

Energy Living Lab

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DRIVING OPEN INNOVATION

Challenging the culture of energy projects

Energy Living Lab Association

The Energy Living Lab Association (ELLA) has been created in 2020 as a spin-off to replicate, disseminate and communicate living lab approaches in the energy field. It supports an ecosystem of actors in using the methods and tools and invites People & Institutions from the Public, Private, Governmental, Academic sector and civil society to co-design solutions for Energy Decarbonisation.

Energy Living Lab @HES-SO

The HES-SO research team works on applied research, methods and tools to further develop the knowledge on applying Living Lab methods in the energy field. Designing research projects, publishing scientific articles, developing a network of researchers, teaching living labs, open innovation and social innovation are our main activities within the Energy Living Lab @HES-SO

The Team ELL@HES-SO



ENERGY LIVING LAB @HES-SO

Joëlle Mastelic

Professor & Researcher

Projects: Involved in all projects



ENERGY LIVING LAB @HES-SO

Florian Bürki

Research assistant

Projects: RCSO – Typicalp – Market analyses – CAD Givrin – Fabulle – Water Living Lab



ENERGY LIVING LAB @HES-SO

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Projects: NTN Innovation Booster Living Labs for Decarbonisation – oPEN Lab

The Team ELL@HES-SO



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Anastasia Ponomareva

Scientific Collaborator

Projects: oPEN Lab – Smart City –
Fabulle



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Projects: NTN Innovation Booster Living
Labs for Decarbonisation – doMOS –
2lcap – oPEN Lab– SCORE



ENERGY LIVING LAB @HES-SO

Laura Minisini

Event Coordinator Intern

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Labs for Decarbonisation

Energy Living Lab Association



MEET OUR ASSOCIATION MEMBERS

Association Members



ASSOCIATION MEMBERS

Red Lab

Living Lab



ASSOCIATION MEMBERS

Syntezia

Living Lab



ASSOCIATION MEMBERS

Hub Neuchâtel

Living Lab



ASSOCIATION MEMBERS

ELLA@HES-SO

Living Lab

What is a Living Lab?



What is a Living Lab?

- A Living Lab (LL) is an **innovation intermediary that orchestrates an ecosystem of actors** in a specific region.
- Its objective is **to co-design products and services**, in an iterative way, with key stakeholders **in a public-private partnership and in a real-life environment**.
- One of the outcomes of this co-design process is the **co-creation of social values (benefits)**.
- To achieve its objectives, the Living Lab **mobilises existing innovation tools or develops new ones** (*Mastelic, 2019*).

Living Lab key principles

01. Value

02. Influence

03. Sustainability

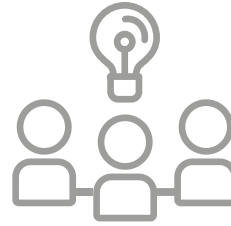
04. Openness

05. Realism

Living Lab elements



Active User
Involvement



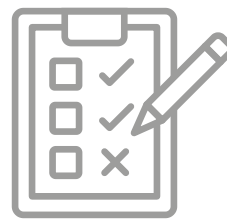
Co-creation &
Co-design



Real Life
Setting



Multi Stakeholder
Participation



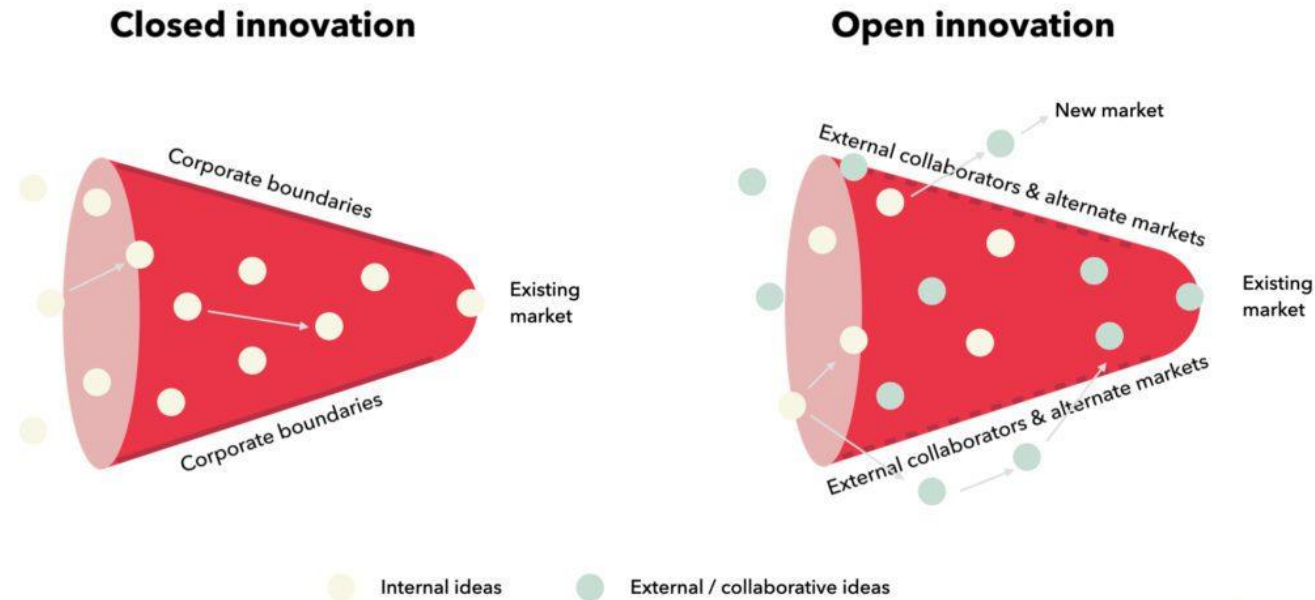
Multi Methods
Approach



Orchestration

Living Lab and Innovation

- **Open Innovation** – purposeful inflows and outflows of knowledge to accelerate innovation internally while also expanding the markets for the external use of innovation” (*Chesbrough, 2006*).
- **User Innovation** – the development of new products and services by customers and end users, for their own benefit, rather than by manufacturers (*Von Hippel, 2005*).



Source: <https://www.boardofinnovation.com/blog/how-to-approach-open-innovation-strategy/>

Quadruple Helix Model

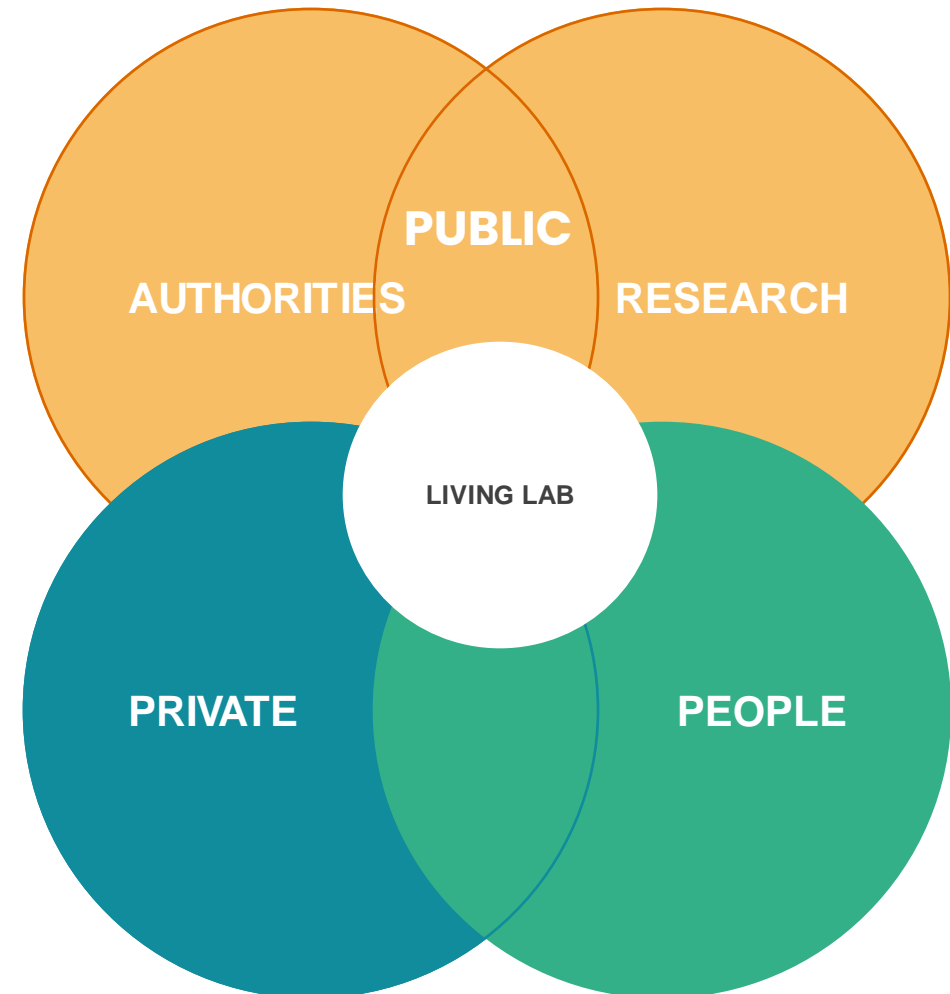


Quadruple Helix Model

LL orchestrates **the collaboration of four types of stakeholders:**

- Citizens
- Research organizations
- Private companies
- Public authorities

This model is called the **Quadruple Helix** (*Carayannis and Campbell, 2012*).



Three Layer Model

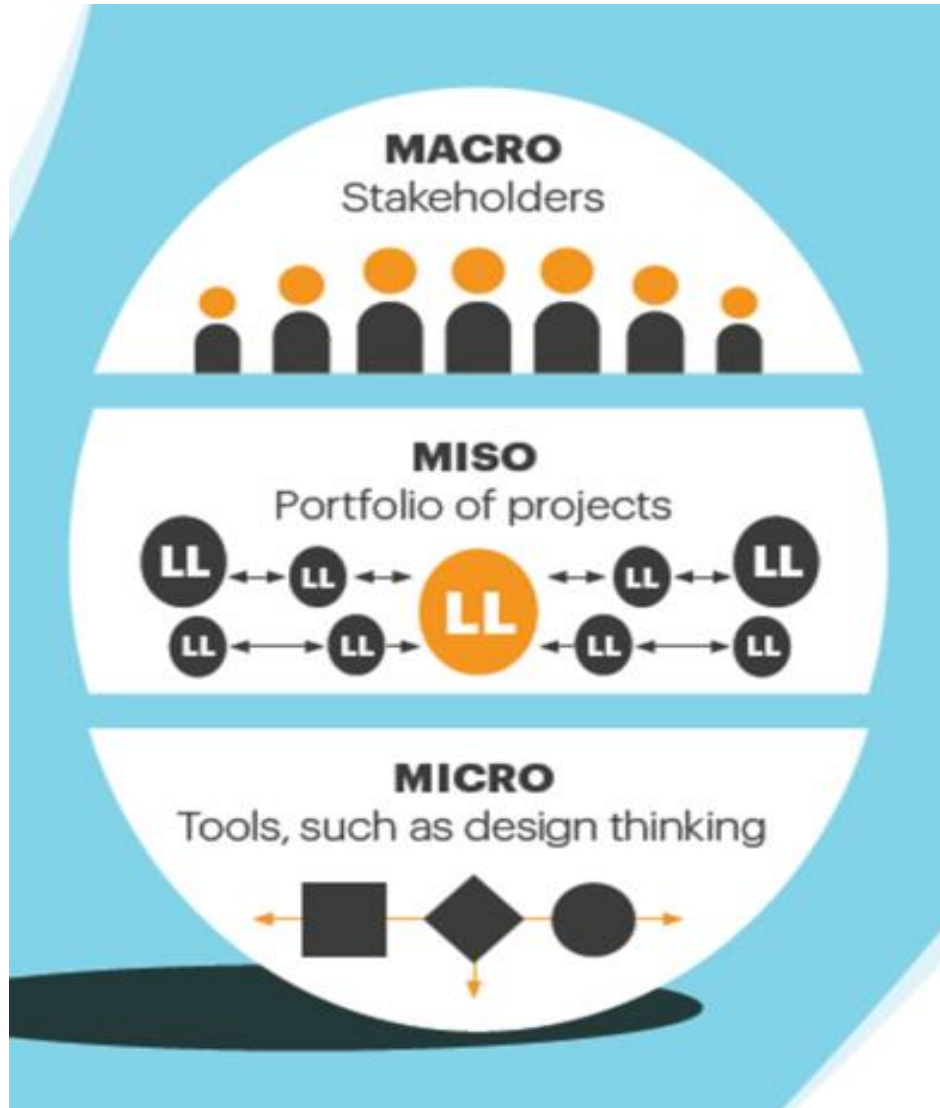


Three Layer Model

	Definition	Research aspect
MACRO	Living Lab constellation consisting of organised stakeholders (PPP-Partnership)	Open Innovation: Knowledge transfers between organizations
MESO	Living Lab innovation projects using Living Lab methodologies	Open & User Innovation: Real life experimentation, active user involvement, multi-method and multi-stakeholder
MICRO	Tools and activities linked to the stakeholders' assets and capabilities	User Innovation: User involvement & contribution for innovation e.g. co-design

Source: Schuurman, 2015.

Three Layer Model examples



MACRO

- Governance
- Stakeholders management
- Juridical entity

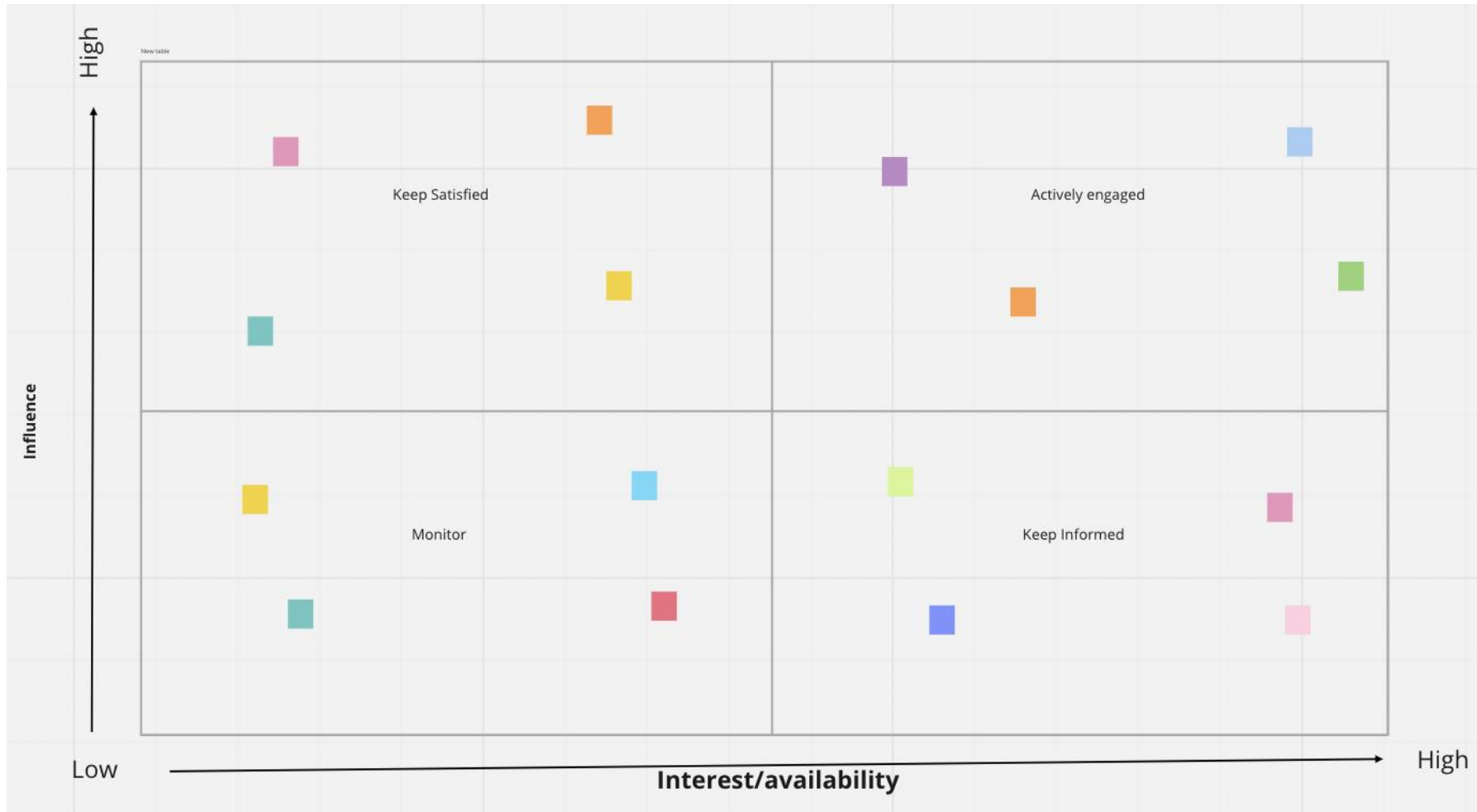
MESO

- Projects in the Living Labs
- Events

MICRO

- Tools for co-creation and co-design

Tools: Stakeholder Interest/Influence Matrix



Source: Eden and Ackermann, 1998, in Bryson, 2004.

Tools: Personas

Marcel, retraité



"Comme à la campagne, j'ouvre mes fenêtres tous les matins pour aérer mon appartement."

Age : 81 ans
Métier : Agriculteur à la retraite
Etat civil : Veuf
Composition ménage : 1 adulte
Type d'appartement : 3.5 pièces
Type de bien : Locataire
Construction du bâtiment: 2015

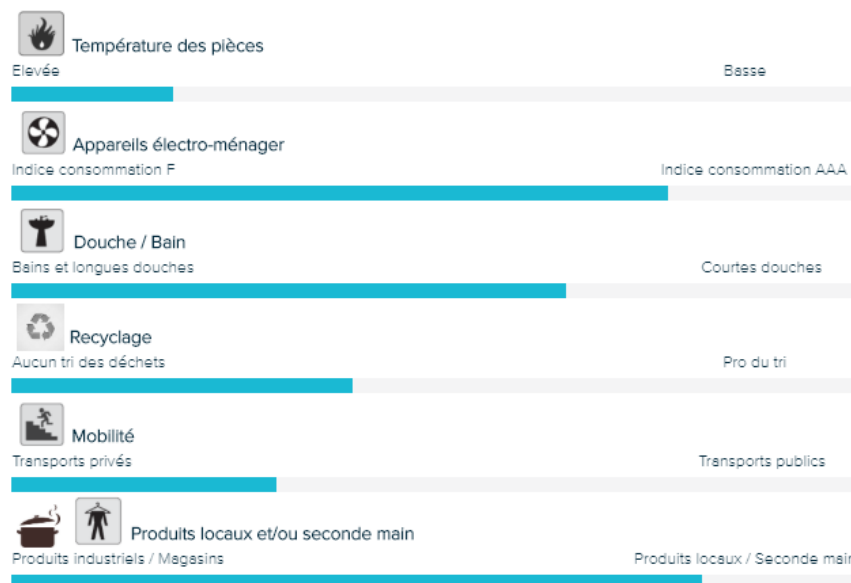
Connaissances

Habitants du village
Technique
Energie

Biographie

Suite au décès de son épouse il y a 3 ans, Marcel a déménagé dans le quartier. Il apprécie la proximité d'un magasin alimentaire, de la pharmacie et du centre médical. Il les fréquente régulièrement. Tous les matins, il ouvre les fenêtres afin d'aérer l'appartement. La température dans les pièces avoisine 23°. Marcel aime bien cuisiner. Il prépare donc ses repas, ainsi que ceux de son voisin de palier, un contemporain. Dans l'après-midi, il aime se promener dans le quartier et aller à la rencontre des habitants. Il sait qu'il dispose de beaucoup de temps libre, c'est pourquoi il trie ses déchets et amène ceux des voisins à la déchetterie. Marcel adore prendre le bus pour se rendre dans la ville.

Importance des critères - Energie

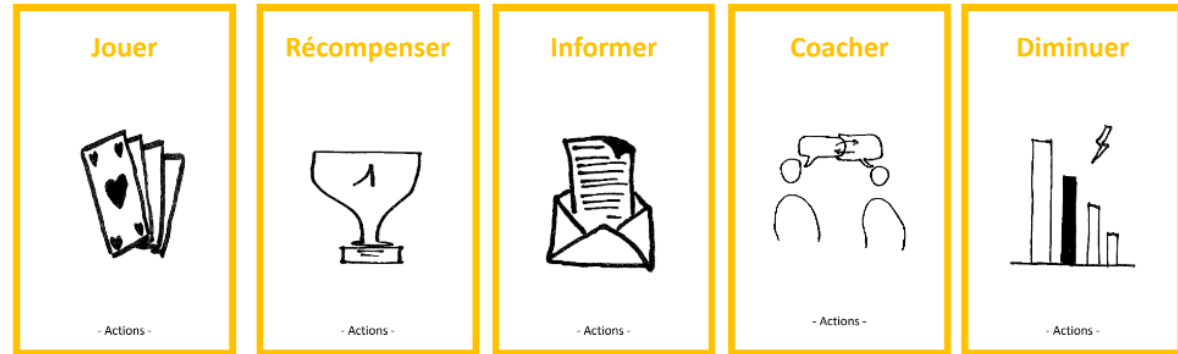


Tools: Game "Poker Design"

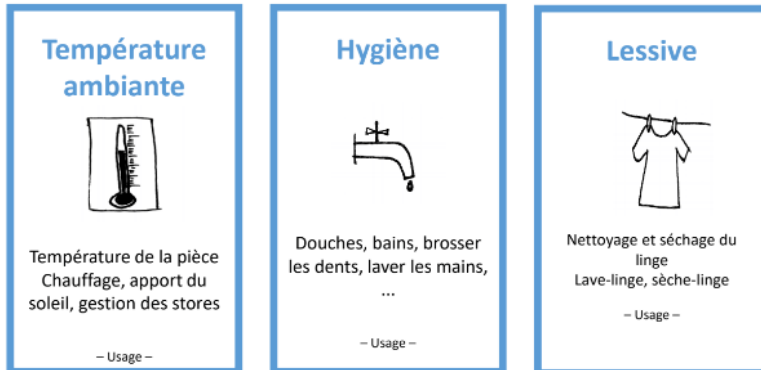
Personas



Actions



Usages



Combining personas, action card and usages, the participants with little energy literacy co-design an energy performance plan translated later into a technical plan by specialists.

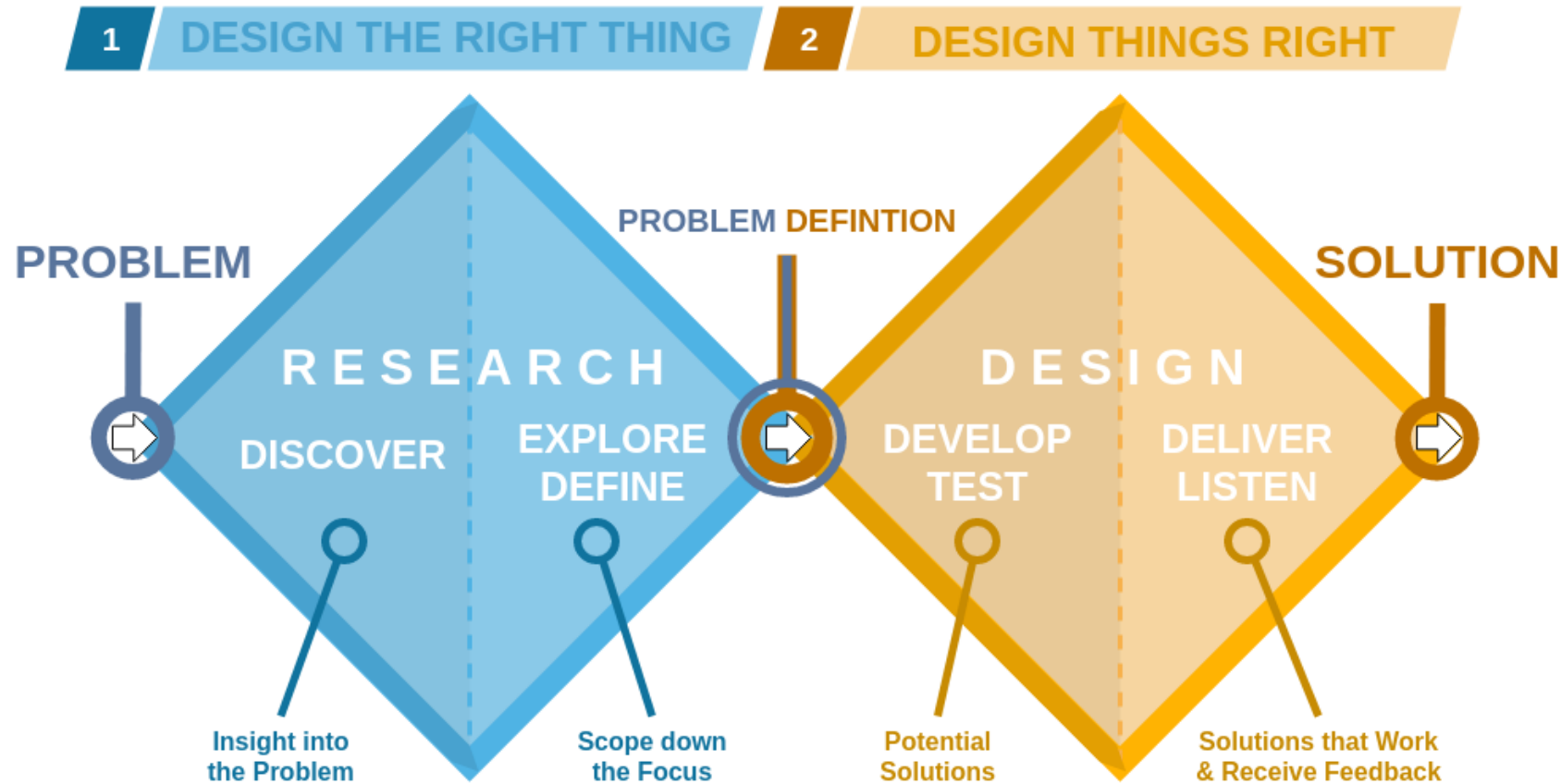
Co-creation & Co-design



Co-creation & Co-design

- **Co-creation** is a generic term and refers to value creation. The value is always created when it is consumed. Energy which is not consumed does not generate value (*Vargo and Lusch, 2004, in Mastelic 2019, p.16*).
- **Co-design** is specific instance of co-creation, a sub-category. It refers to the creativity of people not trained in design working together with the specialists in the innovation process (*Sanders and Stappers, 2008, in Mastelic 2019, p.22*).

Double Diamond Design Process Model

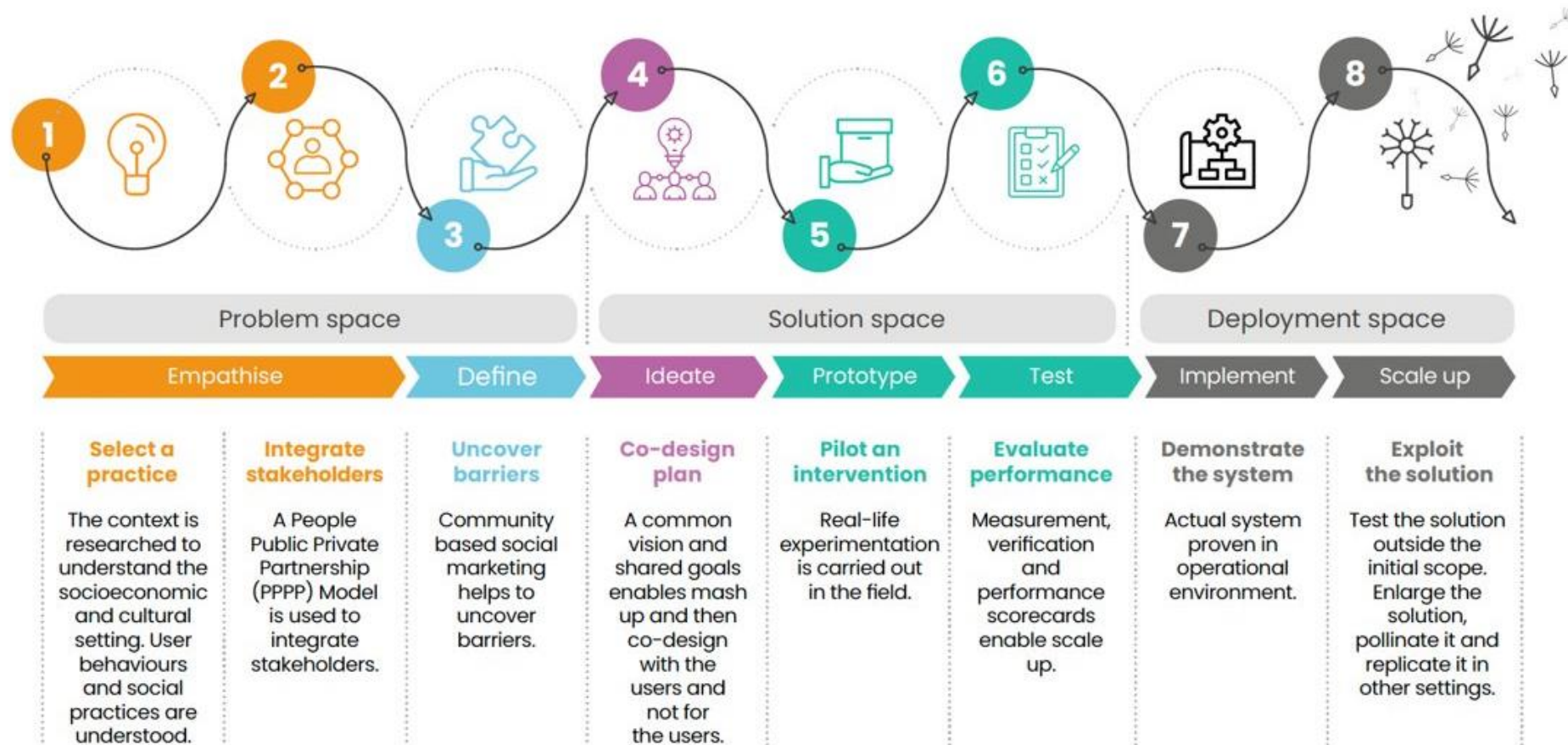


Source: Rugman & D'cruz, 1993.

Living Lab Integrative Process



Living Lab Integrative Process



Source: Adapted from Mastelic, 2019.

Transnational Experimentations



Living Labs available Toolboxes

- Research methods
- Engagement tools
- Practical templates
- Rules or games

UNaLab

[Click here](#)

U4IoT

[Click here](#)

Siscode

[Click here](#)

DesignKit

[Click here](#)

Examples from Energy Living Lab



Some of ELL current projects

Fabulle

Space for creativity and prototyping



Local Scale

Smart City of OFEN

Participative events for Communes



Regional Scale

oPEN Lab

Energy Efficient Urban Neighbourhoods



International Scale

2ISECAP

Integrative Energy and Climate Plans



International Scale

Fabulle

Space for creativity and prototyping

Campus Energypolis

Sion, Switzerland

Goal

Co-design of a new multifunctional space for learning, prototyping and working.

Living Lab Tools & Principles

Stakeholder analysis and mapping (Miro) ;
Needs analysis – Qualitative interviews with main Stakeholders ;
Case analysis – Visits and Interviews ;
Co-design of space configuration in a collaborative open platform (Figma) ;
Collaboration with external organisations – design studio, students and start-ups



Fabrication &
Prototyping

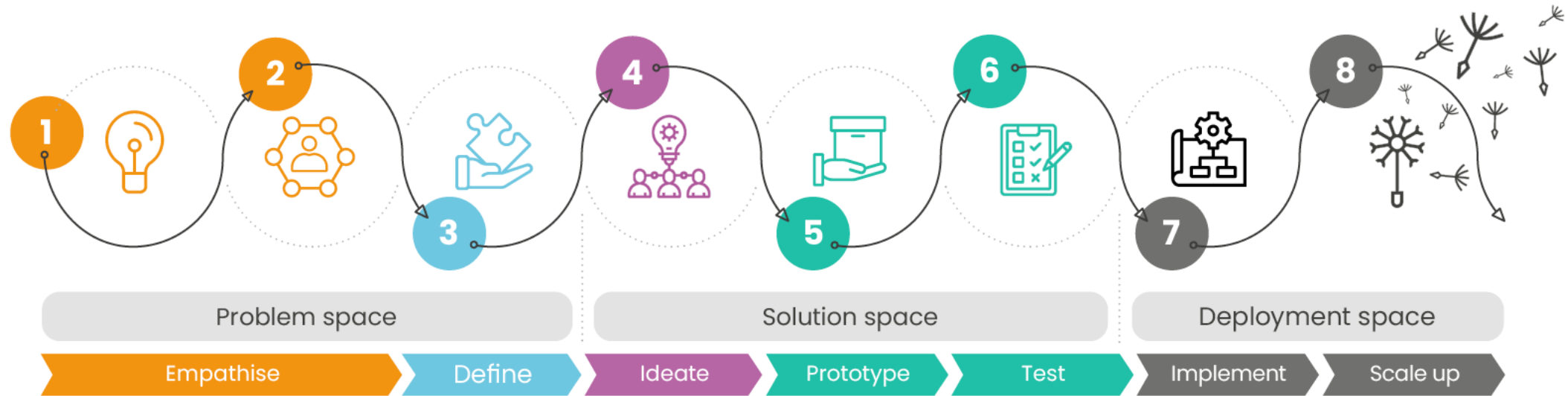
Ideation & Creativity

Educational
activities & Events



Fabulle

Space for creativity and prototyping



- Qualitative Interviews
- Stakeholder cartography
- User Journey development
- Needs analysis and mapping
- SWOT analysis

- Co-design of a new space
- Collaboration with interior designers at the basis of our researches
- Collaboration with master programs of HES-SO

- Space opening
- Development of guidelines and recommendations
- Organizing of events in Fabulle (Innovation Camp)

Smart City of OFEN

Participative events for Communes

Switzerland's Romand part

Lausanne 2021 / Sion 2022

Goal

Organising innovation sprints for the Communes of different scale and profile to share experience and to develop projects.

Living Lab Tools & Principles

Creation of synergies between 4 types of Stakeholders on the topic of Smart City:

- **Public authorities** (Communes representatives) ;
- **Private companies** (Start Ups and Local Organisations) ;
- **Research organisations** (University laboratories) ;
- **People** (Students and Inhabitants).



Experience & Knowledge sharing

Collaboration opportunities

Development of Smart City projects according to local context



Goal

Elaboration and launching of Regional Living Labs for the creation of Energy efficient urban neighbourhoods in Genk, Pamplona and Tartu.

Living Lab Tools & Principles

Stakeholder analysis and mapping (Miro) ;

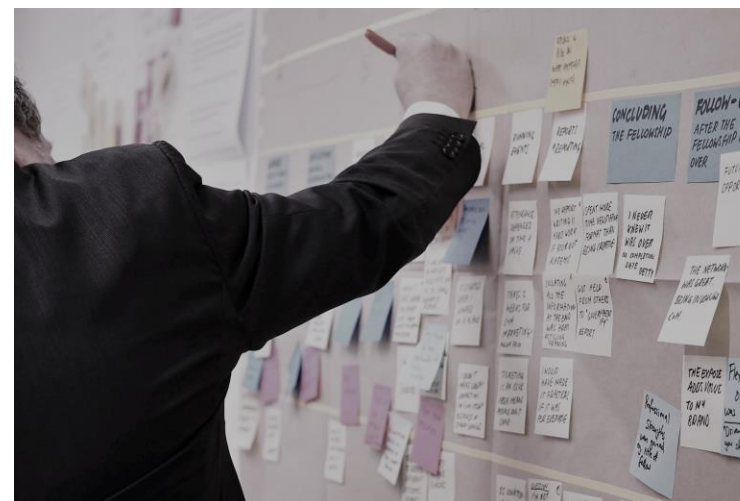
Multi Stakeholders engagement ;

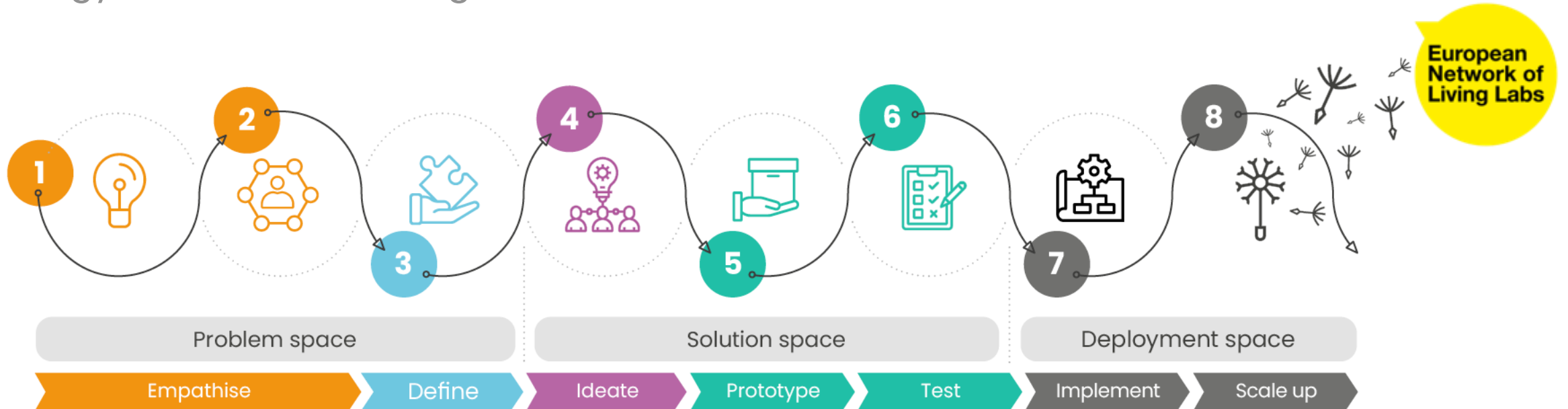
Needs analysis – quantitative survey ;

Sharing of methodology for Living Labs' launching and development ;

Organisation of participative workshops (online and offline) ;

Development of a Capacity Building Program.





- Quantitative survey
- Stakeholder interest-influence matrix
- Stakeholder Journey
- SWOT analysis

- Organisation of participatory workshops
- Development of a Capacity Building Program based on LL methodology

- Development of guidelines and recommendations
- Organizing of events in the cities of Genk, Pamplona and Tartu.

2ISECAP

Development of Integrative Energy and Climate Plans

Integrative Climate Plan

6 European Cities

Goal

Provide cities with methodology for the development and implementation of Integrative Energy and Climate plans.

Living Lab Tools & Principles

Sharing of methodology for Living Labs' launching and development ;

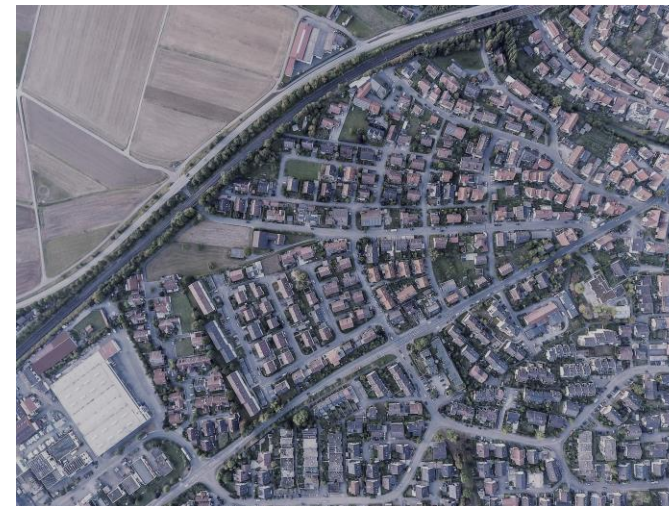
Adaptation of the Living Lab methodology to urban context ;

Multi Stakeholders engagement ;

Integration of specific tools for urban analysis ;

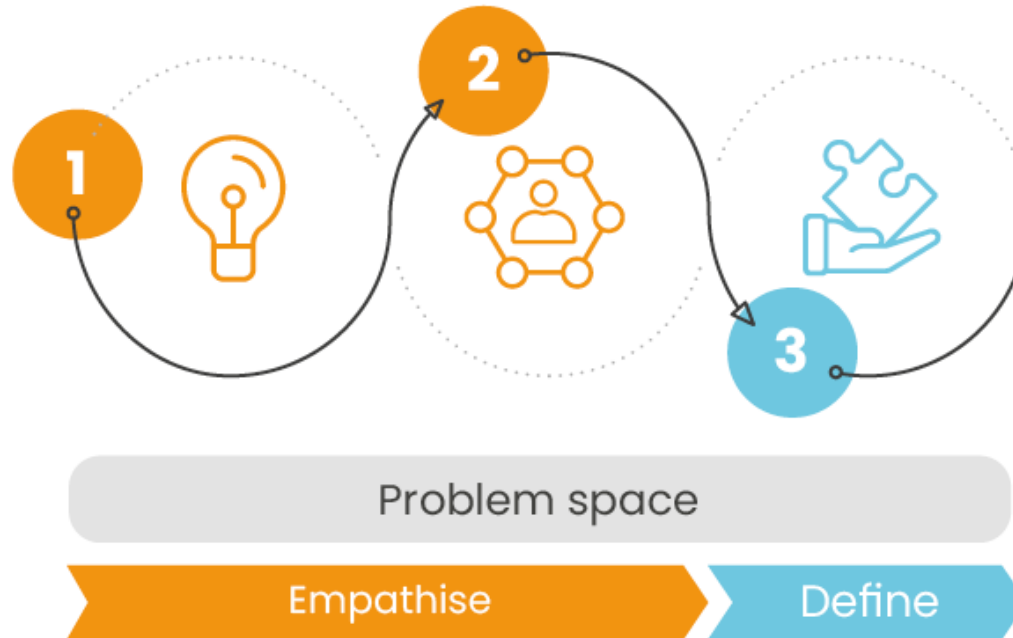
Organisation of participative workshops ;

Development of a Capacity Building Program.



2ISECAP

Development of Integrative Energy and Climate Plans



- Urban context analysis >> SWOT
- Stakeholder analysis and mapping
- Educational videos on LL methodology
- ...



NTN Living Labs for Decarbonisation

National Research Program funded by InnoSuisse



Innovation Management

10 Living Labs

Goal

Coordination a network of Living Labs which support 15 innovation teams per year

Living Lab Tools & Principles

Coordination of the program (ELLA)

Support regional Living Labs with capacity building program, an innovation platform, event

Communication of the program (Cimark)

SWEET LANTERN

National Research Program funded by SFOE

Applied Research on Energy

5 Urban Living Labs

Goal

Develop interventions to decarbonise Switzerland, measure the impact and replicate.

Living Lab Tools & Principles

WP1: Coordination of the program (ELL@HES-SO)

WP2: Set up and scale up of Living Labs

Development of Sion Living Lab

WP3: Research on methodology for Living Labs

...

WP11: Dissemination (ELLA)



Open Living Lab Days

<https://openlivinglabdays.com/>

- 20-21-22-23 September in Torino

European
Network of
Living Labs

Thank you for your attention

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