



Guide for Living Labs

WP1.1, Task 1.1

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Executive Summary

This document outlines guidelines for implementing living labs as a strategy for urban regeneration within the REGEN project. It is structured into three main sections that detail the essential phases of living lab implementation: preliminary steps, the process, and evaluation. The guide specifically addresses four demo sites chosen for the REGEN project, selected for their diverse socio-spatial characteristics and their alignment with the project's objectives.

Key stakeholders and local partners were identified during the initial stages of the project (refer to Figure 1), and this document provides them with tools to design and experiment with various interventions (detailed in Annex 1). This guide is part of a broader initiative within REGEN that aims to enhance the resilience of these communities and stakeholders, fostering socio-territorial resilience through social innovation and participatory urban design.

Employing an iterative design thinking approach, this document not only seeks to facilitate the urban regeneration process at these demo sites but also aims to foster the creation of community-produced knowledge involving various local stakeholders. Therefore, this guide should be considered a living document, subject to refinement over time based on insights and lessons learned from ongoing fieldwork as the living lab interventions are implemented.

All community stakeholders and selected local partners are thus de facto contributors to the body of knowledge that this document aims to disseminate by the end of the REGEN project.

Keywords

Community participation, living labs, urban regeneration, design thinking, social innovation



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Introduction to Urban Regeneration

Urban regeneration is the holistic process of revitalizing, renewing, or redeveloping urban areas. It encompasses a broad spectrum of interventions, ranging from economic and social to environmental, aimed at improving the quality of life for the inhabitants while ensuring the sustainability of urban environments. Urban regeneration seeks not only to refurbish buildings but also to revive communities and economies, creating spaces that cater to the contemporary needs of residents, businesses, and visitors alike.

The growing emphasis on sustainable, resilient, and low-carbon communities underscores the urgency of adopting holistic approaches to urban development and regeneration. Sustainable urban regeneration prioritizes environmental conservation, efficient resource use, and the minimization of carbon footprints. It focuses on creating urban spaces that are not only economically viable and socially inclusive but also resilient to climate change and environmental challenges. This approach ensures that regeneration efforts contribute to the long-term sustainability and adaptability of urban areas, making them capable of withstanding and recovering from environmental, social, and economic shocks.

Participatory design and living labs play a crucial role in the process of urban regeneration[1]. Participatory design involves stakeholders—particularly community[2] members—in the design process, ensuring that regeneration projects reflect the needs, aspirations, and values of those who are most affected by them. This collaborative approach fosters a sense of ownership and empowerment among community members, leading to more sustainable and accepted outcomes.

Living labs extend this participatory approach by creating real-world environments where stakeholders can co-create, test, and refine solutions in actual urban settings. These open innovation ecosystems engage citizens, researchers, policymakers, and industry professionals in collaborative experimentation, enabling the development of innovative solutions that are socially, economically, and environmentally sustainable. By embedding the innovation process in real-life contexts, living labs ensure that urban regeneration projects are grounded in the actual needs and dynamics of urban communities, leading to more effective and enduring transformations.

[1] Sanders EB-N, Stappers PJ (2008) Co-creation and the new landscapes of design. *CoDesign* 4(1):5–18. [1] Vanmeerbeek et al., "Quelles Sont Les Conditions d'implémentations d'un Living Lab Dans Le Domaine de La Santé En Région Wallonne?"

[2] Community members refer to all stakeholders (socio-political and economic) that exist in the territory and who are impacted either directly or indirectly by various happenings on the territory (see Aiken 2019, Zademach et al, 2013)



The REGEN Project Overview

The REGEN project represents a pioneering initiative aimed at catalyzing urban regeneration across various European communities. Through a strategic fusion of participatory design and innovative living labs, REGEN seeks to transform urban spaces into more sustainable, resilient, and vibrant communities. This section outlines the project's objectives, its emphasis on participatory approaches, and the diverse range of countries and communities it encompasses.

Objectives and Scope of the REGEN Project

The primary objective of the REGEN project is to facilitate comprehensive urban regeneration that adheres to the principles of sustainability, resilience, and inclusivity. It aims to achieve this by:

- Enhancing the physical infrastructure of urban areas while preserving their cultural and historical heritage.
- Stimulating economic development and creating job opportunities through innovative urban planning and development strategies.
- Promoting social cohesion and inclusivity by addressing issues of accessibility, affordability, and community engagement.
- Incorporating sustainable practices and technologies to minimize environmental impact and create low-carbon urban spaces.

The scope of the REGEN project extends beyond mere physical refurbishment to include economic, social, and environmental revitalization. It involves a wide array of stakeholders, including local governments, businesses, non-profit organizations, residents, and academic institutions, in a cohesive effort to reshape urban landscapes into thriving habitats for current and future generations.

The Participatory Approach and Its Significance in Urban Regeneration

At the heart of the REGEN project lies the participatory approach, which is instrumental in ensuring that urban regeneration efforts are grounded in the needs, aspirations, and expertise of the local communities. This approach emphasizes active collaboration and co-creation among all stakeholders, enabling:

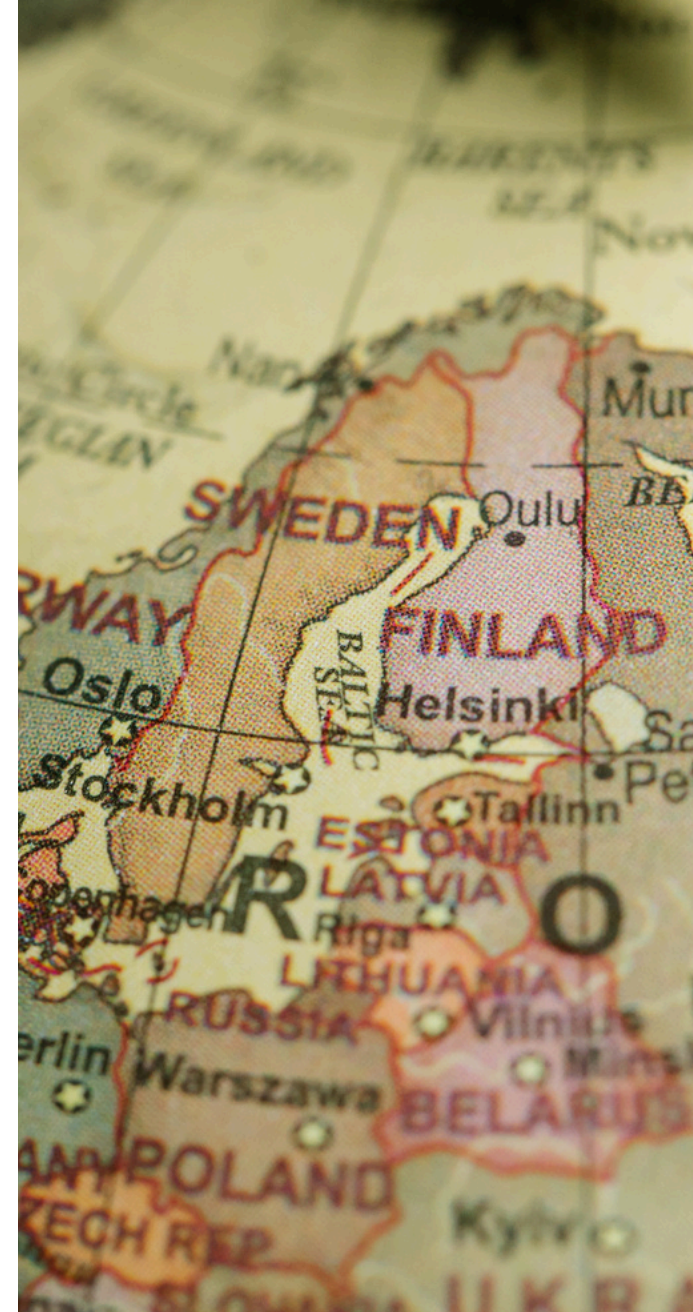
- The identification of genuine community needs through direct engagement and dialogue.
- The co-development of solutions that are both innovative and contextually relevant, ensuring higher levels of acceptance and sustainability.
- The empowerment of local communities by involving them in decision-making processes, thereby fostering a sense of ownership and commitment towards the regeneration initiatives.

The participatory approach not only enhances the effectiveness of urban regeneration projects but also ensures they are adaptable, resilient, and reflective of the community's identity and values.

Overview of the Countries and Communities Involved

The REGEN project makes an initial proposal of 23 interventions (see Annex 1) across four diverse geographical areas (Luxembourg, Spain, Italy, and Ireland). These demo sites have been meticulously selected for their complementary characteristics, including their scale, contextual diversity (rural to urban settings), and varied climate zones:

- **Luxembourg (Beckerich):** A rural setting that has shown a longstanding commitment to sustainable development. Here, we address inefficiencies in existing District Heating Networks (DHNs) and leverage the community's strong engagement in sustainable practices.



- **Spain (Laredo):** This tourist-centric town faces unique challenges in integrating its protected cultural heritage within the urban regeneration framework. The focus is on enhancing accessibility and mobility, particularly for older people within its historic centre.
- **Italy (Milan):** In the Giambellino-Lorenteggio neighbourhood, we aim to transform a semi-central district into a greener, more liveable, and inclusive space. This intervention focuses on rebuilding public housing with aims of improving living conditions and integrating sustainable urban mobility solutions.
- **Ireland (Dublin):** The Irishtown & Ringsend area, designated as a 'Decarbonising Zone,' presents an urban setting undergoing significant gentrification. Our interventions here concentrate on reducing GHG emissions from residential buildings through ambitious retrofit plans and the integration of a district heating scheme.

The pilot communities serve as living labs, where interventions proposed as part of the REGEN project are to be applied and evaluated in real-world settings. The experiences and learnings derived from these pilot sites will contribute to a rich repository of knowledge, best practices, and policy recommendations that can guide future urban regeneration efforts both within and beyond the borders of the participating countries.

Figure 1: Description of the case studies and main partners

DEMO CASE	Beckerich, Luxembourg	Laredo, Spain	Milano, Italy	Dublin, Ireland
Municipality Partner	Gemeng Beckerich	Ayuntamiento de Laredo	Comune di Milano	Dublin City Council
Main Partner	TIL, S&A, LISER, LIST, GTB Lab	TECNALIA, DINYCON, BEGIRUNE	AMAT, R2M IT, GTB Lab	CODEMA, Arden Energy
Neighbourhood type	Rural	Cultural Heritage	Urban, Among the "100" climate-neutral and smart cities by 2030	City centre district, Among the "100" climate-neutral and smart cities by 2030"

Nota Bene

In the REGEN project, the interventions (vision and objectives) were identified at a macro stage, and the potential stakeholders needed to create the initial working groups. Taking into account the initial 23 interventions and potentially new interventions arising from consultations with local stakeholders, there is the need to select and choose specific interventions based on context-specific criteria so that the interventions are adapted to the needs of the locality and community. This means that the implementation process should be iterative and reflective. This section aims to support this process.

All processes embedded below are to be reflected and designed with the initial working group that is part of the project consortium. The aim is to for the working group to then recruit other local stakeholders to then enrich their implementation process of the living labs.

This process involves three steps:

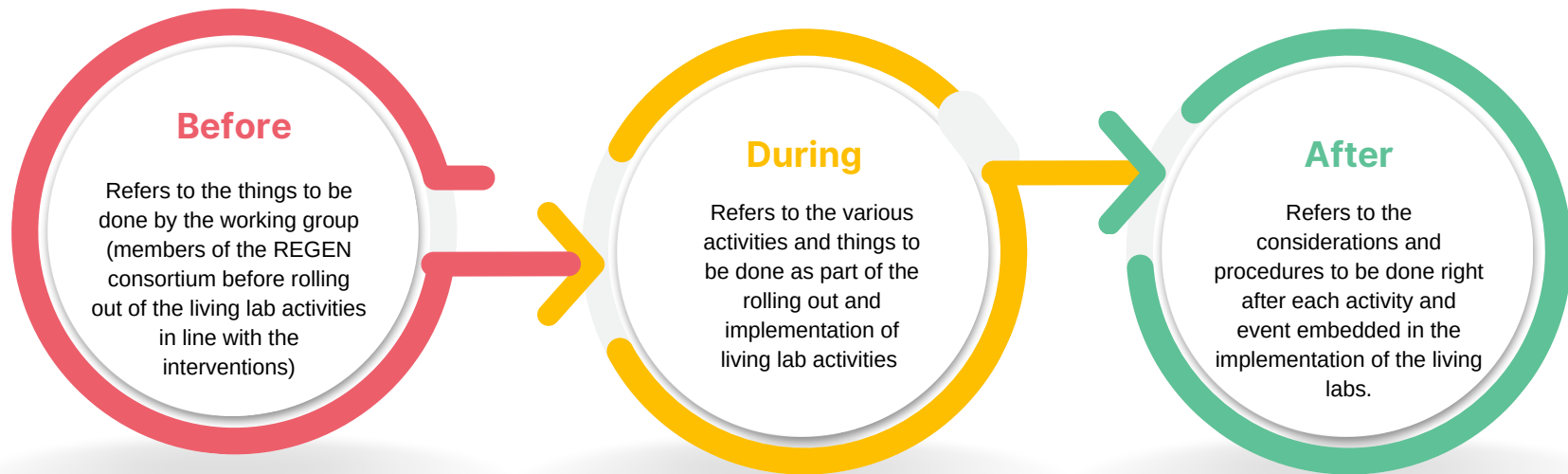


Figure 2: Steps involved in setting up and running the living labs as part of the REGEN project

Understanding Living Labs

Living labs represent an innovative, user-centred approach to creating, prototyping, validating, and refining complex solutions in real-life environments. They are defined as user-driven open innovation ecosystems integrated within a territorial context (e.g., city, region), involving public-private partnerships. Living labs operate under the principle that users, being at the heart of the innovation process, contribute not only to idea generation but also to co-creation and testing, ensuring that solutions are both practical and tailored to real-world needs. In this context, living labs operate as intermediaries/orchestrators among citizens, research organisations, companies and government agencies/levels (See ENoLL).

Principles of Living Labs

The core principles of living labs include:

- **Co-creation:** Engaging all stakeholders, especially end-users, in the creation process to ensure outcomes meet actual needs.
- **Exploration:** Investigating and experimenting with innovative ideas, technologies, and processes in real-life settings.
- **Experimentation:** Testing concepts, products, services, and systems in live contexts, allowing for immediate feedback and iterative design cycles.
- **Evaluation:** Assessing the impact, sustainability, and scalability of innovations openly and transparently.

The European Network of Living Labs also proposes some core principles that distinguish living labs from other labs, user-centred products, or multi-stakeholder innovation labs. These include:

- **orchestration**, or the convening nature of living labs (that distinguishes them from e.g. corporate innovation)
- **real-life and often real-time monitoring** (that distinguishes living labs from e.g. innovation labs)
- **citizen science / open data collection** (that distinguishes them from e.g. social community labs), etc.



An example of Living Lab in Urban Regeneration

Living labs have evolved from mere concepts to vital instruments of innovation in urban development. Initially focused on technological advancements, their scope has broadened to encompass social, economic, and environmental innovations, making them instrumental in addressing the multifaceted challenges of urban areas. This evolution reflects a growing recognition of the complexity of urban systems and the need for holistic, integrative approaches to innovation.

Living labs[3] are now seen as platforms for collaborative problem-solving, bridging the gap between research and application while fostering partnerships across sectors. They facilitate the transition from traditional top-down development models to more inclusive, bottom-up approaches that prioritize stakeholder engagement and sustainability.

The Collaboratorium for Climate Adaptation: A Case Study from Greater Copenhagen Living Lab[4]

Overview	Project Execution	Achievements	Outcomes
The ENERGY & WATER Living Lab, alongside CALL Copenhagen and the Greater Copenhagen Utility, developed the Collaboratorium for Climate Adaptation. This initiative aimed to empower communities in Copenhagen to actively participate in climate adaptation projects through an innovative online platform featuring interactive maps and 3D models.	Between January 2018 and June 2019, the project was implemented in two suburban neighborhoods of Copenhagen, engaging 500 citizens in the participatory planning process. The online platform served as a critical tool for bridging the gap between citizens and key stakeholders, including city planners, utility engineers, and architects, by making complex technical data accessible and interactive.	• Enhanced Engagement: The project's drone and data collection workshop was highly successful in capturing and maintaining citizen attention and raising awareness about climate adaptation needs. • Informed Discussions: The use of StoryMaps significantly enriched discussions among citizens, providing clarity on technical aspects and prerequisites for proposed adaptation projects. • Empowered Decision-Making: Through 3D models, citizens were able to visualize proposed constructions, conduct shadow analyses, and engage in informed dialogue about the placement and impact of these projects.	The Collaboratorium for Climate Adaptation marked a significant advancement in participatory planning for climate resilience. By leveraging digital tools to make data more accessible and engaging, the project facilitated meaningful collaboration between citizens and authorities. This approach not only improved the quality of climate adaptation initiatives but also fostered a deeper understanding and commitment among community members towards sustainable urban development.

[3] Vanmeerbeek et al., 'Quelles Sont Les Conditions d'implémentations d'un Living Lab Dans Le Domaine de La Santé En Région Wallonne?'

[4] ENERGY & WATER - Frontpage (energiogvand.dk)

The Relevance of Design Thinking in Living Labs and Urban Regeneration

In the context of living labs and urban regeneration, design thinking serves as an interesting tool for fostering innovation and addressing complex urban challenges. Its user-centered focus ensures that solutions are grounded in real-world needs and opportunities, making it particularly relevant for projects aiming to improve urban environments and enhance the quality of life for city dwellers.

Design thinking encourages cross-disciplinary collaboration and creative problem solving, both of which are essential in managing the complexity of urban regeneration projects. It helps stakeholders to navigate uncertainty, experiment with novel solutions, and adopt a more flexible and adaptive approach to urban development. By integrating design thinking into living labs, cities can foster a culture of innovation that prioritizes people's needs, leverages technology effectively, and achieves sustainable urban transformation.



Design Thinking in Living Labs

Design thinking[5] is a human-centered approach to innovation that integrates the needs of people, the possibilities of technology, and the requirements for project success. It is both a mindset and a process that involves several key stages: empathize, define, ideate, prototype, and test. This methodology encourages a hands-on approach to creating innovative solutions, emphasizing rapid prototyping and iterative testing to explore new ideas and challenge assumptions.

1. Empathize: Understanding the needs, motivations, and behaviours of the people for whom you are designing.

2. Define: Clearly articulating the problem based on insights gained during the empathize phase.

3. Ideate: Generating a broad set of ideas to address the defined problem, pushing beyond obvious solutions.

4. Prototype: Transforming ideas into tangible forms so that they can be experienced and evaluated.

5. Test: Sharing prototypes with users to gain feedback, learn about preferences and limitations, and refine the approach.

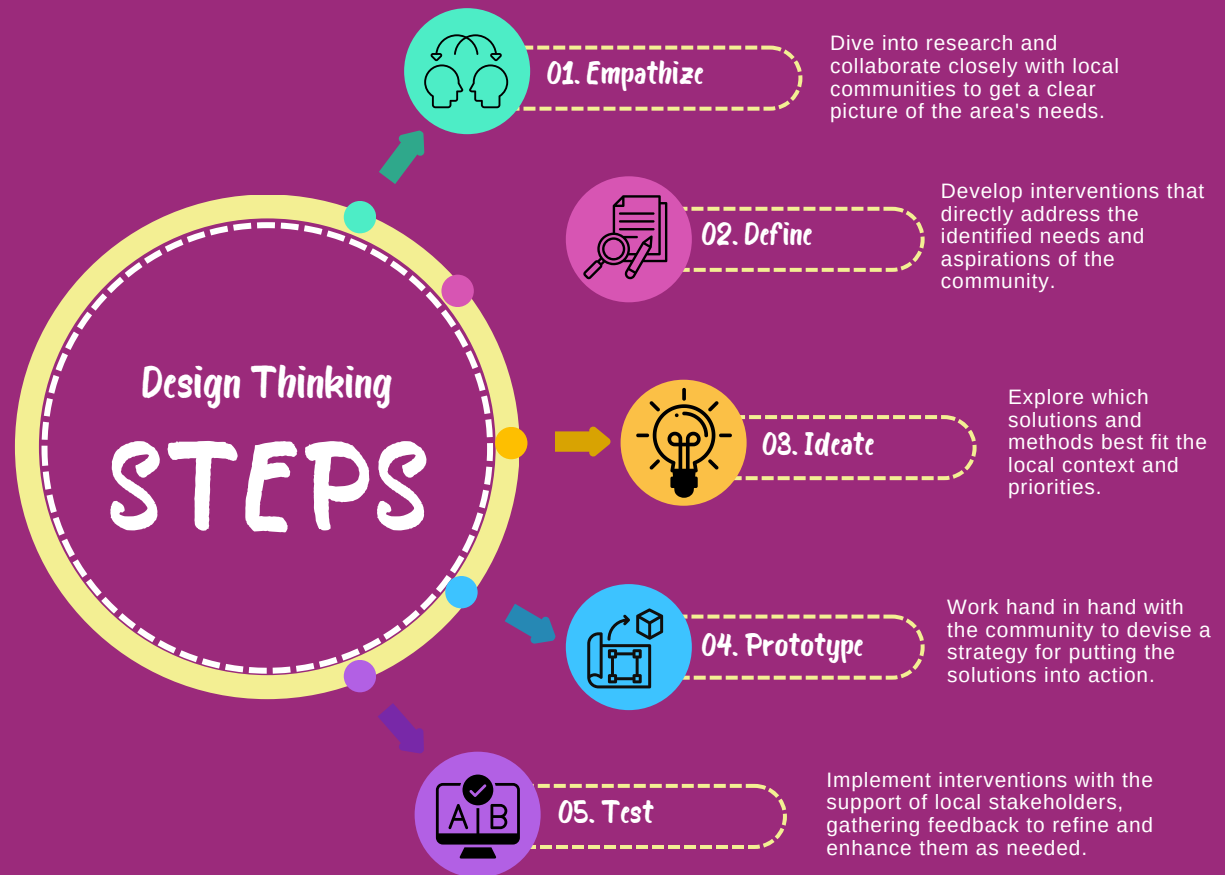


Figure 3: Design Thinking Methodology in the REGEN Project.
Author: Gilles E. ESSUMAN.

[5] Design thinking, as a distinct approach to problem solving, emerged in the mid-20th century, evolving through various disciplines. Initially mentioned by Herbert A. Simon in 1969, it was later defined by Nigel Cross in 1982 as a solution-focused process. Peter Rowe's 1987 book further explored design thinking in architecture. The term became mainstream in the 1990s, notably through IDEO's development of practical toolkits. Richard Buchanan's 1992 article highlighted design thinking's role in addressing 'wicked problems', integrating specialized knowledge for complex challenges. The Hasso Plattner Institute of Design at Stanford, founded in 2004, played a crucial role in teaching and popularizing design thinking. Its applications extend across business, education, and computer science, facilitating innovation, creative learning, and user-centric design in technology.

The Double Diamond metaphor

At the heart of the design thinking methodology lies the Double Diamond metaphor, a visual representation that captures the process's dynamic and iterative nature. This metaphor is divided into four distinct phases, organized into two broad diamonds that represent diverging and converging thinking:

1. **Discover (First Diamond, Diverge):** The process begins with an open-minded exploration, seeking to understand the people for whom we are designing. This phase involves empathizing with users to gather deep insights into their experiences, problems, and needs.
2. **Define (First Diamond, Converge):** Insights from the discovery phase are synthesized to define the core problem to be solved. This sharp focus on the problem sets the direction for ideation.
3. **Develop (Second Diamond, Diverge):** With a clear problem definition in place, the process opens up again to explore a wide range of solutions through brainstorming and ideation. This phase encourages creativity and the generation of multiple ideas to address the defined problem.
4. **Deliver (Second Diamond, Converge):** The final phase involves converging on a solution through prototyping and testing. Solutions are brought to life, iteratively tested, and refined based on feedback, leading to a solution that is both innovative and grounded in users' real needs.

The Double Diamond metaphor emphasizes the importance of both expanding thought to generate diverse ideas and focusing thought to refine and test those ideas. This balance between exploration and execution is critical to the design thinking approach, ensuring solutions are not only innovative but also viable and user-centered.

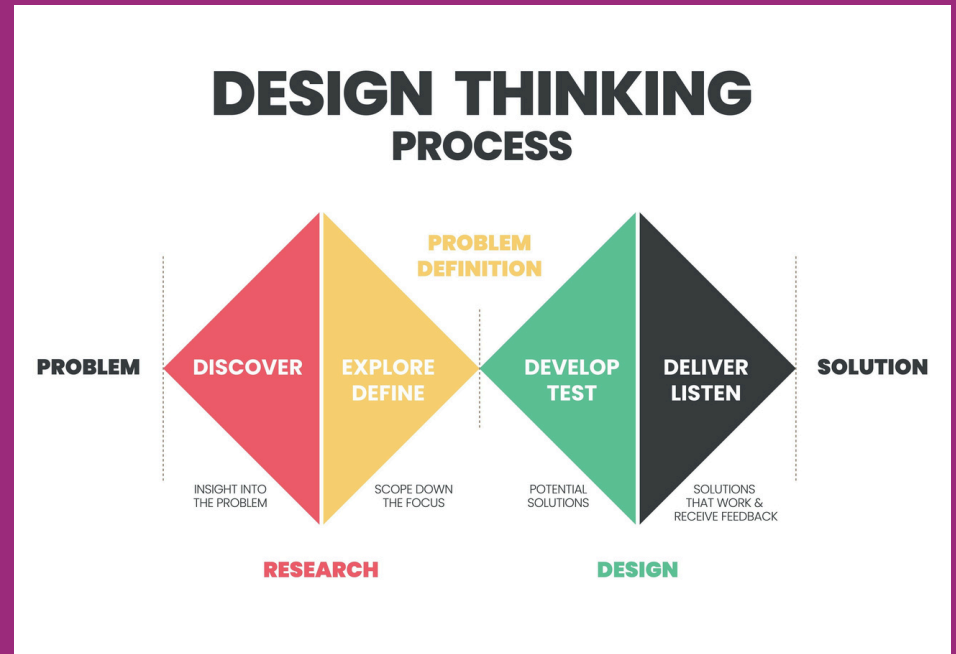


Figure 4: The Double Diamond Metaphor [6]

[6] The Double Diamond Approach, <https://www.neumind.co.uk/blog/2022-07-13-design-blog/>
Also, see:

- Saad, Ezzat, et al. "Double diamond strategy saves time of the design process." *International Design Journal* 10.3 (2020): 211-222.
- Gimenez, Patricia, and Jennifer Johnson. "The Double Diamond as Metaphor for the Research Process." (2020)

Operational Framework for Living Labs

Creating a living lab is a deliberate and methodical process that involves careful consideration of several critical factors. This section outlines the essential considerations and steps involved in setting up[7] a living lab, emphasizing stakeholder engagement, management, and the legal and ethical frameworks guiding these collaborative environments. Based on the literature on living labs and design thinking, such as the works by Schuurman (2015) who delineates the operational and management structures necessary for living labs, and the principles outlined by Brown (2008) on design thinking as a method for creative resolution of problems or issues, this section proposes key considerations and steps in setting up living labs that aim to incorporate the “imaginaries”[8] of the targeted community into its developmental process.

The concept of “imaginaries” in the context of living labs and urban regeneration is deeply rooted in the integration of community aspirations, cultural narratives, and the envisioned futures of the stakeholders involved[10].

These imaginaries play a crucial role in shaping the design and innovation processes by embedding the socio-cultural dimensions and expectations of the community within the technological and spatial interventions proposed. Engaging with the imaginaries of the community enables living labs to transcend traditional boundaries of innovation, fostering solutions that are not only technologically advanced but also socially inclusive and culturally resonant.

Incorporating these imaginaries necessitates a participatory approach that leverages design thinking methodologies to ensure that the solutions envisioned are both reflective of the community's needs and aspirations and are practically achievable. This involves a series of iterative steps - from empathizing with the community to define the problem, ideating solutions, prototyping, and testing - that are informed by the community's input at every stage. Such an approach ensures that the living lab acts as a facilitator for community-driven innovation, where the development process is as much about technological and urban planning solutions as it is about reinforcing community identity, belonging, and resilience.

[7] This section aims to give an overview of the processes embedded in setting up a living lab as part of the interventions proposed in the REGEN project. Detailed tools are proposed in the subsequent sections about tools and resources.

[8] Imaginaries here refer to the various values, institutions, and symbols through which people imagine their social whole, their ideal situation and environments Castoriadis, The Imaginary Institution of Society; Gezerlis, ‘Castoriadis and the Project of Autonomy. A Review of the Imaginary Institution of Society’; Latouche, ‘Imaginary, Decolonization Of’; Thompson, ‘Ideology and the Social Imaginary’.



I. Preliminary Considerations and Steps

This stage has 3 steps, **however, for the REGEN project, these steps have already been partly tackled as part of initial research and contacts made with different stakeholders in the various demo sites.**

Step 1: Define the Vision and Objectives (each demo site has already been proposed some potential interventions –that are yet to be refined with the working group and newly identified local collaborators)

Step 2: Identify and Engage Stakeholders (the working group already has core members who are consortium members and are tasked to recruit new local community members and stakeholders to enrich the project's local team and community to ensure that the interventions and project englobes local community's ideals and vision)

Step 3: Choose a Suitable Location (While the demo sites have already pinpointed some neighbourhoods, specific places and spots for the deployment of actions and activities are to be co-selected, co-designed and co-opted with the local community.)



Step 1: Define the Vision and Objectives

Defining the vision and objectives provides a clear direction and purpose for the living lab. It ensures all stakeholders are aligned towards common goals, facilitating focused and coherent efforts. Utilizing the SMART criteria (Specific, Measurable, Achievable, Relevant, Time-bound) in this process ensures that objectives are actionable and conducive to evaluation.

Example: In the REGEN project, one selected regeneration intervention could be "To reduce urban mobility carbon emissions by 20% in the downtown area within five years."

Guidance: Among many other tools, the working group can utilize the SMART framework to refine this objective:

- **Specific:** Identify the precise area of focus (urban mobility carbon emissions in the downtown area).
- **Measurable:** Set a quantifiable target (20% reduction).
- **Achievable:** Ensure the target is realistic with available resources.
- **Relevant:** Align with broader urban regeneration and sustainability goals.
- **Time-bound:** Set a deadline (five years).

To facilitate this process, engage potential stakeholders in workshops utilizing tools like goal-setting templates to brainstorm and refine objectives collaboratively.

Proposed tool: A vision development strategy[9] tool can be used to define the desired future scenario for the city. By involving stakeholders in various workshops, the vision development tool kit provides a visualized format of the vision and plans discussed among stakeholders.



[9] As proposed by the ENOLL in their toolbox for living labs.

Step 2: Identify and Engage Stakeholders

Stakeholder engagement is crucial for gathering diverse insights, fostering community buy-in, and ensuring the living lab's initiatives are grounded in real-world needs. Effective engagement leverages mapping and visualization techniques to identify and understand the roles, interests, and potential contributions of each stakeholder group. In this process, it is also important to actively seek participation from diverse community segments, including underrepresented groups, to ensure that a wide array of perspectives and experiences are considered in the innovation process.

Example: For a REGEN intervention focusing on creating green spaces in urban areas, key stakeholders might include local residents, city planners, environmental NGOs, and businesses.

Guidance: Employ stakeholder mapping tools to visualize the ecosystem of involved parties. Use tools like stakeholder engagement matrices to categorize stakeholders by their influence and interest.

Proposed tool:

Identify the most important stakeholders to be involved in the challenge in your city. In this exercise, you will use the technique of Stakeholder Mapping.

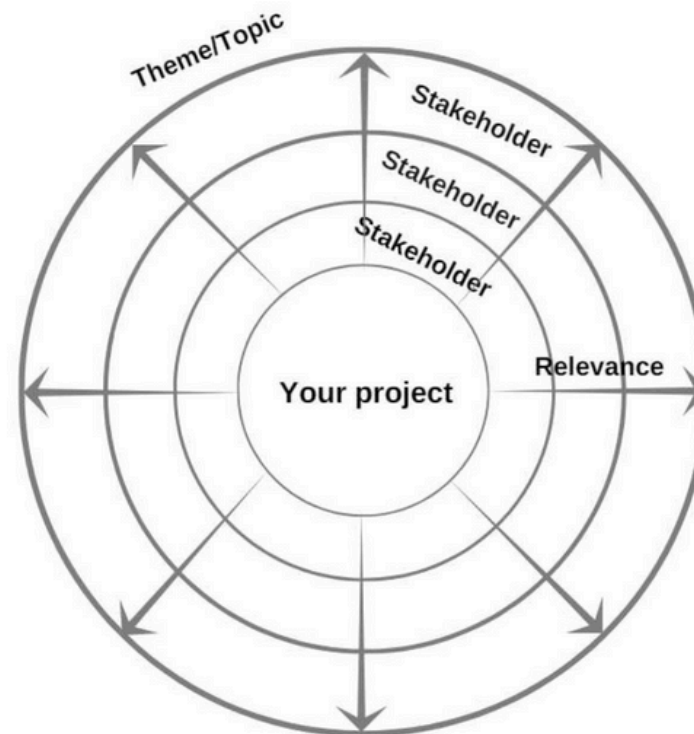
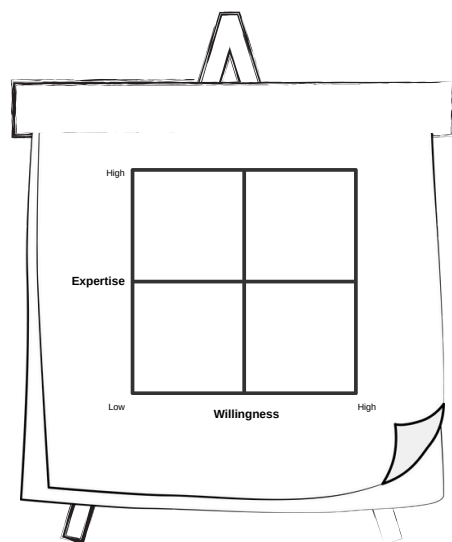


Figure 5: Tool for Stakeholder Mapping process[10]

1. Start by writing down your project at the centre of the map.
2. Then identify the topics your project deals with.
3. Place all the partner organisations right across the circles to see who is closer or further away from you (and the project you carry out) – the closer they are, the more influential they are.
4. Once the map is done, discuss it with the stakeholders/ partner organisations and reposition them if it is necessary.

[10] As proposed by Limitless Consortium. Available at: <http://www.limitless.lu/wp-content/uploads/2018/07/LIMITLESS-STAKEHOLDER-RELEVANCE-MAPPING.pdf> (consulted on 19/04/2024)

**Materials:**

2x A0 flipover sheet, felt pens, Pens

Step 3:**Choose a Suitable Location**

The selection of a location is integral to the living lab's operational success. It influences the feasibility of projects, the engagement of the community, and the generalizability of findings. A participatory approach to selecting the location ensures that it resonates with stakeholder needs and preferences, enhancing the relevance and impact of interventions.

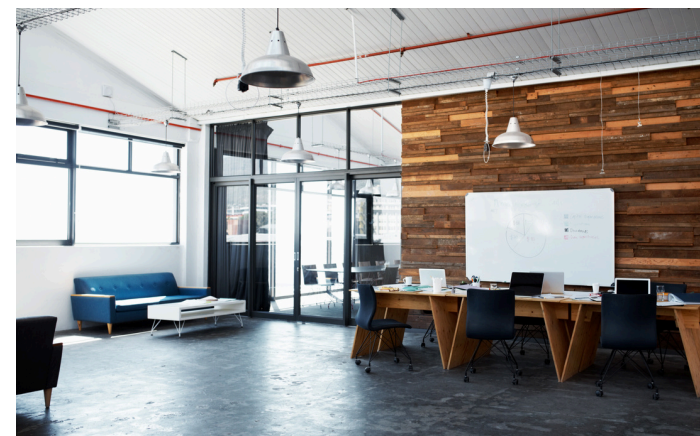
Example: If the targeted intervention aims to enhance community health through improved urban green spaces, potential locations could vary from densely populated neighborhoods lacking greenery to areas near schools requiring safe play spaces.

To democratize the location selection process, incorporating both high-tech and low-tech tools can cater to diverse stakeholder groups, ensuring inclusivity and broad participation:

1. Participatory GIS (Geographic Information System):

High-Tech Option: Utilize participatory GIS tools to enable stakeholders to input data on potential sites, visualize geographic features, and collectively assess site suitability based on established criteria like accessibility, community need, and spatial availability.

QGIS with a participatory plugin or ArcGIS with its community engagement tools can facilitate this process.

**2. Community Mapping Workshops:**

Low-Tech Option: Conduct mapping workshops using printed maps and stickers or markers for stakeholders to indicate potential locations.

This method allows participants who may not have access to or are not comfortable with digital tools to contribute their local knowledge and preferences.



3. Digital Surveys and Polls:

- Hybrid Option: Deploy digital surveys and polling tools like SurveyMonkey or Google Forms to gather broader community input on preferred locations. These tools are accessible to a wide audience and can complement in-person workshops by capturing the perspectives of those unable to attend.



4. Mobile Mapping Applications:

- Accessible Tech Option: Leverage user-friendly mobile applications like Mapillary or Crowdmap that allow community members to document and share observations about potential locations through photos and notes. These apps are generally intuitive and can engage younger demographics or tech-savvy stakeholders.

5. Community Walkabouts:

- No-Tech Option: Organize guided walks through potential areas with community leaders and stakeholders to observe, discuss, and evaluate the suitability of each site firsthand. This approach fosters a tangible connection to the space and encourages open dialogue among participants.

6. Interactive Web Portals:

- Innovative Tech Option: Develop an interactive web portal where stakeholders can explore potential locations virtually, learn about their characteristics, and submit feedback or vote on preferences. This method can reach a wide audience and facilitate detailed understanding and engagement.

By employing a mix of these tools, the living lab can ensure a comprehensive and inclusive process for selecting a location that not only meets project objectives but also resonates deeply with the community's needs and aspirations.



II. Participatory Design Process in Action

During – Participatory Design Process in Action

This stage has 5 steps proceeding from the previous 3. At this stage, it is expected that the working group has been enlarged to include new local actors in order to ensure a good representation of the various profiles of individuals and communities in the demo sites. All steps here should therefore include these new individuals as members of the working group who are to be considered as accomplices and core team members in the design process of the interventions for the community.

To facilitate the differentiation between the initial consortium working group and the new working group consisted of initial + local community members, we refer to the consortium members in charge of the entire process as **Core Working Group** and the new group as **Extended Working Group**.

Caution!

The Core Working Group remains in charge in order to facilitate the process as they are well informed about the specificities of the project but need to modulate their positionality to ensure that the new members feel part of the Extended Working Group and are able to contribute efficiently and effectively to the entire design process.



The participatory design process, underpinned by design thinking, is a powerful methodology for tackling urban regeneration projects. It ensures that solutions are not only innovative and viable but also deeply rooted in the community's needs and aspirations. Here, we illustrate this process through the stages of Empathize, Define, Ideate, Prototype, and Test, using proposed interventions in the REGEN project as an example.

Stage 1: Empathize

The Empathize phase is foundational in understanding the lived experiences, needs, and challenges of the community members. It involves immersive engagement to gather deep insights that inform the design process.

Techniques for Understanding Community Needs and Challenges:

- **Ethnographic Research:** The living lab working groups can immerse themselves in the community, observing and engaging with residents in their daily lives to gain deep insights.
- **Stakeholder Interviews:** Conduct one-on-one interviews with a diverse cross-section of the community, including marginalized groups, to understand their unique perspectives.
- **Community Workshops:** Facilitate workshops that bring together various stakeholders to share their experiences and concerns in a collaborative setting.

Example: For a project aimed at creating green communal spaces in urban areas, the empathize stage might involve spending time in the target neighbourhoods to observe public space usage, conducting interviews with residents about their recreational needs and desires, and mapping out key community groups and local authorities.

Proposed Guidance & Tool: To conduct field observations and community interviews, the working group could use a low-tech tool like printed interview guides and observation sheets to document findings. Alternatively, a high-tech option could involve using mobile apps to record and categorize observations in real-time, such as Evernote or Google Keep, which allow for easy sharing and analysis of data.

Stage 2: Define

In the Define phase, the insights gathered are synthesized into a clear problem statement that identifies the core issues to be addressed. This serves as a guiding light for the ideation process.

Example: From the empathize phase, if residents express a need for more child-friendly green spaces, the problem statement could be, "How might we redesign urban green spaces to be more accessible and engaging for children?"

Proposed Guidance & Tool: Use the affinity diagramming technique^[11] to organize insights and identify themes. A hybrid tool option here would be sticky notes (low-tech) for initial brainstorming, combined with a digital platform like Miro (high-tech) for collaborative sorting and theme identification.

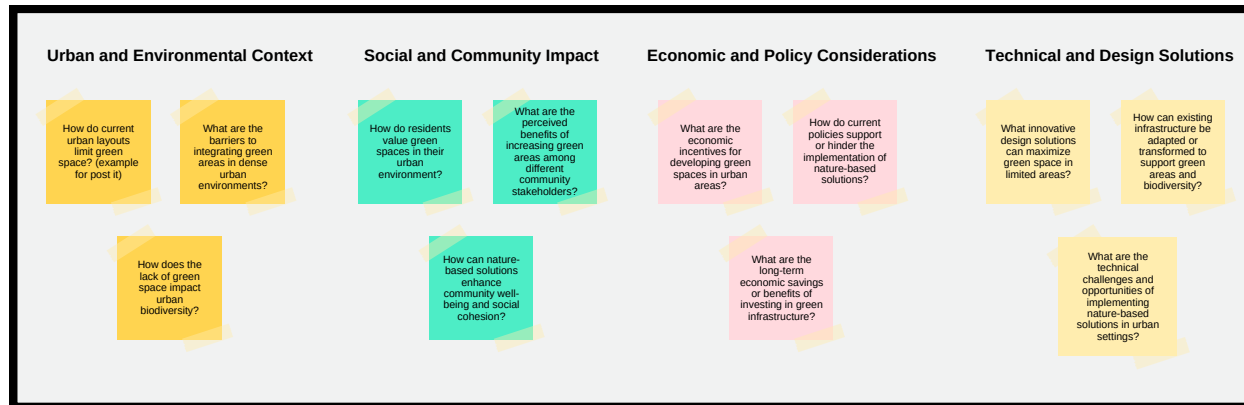


Figure 6: Example of use of affinity mapping technique through Miro platform

Using the Affinity Map

Create an affinity map by categorizing all insights gathered during the Empathize stage under these themes. This visual organization helps identify patterns, pain points, and opportunities, which can then inform a comprehensive problem statement for the Define stage. This process ensures a holistic approach to defining the problem, incorporating multiple perspectives and leveraging diverse insights to drive innovative, effective solutions.

Problem Definition

Using the insights grouped under each theme, formulate a problem statement that clearly articulates the challenges and opportunities of increasing green areas through nature-based solutions. This problem statement should reflect the complex interplay of urban planning, community needs, economic considerations, and innovative design required to successfully implement the intervention.

^[11] An affinity diagram (sometimes known as an affinity map or affinity chart) is a visual tool that helps you organize information from a [brainstorming session](#). You'll sort ideas into different groups or categories based on their relationships to one another

Stage 3: Ideate

The ideation stage is the creative phase where diverse ideas are generated to address the defined problem. It encourages thinking beyond conventional solutions to explore a wide range of possibilities.

Creative Ideation Techniques for Generating Solutions:

- **Brainstorming Sessions:** Use brainstorming sessions to generate a wide range of ideas, encouraging creativity and out-of-the-box thinking.
- **Mind Mapping:** Create mind maps to visually organize ideas and explore connections between different concepts.

Collaborative Workshops and Brainstorming Sessions:

Organize collaborative workshops that bring together diverse stakeholders to ideate solutions, leveraging the collective creativity and knowledge of the community.

Example: In ideating solutions for green communal spaces, the project might use brainstorming sessions to generate ideas like community gardens, green rooftops, and pop-up parks. Collaborative workshops could involve residents in co-creating designs for these spaces.



Proposed tools: A low-tech tool like flip charts or whiteboards can facilitate in-person sessions. Alternatively, use high-tech tools like IdeaFlip or Stormboard for virtual collaborative sessions, allowing participants to contribute ideas regardless of their location.

Stage 4: Prototype

Prototyping involves creating tangible representations of ideas to explore their feasibility and impact. This iterative process allows for refinement based on feedback and further exploration.

Example: For the green communal spaces project, prototypes might include a scale model of a community garden layout and a mock-up of a green rooftop. Community feedback sessions could help refine these ideas, incorporating local knowledge and preferences.

Proposed Guidance & Tool: Build prototypes using everyday materials (low-tech), such as cardboard or clay, for physical mock-ups. For a high-tech approach, utilize 3D modeling tools ranging from 3D printers to software like SketchUp or Tinkercad to create virtual prototypes that can be explored and iterated upon digitally.



Stage 5: Test

The Test phase is where prototypes are introduced to the community for feedback. Observations and insights gained here are crucial for refining solutions and ensuring they meet the community's needs.

Creative Ideation Techniques for Generating Solutions:

- Select one or more prototypes for pilot testing in the community. Implement these on a small scale to assess feasibility, impact, and community response.
- Evaluate the outcomes against the project's goals and objectives, collecting both quantitative and qualitative data.

Engaging the Community in Testing and Feedback:

- Involve the community actively in the pilot phase, seeking their input and experiences.
- Use surveys, focus groups, and observation to gather comprehensive feedback on the pilot's effectiveness and impact.

Example: A pilot project might involve creating a temporary community garden in an underutilized lot. Throughout the pilot, the project team measures community engagement, improvements in well-being, and environmental benefits. Community workshops post-pilot provide valuable insights into the project's success and areas for improvement.



Proposed Guidance & Tool: Use low-tech tools like feedback forms and discussion groups to gather qualitative feedback. Alternatively, employ high-tech tools like online surveys created with Google Forms or SurveyMonkey to collect and analyze feedback efficiently.

For a more interactive approach, augmented reality (AR) tools could allow community members to visualize changes in their physical environment directly through their smartphones, providing a futuristic yet accessible means to gauge reactions and gather feedback.

Overview of the full design thinking process through a case study[12]

This case study was an experimental process during which the working group, composed of 5 NGO project managers tested the design thinking methodology by choosing an intervention purposed for an EU community. The different stages are explained by the group starting from how they approached each of the steps and the tools that they used to attain their objectives.

[12] Case study was mobilized from the [IDEA4EU](#) project (2019-1-IS01-KA105-051112), co-facilitated by Gilles ESSUMAN, research associate at LISER involved in the execution of REGEN WP1.

Tourists are attracted by the mainstream destinations

Case Study

Empathize

To work on empathize, you start by analyzing the different causes of the problem by asking the question of WHY. (10 questions).

In this case, the questions are:

1. Governments are funding the development of the already popular areas.
2. When travelling for the first time in a country, tourists choose to visit the capital with the most things to do and see.
3. Different cuisines can be found in big cities.
4. The media receive funding for promoting certain areas.
5. People are following the mass mindset.
6. Lack of good infrastructure in rural areas.
7. More possibilities and more experiences can be found in the big cities.
8. It's trendy to visit the top 10 destinations in order to make your social media look good.

Then we proceed to find the different stakeholders which are linked to the WHYs we identified. These include **Citizens, Government, Tourists, Hospitality industry, F & B industry, Touristic agencies, Marketing and mass media industry.**



After identifying the stakeholders, we can then proceed to plan interviews with them in order to better assess the problems and clarify them. For that, the questions are brainstormed as follows:

- How often do you travel?
- Where have you been so far?
- What do you consider a mainstream destination and why?
- Do you personally prefer the mainstream destination?
- Why do you think people are choosing mainstream destination?
- What do you expect to see in a country you visit for the first time?
- Would you be interested in trying the local experiences?
- What would make you visit a place outside the capital?

- Do you do any preparation before starting a trip?
- Would social added value make you choose a rural area over a mainstream one?
- Do you think the mass following mindset is affecting the tourism industry?
- Does your hobby motivate you to choose your travel destination?
- Do you prefer solo travelling or travelling in a group (family or friends)?
- How does this affect the way of travelling and destination?

The interviews helped us know the realities of the problem from the stakeholders' point of view and this helped us narrow down our initial problem to this.

Define

After the interview, we proceeded to analyze the data gathered and juxtapose it to the initial problem and the reasons that we had. We selected the strongest WHYs as related and relevant to what the interviewees said.

- Most advertised.
- Followings the mass mindset.
- It's trendy to go the new destinations.
- Transportation Accessibility.
- Financial reasons.
- Lack good infrastructure in rural areas.
- More possibilities and experiences can be found in a mainstream place.

Based on the new reasons and facts that we gathered, we could rephrase our new problem and specify it.

In Iceland, tourists visit Reykjavik and the area 100 kilometres further, but not the rest of the country. This is because the area of Blue Lagoon is highly advertised, it's expensive to move from one place to another, and there are more things to do inside the city.

We proceeded with the flipchart presentation and feedback gathering.

This is what led us to the new problem, and we will continue to the next stage based on this problem, which has hereby been defined.

Ideation

During the ideation process, we came up with 20 solutions that could help our problem. We started with suggestions of good financial management, creating accommodation like glass houses for glamping, cheaper transportation, bicycle roads, e-bikes, and creating new road signs regarding accessibility to rural areas. Furthermore, by promoting adventure tourism and local cafes and restaurants, we can take advantage of the filming industry and our network. After using the matrix on importance and feasibility, we narrowed down our solutions and chose six of them, including organising events and festivals, finding specific experiences outside of Reykjavik, creating a platform for excursions outside of Reykjavik, defining our target group, working with influencers and local companies, and collecting data regarding our main problem.

The first discussion was regarding the target group. Though one of the project team members from Iceland mentioned how more Chinese tourists come to Iceland for luxury shopping and to see nature, However, they only go to mainstream destinations like Blue Lagoon. Then somehow, the idea of breathing fresh air outside of Reykjavik came up with a conversation on how it could be promoted.

Prototype

Through this process, a different idea was introduced with a main solution and objective. The initial concept was a wellness retreat project with the slogan "Get cool, you fool," encouraging people not to fool themselves, to destress, recharge, and find themselves in the North of Iceland through this retreat. There was a discussion regarding the target group, which was defined as people over 35 who have more money, are stressed by work, and are interested in a healthy lifestyle and recovering their souls and bodies.

After receiving some feedback, it was realised that the slogan could sound offensive to customers and lead them to think they were being referred to as fools. Therefore, a new brainstorm was started to select a new slogan and description. Some of the suggestions were "Get cool in Iceland," "Recharge your batteries," "Self-refreshment in the North," and "North wellness retreat." A new slogan was proposed as "Breath in the North," with a new description as "Recharge yourself in the North of Iceland." A new 5-day retreat was set up in Hjalteyri, a small village in the north of Iceland. This retreat will provide yoga, meditation, breathing techniques, stress management workshops led by a certified instructor, and connection with nature activities like hiking, mountain biking, skiing, mud spas, thermal baths, beer baths, and Icelandic storytelling evenings, always depending on the needs and preferences of the group.

Of course, the target was people who were eager to explore their inner selves. Breathe-in North will be able to help with guidance and space to grow.

Proceeding to the technical details, the following were established:

- **Duration:** 5 days, twice a month, April - October
- **Number of people:** 15 per retreat
- **Accommodation:** Hotel Hjalteyri in Iceland since this project itself (Idea4u) was funded by the Iceland National Agency, the perception that Iceland as a country has awesome socio-cultural and environmental life quality which can be promoted to tourists as an awesome offer that cannot be found anywhere else in Europe.
- **Advertising:** Flyers, social media posts, influencer marketing, website, and word of mouth.

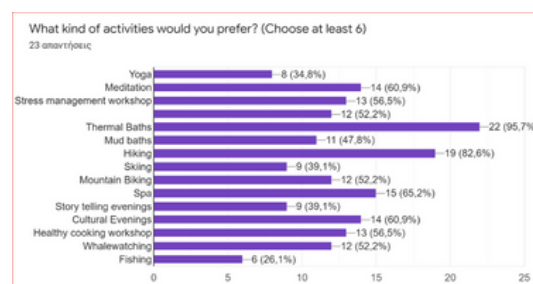
The next step is to create a questionnaire in order to find out what the preferences of the potential customers are regarding the price, activities, duration, period, advertisement, whom they would experience the retreat with, and the number of trainers.

Test

The testing phase started by inviting all the participants from the other five groups to present the idea, show them the flyer, and have them fill out the questionnaire.

Results of the questionnaire:

- 23 people
- 52.2% females
- 47.8% males
- Ages: 18-44 (23-30 main group)
- 60.9% chose the retreat to last for 4 to 7 days
- Period: Summer- 78.3% ; Spring & Winter- 30.4%



The highest interest was in thermal baths, hiking, meditation, spas, cultural evenings, and stress management workshops. Fishing was probably out of the plan.

For the price, most of them would pay between 1500 and 3000 euros. A lot of people were interested in discounts because they were friends.

Valuable Feedback:

- "I would make groups of 10 people"
- "Do this! I will definitely be there to enjoy!"
- "Some challenge, so that you are sure the group is greater together. For example, say one day will sleep outside or something like that. I would like to have a group with similar values"

There were some very important suggestions regarding:

- Focusing on the uniqueness of the North of Iceland and making it stand out from the rest of the country or other countries.
- Making a sample of the schedule.
- Changing the pictures in the flyer and bringing more coziness and movement to their minds food that will be provided since many many people are vegan and gluten/dairy free.
- A winter retreat would also be attractive to people like the harsh winter and Iceland is known for that.
- Making separate retreats for business as it would be a great team building activity between colleagues and employers. it combines getting knowledge, de-stressing and going back to work refreshed, with new ideas and more effective in the workforce.
- There were also some suggestions about splitting retreats into yoga/chilled one.

A very important outcome is that it was realized that this project wasn't only going to solve the tourism problem but also help people with mental health issues, especially in Northern European countries.

III. Evaluating the performance of the living labs and the related interventions

Evaluating the impact of living labs and their related interventions is a pivotal step in the iterative process of urban regeneration. It not only measures the effectiveness of the interventions but also fosters a culture of continuous learning and improvement. Through this evaluation, stakeholders can ascertain the extent to which the interventions have met their objectives, the benefits they have conferred upon the community, and identify potential areas for refinement.

The Core Working Group needs to have recurrent meetings to evaluate their meetings and interactions after each Extended Working Group event. This is to help understand the dynamics of the living labs and tackle any arising issues. Prior to this process, if an intervention or an event has been organised with the Extended Working Group, it is important to collect feedback and engage with the community in order to implement necessary adjustments and changes as and when needed and necessary for the sustainability of the living labs process.



The Importance of Impact Evaluation

Impact evaluation serves several crucial purposes. Firstly, it validates the interventions' effectiveness in solving the specific challenges they were designed to address. Secondly, it quantifies the value these interventions add to the community, whether through enhancing the quality of life, fostering economic development, or improving environmental sustainability. Furthermore, impact evaluation illuminates areas requiring improvement, thereby informing the decision-making process for future projects. This cycle of evaluation and adaptation is essential for the living lab's evolution and the sustained relevance of its projects.

An example of reflection activity as part of reflection with Extended Working Group can involve questionnaires:

Key Questions:

- What did you like about the event/activity?
- What did you wish should have been done?
- What went well, and what did not?

Steps:

1. Ask the participants about their personal hopes and aspirations in relation to the project's activity. At the end, check back to see if they were met. Why are they taking part? What do they hope to achieve?
2. Also inquire about what they hope to achieve with their efforts, and even what worries or unease they feel in relation to the intervention and the way the things have unfolded.
3. Try to get feedback about the core project team. Feedback on their activities will also be very useful for constant, iterative improvement. Questions about the organisation and team members can also be complemented with enquiries about suitability of venues, meeting times and their frequency.
4. Consider your next steps. How might you improve? Given what the participants now know, how might they improve the experience? After reflecting on all the positives and negatives of the project, applying some future-forward positive thinking can help make all the difference to the next iteration of activities.

You can also make use of interviews (*see the interview guide tool in appendix*)

Another tool is the Pilot Appraisal Tool:

Description:

A pilot appraisal is a great way to crosscheck the success of an event or activity embedded in an intervention. It can be a formal or informal session, but the objective is the same: to find out what went well and what could be improved. There are many methods for achieving this, but to overcome any group shyness in expressing criticism, an approach that pairs cards explaining the methods with some sticker-dot voting works nicely. Finally, this could be paired with a secondary task of planning a future pilot using insights gained from the appraisal.

Steps:

1. Start with a discussion. Set up a safe environment to talk about positive experiences and frustrations with the pilot. Record everything.
2. Using flashcards, write down the titles and a short description of the stages of your event/project so far.
3. With sticker dots, vote on the activities that were enjoyable and useful in one colour, and the activities that were frustrating or less useful in another colour.
4. At this point, you can dive into discussions on specifics. You can disregard the more negatively rated activities, as well as suggest activities that were perhaps missing from the previous event or intervention activity. This step is a great lead into the process of planning a new event as part of the intervention.

Steps to Conduct an Effective Evaluation

1. **Define Evaluation Criteria:** Start by establishing clear, measurable criteria against which the impact will be assessed. These criteria should align with the objectives defined during the design thinking process of the living labs and might include metrics related to community engagement, environmental benefits, or economic impacts.
2. **Gather Data:** Collect data relevant to the evaluation criteria. This could involve quantitative methods, such as surveys and usage statistics, or qualitative approaches, such as interviews and focus groups, to capture a broad spectrum of impacts.
3. **Analyze the Data:** Analyze the collected data to assess the intervention's performance against the predefined criteria. This analysis can help highlight successes, detect shortfalls, and uncover unforeseen outcomes.



4. Report and Reflect: Compile the findings into a comprehensive report that details the evaluation outcomes, including both successes and areas for improvement. Reflect on these findings with all stakeholders to derive actionable insights and guide the planning of future interventions.

5. Engage Stakeholders in the Evaluation

Process: Involve community members, project partners, and other stakeholders in the evaluation process to ensure a diverse range of perspectives is considered. This participatory approach can enhance the validity of the evaluation findings and foster greater community buy-in. Enable insights and guide the planning of future interventions.

Evaluating the impact of living labs and their interventions requires a nuanced approach that accommodates the complexity and multifaceted nature of these initiatives. Different stages of intervention implementation necessitate distinct evaluation strategies, guided by clear methodologies, to effectively measure and understand their impact.

During the Early Stages of Intervention Implementation

- **Purpose:** To gather ongoing feedback that can inform the development process, ensuring that interventions are responsive to community needs and expectations.

- **Guidelines:**

- Engage with a diverse range of stakeholders to gather a broad spectrum of insights.
- Establish clear, measurable objectives based on the initial design thinking process.

- **Factors to Consider:**

- The relevance of the intervention to the community's needs.
- Stakeholder engagement and participation levels.

- **Tools:**

- Low-Tech: Feedback forms and community meetings offer direct, accessible means to gather insights.
- High-Tech: Digital feedback platforms like Google Forms enable real-time data collection and analysis.

At the Conclusion of the Intervention

- **Purpose:** To assess the outcomes and overall impact of the intervention against its objectives.

- **Guidelines:**

- Compare pre-intervention data with post-intervention outcomes to quantitatively measure impact.
- Conduct qualitative evaluations to capture the nuanced effects of the intervention on the community.

- **Factors to Consider:**

- Long-term sustainability and scalability of the intervention.
- Unintended consequences or outcomes.

- **Tools:**

- Low-Tech: Post-project surveys and focus groups can provide in-depth insights into the intervention's impact.
- High-Tech: Analytics tools like Google Analytics for digital interventions, and GIS for spatial analysis, offer detailed outcome assessments.

Long-Term Evaluation Following Intervention Implementation

- **Purpose:** To understand the broader, long-term effects of the intervention on the community and the urban environment.
- **Guidelines:**
 - Identify and track long-term indicators of success beyond the immediate outcomes of the intervention.
 - Consider the integration of the intervention into wider urban planning and development strategies.

- **Factors to Consider:**
 - Changes in social, economic, and environmental indicators over time.
 - The intervention's contribution to overarching urban regeneration goals.
- **Tools:**
 - Low-Tech: Annual community reviews and storytelling sessions can capture evolving perceptions and impacts.
 - High-Tech: Longitudinal data collection platforms and social network analysis software provide insights into the extended effects and community network changes

Cross-Stage Evaluation Considerations

Across all stages of intervention implementation, several key considerations remain constant:

- **Stakeholder Engagement:** Continuous involvement of stakeholders is vital for all evaluation types, ensuring evaluations are reflective of diverse community perspectives.
- **Iterative Learning: Evaluation** should be seen as an ongoing process that feeds back into the living lab's strategy, promoting iterative improvements.
- **Transparency and Openness:** Sharing evaluation results openly with all stakeholders fosters trust and encourages collective ownership of outcomes.

Inspiring Tools for Effective Evaluation

- **Low-Tech Tools:** Community mapping with physical maps and stickers, paper-based feedback collection during workshops, and public exhibitions of outcomes for collective reflection.
- **High-Tech Tools:** Mobile apps for crowd-sourced feedback collection, data visualization software for presenting complex data in accessible formats, and online platforms for collaborative evaluation and discussion.

By employing a structured approach to evaluation, guided by these methodologies and tools, living labs can ensure that their interventions not only meet the immediate objectives but also contribute to the long-term vitality and resilience of urban communities. This comprehensive evaluation framework enables living labs to document their achievements, learn from experiences, and continuously refine their approaches to urban innovation.

Case study example

Suppose a living lab implemented a project to increase urban greenery and enhance public spaces. The impact evaluation might focus on criteria such as the increase in green space per capita, improvements in air quality, and changes in community use of public spaces.

Proposed tool and Guidance: Action planning^[13] is a powerful tool that can help clarify ideas, decide what actions have to be taken to reach particular objectives and check your own progress over time.

An effective action plan should give detailed timetable and set precisely defined actions to help achieve the intervention's goals. While outlining the action plan, the following aspects should be taken into account:

- Setting objectives that are achievable and measurable
- Prioritising tasks effectively; distinguishing between short-term and long-term tasks
- Identifying the actions that are needed to achieve the intervention's goals. This could be by arranging them in a chronological order, then setting a specific date for every single action

Working together on an action plan within a Living Lab can help build stronger relationships between all participants, while creating a deeper shared understanding of which action have to be taken in future in order to achieve common goals.

^[13] As proposed by e-genius as part of the SMACC – Smart City Coaching. Available at: https://www.e-genius.at/fileadmin/user_upload/livinglabs/en/Living_Labs_4_Focus.docx (Consulted on 19/04/2024)

Action Plan Tool

Develop an action plan for setting up your Living Lab!

Use the form of matrix to arrange your plan according to time (short-term actions come first). The following questions will help you solve this task:

- What actions need to be done? Be specific.
- How are you going to perform the action?
- Who needs to be involved within the action.
- When does the action take place, or over what period of time? Divide between short term, medium term and long term actions.
- Where does the action take place?
- What resources are needed for the action?

Materials:

Flipover sheet, felt pens





Conclusion

The journey through the intricacies of living labs and their participatory design processes illuminates a path toward sustainable urban regeneration that is innovative, inclusive, and deeply attuned to the fabric of community life. Living labs represent more than a methodology; they are a testament to the transformative power of collective action and creativity in reimagining urban landscapes. By grounding interventions in the needs, aspirations, and imaginations of communities, living labs transcend traditional approaches to urban development, fostering environments where every stakeholder has a voice and a stake in the future.

The participatory design process, with its emphasis on empathy, collaboration, and iterative learning, underscores the belief that the most enduring solutions emerge from the confluence of diverse perspectives. This approach does not merely seek to solve problems but aims to empower communities, building capacities and relationships that endure beyond individual projects. In doing so, living labs catalyze innovations that are not only technically feasible and economically viable but also socially desirable.

As we reflect on the potential of living labs to drive meaningful change in urban regeneration, it becomes clear that the success of such initiatives hinges on the active participation and commitment of all stakeholders. This includes local governments, businesses, academia, and, most importantly, the residents of urban communities themselves. The synergy of these collaborations can unlock unprecedented opportunities for sustainable development, resilience, and social cohesion.

Thus, this document serves as a call to action for stakeholders at every level to embrace the principles of participatory design and innovation championed by living labs. It is an invitation to engage deeply with the challenges and opportunities of urban regeneration, to invest not just resources but also imagination and empathy in the pursuit of vibrant, livable cities. Together, through the living lab approach, we can co-create urban environments that reflect our highest aspirations for sustainability, inclusivity, and well-being.



Resources and additional references

We have curated several tools that can inspire the different working groups during the living labs process. These tools are available [here](#).

Other valuable resources are proposed below:

- ENoLL (European Network of Living Labs) (<https://enoll.org/>): Offers a wealth of resources, case studies, and a network of living labs across Europe, providing insights and support for setting up and managing living labs.
- IDEO's Design Kit (<http://www.designkit.org/>): A resource for learning human-centered design, offering methods and case studies that can be applied to participatory design processes in living labs.
- Nesta's DIY Toolkit (<https://www.nesta.org.uk/toolkit/diy-toolkit/>): Provides practical tools to trigger and support social innovation, including templates and methodologies that can be adapted for living lab projects.
- Problem solving with design thinking: book tip: <https://yourstory.com/2015/05/problem-solving-with-design-thinking/>
- Design Factory Global Network: <http://dfgn.org>
- Smart City and participation: <https://www.techgoondu.com/2017/08/29/qa-a-smart-city-has-to-solve-problems-not-just-deploy-technology-says-imec/>

Annex 1: Interventions in the REGEN Project

- I1 Prefer multifamily houses to single (detached) houses - *Spatial implications:* Neighbourhoods layouts,
- I2 Fuel switching for heating purposes (from oil, gas, to biomass, heat pumps, district heating) - *Spatial implications:* space needed for heat pumps in surroundings.
- I3 District heating network optimisation (renewable heat generation, distribution, connection of buildings) - *Spatial implications:* Land take for generation units
- I4 Conceive modular buildings according to Circular Economy principles - *Spatial implications:* New building typologies.
- I5 Deconstruct existing buildings by increasing reuse and high-value recycling, and reducing backfilling and waste - *Spatial implications:* storage on-site, sharing/re-use physical platforms occupy significant space.
- I6 Developing urban mining of materials and components for augmenting local re-use and recycling - *Spatial implications:* see I5 (platforms).
- I7 Reduce heat islands - *Spatial implications:* unseal built areas.
- I8 Increase greens areas and deploy Nature-Based Solutions - *Spatial implications:* Less dense urban parcels, unseal built areas, use buildings and infrastructures (roofs, walls)
- I9 Unseal built parcels and/or monitor net-zero land uptake - *Spatial implications:* need for storage areas to re-use/recycle materials issued from unsealing.
- I10 Renovate low energy-efficient buildings. *Spatial implications:* increasing the renovation rate encompasses the need for more storage spaces of materials in cities. It affects the building envelope (dimensions/aesthetics) as well.
- I11 Educate citizens on their energy use (deploying smart metering)
- I12 Deploy energy communities - *Spatial implications:* Renewable generation occupy the city space and landscape, space needed inside buildings for new machineries
- I13 Upgrade smart readiness in buildings portfolios - *Spatial implications:* NA
- I14 Install green roofs to regulate indoor air temperature and save energy, purify air, increase biodiversity, provide rainwater buffer - *Spatial implications:* plants archetypes to be regulated in planning laws.
- I15 Extend bike network, such that any destination can be reached safely by bike - *Spatial implications:* Extended bike network and subsequent areas on roads and infrastructures
- I16 Make inner neighbourhood streets pedestrian - *Spatial implications:* Car-free inner neighbourhoods streets available for other purposes
- I17 Increase free spaces and leisure activities next to settlements - *Spatial implications:* Reduce parcels available for development.
- I18 Integration of retail and other economic activities (e.g. tourism) in neighbourhoods - *Spatial implications:* Less commuter movements, spaces needed for retail stores, sometimes affecting public space, pedestrian people flows
- I19 Implement mobility-aiding solutions in city centres for older people and people with disabilities - *Spatial implications:* equipments to be installed in public space.
- I20 Deploy building-integrated EV mobility capabilities (charging) - *Spatial implications:* Requires dedicated parking lots in the direct surrounding of buildings
- I21 Electric buses to be implemented in the districts - *Spatial implications:* charging points
- I22 Implement 30km/h speed limit in some streets - *Spatial implications:* transformations of streets dimensions
- I23 Sustainable water resource management for the full water cycle, optimising the use and repurposing of rainwater - *Spatial implications:* water treatment units.

Annex 2: Interview Guide Tool

Steps:

1. Define what you wish to find out: your research question(s) for this person in relation to your design challenge. For example:

- *Their experience and perspective on the problem or challenge*
- *Their knowledge and perception of a certain situation*
- *Their ideas about causes and solutions on the situation or challenge*



2. Write down a set of open-ended questions to find out what you want to know. Open-ended questions are questions that require more than a short, fixed response like yes or no. It can help to categorize them under topics and have 3-5 main questions for each topic. Keep in mind that these questions are the starting points, but you should always ask probing and follow-up questions to go more in-depth in each of them.



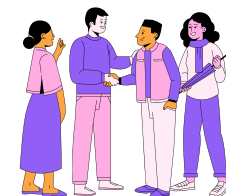
3. Select and invite participants for your interview. Look for people who represent your end-users or relevant stakeholders. And it can also be helpful to look for more “extreme” users or stakeholders.

In qualitative research, there is not a golden rule on how many participants to involve. You don't have to do 50 interviews, but make sure to have more than 2 representatives of each type of user or stakeholder. For example: 3 female students, 3 male students, 3 teachers and 3 mothers and 3 fathers. A rule of thumb is to interview around 12-15 potential end-users or stakeholders.

4. The space for the interview is important: it needs to be easily accessible, private and feel safe for the interviewees. Make sure to have enough time to properly round off the interview. An interview usually lasts around 1 hour and 30 minutes. This is enough time to have a lot of information but not too long for the interviewee.



5. Welcome the interviewee and be very clear on why you are doing the interview and what you want to get out of it. Make sure they are aware they are open to say anything, they are not being judged. Ask if you can record the interview and explain your process.

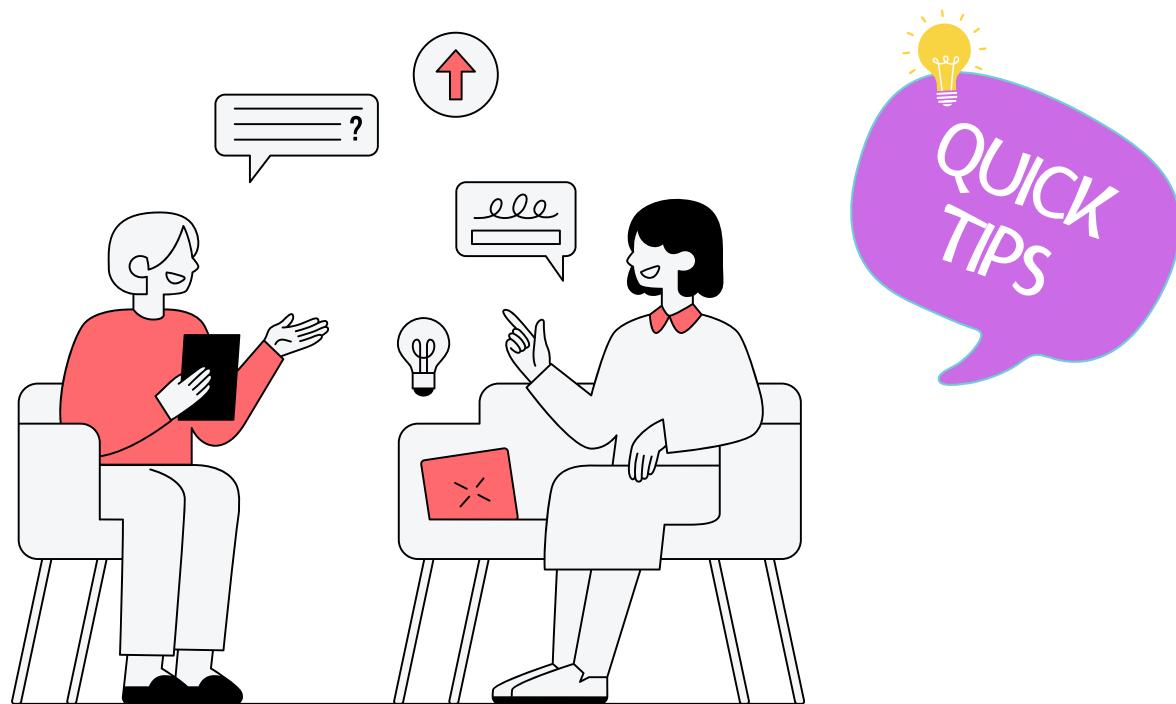


6. During the interview, ask questions and listen carefully to the answers. Feel free to ask your participants to elaborate on their answers. Ask “Why?...” or “Can you give me an example of that?”.

Note down the answers and/or record the interview so that it can be used as a reference later.

7. When you are done with your interviews, look back at your notes or listen to/watch the recordings. Analyse the answers, write out the key findings: most relevant things that answer your research question and share them with your team.





- *Provide a safe atmosphere for the participant: make the participant at ease and relaxed, for example by offering a cup of tea or coffee;*
- *Explain the objectives of your project and your role, ensure that the participants feel they are not judged by you or that they might offend you, make sure they know they have the right not to answer to any question;*
- *Prepare and be confident as an interviewer: know the interview guide, but be prepared to be flexible and follow other directions;*
- *Record the interviews and pay attention to nonverbal cues: actions sometimes speak louder than words;*
- *When asking sensitive questions, don't judge, don't force to answer, make the participant feel safe & comfortable;*
- *Think about compensation for the participant, this can also be in the form of travel expenses or lunch. This is especially relevant when the participants are not directly engaged in later steps of the design process.*