



# e-SMART LIVING LAB CONCEPT

A transnational quadruple-helix cooperation model

## Synthesis

**Interreg**  
Alpine Space  
e-SMART   
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## Contact & Disclaimer

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Find out more about the e-SMART project: [www.alpine-space.eu/projects/e-smart](http://www.alpine-space.eu/projects/e-smart)

## Project Partners

Ricerca sul Sistema Energetico (IT)

Regione Piemonte (IT)

Veneto Strade (IT)

The Smart City Association Italy (IT)

Business Support Center Kranj, Regional Development Agency of Gorenjska (SI)

Automotive cluster of Slovenia (SI)

Pôle Véhicule du Futur (FR)

Auvergne-Rhône-Alpes Energy Environment Agency (FR)

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Climate Alliance (GER)

Municipal authorities of the provincial capital Klagenfurt on Lake Wörthersee (AT)

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Stadtwerke Klagenfurt (AT)

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# Abbreviations

AS	Alpine Space
BeV	Battery Electric Vehicle
E-CS	Electric Charging Stations
ENoLL	European Network of Living Labs
ERDF	European Regional Development Fund
EU	European Union
LML	Last-Mile Freight Logistic
LPT	Local Public Transport
OBS	Project Observer
PA	Public administration
PP	Project Partner
RLL	Regional Living Lab
SMT	Smart Monitoring Team
TNLL	Transnational Living Labs Network

# 1 The Living Labs within the e-SMART project

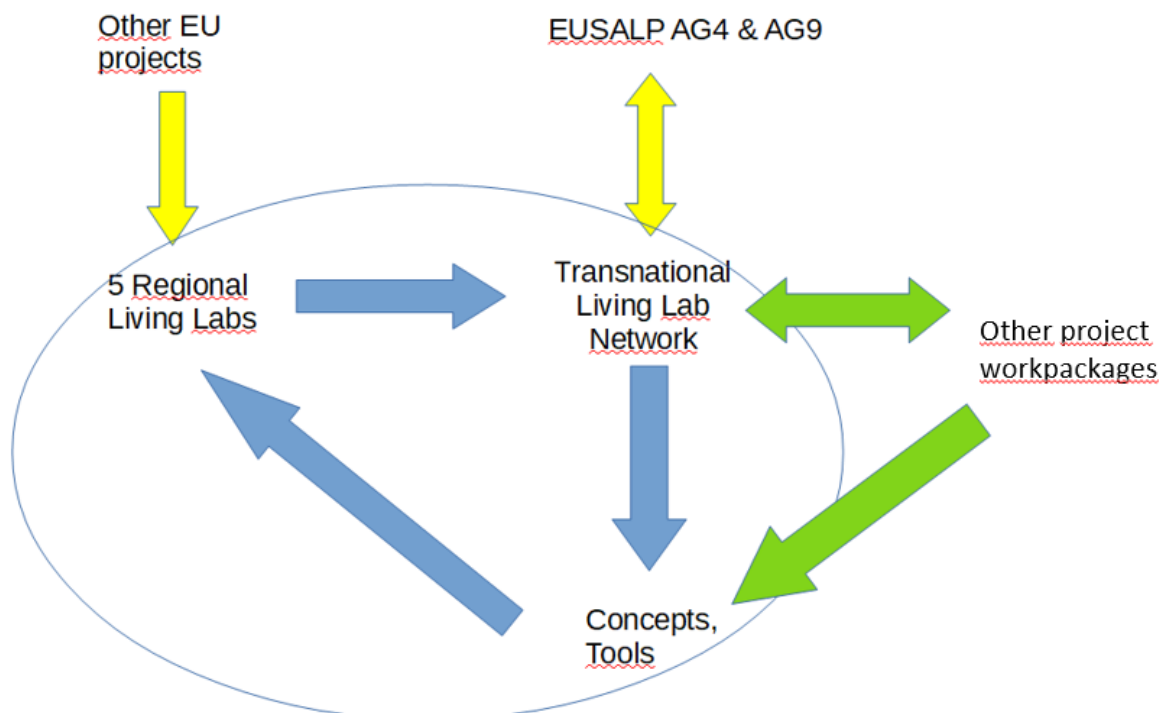
It was a crucial part of e-SMART project to foster interactions between stakeholders.

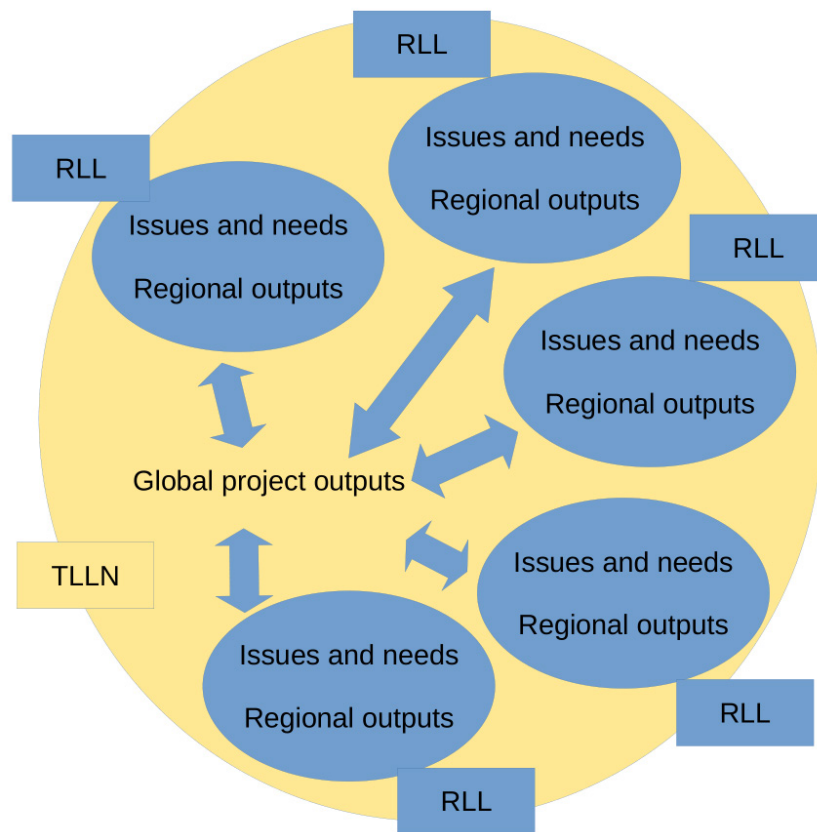
To do so we designed a process to involve stakeholders at the local level through the creation of 5 Regional Living Labs, one in each of the countries involved in the project: Austria, France, Germany, Italy and Slovenia.

Within these Regional Living Labs, we had co-working on the topics involved: electric mobility for Local Public Transport and Last-Mile Logistics, and smart energy integration.

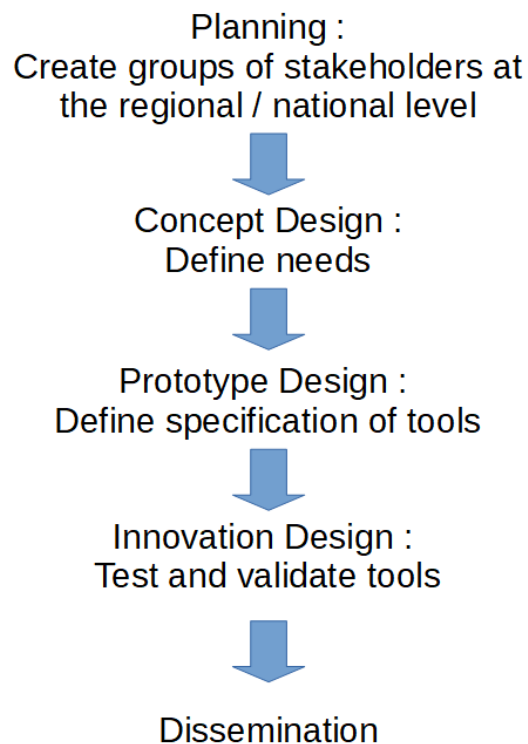
The living labs elaborated on needs, requirements and specifications for the tools that were developed in the frames of the other work packages of the project, and they provided for testing and evaluation for these tools.

At the same time these 5 Regional Living Labs were linked together at the transnational level through a Transnational Living Labs Network, which allowed the sharing of needs and solutions at the Alpine Space level and ensured that the outcomes of the project were not a simple addition of regional needs but a truly aggregated proposal taking into account a rich variety of approaches.

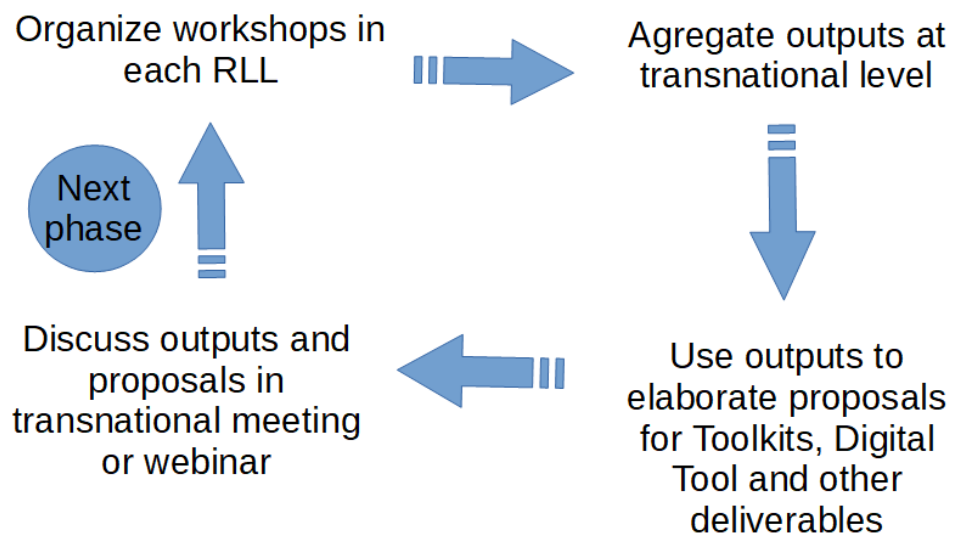




The general structure is described in the following picture:



During each phase, we worked using the following scheme:



## 2 Lessons learned from the e-SMART experience

In general, the organization initially planned proved to be adapted to the need, even during a pandemic. Relationships within the Regional Living Labs were intense, and coordination worked well.

The methodology for the regional living labs and the transnational living labs depicted right above was rather efficient, but it has faced great challenges, particularly because of the pandemic.

Although the very first events were held as “normal” meetings, the covid-19 crisis forced partners to shift to an entirely online process. It was a great challenge to conduct online ideation processes when none of the protagonists had any experience with such a thing and when most stakeholders were still trying to understand how to use Zoom and the likes. Nevertheless, this process enabled the project partners to involve a significant number of stakeholders of the different e-SMART geographical areas in the long term.

In addition, Project Partners needed to be flexible, and tried to exceed the first methodological framework by getting into contact bilaterally with the different stakeholders in the margins of the living labs. Indeed, it was a mean for partners, especially Regional Living Lab leaders, to prepare living labs with the stakeholders and not only to animate these living labs thanks to the stakeholders’ participation. This way to proceed aimed at proposing to stakeholders and companies the most operational regional and transnational living labs as possible.

The use of the classic living lab methodology was also a way to test and trial this methodology. The e-SMART project partners and stakeholders are satisfied with the results obtained. The idea of starting from regional living labs before moving on to a transnational scale works and has allowed for the development of interesting reflections integrated into the various e-SMART deliverables.

It also allowed Project partners to submit project documents, in particular the roadmaps, to the analysis of the participants. Nevertheless, this process proved quite difficult to conduct with a large number of participants: reviewing sessions should be limited to a small number of motivated stakeholders to stay efficient. It is advisable to keep meetings with many participants for the expression of ideas or for topics requiring only simple feedback.

Furthermore, it should be noted that this living lab methodology requires the organisation of many meetings, both virtual and face-to-face, which was a source of complexity in the light of the Covid-19 pandemic. Indeed, as already mentioned all the meetings had to be organised virtually, which sometimes caused a certain amount of fatigue among the participants. One solution to overcome the lack of dynamism of the remote meetings was to use live ideation software during the living labs, to boost the active participation of the connected people, but this also has its limits. Another good practice was to split meeting participants into smaller virtual rooms. We also conducted simple online surveys that provided additional momentum.

The e-SMART partners advise future Interreg project consortia planning to organise their activities around living labs to plan from the beginning of the project an adaptation of the methodology of these living labs to make them more efficient when organised virtually.



# 3 Summary of the findings

In the e-SMART project we dealt with e-mobility applied to Local Public Transport (LPT) and to City/Last-Mile Freight Logistic (LML) in synergy with private e-mobility and energy integration.

The findings of the e-SMART living labs come from, on the one hand, the regional living labs and, on the other hand, the transnational living labs, during which the results of all RLL were put into emphasis and studied through a more general perspective.

Depending on the country and local conditions, some RLLs have been more inclined to focus on one or another of the themes (e-LPT / e-LML). Similarly, the work in each country was influenced by the composition of the groups involved.

Nevertheless, by aggregating the results it is possible to highlight problems and needs relevant to the Alpine region.

## **3.1 Common challenges**

Some of the issues identified in relation to electromobility are common to both urban logistics and local public transport: Costs, Uncertainty, and Infrastructure issues.

### **3.1.1 Costs**

- E-Vehicles are more expensive in terms of purchase cost as well as maintenance cost
- The operational costs are also higher: less flexibility (range + time to charge)
- The costs of infrastructure have to be added to the overall bill

### **3.1.2 Uncertainty**

- New vehicles need maintenance, we don't have enough information about their sustainability, TCO, residual value
- Technologies are also a factor of uncertainty: different kinds of batteries, H2 Fuel-cell – vs CNG / BioCNG
- Summer range / winter range are different

### **3.1.3 Infrastructure**

For the moment, it is mainly overnight charging: need massive investments, with various constraints.

But some challenges are specific to e-LPT or e-LML.

### **3.2 e-LPT specifics:**

Some characteristics are specific to electrified Local Public Transports:

- The global exponential increase: vehicles are becoming more and more available
- Operational constraints: very high predictability of the usage, can adjust very precisely
- On-street charging (very) expensive
- The PA funding (at least partially) is existing, on the contrary to e-LML
- There is a very high impact of user/ citizen acceptance (positive)

### **3.3 e-LML specifics:**

Specific characteristics to electrified Last Mile Logistics have also been identified:

- Vehicles are not available yet / not adapted to need (size, range)
- Overnight charging: only the big ones have their own parking spaces: it is a problem for the subcontractors (on-street charging?)
- Emergency solutions are still needed (on-street high power charging)
- For small range BeVs, there is a higher risk to unload rapidly and thus it occurs at higher costs. Who is going to pay for the extra costs? For the moment, they are all private stakeholders.
- There is an uncertainty on the evolution of regulation, since it also depends on the area
- The Public/ private concentration may help (+ fundings)

### **3.4 Actions needed**

In conclusion of the work, the main necessary actions identified are the following:

- e-LPT + e-LML: grid insertion of large quantity of E-CS at depot / company parking lot + legal
- e-LML: Overnight charging of subcontractors + opportunity charging
- e-LML: Concertation with PAs (visibility) + Share the extra costs with the help of PAs

These actions can also be found in the operational roadmap of the e-SMART project.

