Evaluating living labs?
Methods and tools

Evaluating living labs? – an overview of existing methods and tools

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Abstract

Living labs are complex multi-stakeholder collaborations that often employ a user-centred and design-driven methodology to foster innovation. Conventional management tools fall short in evaluating them. However, some methods and tools dedicated to living labs' special characteristics and goals have already been developed. Most of them are still in their testing phase. Those tools are not easily accessible and can only be found in extensive research reports, which are difficult to dissect. Therefore, this paper reviews seven evaluation methods and tools specially developed for living labs.

Each section of this paper is structured in the following manner: tool's introduction (1), who uses the tool (2), and how it should be used (3). While the first set of tools, namely *"ENoLL 20 Indicators"*, *"SISCODE Self-assessment"*, and *"SCIROCCO Exchange Tool"* assess a living lab as an organisation and are diving deeper into the organisational activities and the complex context, the second set of methods and tools, *"FormIT"* and *"Living Lab Markers"*, evaluate living labs' methodologies: the process they use to come to innovations. The paper's final section presents *"CheRRIes Monitoring and Evaluation Tool"* and *"TALIA Indicator for Benchmarking Service for Regions"*, which assess the regional impact made by living labs.

As every living lab is different regarding its maturity (as an organisation and in its methodology) and the scope of impact it wants to make, the most crucial decision when evaluating is to determine the focus of the assessment. This overview allows for a first orientation on worked-out methods and on possible indicators to use. It also concludes that the existing tools are quite managerial in their method and aesthetics and calls for designers and social scientists to develop more playful, engaging and (possibly) learning-oriented tools to evaluate living labs in the future.

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Introduction

In the framework of contemporary transitions to sustainable, energy-neutral, (digitally) responsible and healthy societies, living labs are frequently employed as environments, methodologies, or activities for innovation. They are called living labs, but also field labs, test labs and urban or rural living labs, or even innovation ecosystems, but all these labs share a living lab "family resemblance". They typically function as multi-stakeholder collaborations between industry, governments, and universities (called triple helix) and sometimes include citizens (quadruple helix) on a local or regional level. They employ co-creation as well as real-life experimentation and prototyping as their primary methods.[1] Living labs strive to make an impact by embedding their results in existing contexts, translating their method of learning to other contexts or scaling up and influencing policy and regulations (Van Wirth et al., 2019). However, we know little about the actual impact of living labs as methods and tools evaluating a living lab's successful working are not widely adopted.

Only a small percentage of labs evaluate their projects systematically or assess their impact at all, impeding lab development and learning across labs. Another reason why living labs are not systematically assessed is because they are often short-term oriented, brief encounters in the context of research (Ballon, van Hoed, and Schuurman, 2018; Schuurman, de Marez, and Ballon, 2016). With the project "Future Proof Labs", the research group '"Innovation Networks" of The Hague University of Applied Sciences is searching for indicators for living lab success across four partner labs of the Centre of Expertise "Mission Zero" all active in the field of sustainability. As a benchmark, we looked at existing and developing evaluation methods and tools in the European context. We were predominantly interested in the criteria and character of already existing tools and not so much in the theoretical discussion of possible success indicators. To find these tools, we engaged with our network of living labs, lab researchers in The Netherlands, and the European Network of Living Labs (ENoLL) community using snowball sampling. Thus, the following overview does not claim to be comprehensive. Instead, it serves a dual goal: supporting living lab practitioners in thinking about (a framework for) systematic evaluation of their labs and inspiring researchers and designers to develop alternative methods and tools.

Overall, the findings show that there are only a few available evaluation tools specially dedicated to living labs today. We talk about methods and tools in this paper, as some of the presented items include qualitative indicators which allow for targeted reflection (methods) sometimes operationalised in questionnaires. Other items have developed readily applicable tools that help to quantify results. When studying the currently

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[1] Extensive literature from the Open Innovation and user innovation fields was used for this analysis. To name the most important: Almirall, Lee, and Wareham, J. , 2012; Bergvall-Kareborn, and Stahlbrost, 2009; Brankaert, and den Ouden, 2017; Dell'Era, and Landoni, 2014; Hossain, Leminen, and Westerlund, 2019; Leminen, Westerlund, and Nyström, 2012; Steen, and van Bueren, 2017.

existing methods and tools, we also noticed that there are three types: those evaluating a lab as an organisation and looking at the operational process of a lab. Then there are those reflecting on the lab methodology, its approach and practice in different project phases.

Finally, there are those tools developing indicators to assess the impact of a living lab on a regional creative innovation context. All seven items fall into one of these three categories *(see table 1)*. Consequently, the following presentation of currently existing living lab evaluation methods and tools is ordered along with these three categories, which by no means is to imply that these are the only possible categories of living lab evaluation in the future.

CATEGORY	TOOL	FOCUS OF EVALUATION	EVALUATING GROUP
ORGANISATION	*ENoLL 20 Indicators*	Living lab organisational activities	Living lab core team, researchers, lab stakeholder groups
	SISCODE Self-assessment	Living lab activities at different stages of the experimentation process; proposes new strategies or organisational practices	Living lab project's core team
	SCIROCCO Exchange Tool	The complex stakeholder context and the readiness of the organisational context for a living lab	All local/regional stakeholders
METHODOLOGY	*FormIT Method*	Living labs research activities in different project phases	Researchers
	Living Lab Markers	The qualitative conditions of how the living labs methodology is implemented	Project's core team, researchers
	CHERRIES Evaluation Tool	The project's overall impact	External evaluators assessing the lab
REGIONAL IMPACT	*TALIA Indicator Benchmarking for Regions*	How regions develop place-based policies and strategies that stimulate creativity and social innovation.	NGO's, researchers, public authorities, policy makers

Table 1: Overview of the seven evaluation methods and tools in three categories (Overdiek and Genova, 2021)

1. Living lab as an organisation

Living labs are unique and complex structures, and often they function and survive as (independent) organisations. When living labs want to evaluate their organisational activities and practices or the maturity of the lab context, various options are available. This chapter presents the 20 indicators used by the "European Network of Living Labs" (ENoLL) to determine whether a living lab can join the network. The indicators could also be used by labs as a method to evaluate their organisational performance periodically. Further, two more developed tools will be presented: the "*SISCODE Self-assessment*" for living labs and the *"SCIROCCO Exchange Tool",* which helps to assess the readiness of the organisational context of a lab.

ENoLL 20 Indicators

The non-profit organisation ENoLL defines living labs as real-life test and experimentation environments where users and producers innovate together, undertaking four main activities: co-creation, exploration, experimentation, and innovation. For their assessment of partner labs, ENoLL uses six "common attribute areas" (ENoLL 2019). They are depicted and explained in *figure 1*.

Active User Involvement: this refers to the methods or practices that incorporate users on all stages of development as active partners, particularly at the beginning of the process. This means not limiting user-engagement to a validation stage but creating the conditions necessary to develop an "ownership" of the process by the end-user.

Multi-method approach: there is no single living methodology and as such each living lab approach must combine and customize user-centric methodologies that best fit the purpose.

Multi-stakeholder participation: the involvement of all Quadruple Helix actors must be an intrinsic part of the process, properly accounted for with established mechanisms of interaction.

Orchestration: orchestration looks at the living lab beyond the meeting point for societal actors in an innovation process. It looks as the mechanisms in the place within a living lab that place that living lab as a spring board for external actors to interact within the large innovation ecosystem.

Real-life setting: activities must take place in the real-world to have a solid understanding of their context and follow for upscaling or transfer feasibility.

Co-creation: builds on the idea of active user involvement by proposing the user as an actor, not a factor. Co-creation understands the Quadruple Helix to-down and bottom-up approach to innovate.

Figure 1: The six common attribute areas of mature ENoLL Living Labs (ENoLL, 2019, p. 5) (author's illustration)

Within these attribute areas, 20 key indicators were defined (*see figure 2*). ENoLL determines which living labs can become part of the network based on them. ENoLL looks at living labs as "healthy organisations", that is to say: the performance of a lab as a special sort of organisation. As of now, they do not further evaluate the impact of the lab organisation on i.e., regional innovation.

- Evidence of co-created values from research, development and innovation.
- Values/services offered/provided to Living Lab actors.
- Measures to involve users.
- Reality usage contexts, where the Living Lab runs its operations.
- User-centricity within the entire service process.
- Full product life-cycle support – capability and maturity.
- Living Lab covers several entities within value chain(s).
- Quality of user-driven innovation methods and tools.
- Availability of required technology and/or test-beds.
- Evidence of expertise gained for the Living Lab operations.
- Commitment to open processes.
- Intellectual property rights (IPR) principles supporting capability and open-ness.
- Openness towards new partners and investors.
- Business– citizens– government partnership: strength and maturity.
- Organization of Living Lab governance, management and operations.
- Business model for Living Lab sustainability.
- Interest and capacity to be active in EU innovation systems.
- International networking experience.
- Channels (e.g. web) supporting public visibility and interaction.
- People/positions dedicated to Living Lab management and operations

Figure 2: ENoLL 20 Indicators (ENoLL, 2019, p.6) (author's illustration)

According to some critics, ENoLL fails to address the inherent business model of a living lab. Therefore, Mastelic et al. (2015) propose to group ENoLL's indicators into categories using the Business Model Canvas (BMC). Furthermore, to account for a financially independent living lab, they also promote the idea of exploring indicators that will fill in the customer segment, cost structure and revenue streams of the BMC's building blocks which are underdeveloped within the existing indicators (*see figure 3*).
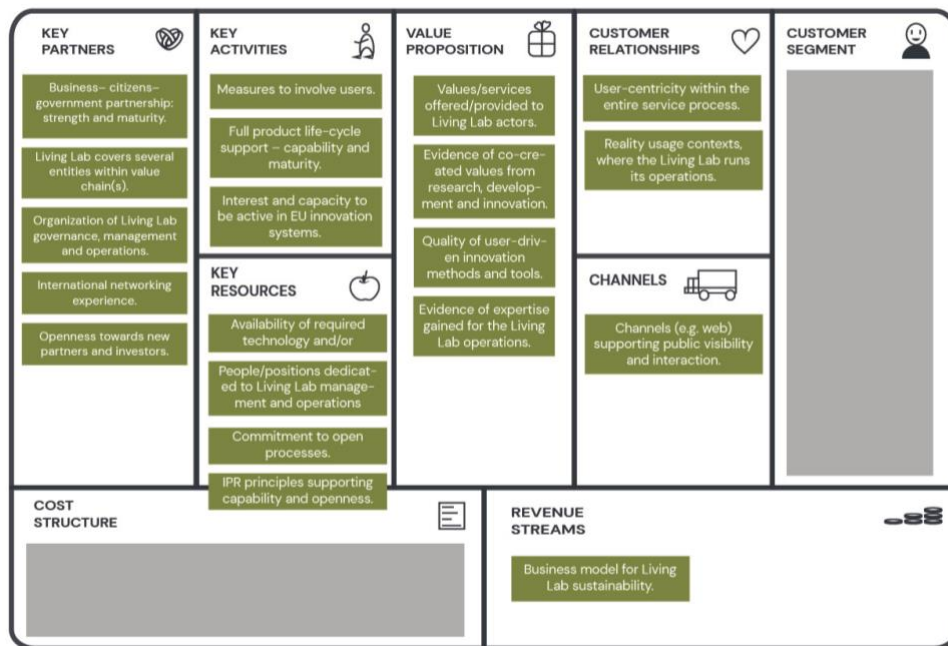
Figure 3: ENoLL's 20 indicators analysed using the Business Model Canvas (Mastelic et al., 2015, p.17) (author's illustration)

Currently, ENoLL is revisiting its criteria to account for these and other new insights. The network is also developing an evaluation tool.

● What is evaluated with the *ENoLL 20 Indicators*?

The indicators *seen in figure 2* allow for a qualitative evaluation of the organisational performance of a living lab. They can be used entirely or as a selection of indicators for areas the lab wants to develop.

● Who uses the indicators to evaluate?

The lab's core team could use the indicators periodically to evaluate their performance. The indicators could also be used by researchers or even by lab stakeholder groups to evaluate a lab they might want to collaborate with, depending on the information they can collect about the lab.

The SISCODE Self-assessment

SISCODE was a European Horizon 2020 financed project, running until the summer of 2021, and focused on two main fields, namely co-creation and Responsible Research and Innovation (RRI) (Schmittinger et al., 2020). Monitoring and evaluating the impact of these two fields on living lab's operations is particularly challenging because of the missing evidence of their direct effect. When assessing co-creation, the complication arises because this iterative process involves various stakeholders and produces multiple vague solutions and suggestions for future implications rather than concrete products (Schmittinger et al., 2020). Therefore, the project report states, numerous

factors must be considered, and only the creation of a specific scheme evaluating the success of the process would allow assessment. Meanwhile, RRI is recognised as an opportunity to tackle global societal change by identifying the potential implications of both research and innovation.

During the SISCODE project, multiple monitoring and evaluation tools that could be used at different project stages were developed, including the lab's *Journey Spreadsheets*, the *Self-assessment* questionnaire, and *Scenarios* (Schmittinger et al., 2020). For the goal of this publication, *the SISCODE Self-assessment* questionnaire was chosen because it stimulates a lab's reflection on organisational learning. The *Spreadsheets*, on the other hand, serve to collect lab documents, and the *Scenarios* illustrate possible futures to communicate lab insights and translate them to other contexts.

- What is evaluated with the *Self-assessment* questionnaire?

The *Self-assessment* questionnaire's outcomes are practical for manifesting new living lab strategies or organisational practises exceeding single activities *(see figure 4)*. The method aims to investigate qualitative aspects of three indicators (stakeholders, co-creation, and dissemination) to trigger reflection, investigate and stimulate organisational learning (Stacey, 2003; Schmittinger et al., 2020)
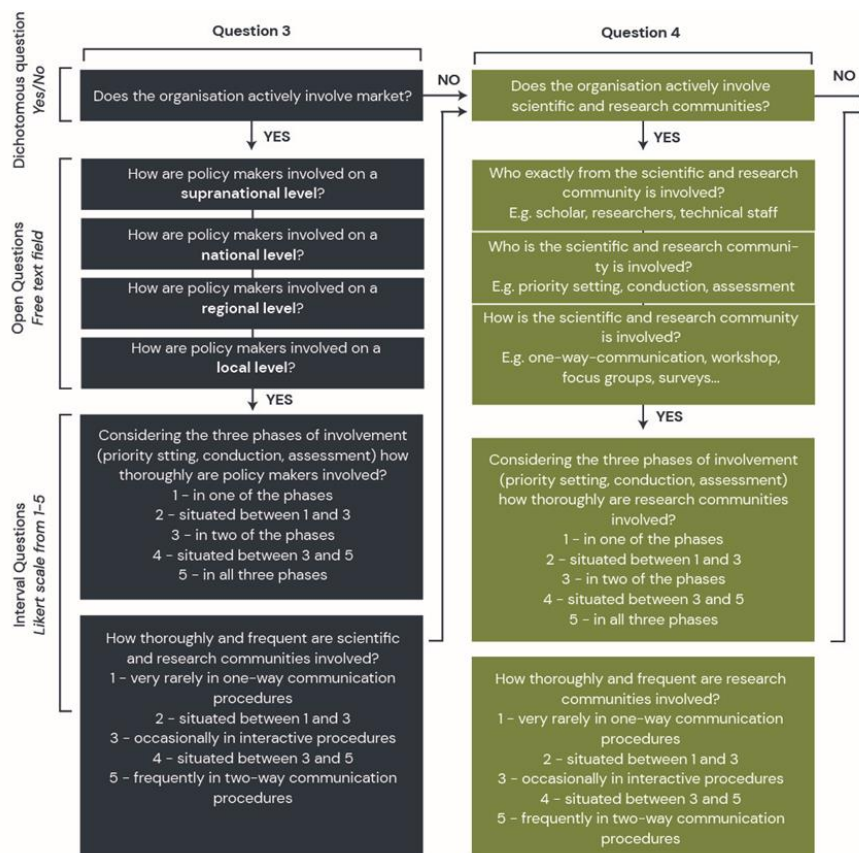

Figure 4: SISCODE Self-assessment example (Schmittinger et al., 2020, p. 119-142) (author's illustration)

- Who uses the questionnaire to evaluate?

The *Self-assessment* questionnaire is made for the living lab core team to assess their activities at different points of the experimentation process in one project, mid-term and at the end *(see figure 5)*.
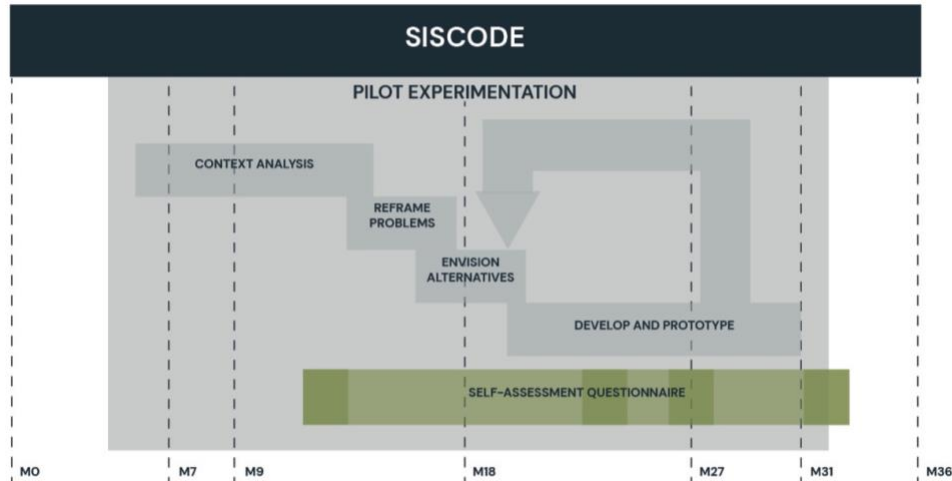

Figure 5: The different points thought the experimentation process when the core team can assess (Schmittinger et al., 2020, p. 43) (author's illustration)

- How is the questionnaire used to evaluate thoroughly?

The questionnaire consists of 16 questions, eight related to stakeholder engagement, six to co-creation, and two to disseminating information *(see figure 4)*. Each question has its decision tree and provides a binary outcome in the form of a "Yes/No" answer. Every positive answer leads to more sub-questions that dive deeper into the organisational practices and collects detailed information. At the same time, a negative answer sends the respondent to the next section. The SISCODE *Self-assessment* questionnaire can be found in the project report (Schmittinger et al., 2020, p. 119-142).

The SCIROCCO Exchange Tool

Accelerating SME innovation capacities with a Living Lab approach (ACSELL) is a European project aimed to allow policy arrangements and enable network thinking through applying different strategies, including self-assessment (ACSELL Interreg Europe, 2021). ACSELL adopted the *SCIROCCO assessment tool* developed for collaborative healthcare systems because of its previous success with more than 1200 completed assessments and reworked it into an evaluation tool for multi-stakeholder innovation contexts. The so-called "*Exchange tool for a Demand-Driven Innovation*" knows a 12-dimensional scale *(see figure 6)* (ACSELL Interreg Europe, 2021).

- What is evaluated with the tool?

Regional living lab innovation approaches should be designed and applied following local needs and enable successful demand-driven innovation. The online tool allows users to understand the local context and evaluate the maturity of this context to develop a living lab innovation approach (ACSELL Interreg Europe, 2021).

- Who uses the tool to evaluate?

The *SCIROCCO Exchange Tool* is targeted to the different stakeholders struggling to understand:
- the local situation and context needed to create innovative solutions,
- the ecosystem willingness to adopt and scale up such,
- the steps that need to be taken by progressive regions to allow information sharing, twinning, and coaching to achieve successful results.
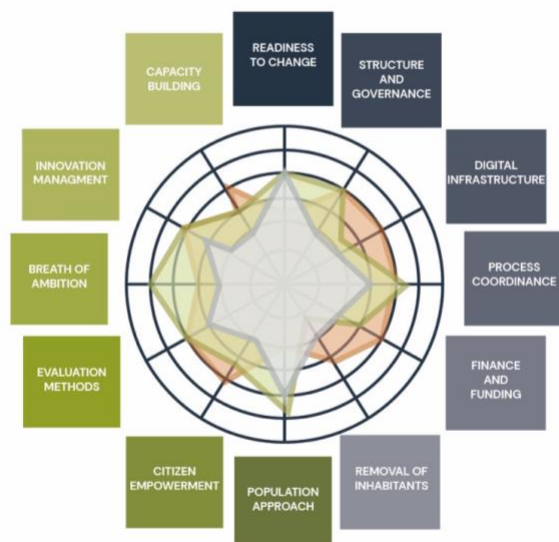

Figure 6: The SCIROCCO Exchange Tool with its 12 indicators (ACSELL Interreg Europe, 2021) (author's illustration)

- How is the tool used to evaluate thoroughly?

When using the online free-of-charge tool, illustrated in *figure 6*, an organisation's core team first selects which stakeholders will take part in the evaluation process; those stakeholders then fill in an individual assessment; the core team arranges discussions with the stakeholders to communicate the results and develop a shared understanding of the situation; finally, the core team consults regions on how to improve their innovation implementation and scaling-up processes (ACSELL Interreg Europe, 2021).

2. Living lab as a methodology

As discussed in the previous chapter, living labs can be evaluated as (developing) organisations. However, another strand of tools looks more at the living lab's co-creation principles and methodologies. Based on design methodology and user innovation, these tools encourage to define and evaluate different phases of the exploration and experimentation process. We will present two of these tools in the following chapter: The "*FormIT Method*" developed by *Botnia Living Lab* establishes four phases and five key principles (value, influence, sustainability, openness, and realism) to which labs should adhere (Ståhlbröst & Holst, 2012), and the *"Living Labs Markers"*, which is a practical tool that allows living labs to assess the different steps in their stakeholder co-creation process.

The FormIT Method

The FormIT is based on three theoretical streams: Soft Systems Thinking, Appreciative Inquiry, and Need Finding. It allows the collaborating researchers in the lab to fully understand the possibilities and strengths of "their" lab. The method takes over ENoLL's Five Key Principles which have been derived from this theory and suggests using them as criteria for process evaluation, *The Five Key Principles* (Ståhlbröst & Holst, 2012) are:

- o Value – refers to the user or business value, where user value is created by understanding the users' needs and motivation and involving them in the innovation process, and business value is added through the insights gathered and innovations delivered.
- o Influence – based on the idea of acknowledging users as active, competent partners and domain experts as they could generate innovative concepts driven by a desire to solve their problems and fulfil their needs. However, their involvement in the process will only be worthwhile if their needs and ideas are visible in the concepts, prototypes, and final product.
- o Sustainability – aimed at ensuring that living labs are solving present and future needs by taking responsibility for their actions, addressing sustainability issues while implementing environmentally friendly processes.
- o Openness – is about the creation of an open innovation process that utilises collective creativity by involving various stakeholders.
- o Realism – the real-life context is a key factor for living labs, so creating like the world environments for testing and evaluating products is essential. Moreover, the users and other stakeholders are part of the processes and play a crucial role.

- What is evaluated with the method?

Three main phases (Concept Design, Prototype Design, Innovation Design) are evaluated by *FormIT* (*see figure 7*). Commercialisation is seen as a new project (and not part of the co-creation) because mostly individual companies aim to introduce innovation to the

market. After the planning and each of the main phases, an evaluation based on the key principles occurs. In addition, a user evaluation occurs at the end of the Innovation Design phase, just before the Commercialisation phase. It is assumed that this methodology leads to successful innovations. However, its impact on the lab and its context are not further assessed.
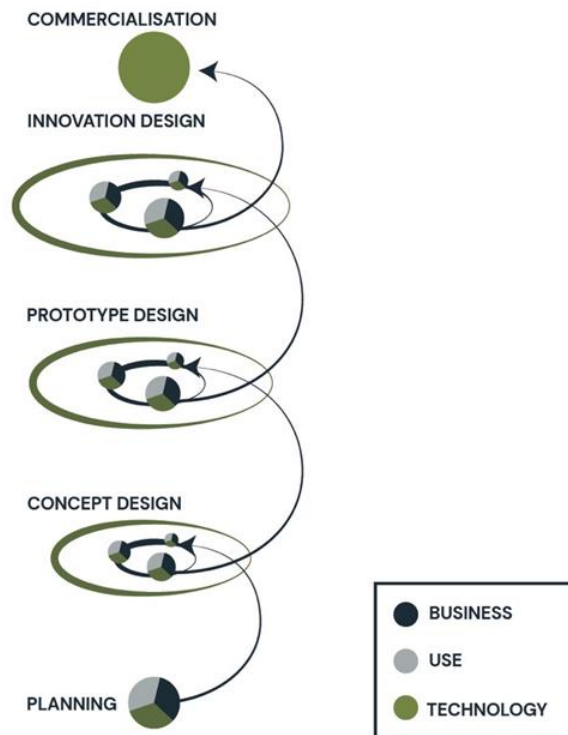

Figure 7: FormIT methodology's five phases (Ståhlbröst & Holst, 2012, p.24) (author's illustration)

- Who uses the method to evaluate?

The researchers in a living lab can use the *Five Key Principles* at the end of each phase (also seen as a cycle, *see figure 7*) to reflect. The additional user evaluation in the Innovation phase should encourage the users to share how they experience the innovation and communicate how it fulfils their needs, values, and requirements.

- How is the method used to evaluate thoroughly?

Within the different phases, a specific set of questions needs to be answered to allow certain activities to be accomplished and decisions to be made *(Ståhlbröst & Holst, 2012, p.24–43)*. However, at the end of each cycle, the living lab needs to evaluate how *The Five Key Principles* were addressed within the process by considering the value created for the users, what influence the users had on the process, how sustainability and openness took form in the project, and how realistic the approach was. Thus, it allows the lab to evaluate further and improve to meet expectations better in the future *(Ståhlbröst & Holst, 2012)*.

The Living Lab Markers

The Wallonia e-health Living Lab and the Smart Gastronomy Lab inspired the creation of a tool called "*Living Lab Markers*". The need to evaluate with indicators reflecting the qualitative conditions of how the living labs methodology is implemented is at the tool's core. Godin Institute, the AISBL Academy of Management and the two mentioned living labs co-created the indicators/markers portraying a labs project's ideal collective process method (Marqueurs Living Lab, 2021). Like *FormIT Method,* the *Living Lab Markers* claim that when used properly, the co-creation in the lab will have a positive influence on innovation.

- What is evaluated with the tool?

The *Living Lab Markers* allows the core team to assess the quality of their living lab's co-creation methodology based on eight core "markers" (see *figure 8*). The importance/magnitude of each marker can be adapted to the phase a lab is in (e.g., early development or mature lab). Like this, the markers also allow them to outline an action plan about integrating a living lab methodology with their activities, evaluating a project's methodology specificities during the solution development phase and successfully integrating the approach (Marqueurs Living Lab, 2021).
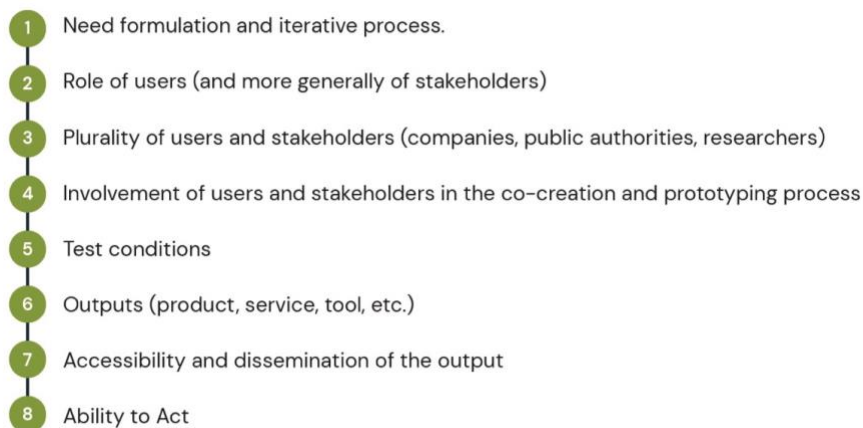
1. Need formulation and iterative process.
2. Role of users (and more generally of stakeholders)
3. Plurality of users and stakeholders (companies, public authorities, researchers)
4. Involvement of users and stakeholders in the co-creation and prototyping process
5. Test conditions
6. Outputs (product, service, tool, etc.)
7. Accessibility and dissemination of the output
8. Ability to Act

Figure 8: The eight Living Lab Markers (Henry, et al., 2021, p.20) (author's illustration)

When the initial lab preparation is done, the core team can download the tool's supporting materials from the Living Labs Markers website and use an excel file to fill in a table with the markers. After the markers are evaluated according to the given magnitude and the provided evidence, the results are illustrated on a spider chart *(see figure 9)* (Henry et al., 2021).
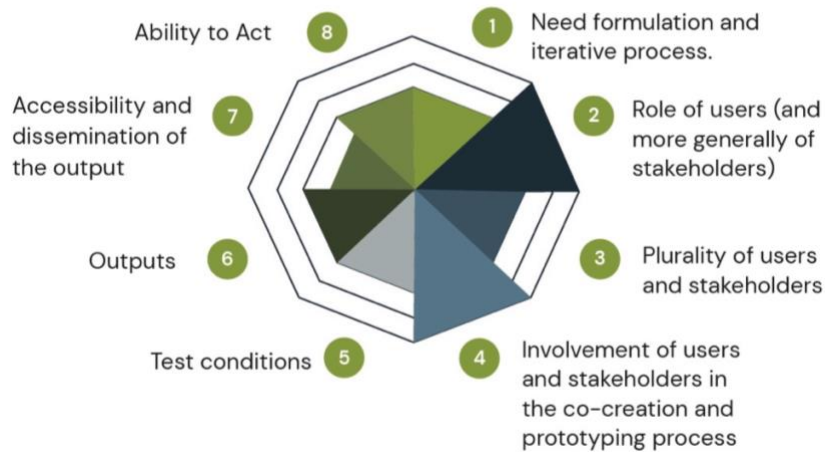
Figure 9: Example of an evaluation with Living Lab Markers (Henry et al., 2021, p.25) (author's illustration)

- Who uses the tool to evaluate?

The *Living Lab Markers* are not targeted at a specific group of people. Instead, they are for anyone who has an idea and wants to incorporate it in a living lab methodology (Henry et al., 2021). Typically, it is the core team of a living lab that intends to evaluate the quality of a project's process.

- How is the tool used to evaluate thoroughly?

Before starting the evaluation, it is essential to first go through all eight markers and determine their relevance to the project, the marker's magnitude, the way it can be proved that the magnitude is reached, and the actions that need to be taken to achieve that.

The *Living Lab Markers* tool can be downloaded via the <u>website</u>.

3. Evaluating the impact of living lab projects on regions

In this chapter, instead of presenting tools that evaluate living lab operational activities or methodology, tools that aim to assess the overall impact of a lab on a regional innovation context are introduced. The first tool is Cherries' *"Monitoring and Evaluation"* package that assesses an entire lab project and its experiments. It results in a thorough evaluation of the social, cultural, and economic relevance of a major lab project and requires two external evaluators. The second tool, the *"TALIA Indicators Benchmarking Service for regions"*, focuses on the regional impact and is an online self-diagnostic tool that evaluates how regions develop place-based policies and strategies that stimulate creativity and social innovation, using contextual and demographic data.

The CheRRIes Monitoring and Evaluation Tool

Constructing Healthcare Environments Through Responsible Research Innovation (RRI) and Entrepreneurship Strategies (CheRRIes) is an EU-funded project connecting RRI, demand-side policy, and territorial innovation to support healthcare research, innovation policy and pilot actions. For this project, RRI methods stimulated societal reflection on how people develop and use innovative solutions in three EU regions – Cyprus, Murcia, and Örebro. The CheRRIes model supports the innovations in all three regions and stimulates them to share their learnings with others (European Commission, 2021). The evaluation tool is part of the package called *"Monitoring and Evaluation"* and consists of the following: *"Monitoring and evaluation tools"; "Experiments monitoring and evaluation"; "Overall Impact Assessment"* (Colonnello et al., 2020, p.33-47).

- What is evaluated with the tool?

A series of hypotheses related to the "heuristic value of changes" created the basis for this evaluation tool. It is designed to study policy experiments and innovation pilots while assessing the specific project's overall impact. Four knowledge blocks were essential for building the evaluation tool: the ASIRPA theory-based realist evaluation model, the evaluation approach for "embracing messiness" (CheRRIes RRI), the Sustainable Development Goals (SDGs) and the so-called SUPER MoRRI indicators (Colonnello et al., 2020, p.20-21).

Derived from these knowledge blocks, six criteria are outlined to effectively assess an entire project and its experiments. The six dimensions are as follows:

- o Relevance - evaluates the relevance of the initiatives. The social, cultural, and economical.
- o Effectiveness - assesses the capacity to achieve the set goals and objectives.
- o Efficiency - assesses the ability to use available resources efficiently while meeting deadlines and costs.

- o   Impact – this dimension measures "subjective" and "objective" impact. The direct beneficiaries' satisfaction of the actors and the other stakeholders' agreement is considered a "subjective" impact. In contrast, the short-term organisational changes observed over the project lifespan are regarded as "objective" impacts.
- o   Sustainability – assesses the territories' ability to continue to carry out the projects even after the project is over.
- o   Transferability – assesses if a particular activity has been already transferred to another context. Contexts in the different territories involved are assessed in relation to the initiatives.

Based on the six dimensions, a set of indicators has been created *(see appendix)*. Those indicators refer to the projects' process and the results, could be used by other living labs and adapted over time.

- •   Who uses the tool to evaluate?

For this tool, two external evaluators with good knowledge of the project need to be employed. During the assessment process, both evaluators and the lab team will engage in intertwining evaluation and monitoring. The evaluators and the team should establish a partnership to successfully work and learn together (Colonnello et al., 2020).

- •   How is the tool used to evaluate thoroughly?

The model requires the implementation of five main activities:

1. Monitoring sessions – during the bi-monthly sessions, the team will reflect on the progress of the planned actions and the main obstacles, opportunities, deviations, and results.
2. Evaluative qualitative questionnaires with experiment teams – at the mid-term and after the end of the experiment, the team leader will fill in questionnaires.
3. On-site visits – the evaluation team will visit the location where the experiments are conducted and conduct interviews or focus groups with beneficiaries, stakeholders, and actors involved in the experiments.
4. Documentary analysis – the document collected by the evaluation team will be analysed by a dedicated grid, which considers the above-presented indicators. Thus, the evaluation team will be able to assess the experiment and the project.
5. Reporting – a mid-term and final report will summarise the evaluation activities. The reports represent the final evaluation and the results obtained through the experiments and the project.

The D6.1 "Monitoring and Evaluation Tools and Work Plan" and "Monitoring and Evaluation Tool" are available for download on the website.

TALIA Indicator Benchmarking Service for Regions

Partners from 13 countries worked together in the European Cooperation Programme for the Mediterranean area, 2014–2020. *TALIA (Territorial Appropriation of Leading-edge Innovation Actions)* was targeted at building and developing a community by orchestrating the progress and results of individual projects related to Cultural and Creative Industries on the one hand and Social Innovation on the other. The community aimed to empower both public and private actors to engage in innovation policy and practice towards Creativity Based Innovation; stimulate transitional cooperation between quadruple helix actors through capacity building; promote triple loop-policy and build an online community (Social&Creative, 2021). TALIA created a benchmarking service that allows regions to assess how they are performing in terms of creative and social innovations. Living labs could use this service to get an indication of how a region is responding to its activities and introduced innovations.

- What is evaluated with the tool?

The online self-diagnostic tool allows regions to compare the impact of its place-based policies and strategies geared to stimulate creativity and social innovation with that of Mediterranean (MED) and European regions. The tool uses contextual and demographic data and assesses collective creativity in the Mediterranean based on three drivers (Community-Scale Partnerships, Territorial Innovation and Trans Socio-Economic Ecosystems). According to Sacco et al. (2013), those three drivers can be connected to six transition variables through which culture may work as a system-wide development platform. Eighteen indicators, found in *table 2,* result from the combination of a transition variable and a driver (Social&Creative Community, 2019).

TRANSITION VARIABLES	COMMUNITY-SCALE PARTNERSHIP	TERRITORIAL INNOVATION	TRANSLOCAL SOCIO-ECONOMIC ECOSYSTEM
CULTURAL ANCHORING	Design Application	Employment in MHT manufacturing and knowledge-intensive services	Occupancy rate of collective tourism accommodation
OPEN NETWORKED PEOPLE	Population density	Working age population with tertiary education	Internet users away from home or work
INNOVATION MIXES	Public private co-publications	Non-R&D innovation expenditures	Trademark application
COLLECTIVE LEARNING	Employment in cultural and creative industries	Population engaged in lifelong learning	Death rate
SHARED VALUES	Crime recorded by the police	Median age of population	Capacity of collective tourism accommodation
NEW BUSINESS MODELS	Innovative SMEs collaborating with other	Sales of new-to-market and new-to firm SME innovations	SMEs introducing innovations (of all kinds)

Table2: TALIA's 18 indicators resulting for drivers and transitional variables (Social&Creative Community, 2019, p.11)

An additional table (*see table 3*) summarises each indicator's expected impact (i.e., positive/negative impact) on the success of regional innovation.

DIRECTION OF INFLUENCE	COMMUNITY-SCALE PARTNERSHIP	TERRITORIAL INNOVATION	TRANSLOCAL SOCIO-ECONOMIC ECOSYSTEM
CULTURAL ANCHORING	Positive	Positive	Positive
OPEN NETWORKED PEOPLE	Negative	Positive	Positive
INNOVATION MIXES	Positive	Positive	Positive
COLLECTIVE LEARNING	Positive	Positive	Negative
SHARED VALUES	Negative	Positive	Positive
NEW BUSINESS MODELS	Positive	Positive	Positive

Table 3: Impact quality of the different indicators (Social&Creative Community, 2019, p.11)

- Who uses the tool to evaluate?

The tool can be used by creatives, NGOs, education and research centres, companies, public authorities, and policymakers (Social&Creative, 2021). In fact, the tool is especially useful for regional policymakers, researchers, and other stakeholders who want to assess how a region of their interest is performing in terms of creativity (Social&Creative Community, 2019).

- How is the tool used to evaluate thoroughly?

When the online tool is accessed, the user selects a region of his interest, and a page with three drop-down menus appears, which are "Contextual Variables" (provides information about the population, purchasing power standard per inhabitant, as well as the employment rate), 18 "Explanatory Variables" (also known as the 18 indicators), and the "Creative Innovation Index" (three indicators which show how the region behaves in relation to the three drivers compared to MED regions). While the "Explanatory Variables" assessment results are given in histograms, the "Creative Innovation Index" results are illustrated on an automatically generated spider diagram. In addition, a comment explaining the region's performance is located at the bottom of both the histogram and spider diagram (Social&Creative Community, 2019).

TALIA Indicator Benchmarking Service for Regions is available on the website.

How do I evaluate "my" living lab?

Valuable principles for evaluating both organisation and methodology of a living lab were developed, whereas impact criteria are still very broad and challenging for a living lab to evaluate by itself. Tools have been developed in European projects but are still in the testing phase. They are not very accessible either. Publications are scattered and mostly delivered in extensive research reports, which are hard to find and analyse for lab practitioners. The target areas are operational "KPI's", process principles for an innovative methodology and indicators of a regional innovation ecosystems. Most notably, we could not find an evaluation method or tool targeted at various learnings of the different lab stakeholders. Nor could we identify methods that rely on certain key moments in the development and workings of a living lab as a platform for different innovation projects. These are two areas that should be further researched and developed.

Living labs thinking about a structured evaluation are well advised first to decide what they want to evaluate. For the average living lab project, a methodology evaluation tool is probably the most useful. Especially *Living Lab Markers* offer a practical and adaptive tool for that. The organisational tools are certainly valuable for living labs that have (or want to build up) an independent organisational structure. However, ENoLL's "common attribute areas" are also helpful to reflect on organisational aspects of "mere" living lab projects. For labs that want to evaluate their impact on a particular context, the tools presented in chapter three might inspire the development of their own impact criteria and indicators in particular contexts like sustainability on a local or regional level. Certainly, in the Netherlands with its "mission-driven" innovation policy, more research and development should go into aligning these impact criteria with goals in the transition process.

Currently existing tools, themselves, as well as the way they are visualised, can be characterised as very "managerial". They are based on numerical scales and form flowcharts or diagrams. They are not very engaging. With the goal of inspiring and learning, researchers and designers might feel triggered to develop more playful and creative ways to evaluate living lab activities and their impact.

In the coming two years, the Future Proof Labs project will work on a method that integrates certain aspects of operational excellence and methodology in living labs with impact criteria on different systemic levels of sustainability transitions. We are particularly interested in "milestone moments" of learning and ways creative professionals can facilitate them. Please check for the latest updates on the Innovation Networks website of The Hague University of Applied Sciences.

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Appendix

The CheRRIs Impact Tool has created a set of indicators based on six dimensions (relevance, effectiveness, efficiency, impact, sustainability, and transparency; Colonnello et al., 2020). The indicators are to be found below:

A. RELEVANCE INDICATORS

- Activities and objectives included in the experiment's Plan are consistent with what envisaged in the DoA
- Project actions and objectives address the emergent challenges for responsible innovation in health for the territorial areas (e.g., increase of health excellence, health innovation, etc.)
- Project actions and objectives address the wider social, health, and economic problems and needs of the target area (to be specified regarding the three territories)
- Active involvement of different institutional actors in the design and implementation of the project activities envisaged
- Active involvement of further actors (e.g. health patients associations) in the design and implementation of the project activities envisaged
- Development and sharing of the contents and results of the actions with the widest possible circle of potential beneficiaries and/or interlocutors
- Sharing the evaluation of ongoing actions with the largest possible number of relevant stakeholders in the territorial area
- Raising awareness in the local institutions about the aims, objectives, and activities of the experiments
- Involvement of potentially non-supportive actors
- Involvement of the institutional actors in solving logistical problems
- Activation of monitoring procedures with the relevant stakeholders

B. EFFECTIVENESS INDICATORS

- The actual implementation of the planned actions (e.g. Pilot actions selected with citizen engagement, territorial chapters in the Communication and Dissemination strategy, Pilots supported, Territorial experiments conducted, etc.)
- The actual execution of the assigned tasks to the different actors according to the designed plans
- Compliance with planned schedules and deadlines
- On-time submission of deliverables and documents, and compliance with other formal duties
- Number of beneficiaries planned/number of actual beneficiaries reached

C. EFFICIENCY INDICATORS

- Presence/absence of financial and/or administrative management problems
- Capacity to carry out the actions foreseen under the experiments with the devoted CHERRIES project funds
- Human resource time-sheets filled in on time and properly
- Interim reports to the EC on the use of resources filled in on time and properly
- The occurrence of financial / cash flow problems and their solution
- Reports on the use of financial resources available to all the expected relevant actors (transparency)

D. IMPACT INDICATORS

"Subjective" impact

- Degree of agreement of the beneficiaries by different target groups (according to the 4P model in health) about the aims of the project and experiments
- Degree of agreement of other relevant stakeholders/actors living/working in the territorial areas (local authorities' managers, persons in charge of territorial programmes, persons in charge of diversity issues/equal opportunities in the territorial area, CSOs working on health issues, etc.) about the aims of the project and the experiments
- Degree of satisfaction of the beneficiaries of individual project' actions (or experiment actions) about the ongoing activity and the first/final results achieved
- Degree of satisfaction of the project staff involved in individual project actions about the on-going activity and the first/final results achieved
- Degree of satisfaction of the CHERRIES' Advisory Board about ongoing activities and the first/final results achieved

"Objective" impact[7]

- The actual introduction of organisational, regulatory, or procedural changes (including human resources management) in the involved services, institutions, or territorial organisations related to the health sector (and their specific programs)
- Identification/activation of new programmes, actions, policies in the involved organisations following the implementation of the CHERRIES actions (e.g., adoption of the CHERRIES methodology; adoption of RRI principle and tools at the territorial level)
- The occurrence of unexpected effects on policies/services provision/innovative measures not envisaged in the design phase (e.g., new committees/initiatives established to address issues not handled before, creation of internal discussion fora or blogs, etc.)
- The occurrence of unexpected effects concerning the involved actors
- The organisation of a dedicated impact investment workshop (made of a training and a pitching session) involving impact and sectorial investors interested in the solutions that will result from the CHERRIES pilot actions and the mirror ones
- Increased access of societal stakeholders to the Health R&I systems (globally and according to the gender)
- Increased access of societal stakeholders to R&I systems (globally and according to the gender)
- Increased responsibility of citizens towards R&I (globally and according to the gender)
- No. of strategy documents based on citizen (and multi-stakeholder) engagement
- No. of open access papers submitted for publication

E. SUSTAINABILITY INDICATORS

- Identification/acquisition of new resources (financial, material, human, etc.) to continue the activities or parts of them (quantity and number of sources by type: financial, material, human, etc.)
- Creation of links with key players not previously engaged in the planned activities in the experiment territories
- Creation of links with networks to access additional resources to continue the activities or parts of them
- Activation of interventions or actions to continue those promoted into the CHERRIES experience
- Access to external financial resources (quantity and number of sources)
- Creation of stable links with further bodies (beyond the expected ones) involved in the implementation of territorial health RRI pilots in health
- Existence of recommendations for policy instruments with RRI potential and their dissemination to interested stakeholders
- Activities to make the new operational setups activated by the definitive actions (e.g., drafting of internal regulations that establish procedures to access certain benefits, etc.)

F. TRANSFERABILITY INDICATORS

- Disseminating information on the presence and contribution of the experiment activities to the public at large (media, etc.)
- Papers or other study documents production on the CHERRIES RRI policy experiments
- Repetition of CHERRIES' model (e.g., Adoption or use of some outputs/outcomes of CHERRIES actions of each of the three experiments in other territorial areas or services; Adoption or use of some actions included in each of the three experiments in other territorial areas or services; Launch of initiatives similar to those proposed in CHERRIES project and its experiments in other organisations)