SCHOOLS AS LIVING LABS

SALL

# DELIVERABLE 2.3: THE SALL METHODOLOGY

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# Executive summary

The 'Schools as Living Labs' (SALL) project (www.schoolsaslivinglabs.eu) is a Coordination and Support Action (CSA) funded under the Science with and for Society (SwafS) objective of Horizon 2020 (H2020), the Research and Innovation Programme of the European Union.

SALL is a project serving Europe's aim to promote open schooling and collaboration on science education. Moving in this direction, the project proposes the living lab methodology as a technique for the development of open schooling activities linked to science learning in Europe's schools. Further, SALL chooses to demonstrate the use of this technique through activities prioritizing a focus on the theme of the food system and its links to the Food 2030 research and innovation policy of the European Union.

The SALL team, including ten consortium members and three linked third parties, consists of institutions from twelve countries (Belgium, Croatia, Cyprus, Estonia, France, Greece, Israel, Luxembourg, the Netherlands, Portugal, Serbia, Spain) representing diverse worlds: schools, universities and research organisations, science museums and centres, NGOs, business. Dialogue and mutual learning among these worlds lies in the heart of SALL.

The present document constitutes Deliverable D2.3 'The SALL Methodology'. It is the output of Task 2.3 'Co-creation of the SALL framework – methodology' within Work Package (WP) 2 'The SALL framework and methodology'.

This methodology is the result of a co-construction process: At first, it started through the review of documentation and other Living Lab experiences, followed by a workshop in January 2021 with the whole SALL consortium. The original version of the methodology that was built during the workshop was then nourished and amended by the experience and feedback of National Coordinators, teachers and other actors. In June 2021, a second workshop allowed to identify missing blocks and guidelines, and to write them in a collaborative manner. Full details on this development process can be found in deliverable D2.2 'Co-creation workshops on applying living lab methodology to open schooling: methodology and results'.

This deliverable presents the final methodology, which is an adaptation of the Living Lab approach to the school context. The aim here is to run Living Lab projects in schools, involving students and other local actors in a user-driven innovation process. This approach has the potential to take open schooling to a new level by increasing the involvement of local actors and the influence of students on the local environment, in collaborative work on innovative solutions.

# 1. Introduction

Within the Schools As Living Labs (SALL) project, the consortium, together with schools and other societal actors, is adapting the Living Lab approach for the school context. This methodology, the 'SALL methodology', is the result of a co-construction process: At first, it started through the review of documentation and other Living Lab experiences, followed by a workshop in January 2021 with the whole SALL consortium. The original version of the methodology that was built during the workshop was then nourished and amended by the experience and feedback of National Coordinators, teachers and other actors. A series of weekly 'case clinics' sessions allowed the National Coordinators to share their experience and provide detailed and continuous feedback. In June 2021, a second workshop allowed to identify missing blocks and guidelines, and to write them in a collaborative manner. For full details on this development process, see deliverable D2.2 'Co-creation workshops on applying living lab methodology to open schooling: methodology and results'.

This deliverable will present the final methodology, which is an adaptation of the Living Lab approach to the school context. The aim here is to run Living Lab projects at schools, involving students and other local actors in a user-driven innovation process. This approach has the potential to take open Schooling to a new level by increasing the involvement of local actors and the influence of students on the local environment, in collaborative work on innovative solutions. Last, the thematic focus chosen as the starting point for SALL is rooted in one interdisciplinary theme, the Food System, which has been integrated with the methodology.

Finally, this deliverable will offer all partners more details about the benefits of this methodology. It may thus support them in identifying the knowledge, skills and behaviour that the school students will develop through their Living Lab school projects, and so enrich evaluation in SALL.

# 2. The SALL Methodology

## 2.1. General Living Lab Methodology

As the SALL project aims to adapt the Living Lab methodology for the context of schools, the first step was to build our definition of Living Lab, from the existing literature and previous experiences. Indeed, the term Living Lab has been used in a wide variety of projects and environments, from co-creation approaches to technology testing booths or patient groups. It has largely been used in the health sector, in environmental projects. Health teams are offering opportunities for patients to develop health-related innovations. Nevertheless, many other sectors used it as well, and Living Labs have become an important trend in the innovation sector. However, while the Living Lab trend grew, its definition also evolved from user-centred to user-driven innovation. The Living Lab framework was also adapted to the education and cultural sectors, particularly in the non-formal education sector (cf. the French project INMEDIATS).

For a general definition of the term Living Lab, we will build on the Livre Blanc des Living Labs developed by Montreal In Vivo. In this reference document, Living Lab may refer to three different dimensions:

- a Public-Private-People partnership,
- a user-driven innovation methodology for co-creation,
- an environment for co-creation and user engagement.

A Living Lab is, first and foremost, a partnership: it is an approach rooted in the collaboration of heterogeneous actors from diverse sectors. The partnership usually comprises some actors from the public sector (e.g., a public authority, a school), some private entities (e.g., a company), and the users themselves, who may be involved as individuals or through a civil society organisation. In the SALL project, this partnership always comprises the school itself, the teachers, the pupils. In addition, some other actors from the school are frequently involved (e.g., school staff). Some of the first steps of a Living Lab project is thus to involve other actors (a company, a policymaker, a shop, a fisherman…) to consolidate the partnership and ensure that the collaboration will involve new local actors, out of the schools, in line with the Open Schooling concept. These actors should commit to engaging the project in a co-creation process, devoting time and resources, and accepting that the project may also impact their own work.

Secondly, a Living Lab can be defined as a **methodology** to develop new innovations, through a user-driven process, rooted in co-creation. This definition emphasizes the role of the user in the Living Lab approach. Instead of being the "target" of an innovative solution, the users will be its co-creators, so the solution can be tailor-made to their real needs, their context, and be in adequation with their values and ethical choices. This approach is a true commitment for all partners: users are required to dive into a project and really contribute to its development, other actors are required to grant a real influence to those external users. The methodology often emphasizes the idea of cycles comprising prototyping and testing solutions, in a way that is related to Design Thinking approaches.

Last, the Living Lab approach can be defined as an **environment**, which can be physical or digital, to be used for user engagement, co-creation and testing. Living Lab projects usually emphasize the importance of "real-life" environments, in order to test solutions in their real-life setting.

The Living Lab methodology thus focuses on the concept of user-driven innovation. Its value for innovation has been largely explored[1]. More recently, it has been adapted to other contexts, including non-formal education settings. The handbook *Living Lab, a new form of relationship with the public*[2], summarizes the attempt to use the Living Lab approach in science centres, with the aim to focus more on engaging audiences in a science & society dialogue rather than boosting the economic development. Here, the Living Lab approach appears as a methodology for co-creation with a wide variety of stakeholders, including the users who are often the science centre's audience. Both its social

[1] See for example Eric von Hippel, Democrating Innovation, 2005, MIT press.
[2] Living Lab, a new form of relationship with the public, by Millet and al., 2015.

value (e.g. in the interaction between the audience and other stakeholders) and its educational value (e.g. building soft skills) have been outlined, as well as an opportunity for audiences to reclaim a sense of agency and responsibility in the realm of innovation.

The SALL project adapted these elements to the school context and summarized them in order to quickly send the core messages to teachers, who are often unfamiliar with the innovation terminology and concepts. In SALL, "Living Lab" is firstly defined as the methodology used to support the collaboration among different partners who want to address a concrete issue relevant to each of them.

The methodology uses design cycles typically comprising:

- Creating ideas together after exploring the issue
- Quickly building some elements of the solution, which can be done in a cheap and fast way (often referred to as prototyping)
- Testing the solution with users and getting feedback to improve the solution.

This cycle can be implemented several times, in an iterative way, to refine the solution at various levels.

The key principles of a SALL Living Lab project are defined as:

1. **Real issue - real solution, making use of the participants' personal experience**

This principle ensures that the project focuses on an issue and not a general idea, and that the driver of the project will be to look for solutions. Going further than project-based learning, SALL Living Lab projects should look for solutions – or at least responses – to the issues, with a view to have those solutions implemented.

2. **Co-creation, involving of all impacted societal actors**

The projects are done in co-creation with local actors. Those local actors can be any individual or institution that has a common interface and/or a common interest with the school, and that are interested or affected by the process or the project's outcomes. They range from the municipality to the local bakery, from the local environmental association to the driver of the food truck.

The solutions should be designed using all the perspectives that are present in the partnership, thus recognizing the various types of expertise of different actors. The school students would generally be the core team to generate ideas, but those ideas would have to be discussed and built with the other local actors.

3. **Quick prototyping, as ideas are immediately put in practice and tested.**

Last, the methodology should comprise quick prototyping and testing. This means that low-cost and low-fidelity versions of the solutions should be built quickly, to test the solution in practice with users. Thus, the value of a SALL project is not simply coming from the study of an issue, but also from the transformation of an idea into prototype, the testing with real users, the framing and analysis of the

feedback from the users. Those steps add a large amount of complexity to the projects, and enable participants to think and reflect by making, by discussing with people, by confronting views or analysing data.

The detailed methodology of a SALL Living Lab project comprises two phases: a setting up phase and an implementation phase, which are described below.

## 2.2. Setting up the Living Lab projects

Setting up a SALL Living Lab project entails to build several elements which will be the foundations of the future project. Those foundations are crucial, as they will determine the constraints, the possibilities and the assets of the future projects. They are mainly:

1. Exploring the Food System theme
2. Engaging societal actors and building a partnership
3. Choosing a topic in the Food System theme
4. Setting up the evaluation framework

National Coordinators and schools can use several supporting documents, such as a SALL presentation on Living Labs, a pitch presenting the project and an overview of the school commitments, presentations on the methodology or stakeholders engagement deliverables from WP3. They may also benefit from the recordings of four masterclasses produced by the SALL project, exploring four experiences of Living Lab projects and institutions through the perspective of institution managers, a designer, and a student.

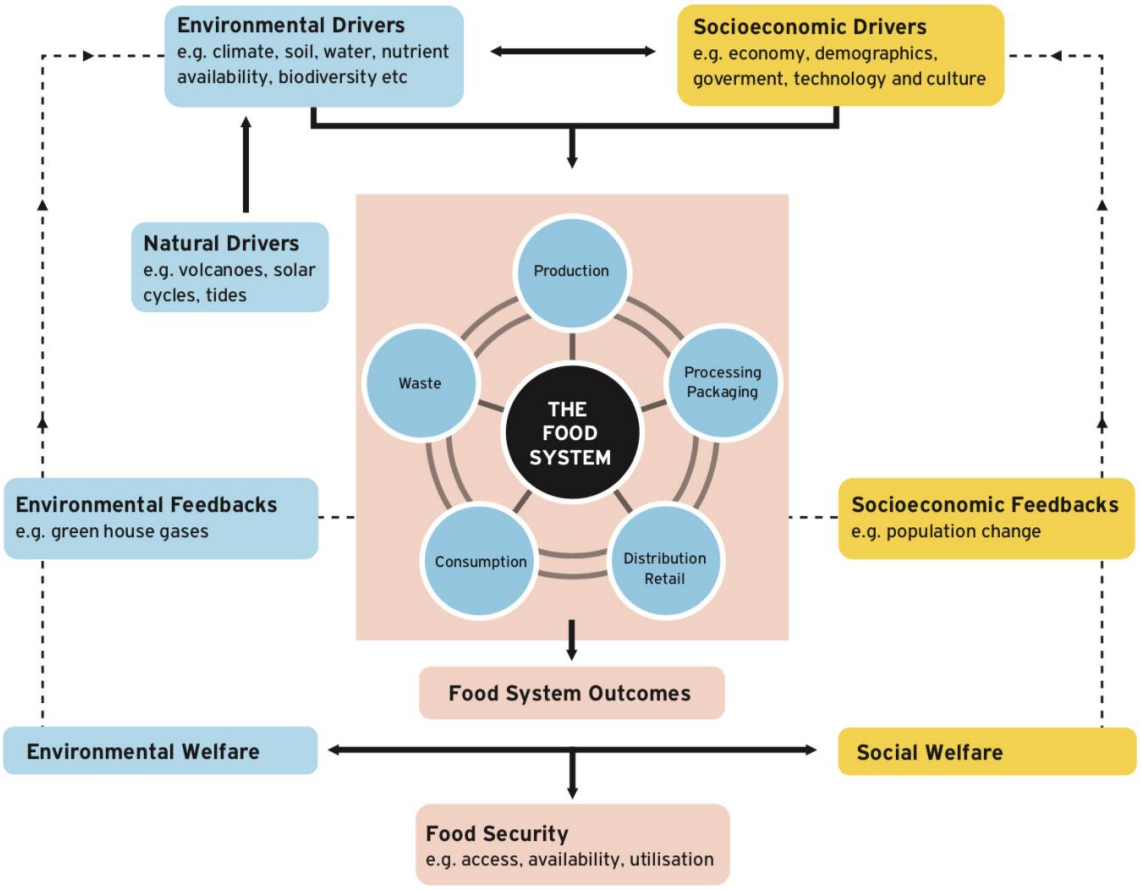
### 1. The Food System theme

The food system is a complex web of activities involving the production, processing, transport, and consumption of food. This can include many different aspects, such as food waste management, cultures and traditions of food, carbon footprints of the food system, agriculture, physiology of taste, packaging, local circulation of food, health issues, economy, or aesthetics.

As the Food System is the theme at the starting point of the SALL project, the very first step to build a SALL Living Lab is to explore the wide variety of topics included in the Food System theme, understanding which ones seem to be the most relevant for the school, the students and the local actors. The school usually starts by exploring the Food System theme with the students. This can be done in a top-down way, by presenting Food System elements to the students, or preferably in a bottom-up way, by asking students to identify the topics and elements that seem to relate to the Food System. The students and teachers may then name and organize topics, selecting the ones which appear as both important and relevant to the local landscape.

As examples, here are three approaches that a teacher may use to engage students and/or local actors with the Food System theme:

- Ask everyone which ideas, examples, thoughts or elements are linked with the “Food System” theme, at both local and global levels. You may then group some elements together, see the main topics arise, and demonstrate that there is actually a lot of knowledge and diverse perspectives in the room!
- Ask everyone what actions they do every week in relation to food (buying, growing, eating, wasting food...). Or ask them what actions the school does every week in relation to food (school meals, a garden, waste, etc.). This can be a great way to explore the theme in a very personalized way.
- Start the project with a shared meal, where everyone brings a dish from their own culture. First, it is a joyful way to start, which also brings awareness of the multicultural environment in the school. Second, this may highlight the diversity of relationships and approaches related to food and foster inspiration or ideas for future projects.




*The food system and its drivers. Adapted from Ericksen 2008.*

### 2. Engaging societal actors

The next step is to identify and engage local actors around the principles of the Living Lab. The full methodology for identifying and engaging local actors is described in deliverables D3.1 ‘Methodology for the engagement of school living labs with stakeholders’ and D3.2 ‘Practical guidance and training materials for the engagement of school living labs with stakeholders’.

## ENGAGING SOCIETAL ACTORS

Societal actors need to be identified and brought into the project from the start. They are full partners of the project from day 1. As the project evolves it is possible that the group will realize that some important societal actors have not been identified. It is never too late to bring someone new on board.

**A.** IDENTIFYING SOCIETAL ACTORS

- Listing all possible stakeholders
- Drawing up of criteria
- Stakeholder analysis
- Selecting a shortlist

**B.** APPROACHING SOCIETAL ACTORS

- Get in touch
- Persuade
- Reduce the risk
- Be open!

**C.** WORKING WITH SOCIETAL ACTORS

**At the start of the project:**

- Take time to get to know each other
- Define goals and ambitions
- Discuss resources
- Discuss constraints
- Organize a kick-off meeting
- Discuss the topic of ownership
- Agree on communication and project management
- Organize regular meetings
- Document and share findings
- Add missing actors.

**During co-creation sessions:**

- Actively involve all actors
- Document all decisions
- Promote good communication
- Determine a location
- Foster intrinsic motivation

**D.** BUILDING SUSTAINABLE CONNECTIONS WITH STAKEHOLDERS

- Take the time to evaluate the collaboration after the project ends
- Celebrate the successes!

Find further information and examples about this point in the SALL Report "Methodology for the Engagement of School Living Labs with Stakeholders" (Deliverable D3.1).

*https://www.schoolsaslivinglabs.eu/resources/methodology-for-the-engagement-of-school-living-labs-with-stakeholde/*

### 3. From the Food System theme to a topic

Once the Food System theme has been explored, the next step is to focus on one more precise topic. In a Living Lab project, identifying and engaging societal actors and choosing a topic are conducted side by side, because each societal actor has to contribute to how the topic will be shaped.

The topic is often interdisciplinary and comprises a multitude of challenges and issues to tackle, but it will give coherence and consistency to the various solutions that are designed and tested. Partners should look for a topic with the following characteristics:

- Clarity: the topic should be easily understood by all partners. The topic is a first common language built together by the partners, so it is crucial that it is not too blurry or built on an ambiguous meaning.
- Interdisciplinarity: the topic should be wide enough to allow a wide array of expertise to take part. A specific discipline or technical expertise should only be one of the types of knowledge needed to tackle the topic. The topic should be explored through the multiple lenses of natural sciences, engineering, social sciences, art or the humanities.
- Link with the students: the topic shouldn't be purely technical, so that the "everyday" expertise of lay people are relevant and valued. Students and other types of "non-formal experts" should be legitimate to have their say on the matter.
- Engagement (depending on the sensitivity of the students): The topic should be compelling for them, whether it is because it's related to their daily experience, because it's aligned with their values or aspiration, or because they have a specific interest on the matter.
- Relevance to the local actors: the topic should allow each local actor to understand how they can contribute to the project, and which aspects of the topic is in their areas.

Although the topic may be defined by the teacher and students only, it is recommended to build the definition of the topic with the other local actors. Not only does this maximize their engagement and the topic's relevance, but it also plays the role as a first "co-creation" step, where everyone experiences a first collaborative task, reinforcing a culture of horizontal participation. As the topic is then linked to the stakeholders themselves, participants should keep an open mind: the topic may even evolve if the conditions changes, if the partnership evolves, if opportunities for students' engagement arise, or if new resources and actors can be leveraged.

Here are three examples of activities :

- If you had a common exploration of the Food System theme, ask everyone: what are the elements that strike you, and why? Are there some factors that seem particularly important to you? Which components are relevant for us, as individuals, as a class, as school, as a city…?
- Examine the specific resources and partners you could find in your local areas: is there a farm, a fisherman, a food factory, a recycling centre? Do you have some fast food, or some posh restaurants you could work with? These may orient your choice of topic.
- Some elements are often perceived as unfair – or even revolting – by students: excessive food waste, animal cruelty, homeless people, pollution or ecological damage… If you identify such sensitivity on a classroom, you can target the topic adequately to increase the students' engagement and motivation.

# THE TOPIC

## List of guiding questions to engage discussion

1. What is the characteristic of a "topic"?
2. The local context must me analysed: Which are the main concerns? Who can act about it?
3. The topic must be defined with all the actors: What topic would get you involved in a project?
4. It is important to remain open, the topic can change: Is there a way that transforming the topic will get you more involved?

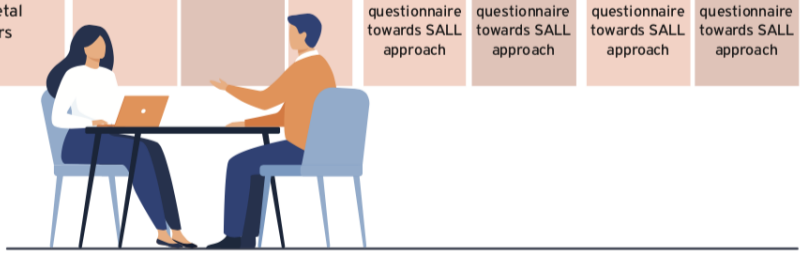
### 4. Evaluation

When setting up the project, the schools should have an overview of the whole evaluation process included in SALL. A pre-post design will be followed for administrating the evaluation tools of the SALL project in order to identify changes in the four participation levels as a result of the implementation of the SALL methodology. During the implementation activities in schools, the partners will provide support to the participants and collect data and feedback when needed.

The first steps of the evaluation, including the SWOT analysis, will enable teachers and headteachers to assess how they can best use the Living Lab projects to improve and transform their schools.

The evaluation framework is described in deliverable D5.1 'Evaluation framework'.

| | YEAR 1 FOCUS COMMUNITY | | | YEAR 2 WIDER COMMUNITY | | YEAR 3 WIDER COMMUNITY | |
|---|---|---|---|---|---|---|---|
| Participation level | Pre-Year 1 | Post-Year 2 | | Pre-Year 1 | Post-Year 2 | Pre-Year 1 | Post-Year 2 |
| Students | Questionnaires | Questionnaires | | Questionnaires | Questionnaires | Questionnaires | Questionnaires |
| Teachers | Expectancies SWOT | Impact SWOT | Case studies | Beliefs questionnaire towards SALL approach | Beliefs questionnaire towards SALL approach | Beliefs questionnaire towards SALL approach | Beliefs questionnaire towards SALL approach |
| Schools | | | | Beliefs questionnaire towards SALL approach | Beliefs questionnaire towards SALL approach | Beliefs questionnaire towards SALL approach | Beliefs questionnaire towards SALL approach |
| Societal Actors | | | | Beliefs questionnaire towards SALL approach | Beliefs questionnaire towards SALL approach | Beliefs questionnaire towards SALL approach | Beliefs questionnaire towards SALL approach |



## 2.3. Implementing the Living Lab projects

Once set up, the Living Lab projects operate using an iterative cycle comprising four steps: co-creation, exploration, experimentation, evaluation. This cycle can be repeated to improve the solutions designed.


### 2.3.1. Co-creation

The objectives of the co-creation phase are to identify needs and issues, build a wide range of ideas and solutions, and finally to select a few relevant ideas to implement in the next phase.

Once the topic is selected and relevant societal actors are on board, it is time to choose the issue the project partners will address. It is important that all partners have ownership of the issue to be addressed.

At the end of the co-creation process, participants should have:

- An overview of identified expectations, needs, constrains, values … of all participating societal actors (share and acknowledge)
- A common understanding of the issue to be solved (clarify – narrow down)
- A common vocabulary (respect and understand each other)
- A set of ideas on how to address the issue that will be explored during the next phases (use imagination)

During the co-creation phase, the participant will address the following:

A. Identify the needs and expectations of societal actors

All participants should build a common understanding of the needs of all concerned societal actors, and ensure that all of them have some expertise, relevance and ownership of the chosen issue. If needed, the needs and expectations from all local actors may be explored through interviews, SWOT analysis or simply informal conversations.

B. Build a common project culture

All activities implemented together will contribute to strengthen the partners' feeling that they are truly part of the project. Yet it is important to pay attention that the group sticks together, that members trust each other, and that they all understand the project. A culture of acknowledgement of

each other's expertise should often be reaffirmed during the project lifetime. Small actions and activities, that may be repeated as "community rituals", should reinforce the feeling of a valued contribution.

C. Foster creativity, imagination and wild thinking

It is crucial that all participants' voices are heard. The students', of course, but all other societal actors' as well. This is the first stage where all actors learn how to really work with each other on equal terms. Any appropriate creativity method is welcome. It is good to propose various exercises that allow different types of expression (i.e. speaking, writing, drawing, moving, discussion, etc.), and where participants can take a turn in facilitating.

D. Monitor how we feel

There are not many tangible outcomes at this stage, yet the project might have been going on for a while already. To keep everyone on track it can help to monitor how things are going, how people feel in the project. If a little loss of energy and sense of purpose is observed, remember that this is likely to disappear as the project moves to the exploration phase:

- Open discussion or questionnaire: "how I feel?": in general, about the process, with the result
- Reflect throughout the process on how each actor is contributing
- Don't forget to acknowledge that listening IS contributing
- Take some time to look back at the overall planning of the project

**How to co-create ideas?**

Various tools and formats such as brainstorming, mind mapping or the organization of a world café may then be implemented to frame issues, generate ideas and build consensus while allowing all voices to contribute. Here are a few tips and inspiring examples:

- Before asking them for solutions, have a playful activity to boost the students' confidence, such as an icebreaker activity.
- Have a brainstorming session where students generate a maximum of ideas to respond to one or several issues, and then select the ones they will work on. Trying to find a big quantity of (good and bad) ideas, rather than a few good ones, often decreases the pressure and enable to speak freely. Many good ideas are born from "tweaking" bad ones!
- If they stall on their first ideas, stimulate them with other possibilities, is it possible to: find a solution using nature? Using an organization of people, helping each other? Using a pen and a notebook? Using geolocalization (through a smartphone or a GPS device)? What if the solution has to be an object? A smartphone app? A book?
- Have students search the internet for solutions that have been tried in other places, as inspiration.
- There are a huge number of ways to change the format of a brainstorming session, to adapt and vary the creative processes. You can have all students transform all the ideas with a World

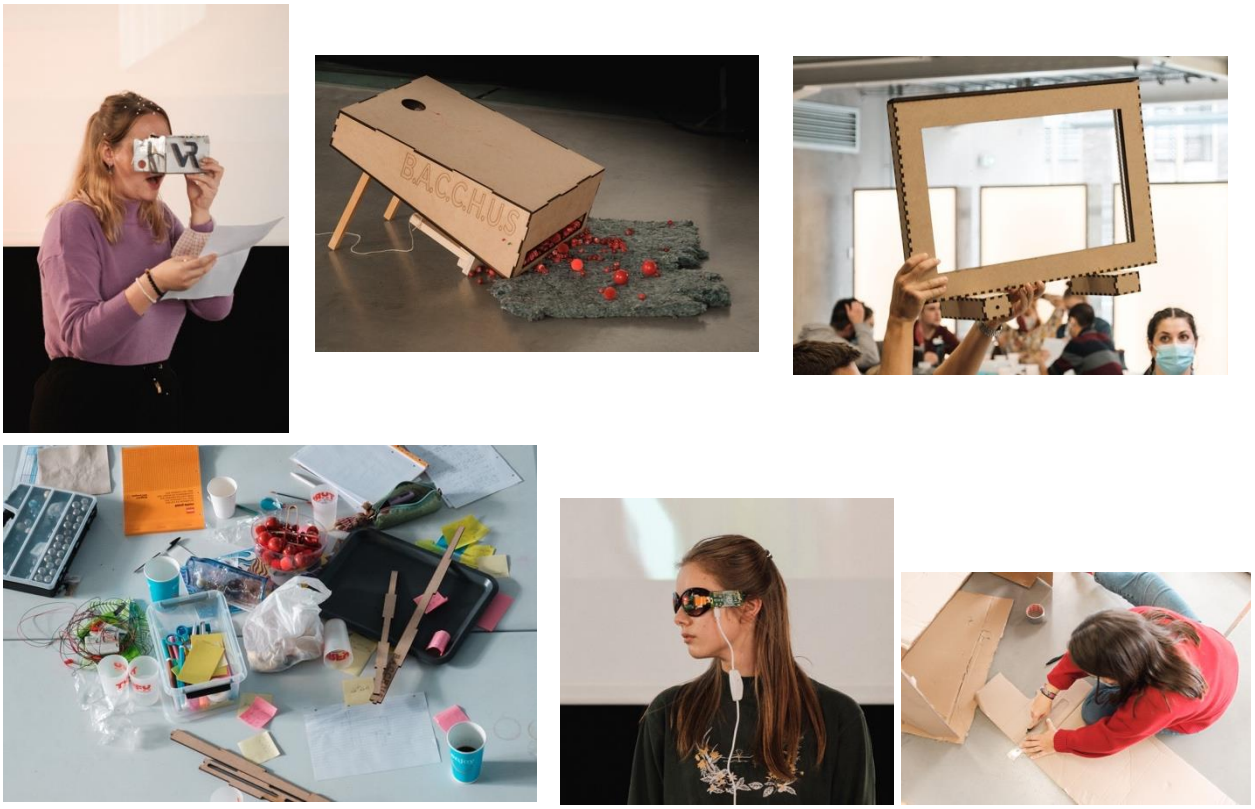
café, have them practice their oral skills with a timed sixty seconds elevator pitch, or, if your class loves competition, use another class as a jury, to select their favourite idea and celebrate it!!!

### 2.3.2. Exploration

The exploration step's objectives are the following:

- To deepen the ideas selected at the end of the co-creation phase, to elaborate a large number of details about their use;
- To identify the "core value" of each idea, the one that will be tested in the experimentation phase;
- To spot opportunities for new uses, new markets, better experiences;
- To reflect on the idea "by doing", by making, writing, elaborating details, rather than just by conceptualizing general concepts;

These objectives are mainly achieved by building **prototypes** (low-fidelity models) of the services or products. Prototypes are made through simple and inexpensive material (cardboard, paper, Lego bricks…), to represent and test some particular features of the idea.




*Examples of prototyping taken from the Living Lab projects of the TURFU Festival 2020, festival of participative research and innovation, led by Le Dôme in Caen. © Le Dôme.*

Moving from the idea to the prototype requires starting an analysis agreement on some tested elements in the future. The participants should ask themselves the following questions:

- What does our idea need to be successful?
- What seems to be a critical element for the idea?
- How can we make it easy to use, simple and reliable?
- What could increase its impact, help more people, make it more efficient?
- How can we ensure people will actually use it?
- What part of the idea is likely to work well? Where will the issues most probably come from?
- Are there some ethical issues liked to the idea? Some social or political issues? Are there some acceptability issues?

Based on this analysis, which aspect of your idea would the participants like to test? What question should the test give an answer to?

(Examples: *is the **program** of my event **attractive** to my audience? Will **people actually use** the new compost? **What time and place** is best to give food to homeless people?)*

When the participants have one or several testing questions, they may start to identify the kinds of prototypes which will allow me to answer the questions through a test? It is recommended to be as simple as possible: for example, is it possible to test that aspect with paper (e.g.: a flyer showing the program of a conference, drawings of the screens of the smartphone app…)? With a questionnaire (e.g.: "would you pay 1€ each month to decrease the school carbon footprint?")? With a simple homemade object, made of cardboard or basic materials? With a storyboard (e.g. you can use the https://www.storyboardthat.com/ online platform) to explain clearly the service to people? With a model made of building blocks or Lego blocks?

One idea of solution can lead to a wide number of different prototypes, depending on what needs to be tested. As an example, you may read below how the same idea (installing a composter) is prototyped in various ways:

Identified problem:

**Too much organic waste in the school**

Selected solution:

**To install a composter near the school canteen, where the organic food waste should be disposed.**

**Raised questions:**

1. What are the best materials to build the composter?
2. At what distance should the composter be from the school canteen?
3. What types of food (organic waste) can be placed in the composter?
4. How will the organic waste be separated from the rest of the canteen waste?
5. Who is going to place the food waste in the composter?
6. With which frequency the food waste is going to be disposed in the composter?
7. Where does the brown residues needed to put in the composter (leaves, twigs, etc.) come from?

8. With which frequency the obtained compost (organic matter) should be harvested from the composter?
9. Where will the harvested compost should be placed?
10. Who is going to manage (harvest and use) the formed compost?

The above questions follow a line of reasoning that starts with **placing a composter in the school**, going through **managing the food waste** that can go to the composter, until the final step of **managing the compost** that was formed.

In order to test the solution (to install a composter) it is important to develop different tests that answer the raised questions.

**1. <u>Placing a composter</u>**

**What is being tested?** The quality of the materials used to build the composter, the size of the composter

**a. Who is testing it?** Project participants + canteen staff + experts on composter (the last two may be already involved as societal actors)

**b. What kind of prototype could be developed?**

**Physical prototype (object):** a low-fi composter that could be used to evaluate the quality of the materials (wood vs. plastic, wide vs. narrow net, etc.)

**d. Questions that will be answered with this tests:** 1

**2. <u>Managing the food waste</u>**

**What is being tested?** The path that food waste has to take to reach the composter

**a. Who is testing it?** Project participants + canteen staff + canteen users (students, teachers, other staff) + experts on composting (if not already involved as societal actors)

**b. What kind of prototype could be developed?**

**Role play:** This technique can be useful, for example, to understand how the separation of organic waste can be done in the canteen (a special line and area for students to "clean" the dishes after the meal?) and if the solution would not introduce chaos in the normal function of this area.

**Storyboard:** A storyboard (handmade or digital) would allow to see in great detail the needed changes to manage the food waste, for example, how the “visits” to the composter could be added to the regular work/school schedule of those responsible for the task.

**Model:** Through a model (made of paper cuts or even playmobil pieces) it would be possible to visualize the new canteen arrangement with the waste separation, for example, and even to visualize the location of the composter in relation to the canteen.

**d. Questions that will be answered with this test:** 2, 3, 4, 5, 6, 7

**3. <u>Managing the compost</u>**

**a. What is being tested?** The process of harvesting and using the compost that will be formed in the composter

**b. Who is testing it?** Project participants + canteen staff + canteen users (students, teachers, other staff) + experts on composting + people responsible for the green areas of the school (the last two if not already involved as societal actors)

**c. What kind of prototype could be developed?**

***Role play:*** This technique can be useful, for example, to understand the process of collecting the compost from the composter and take it to the nearby vegetable garden (if the vegetable garden is not

in the school, is there enough time to those responsible for the task to go outside during a regular school day?)

***Storyboard:*** A storyboard (handmade or digital) would allow to analyze in detail the process of harvesting and using the compost.

***Model:*** Through a model (made of paper cuts or even playmobil pieces) it would be possible to visualize the location of the composter in relation to the vegetable garden (or other places) where the compost would be disposed.

**Questions that will be answered with this test:** 8, 9, 10

### 2.3.3. Experimentation

The experimentation aims to try out the prototype or scenario in a real-world setting. During this step, the main testing questions have to be defined as precisely as possible to guide the design of a testing protocol. The protocol is then implemented in a real-world setting, with users.

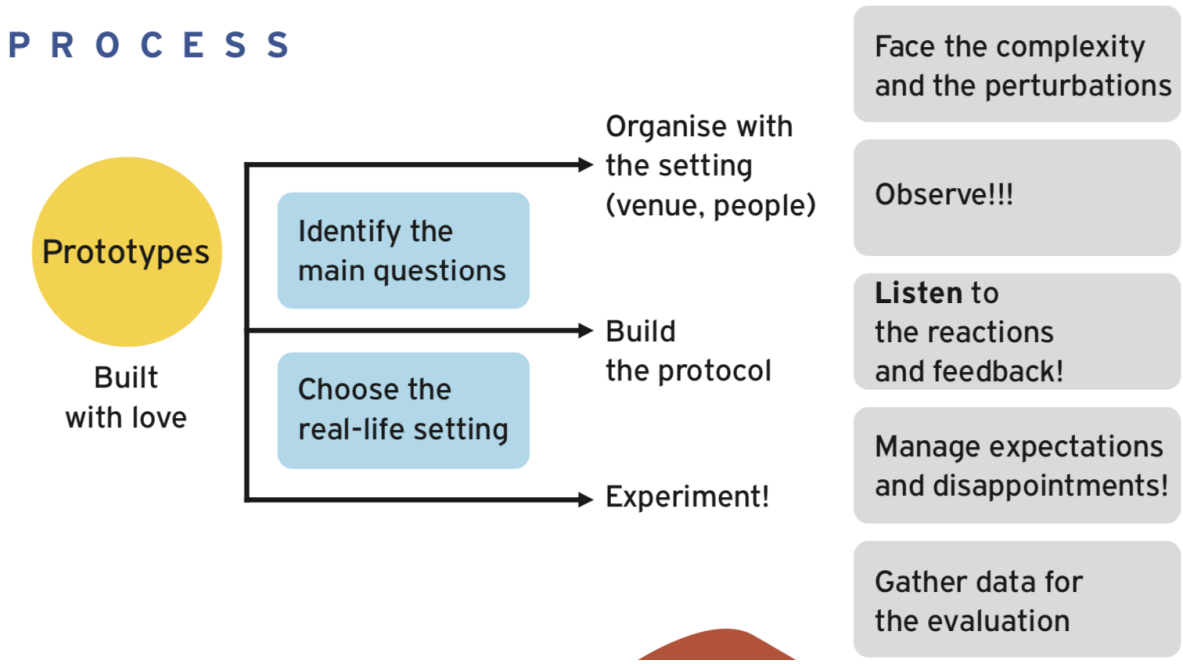
The setting can be in a physical or a digital environment, but should be a place that is actually used by the users and not an isolated lab environment, in order to have the users in their real context. The users may then test the prototypes and offer feedback, which is often collected through interviews and discussions, questionnaires or silent observation.

In the SALL project, the experimentation serves several goals. Of course, it enables to test the ideas of the solution so they can be validated or improved. However, it offers other important benefits or opportunities, especially for students:

- Creating an environment to discuss the topic around a shared experimentation,
- Being confronted to other views, values and experiences of the world, and being able to listen to them,
- Grasping the complexity of the real world, its perturbations, and how it is different from conceptual models often learned at school,
- Finding value in unexpected places: in an apparently off-topic comment, in an aspect of the prototype that wasn't noticed before
- Gathering data and understanding what makes it valuable

Teachers will make sure their students are well prepared before the experiment. First of all, the experimentation should be framed on the following aspects:

- Testing questions: what are the main questions the test should answer, and how?
- Testing users: are there some specific people that should test the prototype? Some specific categories? Where is the best place to find them?




Moreover, the students and all people involved in the tests should be aware of the posture that is necessary for a fruitful experimentation. This posture focuses on reassuring the users involved in the testing, gathering data, being available and thankful for the feedback. Most of all, it is based on the idea that during the test, the important voice is the one of the testing user, and not the voice of the team that is leading the project. Once again, the Living Lab methodology is based on recognizing the users' expertise. Thus, the following advice may be useful for the people conducting the experimentation:

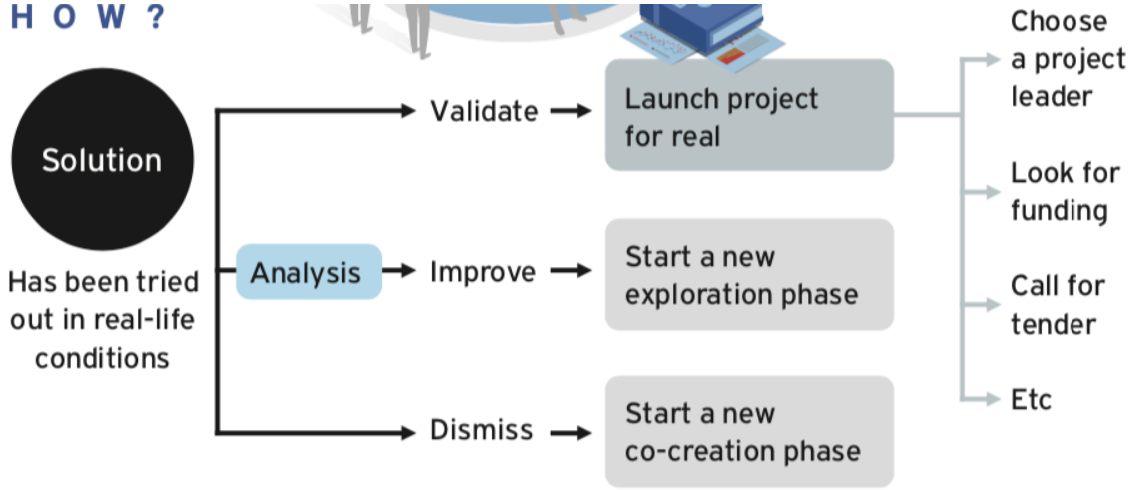
- Experimentation is NOT about proving that your idea is good. It's about finding out what is wrong. It will be frustrating to see things fail or to hear people tell you that your idea is wrong, but greet it all with a calm smile... Be thankful for the unexpected issues that arise!
- Experimentation is not the time to react and fix your ideas, even if it is tempting... Focus mainly on the tests, and you will fix things later during the evaluation phase.
- Be kind to people participating to your experimentation: they give you their time, attention and feedback. Even if the feedback is difficult to hear, show your gratitude.
- You may become aware of unexpected perspectives, such as ethical concerns, political views, etc. that may influence the users. Use these moments to build empathy and understand others' perspective (which does not mean you agree with them!).
- You will discover much more by looking carefully at what happens, and by listening at the feedback with attention, than by showing and explaining.

### 2.3.4. Evaluation

In this part, the term "evaluation" does not designate the SALL project evaluation, but one step of the Living Lab cycle. The aim of this step is to analyse the results of the experimentation, so that the solution can be validated or improved.

In this phase, the project participants, including the local actors, can take a step back to analyse the experience and the data collected during the experimentation. All actors are involved in new collaborative tasks: first of all, making sense of the data collected, agreeing on its interpretation. Various expertise, values or ethical choices must discuss to build a consensus, answering the question: what have we learned from the experimentation?

From there, three directions are possible. If an important flaw has to be addressed, a new Living Lab cycle can start to answer that challenge, with all four steps. If only minor issues to fix, with clear solutions, have been identified, the next step is to amend the solution accordingly with a new prototyping. Last, if the tests fully validate the idea, the next step is to start launching the idea for real, looking for support or funding if necessary.




## 3. The Road Map

In order to support National Coordinators and teachers, the SALL consortium has summarised the methodology into a Roadmap: a document that presents the methodology in a clear, engaging and condensed way. It gives an overview of the whole methodology so that each local actor may fully understand the “big picture” and what they should expect and what they are committing to. It also provides guidelines for each step, with practical hints and advice to implement the methodology. This document has been designed to be short, accessible and user-friendly, especially for people unfamiliar with Living Labs, Open Schooling or the European projects terminology.

A first version of the roadmap has been written and designed after the first WP2 collaborative workshop, in January 2021. Following the second collaborative workshop, in June 2021, the roadmap has been amended to include new contributions from the SALL partners, making it more practical, and offering more precise guidelines. This last version can be read below, while the first version is present in annex.

SALL

SCHOOLS
AS LIVING
LABS

# A road map for schools

The SALL project has received funding from the European Union´s Horizon 2020 Framework Programme for Research and Innovation under Grant Agreement No. 871794. The content of this document is provided by the SALL project consortium and does not necessarily reflect the views of the European Commission. The European Commission is not liable for any use that may be made of the information contained herein.

In this short "roadmap" you will find some practical instruments and guidelines to engage in, and develop, a Living Lab Project. You can use, transform, and adapt them for your own context. Remember the 3 characteristics that really define a Living Lab project:

1. **Real issue**, real solution, making use of the participants' personal experience
2. **Co-creation**, involving all impacted societal actors
3. **Quick prototyping**, with ideas immediately put in practice and tested.

**Co-creation**
Select issues, identify needs and produce a wide range of ideas

**Exploration**
Turn ideas into use case scenarios and prototypes, explore opportunities.

**Evaluation**
Validate, discuss, improve or dismiss the solutions

**Experimentation**
Test in real-life situations.

# THE GENERAL STRUCTURE

## Phase 0 PREPARATION

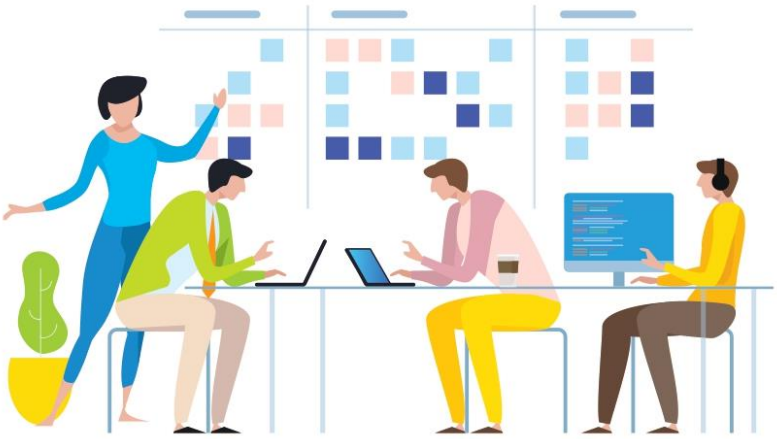
The Food System theme

The topic

Societal actors

SALL project evaluation

## Phase 1 STEPS OF THE LL METHODOLOGY



**Step 1** Co-creation

**Step 2** Exploration

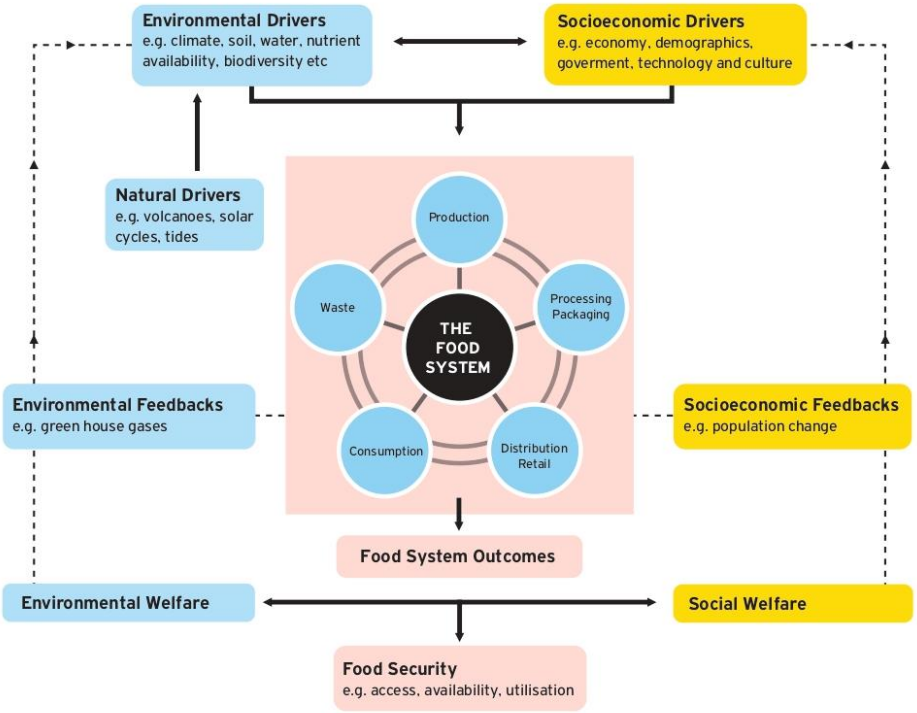
**Step 3** Experimentation

**Step 4** Evaluation

# THE FOOD SYSTEM THEME

## From pitchfork to fork: which challenges for our food system?

The food system is a complex web of activities involving the production, processing, transport, and consumption of food. This can include many different aspects, such as food waste management, cultures and traditions of food, carbon footprints of the food system, agriculture, physiology of taste, packaging, local circulation of food, health issues, economy, aesthetics, ... Each school will define what is most relevant for them. Some ideas about the food system:




*The food system and its drivers. Adapted from Ericksen 2008*
*https://www.futureoffood.ox.ac.uk/what-food-system*

In a Living Lab project, identifying and engaging societal actors and choosing a topic are conducted side by side, because each societal actor has a say in how the topic will be shaped. It is important not to have too strict a definition of the topic until all societal actors are aboard.

**How to explore the food system theme with a school team, or with a class of students?**

Here are a few tips and examples that may inspire you:

- Ask everyone which ideas, examples, thoughts or elements are linked with the "Food System" theme, at both local and global levels. You may then group some elements together, see the main topics arise, and demonstrate that there is actually a lot of knowledge and diverse perspectives in the room!
- Ask everyone what actions they do every week in relation to food (buying, growing, eating, wasting food...). Or ask them what actions the school do every week in relation to food (school meals, a garden, waste, etc.). This can be a great way to explore the topic in a very personalized way.
- Start the project with a shared meal, where everyone brings a dish from their own culture. First of all, it's a joyful way to start, that also brings awareness of the multi-cultural environment in the school. Moreover, this may highlight the diversity of relationships and approaches related to food, and foster inspiration or ideas for the future projects.

# THE TOPIC

## List of guiding questions to engage discussion

1. What is the characteristic of a "topic"?
2. The local context must me analysed: Which are the main concerns? Who can act about it?
3. The topic must be defined with all the actors: What topic would get you involved in a project?
4. It is important to remain open, the topic can change: Is there a way that transforming the topic will get you more involved?

Tool: collage for all partners to share their views and understanding of the topic

Most important: Walk in the neighborhood, chat with the people who live there... (For the National Coordinators, the teachers, all those who lead the project!)

Yet, the narrowing of the topic will also lead to a better identification of some actors that were not necessarily thought of in the first place. The project will start with a few core group of actors, among which the school will be the first one to board. This core group will then define new actors that need to be approached (see the "engaging societal actors" section).

**How to choose the topic with a school team, or with a class of students?**

Here are a few tips and examples that may inspire you:

- If you had a common exploration of the Food System theme, ask everyone: what are the elements that strike you, and why? Are there some elements that seem particularly important to you? Which elements are relevant for us, as individuals, as a class, as school, as a city...?
- Examine the specific resources and partners you could find in your local areas: is there a farm, a fisherman, a food factory, a recycling center? Do you have some fast food, or some posh restaurants you could work with? These may orient your choice of topic.
- Some elements are often perceived as unfair – or even revolting – by students: excessive food waste, animal cruelty, homeless people, pollution or ecological damage... If you identify such a sensitivity on a classroom, you can target the topic adequately to increase the students' engagement and motivation.

# ENGAGING SOCIETAL ACTORS

Societal actors need to be identified and brought into the project from the start. They are full partners of the project from day 1. As the project evolves it is possible that the group will realize that some important societal actors have not been identified. It is never too late to bring someone new on board.

## A. IDENTIFYING SOCIETAL ACTORS

- Listing all possible stakeholders
- Drawing up of criteria
- Stakeholder analysis
- Selecting a shortlist

## B. APPROACHING SOCIETAL ACTORS

- Get in touch
- Persuade
- Reduce the risk
- Be open!

## C. WORKING WITH SOCIETAL ACTORS

**At the start of the project:**

- Take time to get to know each other
- Define goals and ambitions
- Discuss resources
- Discuss constraints
- Organize a kick-off meeting
- Discuss the topic of ownership
- Agree on communication and project management
- Organize regular meetings
- Document and share findings
- Add missing actors.

**During co-creation sessions:**

- Actively involve all actors
- Document all decisions
- Promote good communication
- Determine a location
- Foster intrinsic motivation

## D. BUILDING SUSTAINABLE CONNECTIONS WITH STAKEHOLDERS

- Take the time to evaluate the collaboration after the project ends
- Celebrate the successes!

Find further information and examples about this point in the SALL Report "Methodology for the Engagement of School Living Labs with Stakeholders" (Deliverable D3.1).

*https://www.schoolsaslivinglabs.eu/resources/methodology-for-the-engagement-of-school-living-labs-with-stakeholde/*

At this stage, it might be useful to have a rough idea of what the topic will be. It will be easier to approach new partners with a topic, even though some might be more interested in the Living Lab process and/or the opportunity to work hand in hand with the school.

# POSSIBLE MOTIVATIONS FOR STAKEHOLDERS

Stakeholders can have different motivations to join a Living Labs project. Below is a list of possible motivations:

- Assistance in solving the stakeholder's problem
- Corporal industrial responsibility
- Interest in the subject
- Interest in the problem
- Networking with other community agents
- Personal interest in the subject
- Professional challenge
- Professional curiosity
- Promoting academic research by providing data
- Helping in academic research by being a subject in citizen science
- To attract students to scientific careers/ universities
- To be aware of new environmental friendly solutions
- To be socially involved
- To get to know the neighborhood
- To give a social dimension to my brand
- To help and be an active citizen
- To improve services/ products
- To learn young people's opinions
- To pilot a new product (or solution)
- To promote my brand
- To promote vocations
- To test new solutions or products
- To test their products with different targets
- To work with other stakeholders

In previous Living Labs projects, it has been observed that in each project, multiple motivations can usually be found during the course of the project. Below are a few examples of Living Labs projects in connection to the list above.

## Examples

*Farmers helping farmers*
In this Living Labs project, the aim was to help farmers use their land in a more sustainable way. When approaching farmers who might be willing to participate via email and telephone proved unsuccessful, one team member decided to directly approach a farmer that already applied different strategies for improving biodiversity and sustainability on their farmland. Together, they educated a different farmer with a less sustainable business on how to increase biodiversity and sustainability on their farmland. The motivations for stakeholders to participate in this project were: Assistance in solving the stakeholder's problem; To work with other stakeholders; To be aware of new environmental friendly solutions

*An apple a day...*
This Living Labs project focused on helping an elementary school provide their students with healthy and sustainably grown fruits. The team approached a local famer, who agreed to deliver a weekly fruit basket to the school. The motivations for stakeholders to participate in this project were: To work with other stakeholders; To be socially involved.

*An **APP**etizing way to reduce food waste*
A lot of food is wasted on the consumer side of the chain, which is a problem that was addressed in this Living Lab. The team tried approaching big super market chains or big name producers of food stuffs, but found these to be less open to a collaboration. Eventually, they found a group of stakeholders within their own community: a teacher of the school (the owner of an organization that aims to increase sustainability in schools) as well as two parents of students working in the Living Labs team (a cook in a local care facility and the owner of a local take-out restaurant) agreed to participate in the project. By conducting a brainstorming session involving all stakeholders and students working on the project, the students were able to gather a lot of information on reducing food waste. This led to the idea of creating an app that educates consumers on how to reduce food waste. The different motivations for stakeholders to participate in this project were: To work with other stakeholders; Personal interest in the subject; To be socially involved.

*Paper or plastic?*
The students in this Living Labs project really wanted to reduce the amount of plastic used in supermarkets, specifically by reducing the amount of plastic shopping bags used. The local supermarket happened to be right at the transition point going from plastic bags to bags made of other materials. To help, the students conducted a questionnaire amongst the residents in the neighbourhood who shop at the supermarket. They aimed to find out which materials the costumers preferred, how much money they were willing to pay for a reusable shopping bag and whether they were more or less likely to buy such a bag for the same or a slightly increased price point as compared to the usual plastic bags. The results of this questionnaire were presented by the students to the supermarket, that then used this information to make a plan for their transition that ideally suits their customers. The different motivations for stakeholders to participate in this project were: Assistance in solving the stakeholder's problem; To get to know the neighbourhood; To improve services/ products.

# SALL project evaluation

A pre-post design will be followed for administrating the evaluation tools of the SALL project, in order to identify changes in the four participation levels as a result of the implementation of the SALL methodology. During the implementation activities in schools, the partners will provide support to the participants and collect data and feed-back when needed.

| | YEAR 1 FOCUS COMMUNITY | | | YEAR 2 WIDER COMMUNITY | | YEAR 3 WIDER COMMUNITY | |
|---|---|---|---|---|---|---|---|
| Participation level | Pre-Year 1 | Post-Year 2 | | Pre-Year 1 | Post-Year 2 | Pre-Year 1 | Post-Year 2 |
| Students | Questionnaires | Questionnaires | | Questionnaires | Questionnaires | Questionnaires | Questionnaires |
| Teachers | Expectancies SWOT | Impact SWOT | Case studies | Beliefs questionnaire towards SALL approach | Beliefs questionnaire towards SALL approach | Beliefs questionnaire towards SALL approach | Beliefs questionnaire towards SALL approach |
| Schools | | | | Beliefs questionnaire towards SALL approach | Beliefs questionnaire towards SALL approach | Beliefs questionnaire towards SALL approach | Beliefs questionnaire towards SALL approach |
| Societal Actors | | | | Beliefs questionnaire towards SALL approach | Beliefs questionnaire towards SALL approach | Beliefs questionnaire towards SALL approach | Beliefs questionnaire towards SALL approach |

**Pilot study year 1** (in-depth analysis):

**Students questionnaires:**
- Science Attitudes
- Civic Engagement

**SWOT Analysis**
(Strengths,Weaknesses, Opportunities,Threats)
- Expectancies SWOT (before)
- Impact SWOT (after)

**Case studies**

**Take some time to reflect on what happened:**

- List all the elements that seem to work well, and all the assets you found that your idea has.
- List all the elements that seem to be problematic, to be weak or to fail.
- List all the opportunities that the tests have uncovered: are there some people that were particularly interested? Some possible new places or environment for your solution? Some ways to use your idea in a different way? Some new people or organization that could play a role in your idea?
- List all the possible threats that have been identified: is there something that will make your idea obsolete? Some situations (e.g. bad weather, strike...) that will prevent your idea form working? Can your idea be used in a wrong way, that would make things worse?
- Now, how could your idea be improved? If it is obvious or simple enough, let's implement the change! If it seems too complicated, you may need a new brainstorming session, a bit of documentation, and discussions with all partners to find a way to improve.
- When your idea is improved, what is the next step? First of all, CELEBRATE!!! You have ended a whole Living Lab cycle, congratulations! If you still have time and resources, you can prototype the improved idea and test it again. If the idea seems good enough... What would it take to launch it for real?

# STEP 1: CO-CREATION

**AIM: Identify needs and articulate ideas (of products, services, solutions) from all participants. Define the issue.**

Define the issue: Once the topic is selected and relevant societal actors are on board, it is time to choose the issue the project partners will address. It is important that all partners have ownership of the issue to be addressed.


### Identify the needs and expectations of societal actors

Understanding not only the needs of the project participants but also that all concerned societal actors have ownership of the chosen issue.


### Build a common project culture

A culture of acknowledging each other's expertise and contribution is reaffirmed through little actions and activities. Some of them will be carried on all through the project and become "community rituals".


### Get creative!

**Foster imagination and wild thinking**

It is important that all participants' voices are heard. The students', of course, but all other societal actors' as well. This is the first stage where all actors learn how to really work with each other on equal terms. Any appropriate creativity method is welcome. It is good to propose various exercises that allow different types of expression (i.e. speaking, writing, drawing, moving, discussion, etc), and where participants can take turn in facilitating.


### Monitor how we are doing

There are not many tangible outcomes at this stage, yet the project might have been going on for a while already. To keep everyone on track it can help to monitor how things are going, how people feel in the project. If a little loss of energy and sense of purpose is observed, remember that this is likely to disappear as the project moves to the exploration phase:

- Open discussion or questionnaire: "how I feel?": in general, about the process, with the result
- Reflect throughout the process on how each actor is contributing
- Don't forget to acknowledge that listening IS contributing
- Take some time to look back at the overall planning of the project

**How to co-create ideas?**

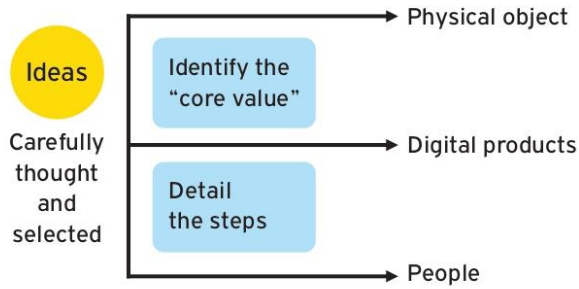
Here are a few tips and examples that may inspire you:

- Before asking them for solutions, have a playful activity to boost the students' confidence, such as an icebreaker activity.
- Have a brainstorming session where students generate a maximum of ideas to respond to one or several issues, and then select the ones they will work on. Trying to find a big quantity of (good and bad) ideas, rather than a few good ones, often decreases the pressure and enable to speak freely. Many good ideas are born from "tweaking" bad ones!
- If they stall on their first ideas, stimulate them with other possibilities: is it possible to find a solution using nature? Using an organization of people, helping each other? Using a pen and a notebook? Using geolocalization (through a smartphone or a GPS device)? What if the solution has to be an object? A smartphone app? A book?
- Have students search the internet for solutions that have been tried in other places, as inspiration.
- There are a huge number of ways to change the format of a brainstorming session, to adapt and vary the creative processes. You can have all students transform all the ideas with a *World café*, have them practice their oral skills with a timed *sixty second elevator pitch*, or, if your class loves competition, use another class as a jury, to select their favorite idea and celebrate it!!!

# STEP 2: EXPLORATION

**AIM: Deepen some ideas > Identify the main questions or elements to be tested > Confront the solutions to the real world > Face feedback, unexpected perspectives, new questions.**

## PROCESS




- Build a physical prototype
- Build a digital prototype
- Build a story of the service
- Build a low-fidelity version of the service with real people
- Build a dramatic representation

## OUTPUTS

- The details about the products and services prototyped
- The prototypes, representations, low-fidelity models
- The main opportunities that have been spotted and that could be tested
- The main questions arising from the work

## FROM THE IDEA TO THE PROTOTYPE

**So, you have an idea?**

Let's do a bit of analysis first. What are the main questions the project participants should ask themselves?

- What does our idea need to be successful?
- What seems to be a critical element for the idea?
- How can we make it easy to use, simple and reliable?
- What could increase its impact, help more people, make it more efficient?
- How can we ensure people will actually use it?
- What part of the idea is likely to work well? Where will the issues most probably come from?
- Are there some ethical issues liked to the idea? Some social or political issues? Are there some acceptability issues?

Based on this analysis, which aspect of your idea would you like to test? What question should the test give an answer to?
(Examples: *is the **program** of my event **attractive** to my audience? Will **people actually use** the new compost? **What time and place** is best to give food to homeless people?*)

| **The test should answer the question: ...** |
|---|

**So, now you have one or several testing questions!**
Which kinds of prototypes will allow me to answer the question through a test? Let's be as simple as possible: for example, is it possible to test that aspect with paper (e.g.: a flyer showing the program of a conference, drawings of the screens of the smartphone app...)? With a questionnaire (e.g.: "would you pay 1€ each month to decrease the school carbon footprint?")? With a simple homemade object, made of cardboard or basic materials? With a storyboard (e.g. you can use www.storyboardthat.com/) to explain clearly the service to people? With a model made of building blocks or Lego blocks?

# STEP 3: EXPERIMENTATION

**AIM: Try out the prototype or scenario in a real world setting**

## PROCESS

Prototypes

Built with love

- Identify the main questions → Organise with the setting (venue, people)
- Choose the real-life setting → Build the protocol
- Experiment!

Face the complexity and the perturbations

Observe!!!

**Listen** to the reactions and feedback!

Manage expectations and disappointments!

Gather data for the evaluation


## OUTPUTS

- Protocols of experimentation
- Documentation of the experimentation itself
- Data for the evaluation

**Make sure your students are well prepared before they experiment!**

They should be made aware of the following:

- When preparing, ask yourself: what are the main questions the test should answer, and how?
- Are there some specific people that should test the prototype? Some specific categories? Where is the best place to find them?
- Experimentation is NOT about proving that your idea is good. It's about finding out what is wrong. It will be frustrating to see things fail or to hear people tell you that your idea is wrong, but greet it all with a calm smile... Be thankful for the unexpected issues that arise!
- Experimentation is not the time to react and fix your ideas, even if it is tempting... Focus mainly on the tests, and you will fix things later during the evaluation phase.
- Be kind to people participating to your experimentation: they give you their time, attention and feedback. Even if the feedback is difficult to hear, show your gratitude.
- You may become aware of unexpected perspectives, such as ethical concerns, political views, etc. that may influence the users. Use these moments to build empathy and understand the others' perspective (which does not mean you agree with them!).
- You will discover much more by looking carefully at what happens, and by listening at the feedback with attention, than by showing and explaining.

# STEP 4: EVALUATION (of the prototype)

**AIM: Analyze the experimentation results to validate or improve the solution**

**EVALUATION** ≠ **EVALUATION**

Activities

4th phase of the Living Lab Cycle

decision making | data analysis | data collection

SALL project evaluation

**Evaluating the deriving prototype**

**Receiving participants' feedback for the implementation of the overall SALL methodology**

## HOW ?

Solution

Has been tried out in real-life conditions

- Validate → Launch project for real
  - Choose a project leader
  - Look for funding
  - Call for tender
  - Etc
- Analysis → Improve → Start a new exploration phase
- Dismiss → Start a new co-creation phase

## OUTPUTS

**A document (or a blog, or a map....) with :**

- the description of each "prototype"
- the data gathered in the experimentation phase
- the lesson learned from the experimentation phase
- the decision made regarding each solution

This "document" is accessible (as easy to read and understand by anyone) and avalaible to all participants as well as to the local community at large.

At the end of an evaluation phase, all participants will know which solution will be transformed into a long lasting solution OR decide for a new cycle starting at co-creation or exploration.

# AN EXAMPLE OF PROTOTYPING

Our issue:
**Too much organic waste in the school**

Our solution:
**To install a composter near the school canteen, where the organic food waste should be disposed.**

**After analysis, we raised the following questions:**

1. What are the best materials to build the composter?
2. At what distance should the composter be from the school canteen?
3. What types of food (organic waste) can be placed in the composter?
4. How will the organic waste be separated from the rest of the canteen waste?
5. Who is going to place the food waste in the composter?
6. With which frequency the food waste is going to be disposed in the composter?
7. Where does the brown residues needed to put in the composter (leaves, twigs, etc.) come from?
8. With which frequency the obtained compost (organic matter) should be harvested from the composter?
9. Where will the harvested compost should be placed?
10. Who is going to manage (harvest and use) the formed compost?

The above questions follow a line of reasoning that starts with **placing a composter in the school**, going through **managing the food waste** that can go to the composter, until the final step of **managing the compost** that was formed. Here are three examples of tests that tackle those three aspects.

1. **Placing a composter**

   a. **What is being tested?** The quality of the materials used to build the composter, the size of the composter
   b. **Who is testing it?** Project participants + canteen staff + experts on composter (the last two may be already involved as societal actors)
   c. **What kind of prototype could be developed?**
   **Physical prototype (object):** a low-fi composter that could be used to evaluate the quality of the materials (wood vs. plastic, wide vs. narrow net, etc.)
   d. **Questions that will be answered with this tests**: 1

2. **Managing the food waste**

   a. **What is being tested?** The path that food waste has to take to reach the composter
   b. **Who is testing it?** Project participants + canteen staff + canteen users (students, teachers, other staff) + experts on composting (if not already involved as societal actors)
   c. **What kind of prototype could be developed?**
   **Role play:** This technique can be useful, for example, to understand how the separation of organic waste can be done in the canteen (a special line and area for students to

"clean" the dishes after the meal?) and if the solution would not introduce chaos in the normal function of this area.
**Storyboard:** A storyboard (handmade or digital) would allow to see in great detail the needed changes to manage the food waste, for example, how the "visits" to the composter could be added to the regular work/school schedule of those responsible for the task.
**Model:** Through a model (made of paper cuts or even playmobil pieces) it would be possible to visualize the new canteen arrangement with the waste separation, for example, and even to visualize the location of the composter in relation to the canteen.
**d. Questions that will be answered with this test:** 2, 3, 4, 5, 6, 7

3. **Managing the compost**

**a. What is being tested?** The process of harvesting and using the compost that will be formed in the composter
**b. Who is testing it?** Project participants + canteen staff + canteen users (students, teachers, other staff) + experts on composting + people responsible for the green areas of the school (the last two if not already involved as societal actors)
**c. What kind of prototype could be developed?**
**Role play:** This technique can be useful, for example, to understand the process of collecting the compost from the composter and take it to the nearby vegetable garden (if the vegetable garden is not in the school, is there enough time to those responsible for the task to go outside during a regular school day?)
**Storyboard:** A storyboard (handmade or digital) would allow to analyse in detail the process of harvesting and using the compost.
**Model:** Through a model (made of paper cuts or even playmobil pieces) it would be possible to visualize the location of the composter in relation to the vegetable garden (or other place) where the compost would be disposed.
**d. Questions that will be answered with this test:** 8, 9, 10

# ANNEX

## Student's template

Dear students,
We would like to know about your Living Lab Project, so we invite you to tell us your story. Tell us how you agreed upon the challenge in your community, what and how you knew about it; who, how and when you worked with; the different steps that drove you to the outcome; the difficulties and achievements in the process; etc.
Here you have some topics and questions that may help you in the storytelling or you can expand your creativity and tell us your story in a totally free way.

Storytelling option #1: Overcoming a Monster

StoryTelling option #2: The Quest

StoryTelling option #3: the creative board

StoryTelling option #4: the visual template

You can write the story as you progress in the project, go back and forward in the narrative, or you can tell the whole story once you have finished.
We look forward to hearing about your adventure on this experience!

Storytelling option #1: Overcoming a Monster


*https://www.leaderonomics.com/articles/functional/ig-storytelling-structures-to-improve-presentations*

| Structure: | Content | Details |
|---|---|---|
| **First Scene:** | **Who or what does the story focus on**?<br>What is the difficulty/obstacle you tried to overcome? (the monster) | |
| **Second Scene:** | **What did you do** in order to prepare to confront this difficulty/obstacle? | |
| **Third Scene:** | **The monster revealed** –<br>What else did you learn about the difficulty/obstacle?<br>How did you deepen your understanding of the difficulty/ obstacle? | |
| **Forth Scene:** | **The first battle** –<br>What happened?<br>Why is the difficulty or obstacle not overcome? | |
| **Fifth Scene:** | **A different approach -**<br>Who helped you to find ways to overcome the difficulty/ obstacle? How?<br>What changed?<br>How do you know that you managed to deal with the difficulty/obstacle? | |
| **Sixth Scene:** | **Defeating the Monster** =<br>Overcoming the difficulty/ obstacle<br>What was your idea? What was different this time?<br>What was your weapon to defeat the monster? What did you build to beat?<br>Which ethical issues you considered? | |

## StoryTelling option #2: The Quest

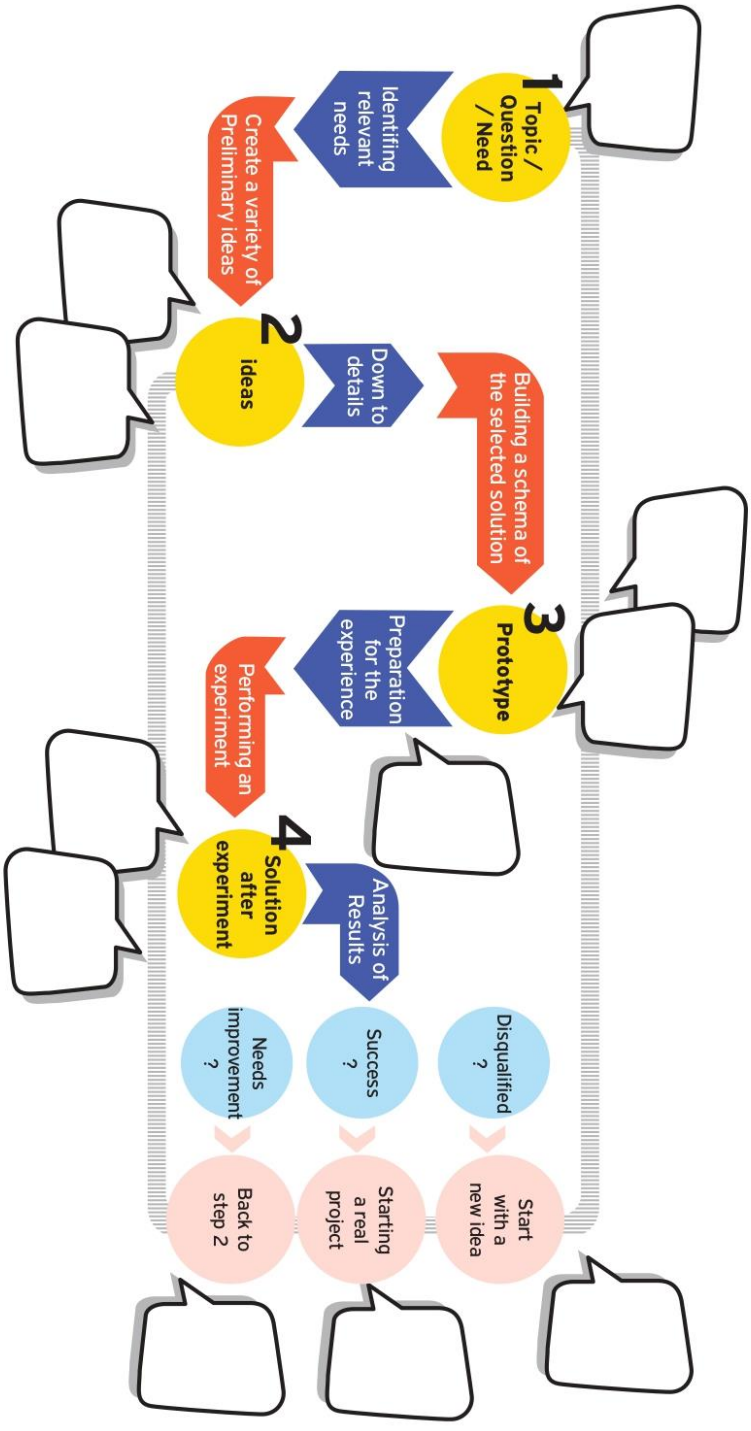

| Structure: | Content | Details |
|---|---|---|
| **First Scene:** | **Team received mission**<br>Who is on the team? What is your mission? What did you try to achieve? | |
| **Second Scene:** | Describe the **difficulties and obstacles** your team encounters and overcome in your journey to find the solution?<br>Who and what helped you to overcome these difficulties? | |
| **Third Scene:** | **Final dangerous test** –<br>What are the most challenging issues your team encountered?<br>Who and what helped you to overcome these difficulties? | |
| **Forth Scene:** | **The final test accomplished** –<br>After finding your solution, what did you test?<br>How do you know if you met the challenge? | |
| **Fifth Scene:** | **The team wins the prize -**<br>What did you accomplish in your project?<br>Who will benefit from your solution? Which ethical issues you considered? | |

StoryTelling option #3: the creative board

| Scene #1 | Scene #2 | Scene #3 |
|---|---|---|
| | | |
| Characters: | Characters: | Characters: |
| Text: | Text: | Text: |

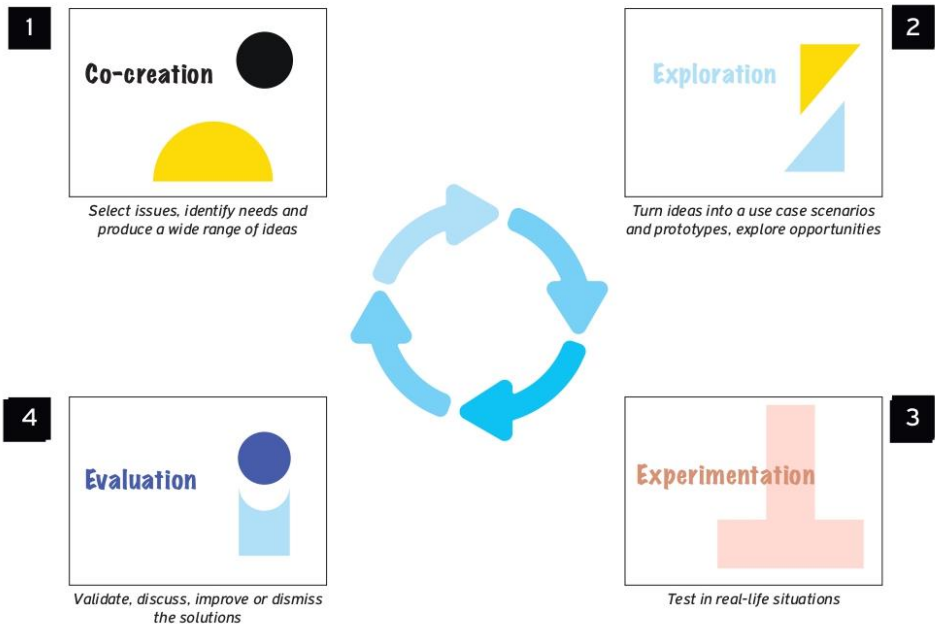
| Scene #4 | Scene #5 | Scene #6 |
|---|---|---|
| | | |
| Characters: | Characters: | Characters: |
| Text: | Text: | Text: |

StoryTelling option #4: the visual template

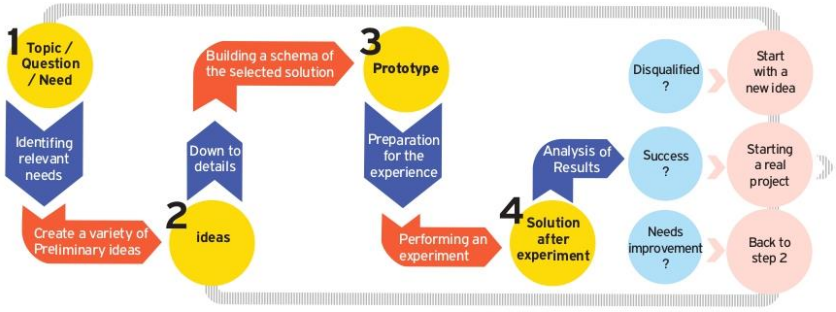


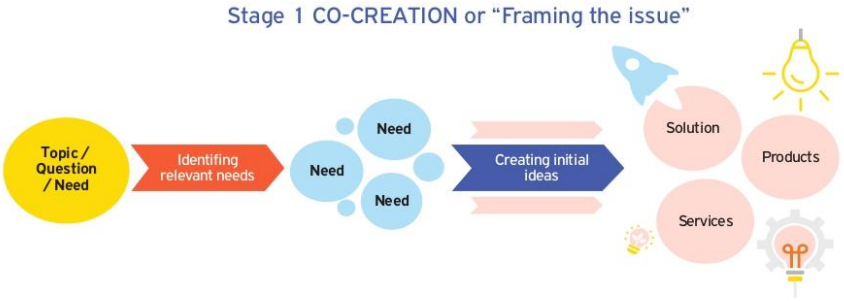
## Student's template

### The main phases




### Main stages of the Living Lab






**What:** It relates to problem framing, or defining the issue, the challenge the group wants to answer. This needs to be co-created with relevant stakeholders. A co-creation activity aims to identify needs and articulate ideas (of products, services, solutions) from all participants. Select or clarify the issue, question, and problem or challenge to be addressed.

**How:** Very often, it takes the form of a creativity session. Examples: brainstorming, mindmap, appreciative inquiry, contributive wall of ideas, world café, etc.

**Expected outputs:** At the end of a co-creation phase, all participants will have:

- An overview of identified expectations, needs, constrains, values ... of all participating societal actors (share and acknowledge)
- A common understanding of the issue to be solved (clarify – narrow down)
- A common vocabulary (respect and understand each other)
- A set of ideas on how to address the issue that will be explored during the next phases (use imagination)

| Steps | Tasks | Relevant Stakeholders | Type of collaboration | Date | Resources |
|---|---|---|---|---|---|
| 1. Identify the topic, the real problem or challenge in the community | | | | | |
| 2. Identify and engage stakeholders | | | | | |
| 3. Create initial ideas to solve the problem | | | | | |
| 4. Introducing the food subject to students and getting them motivated | | | | | |

## Stage 2 EXPLORATION or "Think by doing"


**What:** We deepen one or some of our ideas and elaborate a large number of details about their use. We identify the "core value" of each idea and spot opportunities for new uses, new markets, better experiences. We build representations and low-fidelity models of the services or products in the ideas.

**How:** We have to identify the core value of the carefully thought and selected ideas. It forces us to identify its core principles, detail the way it is used and spot new opportunities. Tools we can use: Wireframe[1], Makey Makey, Google Cardboard, StoryboardThat, Thinglink, TimelineJS, etc.

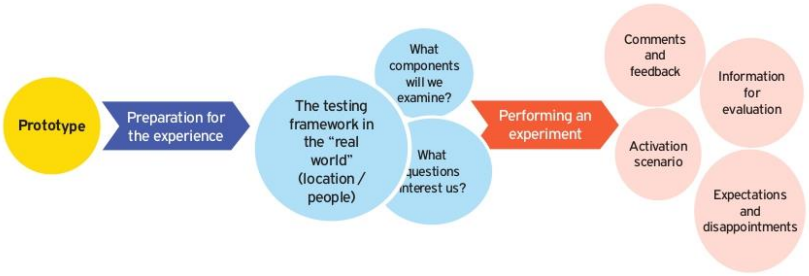
**Expected outcome:** A physical or digital prototype, story of the service, low-fidelity version of the service with real people, dramatic representation, etc.

- The details about the products and services prototyped.
- The prototypes, representations, low-fidelity models.
- The main opportunities that have been spotted and that could be tested.
- The main questions arising from the work

| Steps | Tasks | Relevant Stakeholders | Type of collaboration | Date | Resources |
|---|---|---|---|---|---|
| 1. Evaluate the different ideas and choose one | | | | | |
| 2. Design the final product | | | | | |
| 3. Build the prototype | | | | | |

1 https://wireframe.cc/
https://www.storyboardthat.com/
https://www.thinglink.com/
https://timeline.knightlab.com/

## Stage 3 EXPERIMENTATION or "take it to the real world"

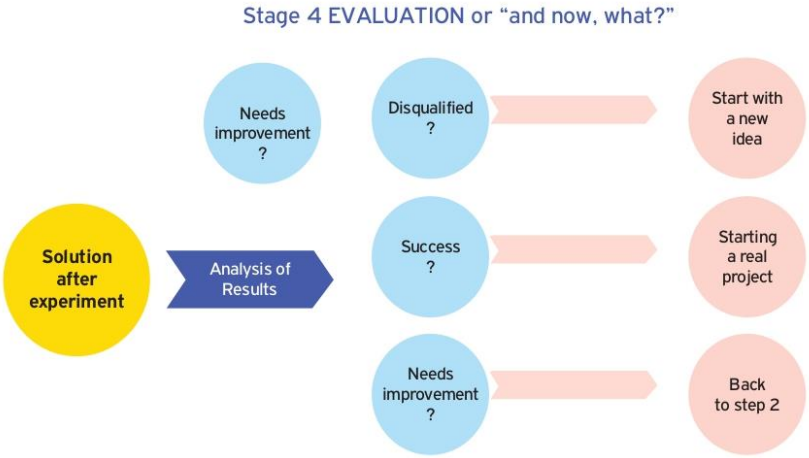



**What:** We want to try out the prototype or scenario in a real world setting, confront the solutions to the real world and face feedback, unexpected perspectives and new questions. With the experimentation, we have to set up the evaluation framework and answer questions such as what do we want to know, from whom, and how?

**How:** We have to identify the main questions regarding the built prototype and choose the real-life setting for experimentation. Organize with the setting, build the protocol and, experiment! The environment may be physical or digital, during a short or long timeframe (for a special event, during a whole term, etc.).

**Expected outcome:** Protocols of experimentation, documentation of the experimentation itself and data for the evaluation.

| Steps | Tasks | Relevant Stakeholders | Type of collaboration | Date | Resources |
|---|---|---|---|---|---|
| 1. Design the experiment | | | | | |
| 2. Perform the experiment | | | | | |
| 3. Collect data | | | | | |




**What:** Analysis of the experimentation results, initially aimed to validate or improve the solution. The evaluation can be used to set up debates or critical reflexions, raising ethical or societal questions.

**How:** The evaluation method may vary, and be more or less participatory (i.e. vote, grade, articulate questions or critical reflexions, exchange, observation, etc.). The evaluation may create public restitutions (i.e. data visualization, videos, webdocs, etc.), to share the work with a wider audience. The analysis may lead to:

- Disqualified? Dismiss and start with a new co-creation phase.
- Needs improvement? Start a new exploration phase, back to step 2.
- Success? Launch a project for real: choose a project leader, look for funding, call for tender, etc.

**Expected outcome:** At the end of an evaluation phase, all participants will know which solution will be transformed into a long lasting solution or decide for a new cycle starting at co-creation or exploration. Implication of each participant for the next step is discussed. Any participant is free to get or not get involved.

| Steps | Tasks | Relevant Stakeholders | Type of collaboration | Date | Resources |
|---|---|---|---|---|---|
| 1. Process data | | | | | |
| 2. Evaluate the information | | | | | |
| 3. Obtain conclusions | | | | | |

# 4. ANNEXES

## 4.1.ANNEX 1 – Road map V1, as done after the first Workshop.

SALL

SCHOOLS
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The SALL project has received funding from the European Union´s Horizon 2020 Framework Programme for Research and Innovation under Grant Agreement No. 871794. The content of this document is provided by the SALL project consortium and does not necessarily reflect the views of the European Commission. The European Commission is not liable for any use that may be made of the information contained herein.

In this short "roadmap" you will find some practical instruments and guidelines to engage in, and develop, a Living Lab Project. You can use, transform, and adapt them for your own context. Remember the 3 characteristics that really define a Living Lab project:

1. **Real issue**, real solution, making use of the participants' personal experience
2. **Co-creation**, involving all impacted societal actors
3. **Quick prototyping**, with ideas immediately put in practice and tested.

**Co-creation**
Select issues, identify needs and produce a wide range of ideas

**Exploration**
Turn ideas into use case scenarios and prototypes, explore opportunities.

**Evaluation**
Validate, discuss, improve or dismiss the solutions

**Experimentation**
Test in real-life situations.

# THE GENERAL STRUCTURE

## Phase 0 PREPARATION

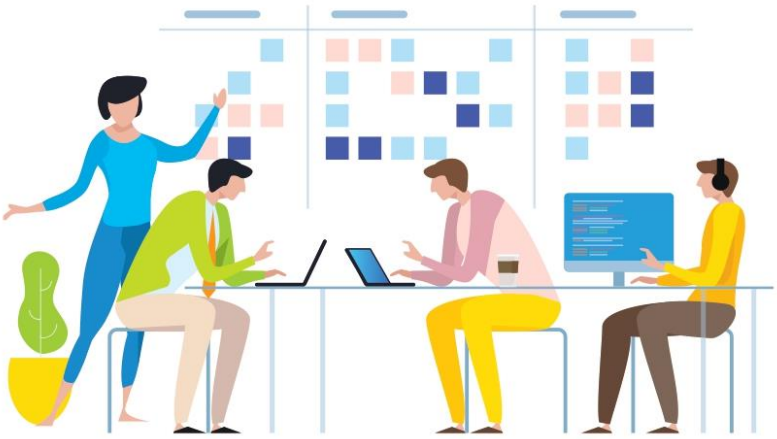
The Food System theme

The topic

Societal actors

SALL project evaluation

## Phase 1 STEPS OF THE LL METHODOLOGY



**Step 1** Co-creation

**Step 2** Exploration

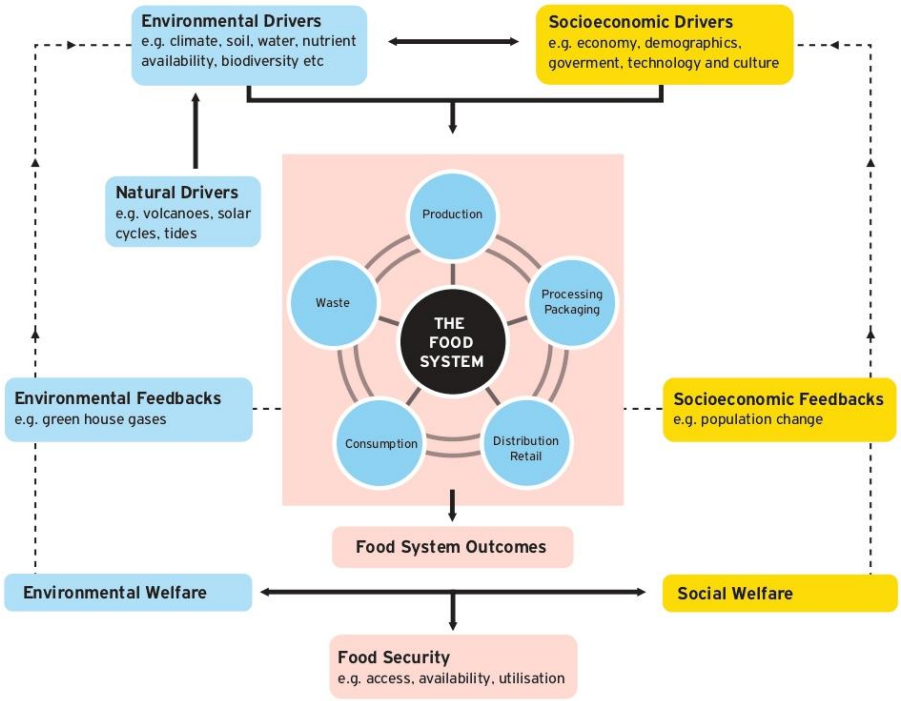
**Step 3** Experimentation

**Step 4** Evaluation

# THE FOOD SYSTEM THEME

## From pitchfork to fork: which challenges for our food system?

The food system is a complex web of activities involving the production, processing, transport, and consumption of food. This can include many different aspects, such as food waste management, cultures and traditions of food, carbon footprints of the food system, agriculture, physiology of taste, packaging, local circulation of food, health issues, economy, aesthetics, ... Each school will define what is most relevant for them. Some ideas about the food system:




*The food system and its drivers. Adapted from Ericksen 2008*
*https://www.futureoffood.ox.ac.uk/what-food-system*

In a Living Lab project, identifying and engaging societal actors and choosing a topic are conducted side by side, because each societal actor has a say in how the topic will be shaped. It is important not to have too strict a definition of the topic until all societal actors are aboard.

# THE TOPIC

## List of guiding questions to engage discussion

1. What is the characteristic of a "topic"?
2. The local context must me analysed: Which are the main concerns? Who can act about it?
3. The topic must be defined with all the actors: What topic would get you involved in a project?
4. It is important to remain open, the topic can change: Is there a way that transforming the topic will get you more involved?

Tool: collage for all partners to share their views and understanding of the topic

Most important: Walk in the neighborhood, chat with the people who live there... (For the National Coordinators, the teachers, all those who lead the project!)

Yet, the narrowing of the topic will also lead to a better identification of some actors that were not necessarily thought of in the first place. The project will start with a few core group of actors, among which the school will be the first one to board. This core group will then define new actors that need to be approached (see the “engaging societal actors” section).

# ENGAGING SOCIETAL ACTORS

Societal actors need to be identified and brought into the project from the start. They are full partners of the project from day 1. As the project evolves it is possible that the group will realize that some important societal actors have not been identified. It is never too late to bring someone new on board.

## A. IDENTIFYING SOCIETAL ACTORS

- Listing all possible stakeholders
- Drawing up of criteria
- Stakeholder analysis
- Selecting a shortlist

## B. APPROACHING SOCIETAL ACTORS

- Get in touch
- Persuade
- Reduce the risk
- Be open!

## C. WORKING WITH SOCIETAL ACTORS

**At the start of the project:**

- Take time to get to know each other
- Define goals and ambitions
- Discuss resources
- Discuss constraints
- Organize a kick-off meeting
- Discuss the topic of ownership
- Agree on communication and project management
- Organize regular meetings
- Document and share findings
- Add missing actors.

**During co-creation sessions:**

- Actively involve all actors
- Document all decisions
- Promote good communication
- Determine a location
- Foster intrinsic motivation

## D. BUILDING SUSTAINABLE CONNECTIONS WITH STAKEHOLDERS

- Take the time to evaluate the collaboration after the project ends
- Celebrate the successes!

Find further information and examples about this point in the SALL Report "Methodology for the Engagement of School Living Labs with Stakeholders" (Deliverable D3.1).

*https://www.schoolsaslivinglabs.eu/resources/methodology-for-the-engagement-of-school-living-labs-with-stakeholde/*

At this stage, it might be useful to have a rough idea of what the topic will be. It will be easier to approach new partners with a topic, even though some might be more interested in the Living Lab process and/or the opportunity to work hand in hand with the school.

# SALL project evaluation

A pre-post design will be followed for administrating the evaluation tools of the SALL project, in order to identify changes in the four participation levels as a result of the implementation of the SALL methodology. During the implementation activities in schools, the partners will provide support to the participants and collect data and feed-back when needed.

| | YEAR 1 FOCUS COMMUNITY | | | YEAR 2 WIDER COMMUNITY | | YEAR 3 WIDER COMMUNITY | |
|---|---|---|---|---|---|---|---|
| Participation level | Pre-Year 1 | Post-Year 2 | | Pre-Year 1 | Post-Year 2 | Pre-Year 1 | Post-Year 2 |
| Students | Questionnaires | Questionnaires | | Questionnaires | Questionnaires | Questionnaires | Questionnaires |
| Teachers | Expectancies SWOT | Impact SWOT | Case studies | Beliefs questionnaire towards SALL approach | Beliefs questionnaire towards SALL approach | Beliefs questionnaire towards SALL approach | Beliefs questionnaire towards SALL approach |
| Schools | | | | Beliefs questionnaire towards SALL approach | Beliefs questionnaire towards SALL approach | Beliefs questionnaire towards SALL approach | Beliefs questionnaire towards SALL approach |
| Societal Actors | | | | Beliefs questionnaire towards SALL approach | Beliefs questionnaire towards SALL approach | Beliefs questionnaire towards SALL approach | Beliefs questionnaire towards SALL approach |

**Pilot study year 1** (in-depth analysis):

**Students questionnaires:**
- Science Attitudes
- Civic Engagement

**SWOT Analysis**
(Strengths,Weaknesses, Opportunities,Threats)
- Expectancies SWOT (before)
- Impact SWOT (after)

**Case studies**

# STEP 1: CO-CREATION

**AIM: Identify needs and articulate ideas (of products, services, solutions) from all participants. Define the issue.**

Define the issue: Once the topic is selected and relevant societal actors are on board, it is time to choose the issue the project partners will address. It is important that all partners have ownership of the issue to be addressed.


### Identify the needs and expectations of societal actors

Understanding not only the needs of the project participants but also that all concerned societal actors have ownership of the chosen issue.


### Build a common project culture

A culture of acknowledging each other's expertise and contribution is reaffirmed through little actions and activities. Some of them will be carried on all through the project and become "community rituals".


### Get creative!

**Foster imagination and wild thinking**

It is important that all participants' voices are heard. The students', of course, but all other societal actors' as well. This is the first stage where all actors learn how to really work with each other on equal terms. Any appropriate creativity method is welcome. It is good to propose various exercises that allow different types of expression (i.e. speaking, writing, drawing, moving, discussion, etc), and where participants can take turn in facilitating.


### Monitor how we are doing

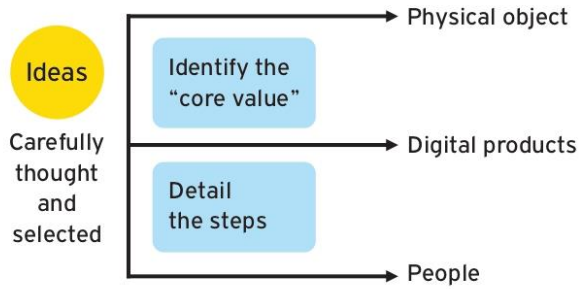
There are not many tangible outcomes at this stage, yet the project might have been going on for a while already. To keep everyone on track it can help to monitor how things are going, how people feel in the project. If a little loss of energy and sense of purpose is observed, remember that this is likely to disappear as the project moves to the exploration phase:

- Open discussion or questionnaire: "how I feel?": in general, about the process, with the result
- Reflect throughout the process on how each actor is contributing
- Don't forget to acknowledge that listening IS contributing
- Take some time to look back at the overall planning of the project

# STEP 2: EXPLORATION

**AIM: Deepen some ideas > Identify the main questions or elements to be tested > Confront the solutions to the real world > Face feedback, unexpected perspectives, new questions.**

## PROCESS




- Build a physical prototype
- Build a digital prototype
- Build a story of the service
- Build a low-fidelity version of the service with real people
- Build a dramatic representation

## OUTPUTS

- The details about the products and services prototyped
- The prototypes, representations, low-fidelity models
- The main opportunities that have been spotted and that could be tested
- The main questions arising from the work

# STEP 3: EXPERIMENTATION

**AIM: Try out the prototype or scenario in a real world setting**

## PROCESS

Prototypes

Built with love

- Identify the main questions → Organise with the setting (venue, people)
- Choose the real-life setting → Build the protocol
- Experiment!

Face the complexity and the perturbations

Observe!!!

**Listen** to the reactions and feedback!

Manage expectations and disappointments!

Gather data for the evaluation


## OUTPUTS

- Protocols of experimentation
- Documentation of the experimentation itself
- Data for the evaluation

# STEP 4: EVALUATION (of the prototype)

**AIM: Analyze the experimentation results to validate or improve the solution**

**EVALUATION** ≠ **EVALUATION**

Activities

4th phase of the Living Lab Cycle

decision making | data analysis | data collection

SALL project evaluation

**Evaluating the deriving prototype**

**Receiving participants' feedback for the implementation of the overall SALL methodology**

## HOW ?

Solution

Has been tried out in real-life conditions

- Validate → Launch project for real
  - Choose a project leader
  - Look for funding
  - Call for tender
  - Etc
- Analysis → Improve → Start a new exploration phase
- Dismiss → Start a new co-creation phase

## OUTPUTS

**A document (or a blog, or a map....) with :**

- the description of each "prototype"
- the data gathered in the experimentation phase
- the lesson learned from the experimentation phase
- the decision made regarding each solution

This "document" is accessible (as easy to read and understand by anyone) and avalaible to all participants as well as to the local community at large.

At the end of an evaluation phase, all participants will know which solution will be transformed into a long lasting solution OR decide for a new cycle starting at co-creation or exploration.

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