

LIVING LABS IN A LEAN PERSPECTIVE

**Joao Soliman-Junior, Samira Awwal, Marcelle Engler Bridi,
Patricia Tzortzopoulos, Ariovaldo Denis Granja, Lauri Koskela and Danilo Gomes**

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Innovative Design Lab

- Interdisciplinary research lab: engineering, built environment, design, and social sciences.
- Pushing the impact of design thinking and practice to new areas
- Focus on solving real-world problems
- Working with public and private organisations to propose solutions to design and project-based problems



Introduction

- Construction projects involve stakeholders with different backgrounds, experiences, knowledge, perspectives and interests.
- These often lead to misalignments
 - inhibit collaboration (Van Geenhuizen 2019)
 - foster a blame culture (Keeping 2000)
 - constrain shared knowledge (Pemsel and Widen 2011)

Living Labs

User-centred initiatives focused on innovative solutions in real-life contexts through collaborative processes (Leminen and Westerlund 2017)

Enable all stakeholders to be co-creators in innovation processes, rather than merely observers (Leminen et al. 2012)

Introduction

- Participatory approaches to support design and construction have been discussed by the lean community (e.g. Sfandyarifard and Tzortzopoulos 2011).
- Koskela et al. (2016) presented a review of concepts supporting communication and collaboration in construction projects from a lean perspective.

Drawing upon the work of Koskela et al. (2016), our paper aims to conceptually analyse potential synergies between LLs and lean, based on these key concepts.

A part of a research project entitled User-Valued Innovations for Social Housing upgrading through Trans-Atlantic Living Labs (uVITAL).

LIVING LABS: concept

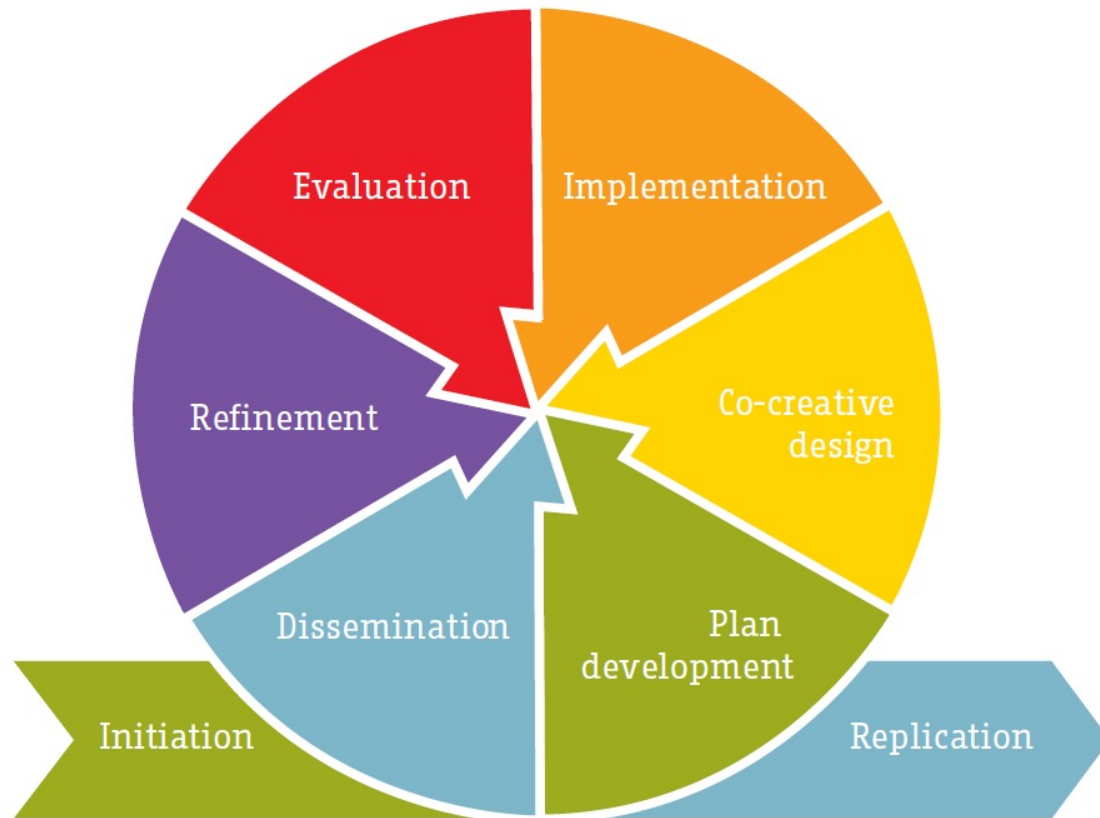
- Multiple definitions for LLs
(Bergvall-Kåreborn et al. 2009)
- Focusing on improving collaboration to promote social innovation
(Almirall and Wareham 2011)

Reference	Definition	Understanding
Eriksson et al. (2005 p. 4)	<i>"A user-centric research methodology for sensing, prototyping, validating and refining complex solutions in multiple and evolving real-life contexts"</i>	Method
Van Geenhuizen (2019 p. 28)	<i>"Aside from innovation methodology, the term living labs often also refers to the (temporary) organizational structure in which the methodology is implemented"</i>	Method; Environment
Ballon and Schurmann. (2015 p. 2)	<i>"An experimentation environment in which technology is given shape in real-life contexts and in which (end) users are considered co-producers"</i>	Environment
Oliveira and Brito (2013 p. 202)	<i>"Open ecosystems that engage and motivate stakeholders into an innovation process, encourage collaboration, facilitate and accelerate the creation and sustainability of new markets and business models"</i>	Ecosystem; Environment
Papadonikolaki; van Oel; Kagioglou (2019 p. 385)	<i>"User-centred sessions focusing on co-creating meaning with the participants, exploring scenarios and evaluating propositions"</i>	Sessions

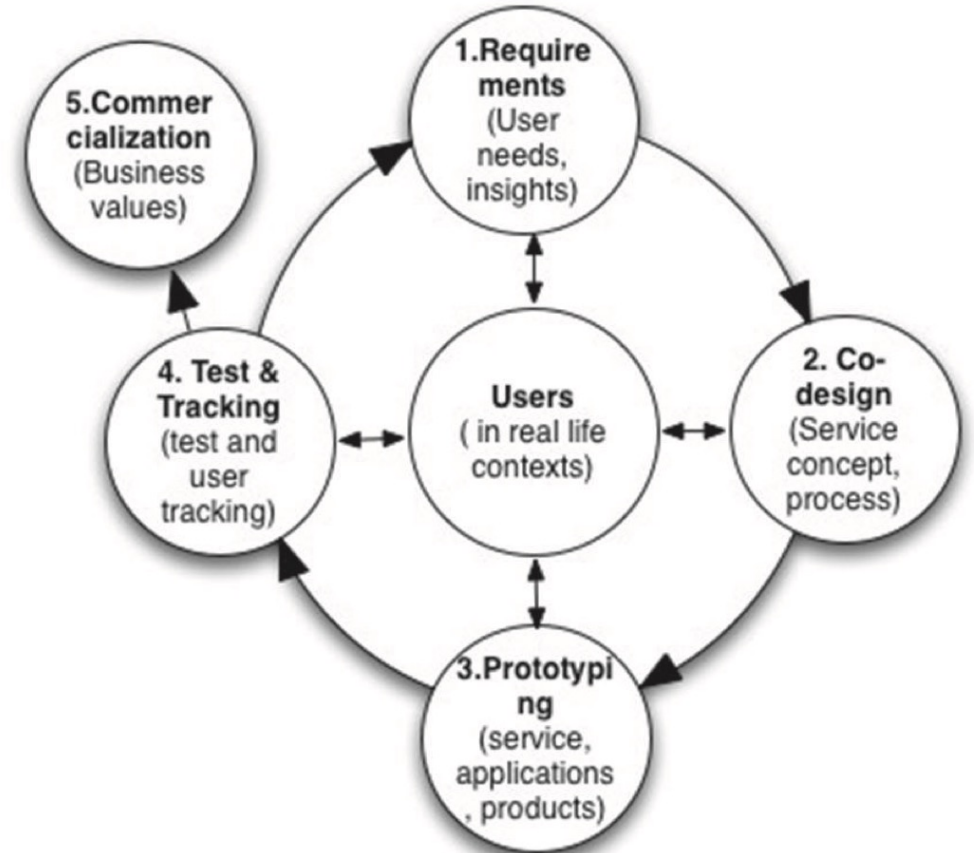
LIVING LABS: in practice

- LLs have common conceptual elements and multiple forms of implementation is observed in practice (ENoLL 2021)
- LLs usually start from (Steen and van Bueren 2017)
 - a problem, by getting people together to initiate an endeavour and come up with ideas for a solution; or
 - an idea, when partners set up a lab for experimentation, connecting the idea to a relevant problem.
- No standard LL process model is reported by existing research, despite the similarities between different models.
- This relates to the participants involved, and resources used in LLs, variable according to their contexts and objectives.

LIVING LABS: in practice

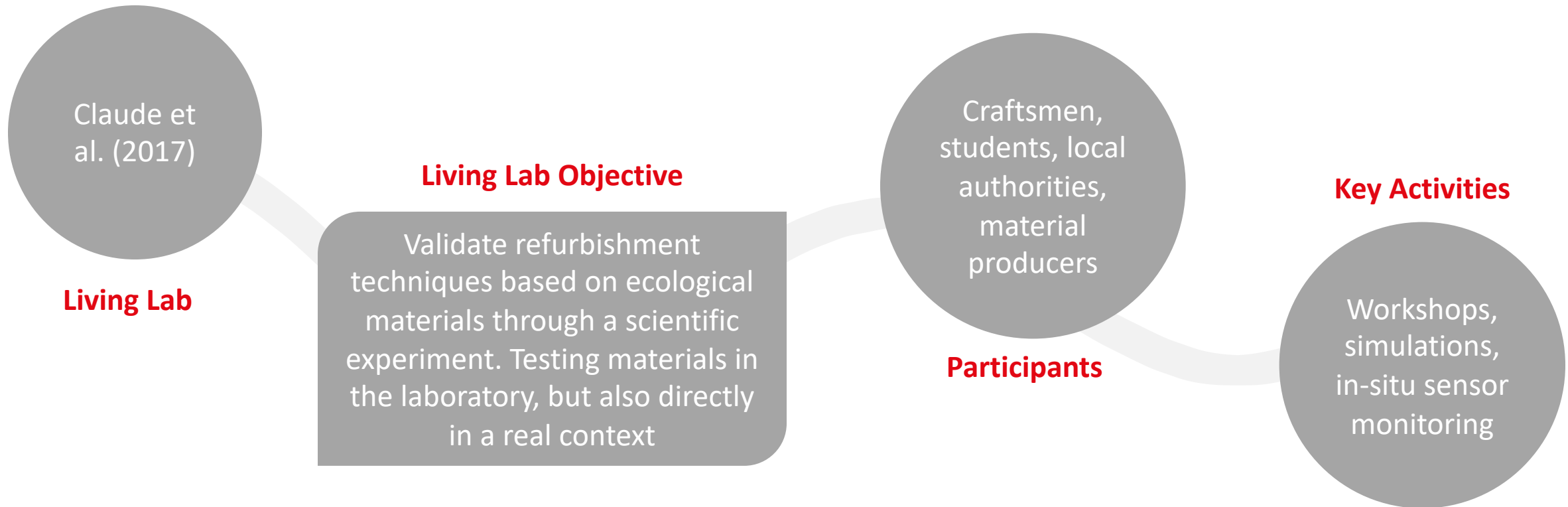


(Steen and Van Bueren, 2017)



(Tang and Hämmäläinen 2014)

LIVING LABS: in practice



KEY CONCEPTS: relationship to Living Labs

CO-CREATION

- an act of collective creativity or *“creativity that is shared by two or more people”* (Sanders and Stappers 2008 p. 6)
- intrinsic to LLs (Nesti 2017) and when practised at early stages has a positive impact on its outcomes (Sanders and Stappers 2008)
- Depends on common ground and shared understanding, whereas a LL environment helps achieving them in practice

COMMON GROUND

- The primary basis for successful communication (Kecskes and Zhang 2009)
- Direct impact on LLs not only from a process perspective but also considering their social character

KEY CONCEPTS: relationship to Living Labs

SHARED UNDERSTANDING

- *“the ability of multiple agents to exploit common bodies of causal knowledge for the purpose of accomplishing common (shared) goals”* (Smart et al. 2009, p. 2)
- As LLs are based collaboration, achieving shared understanding is key to enabling LLs through a social, context-based and collective effort (Almirall and Wareham 2011)

BOUNDARY OBJECTS

- An analytical concept for objects that can coexist between different social worlds and satisfy individuals’ information needs (Star 1989)
- Existing research on LLs addressed BOs as:
 - a way to transpass communication boundaries (Paskaleva et al. 2015)
 - as the materialisation of ideas and concepts during co-creation (Johansson and Snis 2011)
 - as both physical and imaginary artefacts that connect stakeholders coordinate participants (Engels and Münch 2015)

LIVING LABS AS A LEAN APPROACH

- The LL process depends on preconditions for communication and collaboration discussed by the lean community, such as those explored by Koskela et al. (2016)
- The early involvement of stakeholders and team initiation on LLs create opportunities for the collective exchange of ideas and analysis of trade-offs, supporting collaborative decision-making and facilitating the elicitation of potential misalignments.

Potential synergies between Living Labs and Lean

Synergy	Description from LLs	Lean Principles
Focus on users' needs and values	LLs are user-driven initiatives aiming to address their specific needs and values. There is a clear link between LLs and value generation	Increase value
Participatory approach;	LLs are based on participatory approaches through co-creation. These include the development of both physical artefacts such as prototypes, often used as BOs, but also abstract artefacts to support collective sense-making.	Increase value
Early stakeholder involvement; Team forming and initiation	In LLs, stakeholders are identified and engaged from the beginning of the process, whereas communication strategies support initial interactions to overcome potential conflicts and boundaries.	Increase value; Increase transparency
Environment that supports collaboration, transparency	LLs provide an experimentation environment in real-life context, supporting the development of common ground and shared understanding through increased transparency and collaboration between stakeholders (as per tables 2 and 3).	Increase transparency
Iterative process	LL cases are usually reported as iterative processes with multiple evaluation points and feedback loops, suggesting a link to continuous improvement both in the process, but also in the innovation under development.	Continuous improvement
Feedback loops	The iterative process in LLs enables accelerated feedback loops (as evidenced by, contributing to the reduction of cycle times.	Reduce cycle times

FINAL REMARKS

- Understanding LLs : not as a ‘place’ where stakeholders meet and co-create solutions, but as a social and dynamic environment enabling end-users and stakeholders to better collaborate towards an innovation.
- Despite the plethora of uses reported in existing research, LLs are applied to improve value generation through collective sense-making.
- Key lean concepts and practices are part of LLs, highlighting potential synergies between LLs and lean.
- Opportunity to incorporate lean tools and approaches to stakeholders and value management, collaboration and continuous improvement, which is not explored in the LL context yet.
- The presented analysis is limited to literature review and needs further empirical data.

THANK YOU!

J.SolimanJunior@hud.ac.uk



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