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Technology to support the agroecological transition : how farmers' needs are taken into account in a living lab?



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At a glance

A claim that living labs may support technology development for agroecological transitions, but several challenges. How farmers' need are conceptualized and operationalized? What resources and barriers to take them into account?

I. What is at stake?

Agroecology as an alternative to the **negative impacts** of **conventional** agricultural model [1-2].

Technology may **support** the agroecological transition [3-4].

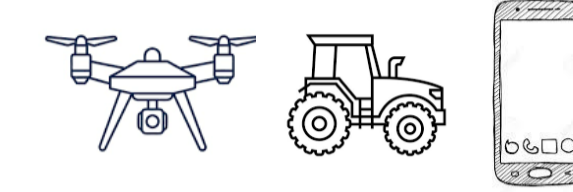
To avoid top-down approaches limits [5], **agroliving labs** (ALLs) are promising innovation systems [6-7]

But, ALLs:

- **remain largely unknown** [8-9], especially in their **design processes and activities** [10-11]
- **may encounter difficulties** in their operations [12-13].

In particular, **farmers' needs** in agroliving labs are **very little studied**.

This ongoing study aims to **understand how farmers' needs are taken into account** in the Occitanum ALL: (**conceptualization, operationalization, resources and potential barriers**).



II. Users' needs in design: conceptual framework

□ In the domains of **living lab** (i.e. 14-15) and innovation in **agriculture** (i.e. 16-17), research on design models show :

- ⇒ **Similar main phases**: Analysis of the existent - Search for solutions - Test of solutions - Assessment of solutions
- ⇒ The **importance** of users' needs...
- ⇒ ... **but no detailed approach** to conceptualize and to identify them

□ For ergonomics,

- ⇒ Design = a dialectical and cyclical process **from initial ideal intention to final realization taking into account "real world" contingencies** [18]
- ⇒ A proposal to act on design **project management** based on [19-20-21-22]:
 - **Ergonomic analysis** of work activity and usage context
 - **Simulation** of future work and usage activity
 - **Participatory approach** with all the stakeholders, giving value to experience and knowledge of workers/farmers
- ⇒ Needs = **what the solution must answer to**, its functions/services to provide to the user for him/her to reach its goals in his/her activity [23-24-25-26]

III. How to study the users' needs taking into account?



- ✓ Non-participant **observation** (≈ 12 days in total): research meetings, open-lab meetings, fablab events



- ✓ **Interviews** (n = 11): ALL founders & facilitators, farmers

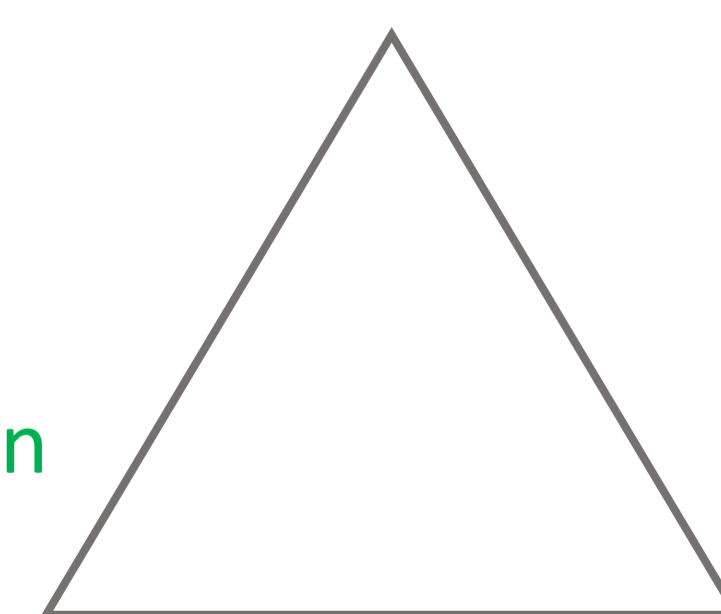


- ✓ **Documents analysis** (consortium agreement, application document for financing, meeting reports & slideshow, farmers surveys)

IV. Preliminary results

1. Farmers' needs = a **core concept** in the ALL
2. **But a variety of definitions**:
 - Needs = general farm tasks (e.g. fertilization management, pest management)
 - Needs = solutions, mostly technical (e.g. robots, softwares), more rarely organizational (e.g. training)

Conceptualization



Operationalization

Barriers

1. Clear and unclear aspects of who is concerned:
 - In charge of needs analysis
 - Whose needs to be considered?
2. **Needs identification = essentially based on farmers' own expression**:
 - Needs = verbalizable by farmers
 - Through meetings, focus group, surveys

1. **Complexity** of needs analysis
2. **Lack of resources**: Skills, Funding & time, To interact with farmers
3. **The ALL bias**:
 - An obligation to do with general and existing technologies
 - Solutions to farmers' needs must be digital

V. Perspectives

- These preliminary result must be strengthened to get a precise understanding of the taking into account of farmers' needs in the ALL.
- From identification of barriers to a proposal of resources: from an operational point of view, an ergonomic intervention might be deployed to support project management in the ALL [27].

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