politik, Wirtschaft, Wissenschaft in einem klar definierten Umfeld zu untersuchen«, erläutert Dr. Bernd Bienzeisler, Leiter des Forschungszentrums KODIS am Fraunhofer IAO. Reallabore stellen somit einen vielversprechenden und vieldiskutierten Ansatz für die Neugestaltung und Beschleunigung von Innovationsprozessen dar.</p>	<p>which new technologies, products or services can be tested and developed simultaneously under real operating conditions and with the involvement of potential users. "Simulations and models fall short because they do not adequately represent the interactions of the innovation and its environment. Real laboratories offer an opportunity to examine the innovation and its interactions with society, politics, business, science in a clearly defined environment," explains Dr. Bernd Bienzeisler, head of the KODIS research center at Fraunhofer IAO. Real labs thus represent a promising and much-discussed approach for redesigning and accelerating innovation processes.</p>	
<p>Living Labs werden im Allgemeinen als eine Infrastruktur verstanden, die eine Nutzer-zentrierte Forschungsmethodik ermöglicht und begünstigt (Eriksson et al. 2005). Der Living Lab-Ansatz umfasst nach einem allgemeinen Verständnis eine nutzergerechte, realweltliche Forschungsumgebung, in der nicht nur Wissenschaft, Wirtschaft und Organisationen gemeinsam Forschung und Entwicklung betreiben, sondern vor allem der Nutzer selbst eine aktive Rolle innerhalb der Innovationsprozesse übernimmt (Følstad 2008, Niitamo et al. 2006).</p>	<p>Living Labs are generally understood as an infrastructure that enables and fosters a user-centred research methodology (Eriksson et al. 2005). According to a general understanding, the Living Lab approach comprises a user-centred, real-world research environment in which not only science, industry and organisations jointly conduct research and development, but above all the users themselves take an active role within the innovation processes (Følstad 2008, Niitamo et al. 2006).</p>	<p>Fraunhofer research institute https://www.isi.fraunhofer.de/content/dam/isi/dokumente/ccv/2015/INNOLAB_9_Living-Lab-Definition.pdf</p>
<p>Reallabore als Testräume für Innovation und Regulierung machen es möglich, unter realen Bedingungen innovative Technologien, Produkte, Dienstleistungen oder Ansätze zu erproben, die mit dem bestehenden Rechts- und Regulierungsrahmen nur bedingt vereinbar sind. Die Ergebnisse solcher</p>	<p>Regulatory sandboxes enable, in a real-life environment, the testing of innovative technologies, products, services or approaches, which are not fully compliant with the existing legal and regulatory framework. They operate for a limited time and in a limited part of a sector or</p>	<p>FEDERAL MINISTRY FOR ECONOMIC AFFAIRS AND CLIMATE ACTION https://www.bmwk.de/Redaktion/DE/Dossier/reallabore-testraeume-fuer-innovation-und-regulierung.html</p>

Definition in native tongue	EN	Reference
zeitlich und oft räumlich begrenzten Experimentierräumen bieten die Grundlage dafür, den Rechtsrahmen evidenzbasiert weiterzuentwickeln. Experimentierklauseln sind häufig die rechtliche Grundlage.	area. The purpose of regulatory sandboxes is to learn about the opportunities and risks that a particular innovation carries and to develop the right regulatory environment to accommodate it. Experimentation clauses are often the legal basis for regulatory sandboxes.	
Das Innovation Living Lab ermöglicht die kooperative Forschung in einer realitätsnahen Umgebung, im Rahmen eines gegenseitigen Wissensaustausches von Experten/innen aus der Industrie/Wirtschaft sowie Wissenschaft. Unter Einbeziehung der Sichtweisen aller Akteure sollen Lösungsansätze komplexer Problemstellungen identifiziert, analysiert, gestaltet, demonstriert bzw. prototypisch umgesetzt werden. Die globale Zielstellung ist eine Lern- und Experimentierumgebung für Studierende, Wissenschaftler/innen und Anwender/innen aus der Praxis zu schaffen.	The Innovation Living Lab enables cooperative research in a realistic environment, within the framework of a mutual exchange of knowledge between experts from industry/business and science. The aim is to identify, analyse, design, demonstrate and prototype solutions to complex problems, taking into account the views of all stakeholders. The global objective is to create a learning and experimentation environment for students, scientists and users from practice.	Ernst-Abbe-Hochschule Jena University of Applied Sciences https://www.eah-jena.de/bw/studium/labore/innovation-living-lab
University of Salamanca (Spain)		
	<p>There is no agreed-upon definition because these entities are relatively new and their inclusion in the "Living Lab" concept usually depends on the decision of the researcher or group of researchers launching the project.</p> <p>The reason why there is no agreed definition is that the Living Lab concept actually integrates a methodology, a concept and a space in which it is intended to create an open innovation environment where researchers and users come together to experiment with a wide range of content and topics. Citizen participation is indeed a key element of the process.</p>	<p>1) Fablab is a digital creation and fabrication laboratory focused on the prototyping of objects with digital technologies and open to the entire university community. https://fablab.usal.es/</p> <p>2) Medialab focuses on new ways of learning, fostering creativity and experimenting with digital technologies to promote social innovation. https://medialab.usal.es/</p>
University of Turku (Finland)		
	"A research and development laboratory utilising multidisciplinary technological solutions."	1) Flavoria multidisciplinary research platform -a

Definition in native tongue	EN	Reference
		<p>multidisciplinary research platform and, at the same time, a unique lunch restaurant, café, and snack shop. The research conducted in Flavoria focuses on producing new scientific knowledge and consumer understanding for the sustainable development of both society and businesses</p> <p>https://www.flavoria.fi/en/front-page/</p> <p>2) Entrepreneurial Hub Konttori - introduced as a working space for students and staff.</p> <p>https://www.utu.fi/en/news/press-release/university-community-receives-entrepreneurial-hub-konttori-on-hameenkatu-street</p>
University of Pavia (Italy)		
	<p>“A new model of interaction between the academy and the professional world and a new way of thinking the role of science and scientists within society”</p>	<p>Neuroscience and Society Lab- “Promotes outreach activities, public engagement and mutual learning workshop among different stakeholders.”</p> <p>https://www.cfns.it/the-labs/neuroscience-and-society-lab/</p>
University of Coimbra (Portugal)		
Zonas Livres Tecnológicas (ZLT)	<p>«ZLT», means a physical environment, geographically located, in a real or quasi-real environment, for testing and experimenting with innovative technology-based technologies, products, services and processes, with direct and permanent monitoring by the competent entities, namely in terms of testing, provision of information, guidelines and recommendations, corresponding to the concept of a regulatory sandbox.</p> <p>They provide a "safe space" in which companies can test innovative products, services, business models and delivery mechanisms without immediately incurring</p>	<p>Decree-Law 67/2021, of 30 July</p> <p>https://portugaldigital.gov.pt/acelerar-a-transicao-digital-em-portugal/testar-e-incorporar</p>

Definition in native tongue	EN	Reference
	all the normal regulatory consequences related to the activity in question.	nova-tecnologia/zonas-livres-tecnologicas-zlt/
	Zonas Livres Tecnológicas (ZLT) consist of physical environments, geographically located, in a real or quasi-real environment, used for testing and experimentation (support and monitoring of the respective competent entities) arising from: - development of new technologies and solutions. - innovative technology-based products, services and processes. - cross-cutting and integrated models (i.e., that cross more than one sector and may therefore be subject to different regulations and regulators).	https://www.ani.pt/pt/valorizacao-do-conhecimento/interface/zonas-livres-tecnol%C3%B3gicas/
		1) ZLT Matosinhos (CEiiA) focuses on developing, implementing and operating “technological solutions alongside our partners to push innovation in aeronautics, mobility, naval/offshore and automotive”, https://www.ceiia.com/ 2) ZLT Infante D. Henrique focus on testing “unmanned security and defence systems and other technologies in subsurface, surface (land and wet) and airborne environments.”, https://business-it.pt/2022/07/19/zona-livre-tecnologica-infante-d-henrique-vai-promover-a-inovacao-na-marinha-e-em-portugal/

Table 1: Living Lab definitions and concepts in the partner countries of the project

ENoLL introduced the Quadruple Helix Model (see Figure 1) when describing the concept of Living Lab. This model reflects the co-creation and open innovation process involving four main actors, namely:

- Citizens

- Government
- Industry
- Academia

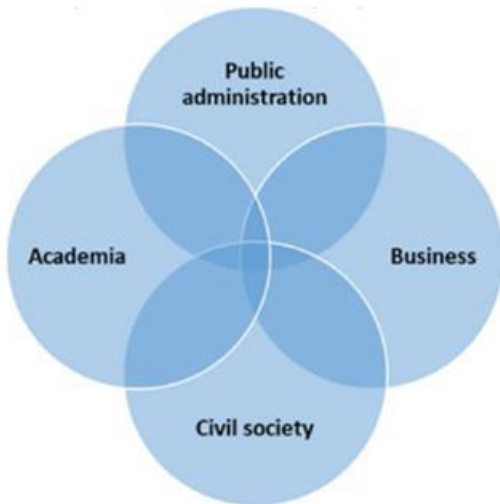


Figure 1: Quadruple Helix Model, from ENoLL, <https://enoll.org/>

To better understand how these four actors relate to each other, ENoLL depicts an image of six building blocks of a Living Lab (Figure 2). This infrastructure operates as an intermediary between civil society, research organisations, the business sector, and public administration.

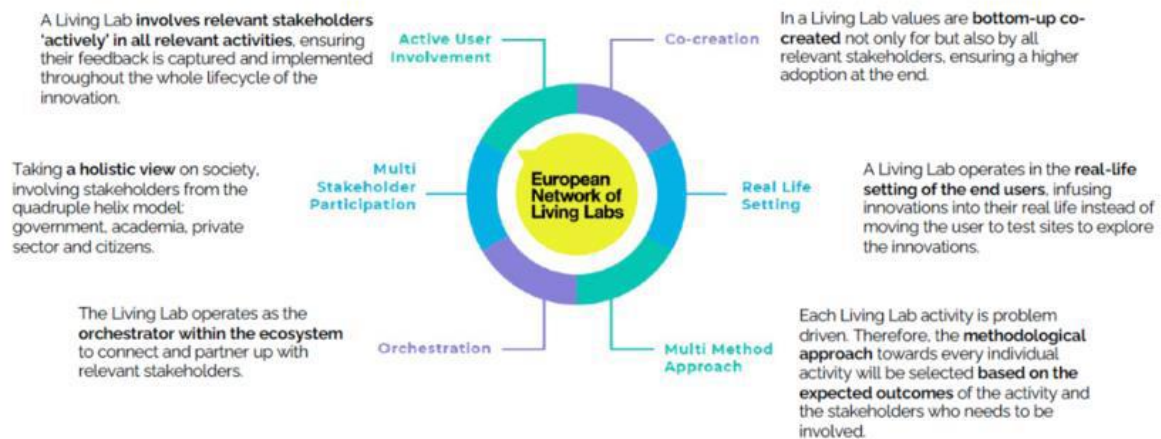


Figure 2: Six building blocks of a Living Lab according to ENoLL, <https://enoll.org/>

V. Examples of existing Living Labs across the EC2U ecosystem

This section presents the existing Living Labs across the EC2U community, either part of a partner university, associated with it or functioning within one of the EC2U cities. The topics of the Living Labs outlined here are related to the three existing EC2U Virtual Institutes. Therefore, this section is divided according to each Virtual Institute, in which already existing Living Labs on related topics are presented.

Further examples of existing Living Labs connected to the topics of the VIs are presented in Annex 1. Those Living Labs are not associated with the partner universities, but they are displayed here as other inspiring examples to build new Living Labs within the EC2U Alliance.

A. Existing Living Labs related to the GLADE Virtual Institute topics

The EC2U Alliance aims to develop specific approaches in education, research, innovation and service transfer to the community in areas of the third UNSDG, through the [Virtual Institute for Good Health and Well-being \(GLADE\)](#).

One example of Living Laboratory that operates in the areas of health and well-being among the EC2U partner universities is as follows:

- **QG Habitudes de vie – Sport Santé**

The [QG](#) is a resource centre dedicated to promoting health through lifestyle habits at the University of Poitiers. It is hosted in a building which includes a gymnasium, a teaching kitchen, a fitness room, training/meeting rooms, and innovative equipment.

This QG Living Lab is coordinated by the University of Poitiers and is meant to be a solution for all people who wish to change their lifestyle habits but who lack the resources and/or knowledge to achieve this.

One of the main objectives is to develop complementary actions to medicinal interventions for people suffering from chronic illnesses. These actions are grouped around 3 pillars: physical activity, nutrition and stress management.

B. Existing Living Labs related to the QE Virtual Institute topics

The [EC2U Virtual Institute for Quality Education \(VIQE\)](#) develops activities that combine education, research and innovation for advanced studies in quality education. A few examples of Living Laboratories that conduct activities in the same area as that of VIQE:

- **Medialab USAL**

[Medialab USAL](#) is a meeting point for the university community and society, facilitating new work and learning processes, through the use of digital technologies. It is a space of the University of Salamanca aimed at the entire academic community but it is also an open door from the University of Salamanca to the rest of society.

This Living Lab focuses on new ways of learning, fostering creativity and experimenting with digital technologies to promote social innovation.

The main objective is to involve and train the university community to provide more creative solutions to real problems, which can have a positive impact on society. Medialab USAL is designed as a complementary space for the training of university students and teachers, promoting a new approach to teaching and learning. Students receive support for their future integration into a work and research environment marked by change and constant innovation, in which self-learning, teamwork and technology are fundamental.

- **Gendered Innovation Living Labs (GILL)**

[Gendered Innovation Living Labs \(GILL\)](#) builds on the Living Lab methodology by adopting a co-creation and co-design approach to develop mechanisms such as methodologies, services, and tools tested in real-life open ecosystems to increase Gender Responsive Smart Innovation and Entrepreneurship through a series of 15 pilot cases across 8 European countries.

GILL focuses on four main objectives:

- enabling organisational and cultural changes;
- enhancing professional development;
- increasing the integration of gender and diversity into product design, technologies, and innovation;
- allowing gendered educational practices.

The project is coordinated by EnoLL and has received funding from the European Union's Horizon Europe Research and Innovation programme under Grant Agreement No 101094812.

- **Fablab USAL**

The Fablab USAL Living Lab, a digital creation and fabrication laboratory, is focused on prototyping objects with digital technologies and open to the entire university community.

[Fablab](#)'s objectives are to promote a more creative use of technologies through digital prototyping, enhance practical, collaborative and interdisciplinary work at the University of Salamanca (USAL) in all areas of knowledge, offer new spaces and resources to the research community and students, and support teaching and research work at USAL.

The FabLab USAL is part of the Digital Production and Innovation Service of the University of Salamanca. Its mission is to provide quality services related to the production of digital and audiovisual content, as well as the implementation of innovation processes based on new technologies.

C. Existing Living Labs related to the SCC Virtual Institute topics

The EC2U [Virtual Institute for Sustainable Cities and Communities \(VISCC\)](#) aims at bringing together research, education and innovation, and outreach in the field of the United Nation's sustainable development goal n°11: "Sustainable Cities and Communities".

A few examples of Living Laboratories that work in the areas of Sustainable Cities and Communities across the EC2U community are:

- **Centre for Industrial Ecology (CIE)**

The [Centre for Industrial Ecology \(CIE\)](#) is part of ADAI-LAETA (Associated Laboratory for Energy, Transports and Aeronautics), at the University of Coimbra. It operates as a research group in the multi-disciplinary field of Industrial Ecology, which develops and applies tools to enhance the sustainability of products and systems supported by life-cycle thinking.

The CIE promotes scientific research, development and innovation to support industry, public authorities, organisations, and consumers towards sustainable production and consumption. This LL takes a holistic and systematic approach to the analysis of sustainable systems by exploring trade-offs and synergies between economy, environment and society.

The expertise is applied in the areas of: renewables energy, sustainable transportation, buildings and sustainable architecture, agri-food and forestry, waste management and packaging.

- **Food for Iasi Living Lab**

[Food for Iasi Living Lab](#) is designed as an innovative collaborative hub whose main purpose is to connect actors and agents in the urban food system of Iasi in order to identify the most important problems of the system and find innovative solutions to solve these problems and to develop sustainable local development.

The project is coordinated by the Romanian Academy, Iasi Branch, in partnership with the Iasi Municipality, Made in Iasi Local Producers Association Rural Development Research Platform Association.

The project objectives are:

- Scientific research and innovation
- Engage actors and agents of the food system
- Dissemination and accountability
- Synergies with other projects and events

- **Sustainable Living Lab**

The [Sustainable Living Lab](#) is a project of urban regeneration and conversion of a former hall-workshop into a living space — a garden-club-workshop-library-hub-bistro for the community.

The NGO Mai Bine Association from Iasi invited three architecture offices (A+noima, Miolk and aPunct) to work together to design a multidisciplinary space. The proposed space (not used today) for revitalisation is an industrial hall, built in the 60s with an educational role (textile dyeing laboratory) that belongs to the Faculty of Textiles of the Technical University of Iași.

The first major component of the project is a production and work space for students, young professionals or enthusiasts, which encourages experimentation, sustainable design, prototyping and development of products that reduce textile waste or promote their recycling. The second major component of the project is a space of culinary experiment and creation where the magic of sustainable food enhances and diversifies in a high-performance equipped kitchen.



The project has not yet reached implementation.

VI. New Living Labs under EC2U/RI4C2

A. Process for the creation of EC2U Living Labs

EC2U instruments supporting and promoting activities catered to Citizen Science involved the creation of three Virtual Institutes (VIs) focused on three of the United Nations Sustainable Development Goals (SDGs): Good Health and Well-being (SDG no 3), Quality Education (SDG no 4) and Sustainable cities and Communities (SDG no 11). These Virtual Institutes have been up and running for several years now, supported by the Erasmus+ grants awarded by successive calls of the European Universities initiative.

Thanks to the H2020 RI4C2 project, three new Living Labs will be created, one in each of the three Virtual Institutes, with the aim of implementing specific and/or complementary activities to the field of activity related to each VI. Information on the newly created EC2U/RI4C2 Living Labs is already available online (see Figure 3).



The screenshot shows the website for RI4C2 – Research & Innovation For Cities & Citizens. The page features a navigation menu on the left with the following items: Home, Objectives, Work packages, Deliverables, GLADE Living Lab (highlighted with a red box), QE Living Lab, SCC Living Lab, Policy Brief, WP 6 Team, News & Events, and Contact. The main content area includes the following text:

The seven universities composing the **European Universities Alliance "EC2U"** are again joining forces to extend the activities of the EC2U Alliance to the Research and Innovation fields:

1. University of Coimbra (Portugal)
2. Alexandru Ioan Cuza University of Iași (Romania)
3. University of Jena (Germany)
4. University of Pavia (Italy)
5. University of Poitiers (France)
6. University of Salamanca (Spain)
7. University of Turku (Finland)

The **Horizon 2020 project: RI4C2 – "Research & Innovation For Cities & Citizens"** is funded under the *European Commission's Horizon 2020 „Science with & for Society“* call, Grant Agreement 101035803/04.06.2021.

In this project, the seven partners have the joint overall objective to create a shared Pan-European Knowledge Ecosystem (PEKE). The project will develop a process that involves a gradual and adaptative transformation of all aspects of the Research & Innovation (R&I) missions at the participant universities. This will include developing a research and innovation agenda and platform, offering workshops on the topic of people empowerment, and investigating which factors promote the development of a functioning knowledge ecosystem.

Figure 3: Screenshot of the RI4C2 project's web page, with information on the new Living Labs, built on „Alexandru Ioan Cuza” University of Iași website, <https://www.uaic.ro/ri4c2-uaic/>

To formulate a framework for the creation and development of the first three pilot Living Labs within existing EC2U Virtual Institutes, a thematic conference was organised on 26.09.2023 by the RI4C2 team. **Living Labs-Pathways for Open Innovation Ecosystems** conference focused on clarifying the understanding of a Living Lab concept, providing a global definition that can be accepted and applied by all EC2U partners (see Figure 4).



Figure 4: “Living Labs – challenges and opportunities for Citizen Science” presentation for the Living Labs-Pathways for Open Innovation Ecosystems conference, 26.09.2023 (excerpt)

“Living Labs – challenges and opportunities for Citizen Science” presentation by Daniela Șoitu & Elida Rosenhech from “Alexandru Ioan Cuza” University of Iași gave an introduction on the Living Lab definition and on how this concept was integrated within the action plan for Citizen Science in the EC2U Virtual Institutes.

B. GLADE Living Lab

The Virtual Institute for Good Health and Well-being (GLADE) aims to develop specific approaches for promoting health and well-being in the EC2U universities and their cities. Within the GLADE Virtual Institute, it was decided to develop a Living Lab that will implement activities dedicated to preventing health problems and promoting a healthy and active lifestyle. Information on this Living Lab is already available online (see Figure 5).

RI4C2 – Research & Innovation For Cities & Citizens



RI4C2
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For Cities & Citizens


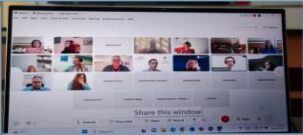

Home	<p>GLADE Living Lab is part of the EC2U Virtual Institute for Good Health and Well-being (GLADE), developed to tackle specific approaches in education, research, innovation and service transfer to the community in the long run.</p> <p>GLADE Virtual Institute will be the headquarters for:</p> <ul style="list-style-type: none"> • EC2U GLADE Literacy LAB and education for all in the area of good health and wellbeing; • EC2U GLADE Transformative Research HUB; • EC2U GLADE Management Service for a Healthy Campus and Online peer counselling LAB for students. • LIFELINE master programme <p>For more information, check the GLADE Virtual Institute -UAIC web-page!</p> <div style="border: 1px solid #ccc; padding: 5px; margin: 10px 0;"> <p><i>What is a Living Lab?</i></p> <p>A Living Lab is an open innovation ecosystem in real-life environments using iterative feedback processes throughout a lifecycle approach of an innovation to create sustainable impact. (European Network of Living Labs)</p> <ul style="list-style-type: none"> • Living Laboratories Definitions </div> <p>To formulate a framework for the creation and development of the three pilot living labs within existing EC2U Virtual Institutes, the Living Labs-Pathways for Open Innovation Ecosystems conference was organized on 26.09.2023.</p> <p>→ Conference programme</p> <p>→ Conference presentations:</p> <ul style="list-style-type: none"> • Living Labs – challenges and opportunities for Citizen Science – Daniela Șoitu & Elida Rosenhech, "Alexandru Ioan Cuza" University of Iași • Healthy Office Teststation exhibition – Lena Schmitz, University of Jena <p>Discover Living Labs in the areas of GLADE:</p> <ul style="list-style-type: none"> • "Alexandru Ioan Cuza" University of Iași – GLADE Living Lab <p>Glade LL is dedicated to preventing of health problems and promoting a healthy and active lifestyle.</p> <div style="display: flex; justify-content: space-around;">   </div> <ul style="list-style-type: none"> • University of Poitiers – QG Habitudes de vie – Sport Santé <p>The QC is a resource center dedicated to promoting health through lifestyle habits. It is also a building located in the Futuroscope area which includes a gymnasium, a teaching kitchen, a fitness room, training/meeting rooms, and innovative equipment.</p> <div style="text-align: center; margin-top: 10px;">  </div>
Objectives	
Work packages	
Deliverables	
GLADE Living Lab	
QE Living Lab	
SCC Living Lab	
Policy Brief	
WP 6 Team	
News & Events	
Contact	

Figure 5: GLADE Living Lab within the RI4C2 project's web page built on „Alexandru Ioan Cuza” University of Iași website, <https://www.uaic.ro/ri4c2-uaic/> (Screenshot)

The GLADE Living Lab will address problems related to aging, lifestyle, well-being and other subjects in relation to the research and innovation topic of *Healthy (Home) Office Habits*.

The GLADE Living Lab's home office is based at „Alexandru Ioan Cuza” University of Iași (see Figure 6), and the main activities will be implemented in Iași, Romania, in cooperation with other EC2U members of the GLADE Virtual Institute.



Figure 6: GLADE Living Lab, home office at „Alexandru Ioan Cuza” University of Iași

During the conference on 26.09.2023, examples of current activities within the partner universities related to the topics that will be addressed in the GLADE Living Lab were presented. For instance, Lena Schmitz (University of Jena) presented a [series of examples of initiatives for health-related & well-being activities](#) at the University of Jena, for students, staff and international guests (see Figure 7).

Healthy Campus
Uni Jena Health Week
HOME: Home Office Meets Ergonomics

Lena Schmitz
Prof. Dr. Rüdiger Trimpop

EC2U RI4C2 Living Labs Conference

26 September 2023

Co-funded by the Erasmus+ Programme of the European Union

EC2U Virtual Institute „Good Health and Well-Being“ – Healthy Campus

Interventions: Examples for health-related & well-being offers at Uni Jena

Behavioral Measures, examples:	Organizational Measures, examples:
<ul style="list-style-type: none"> • HEALTH Lectures: • Lecture series to promote health literacy, sessions of 90 min input, interactive lecture parts & discussion • Mindfulness-based stress training (MBST) taught by university staff • Anti-Perfectionism-Training • Create clarity about own priorities, developing a positive culture of mistakes & setting boundaries • Res-Up! Online counseling from University Witten/Herdecke to promote psychological resilience • 	<ul style="list-style-type: none"> • Student & Occupational Health Management (University Health Management) • Health Week & Health Days • Student Council: Health Representative • Socio-psychological Counselling • Green Office , Diversity Office, Family Office, University Kindergarden etc. •

Co-funded by the Erasmus+ Programme of the European Union

EC2U Virtual Institute „Good Health and Well-Being“ – Healthy Campus

Figure 7: „Healthy Office Test station exhibition“ presentation for the Living Labs-Pathways for Open Innovation Ecosystems conference, 26.09.2023 (excerpt)

The University of Jena provides opportunities for improvements of “home office” workplaces like "optimal" workstations, offers relevant info materials, lectures on health, socio-psychological counselling and other significant activities.

Laurent Bosquet (University of Poitiers) spoke in a video presentation about the [QG Habitudes de vie – Sport Santé](#), a Living Lab implemented at the University of Poitiers. This Living Lab is a resource centre dedicated to promoting health through lifestyle habits, by developing complementary actions to medicinal interventions for people suffering from chronic illnesses, using 3 main health pillars: physical activity, nutrition and stress management (see presentation in section [V.A.](#)).

All submissions at **Living Labs-Pathways for Open Innovation Ecosystems** conference that are focused on Living Lab concept and health & well-being related activities are posted on the GLADE Living Lab' web page (see Figure 8).

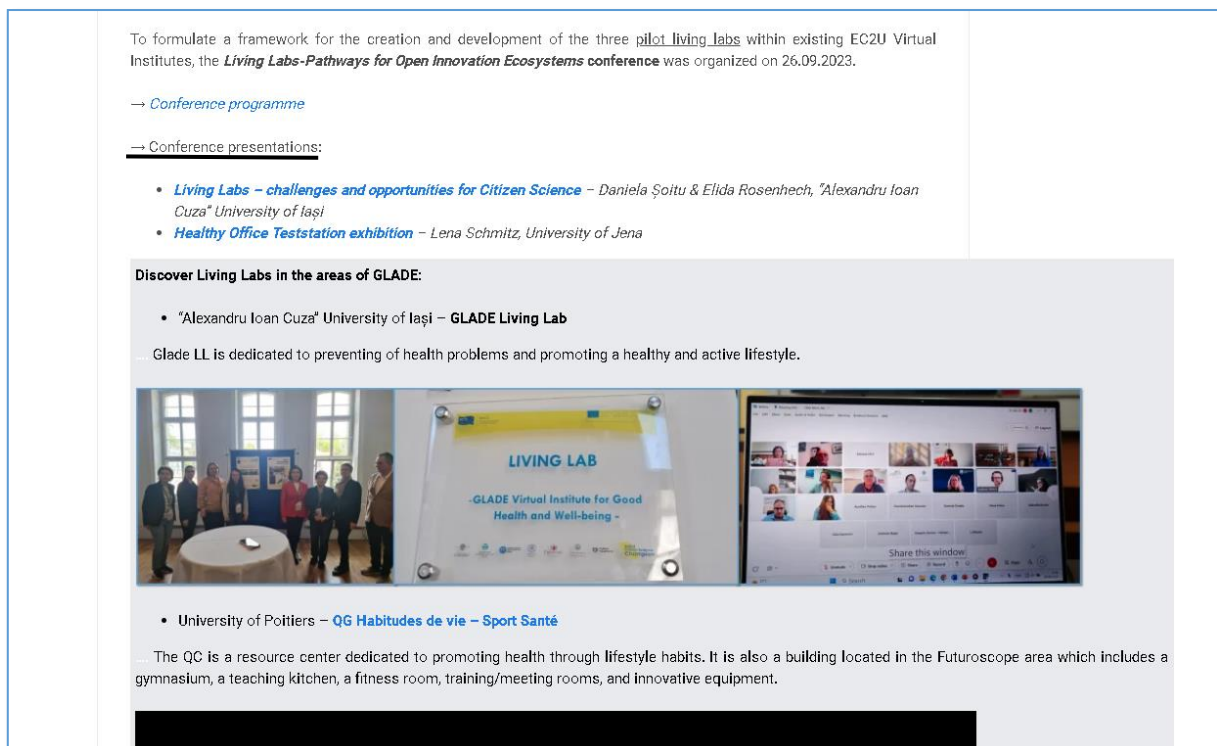


Figure 8: Screenshot of the GLADE Living Lab' web page that highlights the conference submissions in the areas of health and well-being, <https://www.uaic.ro/ri4c2-uaic>

C. QE Living Lab

The [Virtual Institute for Quality Education \(VIQE\)](#) combines education, research and innovation for advanced studies in quality education. The Quality Education Living Lab (QE Living Lab) aims to develop activities that will apply research methods from the Humanities and Social Sciences, including the Digital Humanities, from multiple perspectives.

The QE Living Lab objectives will be correlated with the VIQE aims and activities, on the topic of *Teaching for the Languages in Communities and Approaching Cultural Biases*.

Just as for the GLADE Living Lab, ongoing activities related to the topics that will be addressed in the QE Living Labs were presented during the conference on 26.09.2023.

For example, Inmaculada Sánchez Barrios from the University of Salamanca gave a presentation on [“Contributions from the Gender Equality Unit to Citizen Science”](#) (see Figure 9).

The chosen theme captured different problems related to gender equality and opportunities identified within the University of Salamanca.

The diagnosis of the situation was made for the period 2010-2022, and took into account the following categories: teaching staff, administrative staff and students.

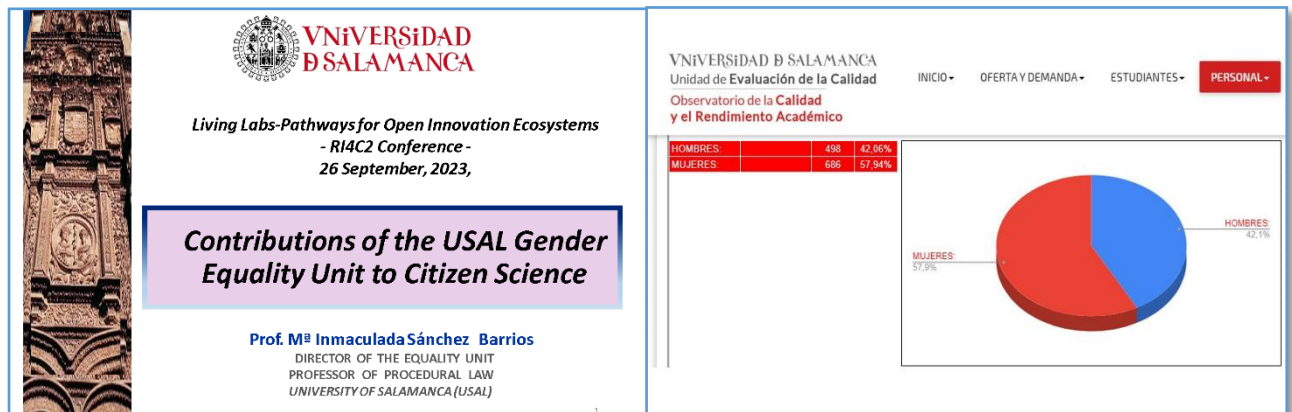


Figure 9: “Contributions of the USAL Gender Equality Unit to Citizen Science” presentation for the Living Labs-Pathways for Open Innovation Ecosystems conference, 26.09.2023 (excerpt)

One of the main observations was that, even though women have higher degrees (bachelor's degrees) in a higher percentage than men, they are not included in a majority of positions of the level appropriate to their degree. Another pointed-out issue is that it would be instrumental to analyse more carefully whether better results obtained by women in their studies constitutes a guarantee of job placement on equal terms with men in their subsequent professional career.

On the QE Living Lab webpage were posted three examples of existing Living Laboratories that carry out activities related to the field of *Teaching for the Languages in Communities and Approaching Cultural Biases* (see Figure 10).

Work packages	<p><i>What is a Living Lab?</i></p> <p><i>Living Labs are open innovation ecosystems in real-life environments using iterative feedback processes throughout a lifecycle approach of an innovation to create sustainable impact. (European Network of Living Labs)</i></p> <p>♦ Living Laboratories Definitions</p> <p>To formulate a framework for the creation and development of the three pilot living labs within existing EC2U Virtual Institutes, the Living Labs-Pathways for Open Innovation Ecosystems conference was organized on 26.09.2023.</p> <p>→ Conference programme</p> <p>→ Conference presentation:</p> <ul style="list-style-type: none"> ♦ Contributions from the Gender Equality Unit to Citizen Science – Inmaculada Sánchez Barrios, University of Salamanca <p>Living Labs – University of Salamanca:</p> <p>♦ Gendered Innovation Living Labs (GILL) builds on the Living Lab methodology by adopting a co-creation and co-design approach to develop mechanisms such as methodologies, services, and tools tested in real-life open ecosystems to increase Gender Responsive Smart Innovation and Entrepreneurship through a series of 15 pilot cases across 8 European countries. Our mechanisms focus on transforming individual, team, and organizational practice.</p> <p>♦ Fablab USAL is a digital creation and fabrication laboratory focused on the prototyping of objects with digital technologies and open to the entire university community.</p> <p>♦ Medialab USAL focuses on new ways of learning, fostering creativity and experimenting with digital technologies to promote social innovation.</p>
Deliverables	
GLADE Living Lab	
QE Living Lab	
SCC Living Lab	
Policy Brief	
WP 6 Team	
News & Events	
Contact	

Figure 10: Three examples of Living Laboratories that carry out activities related to the topics of the QE Living Lab are presented on the webpage - <https://www.uaic.ro/ri4c2-uaic/> (screenshot)

The examples taken into consideration were provided by the University of Salamanca: [Gendered Innovation Living Labs \(GILL\)](#), [Medialab USAL](#) and [Fablab USAL](#) (see their detailed presentation in section [V.B.](#)).

D. SCC Living Lab

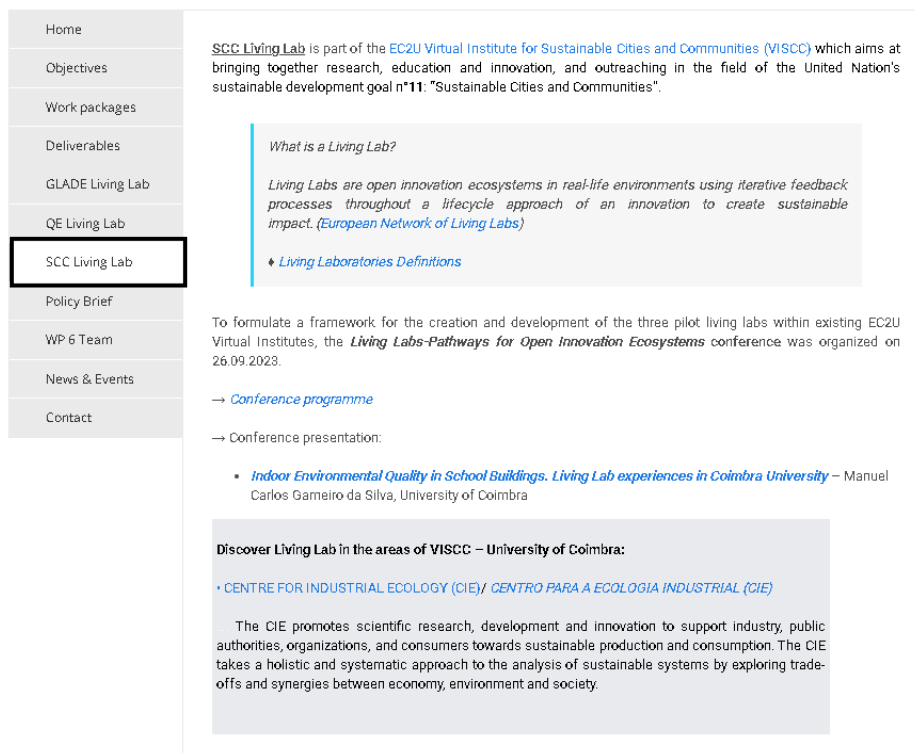
The SCC Living Lab is part of the EC2U [Virtual Institute for Sustainable Cities and Communities \(VISCC\)](#). The activities organised within this Living Lab will focus on scientific activities that promote interdisciplinarity and collaborative work that will align with the VISCC objectives, and will respond to relevant research and innovation topics for Citizen Science that is centred on the topic of *Perceptions of building environment - Indoor environment and quality of air.*

Information on the SCC Living Lab, with examples of Living Labs related to the selected topics, are already available online (see Figure 11).

RI4C2 – Research & Innovation For Cities & Citizens



RI4C2
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For Cities & Citizens



The screenshot shows a webpage for the SCC Living Lab. On the left is a navigation menu with items: Home, Objectives, Work packages, Deliverables, GLADE Living Lab, QE Living Lab, SCC Living Lab (highlighted with a red box), Policy Brief, WP 6 Team, News & Events, and Contact. The main content area includes a description of the SCC Living Lab as part of the EC2U Virtual Institute for Sustainable Cities and Communities (VISCC). It features a section titled "What is a Living Lab?" with a definition: "Living Labs are open innovation ecosystems in real-life environments using iterative feedback processes throughout a lifecycle approach of an innovation to create sustainable impact. (European Network of Living Labs)". Below this is a link to "Living Laboratories Definitions". Further down, it mentions a conference organized on 26.09.2023 and provides a link to the "Conference programme". A list of presentations includes "Indoor Environmental Quality in School Buildings. Living Lab experiences in Coimbra University" by Manuel Carlos Gameiro da Silva. At the bottom, there is a section for "Discover Living Lab in the areas of VISCC – University of Coimbra" featuring the "CENTRE FOR INDUSTRIAL ECOLOGY (CIE) / CENTRO PARA A ECOLOGIA INDUSTRIAL (CIE)" and a brief description of its mission.

Figure 11: SCC Living Lab within RI4C2 project's webpage built on the „Alexandru Ioan Cuza” University of Iași website, <https://www.uaic.ro/ri4c2-uaic/>, (Screenshot)

As for the two other EC2U Living Labs, activities related to the topics of the new SCC Living Lab already ongoing within partner universities were presented.

For instance, Manuel Carlos Gameiro da Silva, Coordinator of the Energy for Sustainability Initiative at the University of Coimbra, described their experience regarding the Living Lab implementation at the University of Coimbra, in his [“Indoor Environmental Quality in School Buildings. Living Lab experiences in Coimbra University”](#) presentation (see Figure 12).



Figure 12: “Indoor Environmental quality in school buildings” presentation for the Living Labs-Pathways for Open Innovation Ecosystems conference, 26.09.2023 (excerpt)

The DEM-UC IEQ Living Lab is used as a tool for indoor air quality research and education. The activities are focused on both diagnosis of the existing situation and implement best practices for adequate solutions. The education and training component is correlated with informing the public but also involving it through questionnaires, studies, events and analyses.

The conference submission is uploaded on the RI4C2 project’s web page build on the [„Alexandru Ioan Cuza” University of Iași website](#).

On the web page, the [Centre for Industrial Ecology - Centro para a Ecologia Industrial \(CIE\)](#) is also presented as a Living Lab example in the areas of VISCC.

The CIE Living Lab promotes scientific research, development and innovation to support industry, public authorities, organisations, and consumers towards sustainable production and consumption. This Living Lab is a multidisciplinary research group in the area of Industrial Ecology that is coordinated by the [University of Coimbra](#). CIE takes a holistic and systematic approach to the analysis of sustainable systems by exploring trade-offs and synergies between economy, environment and society (see section [V.C.](#)).

VII. Concluding remarks

The creation of the first three pilot Living Labs in the three existing EC2U Virtual Institutes emerges from the current activities of the partner universities and Associated Partners, as well as from the experiences on the topics at the European Level. The first three pilot Living Labs will be developed around the three main topics identified in deliverable D6.4 “Selection of relevant R&I topics for Citizen Science”:

- Living Lab from the VI GLADE: ***Healthy (Home) Office Habits***
- Living Lab from the VI QE: ***Teaching for the Languages in Communities and Approaching Cultural Biases from multiple perspectives***
- Living Lab from the VI SCC: ***Perceptions of building environment - Indoor environment and quality of air***

Working groups on these topics will be supporting the launching process of these three new Living Labs. They will be officially launched in February 2024 and further project applications will be developed by August 2024.

VIII. Annex

A. Annex 1 – other inspiring examples of Living Labs across the EC2U countries

1. Living Labs related to the topics of GLADE

- Healthcare Living Lab Catalonia (HCLLC)

The Healthcare Living Lab Catalonia ([HCLLC](#)) is a Living Lab specialised in the health and social fields. Its mission is to bring together healthcare centres, technological centres and Living Labs throughout Catalonia (Spain), and connect them to innovation entities and innovative people, facilitating the prototyping, testing and validation of their solutions based on its own methodology.

One of the deliverables of the project was the publication of a [Guide to Open Innovation](#) which describes the methodology based on the open innovation process. This process is defined by the steps followed from idea conception to implementation, involving cooperation and feedback from stakeholders. The methodology includes three main steps: exploration, experimentation, and evaluation.

- Schools as Living Labs (SALL)

[SALL](#) adopts the concept of open schooling in science education where schools become agents of community well-being by creating new partnerships with other local actors and addressing local issues relevant to them. This open-innovation methodology puts people in charge of the innovation process. It involves different kinds of partners in a private-public-people partnership and integrates research and innovation processes in real-life communities and settings. The methodology and the materials were tested and evaluated in 42 pilot school communities to address local issues linked to the food system across 10 countries. The project will then carry out a larger-scale implementation of the living-lab-based methodology involving additional 370 schools, reaching 412 school communities in 10 countries (Greece – coordinator, Croatia, Cyprus, Estonia, France, Israel, Netherlands, Portugal, Serbia and Spain).

The SALL platform offers a large array of resources such as: [Methodology for the engagement of School Living Labs with Stakeholders](#), [Guidance and Training materials](#), [Case studies](#), [Portfolio of schools as Living Labs projects](#), etc.

- Berlin Healthcare Lab

The [Berlin Healthcare Lab](#) goal is to develop marketable solutions for drug production, clinical research, therapy support and other patient solutions, and to initiate collaborations between the Pfizer Group and innovative companies.

The Living Lab offers services for start-ups, spin-offs and tech-companies that can benefit from the entire spectrum of expertise that Pfizer has to offer. This includes access to selected customer contacts, real-world laboratories, market-specific knowledge, and an international network that extends across the whole world through the Pfizer hubs.

- ActivAgeing Living Lab (LL2A)

The [ActivAgeing Living Lab](#), coordinated by the Université de Technologie de Troyes (France), offers technological and methodological tools to achieve the “adequate design” of solutions to support older adults’ autonomy, health and well-being. The approach designed is human-centred and participatory, aiming at supporting autonomy and adding to the dignity and empowerment of the older person.

The researchers and social work students study everyday life and the development of home-based social and healthcare solutions for the elderly, using participatory design and observational methods. One of the preferred methods is video ethnography, enabling to study social interaction and analyse activity.

LL2A made significant scientific contribution in several exploratory research projects focusing on the use, acceptability and design of mobile social robots for elderly.

2. Living Labs related to the topics of VIQE

- Living Schools Lab

The [Living Schools Lab](#) project created a network of primary and secondary schools to share best practices in successfully integrating new technologies into the educational system. It supported professional development opportunities for teachers, facilitating their engagement with external partners, including the technology industry and other pan-European projects, and promoted a whole-school approach to ICT use, assisting schools in keeping up with the latest developments.

Started in October 2012, Living Schools Lab was a two-year project funded by the European Commission and coordinated by European Schoolnet. It includes 12 Ministries of Education from 12 countries: Belgium (coordinator), Austria, Cyprus, Czech Republic, Finland, France, Ireland, Italy, Lithuania, Norway, Portugal, United Kingdom.

The project created opportunities for schools to get involved in action-based research, creating links with outside partners including industry and other pan-European projects. There were also developing validation methodologies and a new turnkey validation service. Through this service, schools in the network were able to test and evaluate the results of European Commission-funded projects, along with technologies, services, and content provided by other stakeholders.

As [project results](#) were developed the *Network Operations Manuals*, *Observation and Methodology Handbook*, as well as an article, "[Spotlight on practice](#)", and "[First good practice](#)" videos.

A [Final Exploitation Plan](#) was developed to provide a strategy for mainstreaming the project results, including further expanding and sustaining the Living Schools Lab network and validation service after the end of the project.

- **Digital Opportunity Traineeships**

This project aims to develop a large digital talent pool and ensure that individuals and the labour force in Europe are equipped with adequate digital skills. It brings together Member States, companies from all sectors, social partners, non-profit organisations and education providers, who take action to tackle the lack of digital skills in Europe. The project is funded through the Erasmus+ programme, and aims to provide an opportunity for recent graduate and students to gain practical and valuable experience in the area of technology in a company abroad.

The team led by BluSpecs (Spain) in partnership with CIVITTA (Estonia) and the European Network of Living Labs, is working together to support the Commission's services in scaling up the [Digital Skills and Jobs Coalition platform](#) and in implementing the [Digital Opportunity Traineeship](#).

The work is built around 4 pillars:

- Digital Skills for all citizens
- Digital Skills for the labour force
- Digital Skills for ICT professionals
- Digital Skills for Education

- **JamToday**

JamToday aims to use game design principles not just to create useful and meaningful games, but also to explain and design the context (such as the classroom) where games can be effectively implemented. Each year, JamToday organises game jams in multiple locations focusing on a particular theme and each year a pan European conference will be organised around one of the main areas of application: improving ICT skills, adopting healthier lifestyles and supporting learning of mathematics.

- **Möbius**

[Möbius](#) is an initiative funded under the European Commission Horizon 2020 programme. It aims to modernise the European book publishing sector by remodelling the traditional value chains and business models, uncovering the potential of prosumers, and delivering new enriched media experiences.

Möbius enriches the book experience with cross-media productions. This includes the digital version of the book, incorporating social interaction capacities, and a 3D audiobook for an increased sense of immersiveness. The audiobook features three separate audio layers for narration, soundscapes, and effects, as well as soundtracks. Additionally, Möbius offers audiovisual content based on book arts, ad hoc artistic or marketing creations, and contributions from prosumers integrated into the narrative stream. Altogether, it will allow users to enjoy a cross-media reading experience or to cruise from one experience to another (e.g., print, eBook, audiobook) depending on their circumstances or wishes.

Different sources of data were considered in the project, including data scraping of publicly available interaction data from online platforms, surveys and interviews of voluntary participants run within the project. Different measures for [Protection of Personal Data \(POPD\)](#) and [ethical guidelines](#) set in relation to the involvement of users in the project were applied.

Ultimately, the project aims to build a network of ecosystem-related projects, therefore a [Strategic dissemination, communication, and public engagement plan](#) was proposed.

3. Living Labs related to the topics of VISCC

- **Urban Nature Labs Project (UNaLab)**

The [UNaLab](#) project contributed to the European knowledge base on nature-based solutions (NBS), by demonstrating their benefits, cost-effectiveness, economic viability and replicability through the co-creation and implementation of NBS in three front-runner cities – Eindhoven (The Netherlands), Tampere (Finland) and Genova (Italy).

A critical issue for [Tampere](#), Finland, is flooding and storm water management. Other challenges that the city is facing include water pollution and reduced biodiversity. Tampere's main demonstration site for nature-based solutions is Vuores, a new greenfield district surrounded by natural water bodies. One of the initial NBS demonstration ideas of the city included the further development of the Vuores nature-based stormwater management system. The first UNaLab NBS demonstration was a pilot-scale algae-based water treatment system where researchers from the Tampere University of Technology study micro-algae growth in Nordic conditions. A biofilter has also been installed to treat the contaminated water from an old pulp mill. Online water monitoring devices have been installed to monitor the performance of the biofilters in the urban Living Labs and the results can be accessed online. Tampere has also implemented a green wall on a wastewater pumping station in the Viinikanlahti district, with local species suitable for a sub-arctic climate.

[Genova](#), Italy, is also plagued by frequent flooding which has resulted in significant destruction in the past, primarily due to intense rainfall on a highly urbanised landscape. The city faces numerous environmental challenges related to extreme weather conditions such as water management issues, heat stress, and water and air pollution. Nature-based solutions that address key climate- and water-related challenges have been implemented through transforming the Gavoglio area in the Lagaccio district into a 10,000 m² urban park. The Park is intended to create a welcoming and sustainable public area through the implementation of green spaces, such as rows and bunches of trees and lawns. The new green spaces have been connected to the existing nearby green areas, which has created a green corridor in which it is possible to increase

biodiversity and decrease urban heat stress, ensuring a well-functioning ecosystem. Furthermore, cultivation areas offering space for urban farming and orchards have been implemented as well as a green wall.

Due to the project's success, the framework was replicated in 7 other cities (Cannes – France, Castellón de la Plana – Spain, Başakşehir – Turkey, Prague - Czech Republic, Stavanger – Norway, Buenos Aires – Argentina and Hong Kong)

The project offers Resources for NBS replication & up-scaling, like: [Business models and financing strategies for NBS](#), and different types of guides and handbooks ([Living Lab handbook for urban Living Labs developing nature-based solutions](#), [Evaluating the impact of nature based solutions: a handbook for practitioners](#), etc).

- **Mobility Lab Helsinki**

[The project](#) is coordinated by the City of Helsinki, Economic Development and implemented in collaboration with Forum Virium Helsinki, the city's innovation company. The objectives of the project focus on testing and evaluating the impact of new technologies and transport policies on the urban environment. Testing activities were carried out on several topics, such as:

- needs, interests and expectations of the city (support for planning)
- feasibility and suitable locations (consultation with city departments and other local stakeholders, permitting processes)
- data connections (networks, physical needs and installations)
- awareness and dialogue about the results with stakeholders (e.g., traffic planners), etc.

A [City's digital twin for mobility](#) was created that describes the traffic itself, traffic environment and related conditions and context.

The locals and visitors can choose to participate as Test Users by joining a [group of test users](#) (page in Finnish).

The sustainability of the project is ensured by developing new pilots and projects focused on smooth, safe and sustainable transport and mobility solutions. For example, with open calls for agile pilot competitions. [Agile piloting](#) is a short model for quick early phase low-cost experiments of new services in a real-world environment.

- Smart City Living Labs

This project is coordinated by Iceberg+, a company that offers consulting in innovation from Braşov. [Smart City Living Labs](#) is an ecosystem based on the real test environment and infrastructure focused on Smart City, Smart Mobilities and V2X (Vehicle to everything). It provides testing, validation and market transition of innovations and technologies developed by universities and companies (from TRL3 to TRL9). It allows access to developers of ICT technologies with an urban focus - IoT, sensors, beacons, networks, big data, AR and VR to test ideas in real terms. It also provides the opportunity for citizens to be actively involved in the development and adaptation to specific technologies.

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