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## **D1.1 PART A: Typology of Sustainable Financing and Participatory Practices in the Cultural Heritage Sector**

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# Executive summary

This report introduces the concept of Participatory Business Models (PBMs) and defines the methodology of Living Labs, followed by RECHARGE, based on a systematic literature review. These approaches prioritise the involvement of a diverse spectrum of stakeholders in a concerted effort to bolster the sustainability and resilience of businesses, organisations, and communities.

**We define Participatory Business Models as experimental approaches to value-creation, value-capturing, and value-delivery that include a broad spectrum of stakeholders. They reflect the process that makes the operations by businesses, organisations, and institutions more desirable, feasible, and financially viable, by leveraging their stakeholder networks. Through such an engaged contribution, participatory business models devise sustainable solutions that strengthen the resilience of the businesses, organisations, institutions, and their networks.**

Three fundamental characteristics underscore PBMs collaborative approach:

- Co-Innovation for Relevance and Uniqueness: PBMs foster a collaborative environment where co-innovation is pivotal to staying pertinent and distinguishing oneself in the marketplace.
- Varied Degrees of Co-Ownership in Solution Development: PBMs recognize the importance of different stakeholders possessing varying degrees of engagement, with co-ownership in the development of solutions.
- Innovation Driven by Inclusive Needs-Based Cooperation: PBMs draw strength from inclusive cooperation that revolves around addressing the needs of all stakeholders.

The Participatory Business Model Framework encompasses four iterative phases, namely preparing, co-designing, implementing, and reflecting. Alongside these phases, the framework comprises variable key elements encompassing 'who,' 'how,' 'how much,' and 'what.' This framework has been derived from a systematic review of existing literature on participatory business models and business model innovation.

Ultimately, the primary objective of participatory business models is to incorporate a multitude of perspectives, achieve mutually beneficial outcomes, acknowledge social and environmental responsibilities, establish trust, empower stakeholders, ensure sustainability, and drive inclusive innovation.

Critical success factors for participatory business models include the seamless integration and regulation of participatory practices across the entire process, the adoption of a systemic approach that considers multiple scales, and the continuous iteration through co-assessment and adaptation.

Participatory Business Models represent pioneering approaches to value creation, placing a strong emphasis on inclusivity and collaborative engagement among stakeholders. These models offer organisations, especially those within the heritage sector, a viable pathway to address contemporary challenges while promoting sustainability, resilience, and inclusive innovation.

The RECHARGE project employs Living Labs as a central methodology for participatory engagement within European Cultural Heritage Institutions (CHIs). Although a universally accepted definition of Living Labs remains elusive, existing literature characterises them as open innovation ecosystems that facilitate collaboration among citizens, research organisations, companies, and institutions. These ecosystems aim to enact change through action-based projects conducted in iterative learning cycles. Living Labs methodologies enable stakeholders to collectively identify priorities, co-create ideas, co-design solutions, and co-experiment within real-life contexts, generating knowledge through research, exchanges, and co-evaluation processes. This approach fosters open innovation, mutual benefits, and sustainable transformational changes.

**We define Living Labs as dynamic spaces where ideas and solutions can be co-created, tested, and iterated by collaborating stakeholders. The Living Lab offers methods for cultural heritage institutions, researchers, industry, communities, and government to co-design concrete solutions in real-life environments. Operating as 'innovation zones', Living Labs can bring together community knowledge with professional expertise for action-based projects.**

In this report we addressed the limitations of prior studies by investigating essential elements, processes, and outcomes of Living Labs, offering insights for the development, monitoring, and evaluation of these initiatives, particularly within the cultural heritage sector. We propose a novel approach categorising Living Lab characteristics into process, key elements, and intended outcomes. The process encompasses stages of research and exploration, co-creation, monitoring, and evaluation. Key elements involve diversified stakeholder participation, public-private partnerships, collaborative governance, structured setup, real-life context, and user-centred practices. Intended outcomes include open innovation, mutual benefits for society and organisations, and sustainability, measured in terms of direct, indirect, and diffused impact.

This research serves as a foundational step in developing a common theoretical framework bridging the elements of Living Labs and Participatory Business Models, to support Living Labs across Europe in experimenting with participation-based business models for cultural heritage institutions to enhance the resilience of the cultural sector.

# 1. Introduction

The RECHARGE project emerged from the question: How do we use participation as a driving force for Cultural Heritage (CH) business models for Cultural Heritage Institutions (CHIs) in Europe? This question was formulated in face of the unprecedented global changes in the past years and the continuous challenge of CHIs in integrating the value created through their activities, together with the emerging evidence of the positive impact of participation and co-creation. Following a systematic literature review process, this report represents the first steps in our process to provide a solution for the field.

We start, in chapter two, by defining Participatory Business Models for our RECHARGE project, within the context of CH, followed by describing the process to co-create Participatory Business Models in a Framework. The Framework is conceptualised as a process with four iterative phases which will form the core of the work of RECHARGE. The RECHARGE team in fact is in the process of enacting the four phases, having just ended the first iteration and about to start a new cycle in our second year.

We continue, in chapter three, by providing an academic definition of the methodology used, the Living Labs, which curiously lacked a harmonised definition and were hardly discussed in CH literature, underlying the innovative nature of RECHARGE.

In this process, and as envisioned from the start, research and analysis was informed by and supported the model making on the Living Labs. This report presents the concise version of the theoretic framework of both our RECHARGE models and the Living Labs methodology, which is replicable in its general form. A second part of the report (PART B) is meant to capture RECHARGE's process in operationalising the framework, and in defining the specific elements that make up each part of the phases envisioned.

There are a few questions that remain unanswered, and that we will tackle in a future report on RECHARGE models. For instance, is categorisation of participants by profile preferred over type of action? While we are used to profiling participants based on their behaviour or their characteristics, we may have to consider the type of participation to define our various potential engaging participants. Further, must participatory model co-creation be generated from the CHI? In the ideal world, when we are familiar with participatory governance models, we envision any individual can engage in participatory business model co-creation with museums as one of the participants. Such questions require a year or two more of testing.

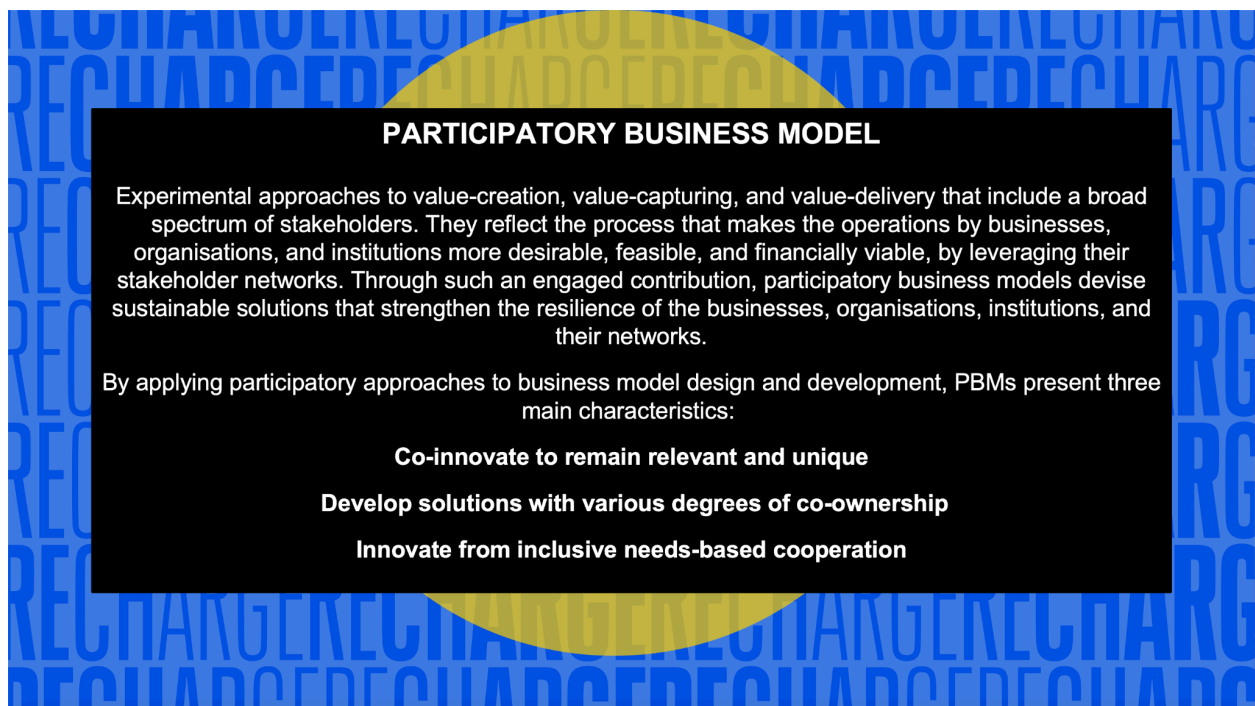
This report centres on the larger picture and provides a clear framework to follow. The operational details to be included in RECHARGE models are part of the next deliverable. This is an important building block in the participatory co-creation of an innovative approach to support CHIs capture value, we deliver a sound framework for a Living Lab methodology and a four-step Participatory Business Model co-creation process.

## 2. Participatory Business Models

A Participatory Business Model (PBM) in the present context, is a way in which an organisation conceives of its value proposition in such a way that participation becomes central, adding a crucial dimension that contributes to the efficacy and resilience of CHIs. This is an innovative type of business model being piloted in the RECHARGE project. What follows is our RECHARGE definition.

### Operational framework and definition

The academic literature does not define Participatory Business Models. Based on the BM-literature, the RECHARGE project proposes the following definition:



The Participatory Business Model Framework entails four iterative phases (preparing, co-designing, implementing, and reflecting) that make up a fixed process, or a 'recipe', and a variable bundle of key elements (who, how, how much, and what), or 'ingredients', that are deemed necessary for the ideation, planning, and implementation of participatory business models (see Figure 1).

## PARTICIPATORY BUSINESS MODEL: framework



Figure 1: Participatory Business Model framework - Cooking metaphor

The framework is developed based on a literature review of participatory business models, combined with insights in business model innovation. The next sections will first clarify the key concepts of business model and business model innovation. After that, the ideas of open and participatory business model design and development are explained, and the results of a systematic literature review on participatory business models are presented. Description of the methodology can be found in Annex A1.



## What is a business model?

A business model is considered as the logical story of the functioning of an organisation, which defines who its customers are, what it is that they value, and how the organisation plans on making returns in providing such value (Magretta, 2002, p. 4). It describes the architecture and process by which it creates, delivers, and captures value. A business model can be implicit or explicit, it can be dynamic and dependent on the context, and can be adapted and improved when technological, organisational, or procedural innovations emerge (Teece, 2010). In brief words, a BM describes “the rationale by which a firm creates, delivers, and captures value” (Osterwalder & Pigneur, 2010, p. 14).

- **Value creation** refers to the development of products or services that an organisation offers on the basis of its customers’ needs, and therefore is its reason for being.
- **Value delivery** refers to the necessary processes that are set in place to bring products or services to customers.
- **Value capturing** refers to the results of the value delivery process. These can be understood in the form of revenues (monetary), reach (the amount of people who benefit from the offered products and services), and reputation (the improvement of the organisation’s image) (Gudiksen, Poulsen, & Buur, 2014, p. 15; Osterwalder & Pigneur, 2010).

Looking at organisations from such a value-angle with its three processes of creation, delivery, and capturing, it becomes clear that a business model narrates the *desirability* (do customers want what is offered?), *feasibility* (can the offer be delivered?), and *viability* (is the offer worthy?) of an organisation's operations, which should ensure its sustainability and profitability (Benghozi, 2020, p. 87; Kriss, 2020, pp. 7–11).

## Developing a business model

Developing a business model is a process of trial-and-error, which typically requires tacit knowledge, experimentation, and organisational learning (Teece, 2010). In 2005, Alexander Osterwalder and Yves Pigneur created the so-called Business Model Canvas (BMC), a template aimed at documenting an organisation’s existing business model, or at facilitating the development of a new business model (Osterwalder & Pigneur, 2010). The Business Model Canvas is a visual tool that organises in a simple layout the nine key building-blocks of a BM:

1. Value Proposition
2. Customer Segments
3. Channels
4. Customer Relationships
5. Revenue Streams

6. Key Resources
7. Key Activities
8. Key Partnerships
9. Cost Structure (see Figure 2).

## The Business Model Canvas

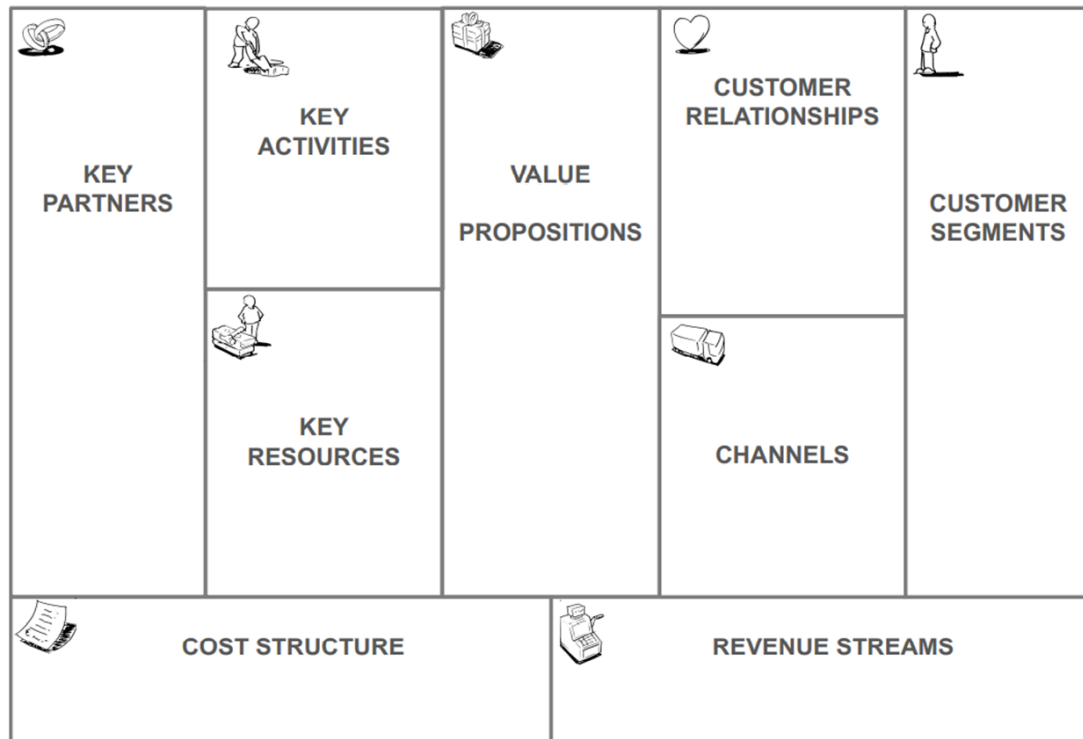


Figure 2: Business Model Canvas (developed by Alexander Osterwalder, available on [www.strategyzer.com](http://www.strategyzer.com))

The BMC helps to create a shared language that is simple, visual, and practical. It can be used internally in the organisation, and externally, for the engagement of various stakeholders. These stakeholders can also become part of business model innovation processes. Making use of the BMC can enable the discovery of new opportunities by visualising the relationship between its building blocks. It is an exercise that can be easily iterated to find the preferred market fit for products and services, especially when stakeholders are involved (Kriss, 2020, p. 5).

Several studies have investigated the most common business models implemented in different fields, resulting into various inventories, guidelines, and manuals (Dümcke, 2015; Gassman, Frankenberger, & Choudury, 2020; Lüdeke-Freund, Gold, & Bocken, 2019; Zott et al., 2011). These inventories of business models can serve multiple purposes: they can represent exemplar models to be replicated or to inspire variations. They can also function as scientific

models that serve the experimentation with new concepts, with the aim of generating new theories. Finally and importantly, they can be regarded as recipes that allow organisations to test, play with its ingredients and processes, and understand the influence of variations and innovations in the value creation, delivery, and capturing processes. Business models can play multiple of these roles at the same time, supporting the transformation of organisations and the development of management research applied to various fields (Baden-Fuller & Morgan, 2010, pp. 19–20).

## Innovating with business models

Organisation can achieve resilience when engaging in discussion on business models by adapting to changes in the market such as changes in consumers' needs or preferences. Further, involving various stakeholders in business model conversations is increasingly advocated across fields (Buur, Ankenbrand, & Mitchell, 2013, p. 55). ICT and the digital economy has further facilitated inclusive practices, which open up the opportunities to experiment with new ways to create, deliver, and capture value in collaboration with a multitude of partners and to reach a wider spectrum of users (Benghozi, 2020, p. 82; Zott et al., 2011, pp. 14–15).

The notions of 'value chain' and 'value network' have been coined to refer to the chain of relations between a focal organisation and its relevant stakeholders. They hint at the dynamics of these exchanges that can generate benefits – economic and beyond – for all of those involved. Opening the value network to new actors or rethinking the relationships and collaborations among existing ones can be a powerful way to spur innovation (Buur et al., 2013, p. 55). These processes of co-creation of products, services, as well as business models, may contribute to what is called 'open innovation' (Chesbrough, 2003). Such an open, process-oriented perspective on the value-creating mechanisms of an organisation, has moved the attention towards value creation that is also more inclusive. At the same time, the importance of co(IIaborative)-value capturing is articulated, in which joint commitment to and trust in the focal organisation and its value proposition can lead to mutual benefits, and equitable relationships and treatments (Zott et al., 2011, pp. 20, 25). Open, process-oriented approaches to the business model can keep on fueling the evolution of business models and the development of new ones (Zott et al., 2011, p. 19).

## Business model innovation in the heritage field

Increasingly more organisations recognize the need to produce a wider range of benefits, besides economic returns, due to pressing sustainable development, health, and financial challenges (Chica Páez & Ruiz-Roqueñi, 2022, p. 148). Social Business Models Canvas have been developed that include the social and environmental value creation, delivery, and capturing processes (Cabrita, Pereira, & Omar, 2021; Nair, 2022; Umar, Sasongko, Widyastuti, & Christanti, 2020). More inclusive (open) business model innovation practices are advocated to address the societal challenges ahead (Lennon, Dunphy, & Sanvicente, 2019, p. 15; Quinonez

Zuniga & Laverde Urrea, 2019, p. 786).

In the heritage field, trends such as decreasing subsidies, larger corporate involvement, new forms of earned income, digitalization, and periods of lockdown have urged organisations to experiment with business model innovation (Prokúpek et al., 2022). Indeed, while many organisations started changing their activities, which led to other income streams, perhaps also other visitor types, they were actually rethinking their business model. For example, Greffe et al. (2017) already before the pandemic identified three archetypical new museums: branding, event-driven, and empowering museums. The branding museum is one that seeks new types of income-generating activities that could include merchandising, consulting services, or capitalising intellectual property rights. The event-driven museum organises next to exhibitions various types of events and programs. The empowering local community museum serves mostly as a hub for meaningful local meetings (Greffe, Krebs, and Pflieger 2017). Another example of a new way of value creation and capturing is franchising, as the Louvre started doing (Prokúpek et al., 2022). Selling museum-related products, digital content, stories, and experiences as well as building digital communities are activities that museums have been very active with during the pandemic (Larkin and Burtenshaw, 2021), but how they can monetize these new activities, and how they can become part of their value proposition (and thus their mission) remains to be seen.

## Participatory business models in heritage

The RECHARGE project partners wanted to understand to what extent business models with a participatory focus exist and are considered in the (academic) literature. To understand the current use(s) of participatory business models, beyond the multitude of possible similar meanings conveyed by synonyms, a focused systematic literature review of this exact term was conducted (Boland, Cherry, & Dickson, 2017). We find participatory business models consists of four phases:

1. Preparing
2. Co-designing business model
3. Implementing
4. Reflecting

## The four phases of participatory business models in heritage

### I. Preparing

The Preparing phase entails *mapping the stakeholders and participants* that will collaborate in the participatory business model-making process. In addition, it requires the *identification of the value network* and the *assessment of the needs of each of its actors*. Ideally, the network is diverse, representing the various sizes, sectors, and levels of decision making involved. On the

one hand, participatory innovation is based on the inclusion of an interdisciplinary, cross-sector arrangement of multiple stakeholders, both internal and external to the organisation, that can contribute to the innovation of the value creation and capturing processes (Buur et al., 2013, p. 57; Lennon et al., 2019, p. 6; Quinonez Zuniga & Laverde Urrea, 2019, p. 790). On the other hand, the needs and motivations of all these distinct actors in the value network need to be understood, because these will affect processes, partnerships, and outcomes. If addressed adequately and in time, arrangements that are open and inclusive can ensure the resilience of the system of collaboration (Manuel-sinde, n.d., pp. 3–4; Marques et al., 2011, p. 935; Quinonez Zuniga & Laverde Urrea, 2019, p. 777).

## II. Business models co-designing

The Co-designing Business Models Phase sets in when the value network works together to bring changes in the business model architecture of an organisation. It entails the *adaptation of the terminology* used, the *adoption and implementation of participatory methods, management of stakeholders*, as well as *mediation and facilitation* practices. The literature identifies as a main success factor of co-designing the adaptation of the language and a good choice of terminology, all to enable a fruitful dialogue and collaboration process among the various stakeholders: making sure that a common basic understanding of the business terminology and economic sustainability aims is developed (Gudiksen et al., 2014, p. 28; Quinonez Zuniga & Laverde Urrea, 2019, p. 790; Suteu & Perondi, 2016, p. 18).

In this phase, business modelling is seen as a participatory activity that creates the environment in which common problems can be discussed and re-framed, and new solutions can be imagined and realised through the use of participatory design tools and methods (Gudiksen et al., 2014, p. 16; Suteu & Perondi, 2016, p. 4). Dedicated participatory design tools, such as Living Labs, are considered fundamental to support the inclusion of multiple actors in bringing innovation across all of the three main components of business modelling – value (co-) creation, (co-) capture, and (co-) delivery. These tools help overcome the limitations of non-specialized participatory design tools that do not address value capturing and delivery (Buur et al., 2013, p. 57; Gudiksen et al., 2014, pp. 17, 28; Marques et al., 2011, p. 944).

Setting in place a management system of participatory processes is fundamental to, first, create the willingness to collaborate, and after that curate the quality of the established relationships within the value network (Krithika & Palit, 2013, p. 222; Manuel-sinde, n.d., pp. 3–4). As part of this management system, the presence of mediation and facilitation professionals dedicated to addressing conflicts and ensuring the participation of all actors, is important. These professionals can leverage the full potential of co-creation processes (Manuel-sinde, n.d., pp. 3–4; Pettersen & Krumsvik, 2021, p. 68; Suteu & Perondi, 2016, p. 17).

## III. Implementing

This phase sees the choice and adoption of changes in value *co-creation*, *co-capture*, and *co-delivery* in the business model architecture of an organisation (Gudiksen et al., 2014;

Pettersen & Krumsvik, 2021). It is really about the implementation of the participatory practices that have been co-ideated and have been adopted as integral parts of the new business model architecture. It entails all the *co-creation*, *co-management*, *co-governance*, and *co-financing* processes, supported by *partnerships*, *collaborations*, and *cooperation* activities that enable *inclusion in deliberation and decision-making* as well as in *monitoring and evaluation* (phase four).

Participation at this stage is fundamental to ensure the inclusion of all actors in the value networks in the planning, governance, implementation, and management of the new configuration of the business model architecture (Chica Páez & Ruiz-Roqueñi, 2022, p. 150; Lennon et al., 2019, p. 1; Manuel-sinde, n.d., pp. 3–4). The implementation phase is where co-creation concretises into results and generates impact, manifesting into “the active, creative and social process based on collaboration between organisations and participants that generates benefits for all and creates value for stakeholders” (Pettersen & Krumsvik, 2021, p. 68). Participatory practices can happen in the form of co-management and governance, but can also refer to the financial participation of different stakeholders, internal or external to the organisation, who join the ownership of the organisation, selected activities, or results, bringing cost efficiencies, competitive advantages, technological innovation, or speed to market, among other potential benefits (Chica Páez & Ruiz-Roqueñi, 2022, pp. 154–155; Pettersen & Krumsvik, 2021, p. 68).

#### IV. Reflecting

This phase is about reflecting on the process and the gains received by the various stakeholders. Sustainable partnerships and mutual collaborations among different stakeholders are key to foster a stable cooperation among actors with different powers, responsibilities, and roles, enabling the inclusive participatory practices that are at the core of participatory business model-making processes (Chica Páez & Ruiz-Roqueñi, 2022, p. 153; Krithika & Palit, 2013, p. 188; Manuel-sinde, n.d., pp. 3–4). A key part of these practices entails the participation of multiple actors in the decision-making system of an organisation through direct deliberation or representatives in order to ensure the agreed balance between interests and shared benefits (Chica Páez & Ruiz-Roqueñi, 2022, p. 153; Manuel-sinde, n.d., pp. 3–4; Marques et al., 2011, p. 944; Suteu & Perondi, 2016, p. 18). The periodic monitoring and (co-) evaluation of participatory practices are fundamental to ensure that interests are represented and benefits achieved, enabling learning from the inclusive participatory business model-making process and continuous improvements for the value network’s needs and satisfaction (Krithika & Palit, 2013, p. 222; Manuel-sinde, n.d., pp. 3–4; Quinonez Zuniga & Laverde Urrea, 2019, p. 786).

### Gains in participatory process

Transversal to all these phases run the objectives of inclusive participatory business model-making processes. These objectives comprise the inclusion of *multiple perspectives*, the

achievement of *shared benefits*, the acknowledgement of *social and environmental responsibilities* beyond economic ones, the establishment of *trust and transparency*, the *empowerment* of all involved actors in participating, the *sustainability of practices and resilience* of organisations, and *inclusive innovation*.

In the literature, the most mentioned characteristic of participatory business models - and at the same time their primary objective - is the incorporation of the perspectives of multiple actors, who can present their needs and advocate for their shares of benefits during the ideation and development of new business model configurations (Buur et al., 2013, p. 57; Gudiksen et al., 2014, p. 28; Lennon et al., 2019, p. 1; Marques et al., 2011, p. 935; Pettersen & Krumsvik, 2021, p. 68). In fact, opening up the redistributive capacity of the generated value to *all* stakeholders, with the aim to support a more inclusive sharing of benefits, is considered to be at the core of participatory business models (Chica Páez & Ruiz-Roqueñi, 2022, p. 150; Krithika & Palit, 2013, p. 222; Manuel-sinde, n.d., pp. 3–4; Pettersen & Krumsvik, 2021, p. 68). These benefits (need to) go beyond economic benefits and be concerned with broader social and environmental challenges (Manuel-sinde, n.d., pp. 3–4).

To effectively broaden an organisation's impact, it is key to promote co-ownership of its processes and practices, be it in financial or governance terms. Equally, risks and control should be shared (Chica Páez & Ruiz-Roqueñi, 2022, pp. 154–155; Manuel-sinde, n.d., pp. 3–4; Pettersen & Krumsvik, 2021, p. 70) and all actors empowered to participate in decision-making processes (Suteu & Perondi, 2016, p. 18). Sharing ownership and control requires trust among partners and transparency of operations that are fundamental conditions to fuel the sustainability of cooperation, prioritising the common project over the interests of individual actors (Manuel-sinde, n.d., pp. 3–4). To enhance the sustainability of participatory practices and the resilience of organisations, the inclusive participatory business model-making processes should be reiterated. Only then, it will be possible to assess, reconsider, and adapt choices of future use and business scenarios in line with the interests and benefits of each involved stakeholder (Gudiksen et al., 2014, p. 17; Manuel-sinde, n.d., pp. 3–4; Suteu & Perondi, 2016, p. 18). Integrating each one's perspective into each iteration will foster the coming into being of inclusive innovation (Buur et al., 2013, p. 57; Pettersen & Krumsvik, 2021, p. 68).

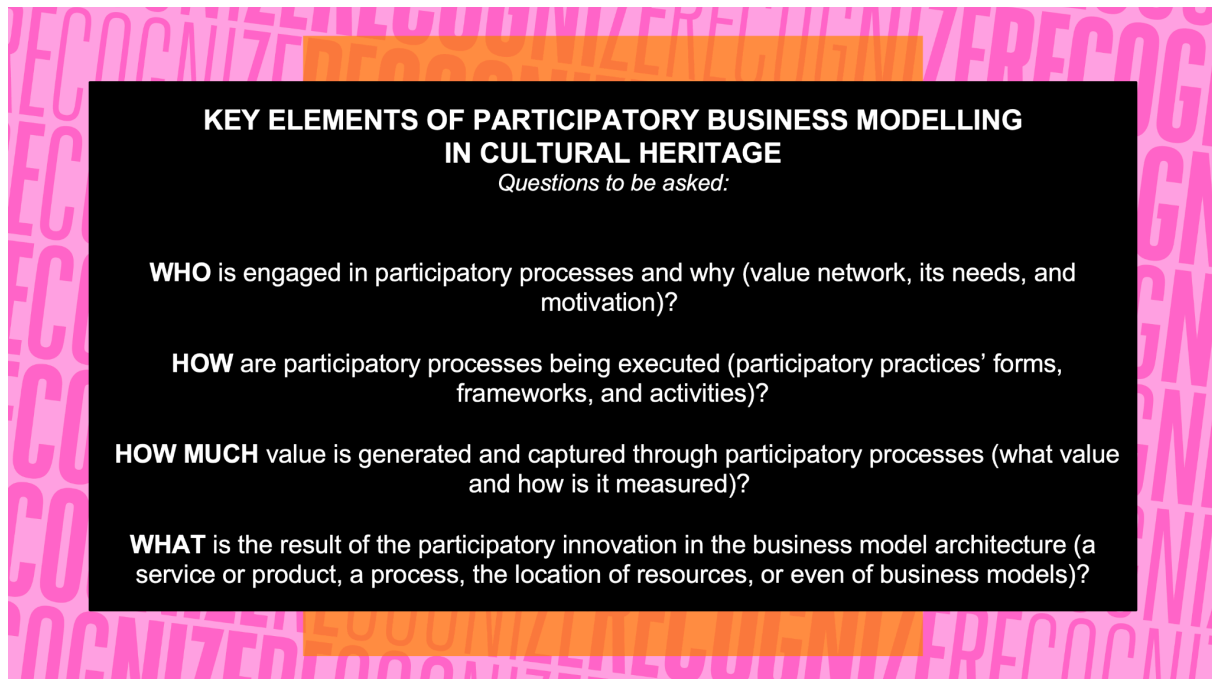
## Critical success factors

A few key characteristics of this participatory business modelling process represent what we believe to be critical success factors. First of all, *participatory practices need to be integrated and regulated* across the whole process, from the inclusive mapping of perspectives, through the co-design of the new business model architecture, to its co-implementation, co-monitoring, and co-evaluation (Gudiksen et al., 2014, pp. 16–17; Lennon et al., 2019, p. 1; Manuel-sinde, n.d., pp. 3–4). Moreover, inclusive participatory business model-making processes need to have a *systemic approach* that takes into account the implications of their development and implementation on their context at different scales (Marques et al., 2011, p. 935; Quinonez

Zuniga & Laverde Urrea, 2019, p. 790). Last but not least, both the business model-making process and the participatory activities within it throughout the different phases need to be *iterated* for their improvement through periodical co-assessment and adaptation (Lennon et al., 2019, p. 1).

## Key elements

Participatory business models rely on a process in steps, a sort of “recipe”, that needs to be undertaken in order for a business model-making process to be inclusive and participatory. Since each participatory process is different and specific to its context, what are the variable ingredients that characterise it? The key elements for each participatory business model are identified with a set of four simple questions:



## 3. Living Lab Methodology

In RECHARGE, we considered pilots and found in Living Labs the best method to engage in participatory practices within our partner EU CHIs.



## Operational definition Living Lab

Despite the lack of a seminal definition of Living Labs (Baran & Berkowicz, 2020, p. 5; Schuurman et al., 2015, p. 1; Tyl & Allais, 2021, p. 3), literature define them as open innovation ecosystems that mediate the collaboration among citizens, research organisations, companies, and institutions to bring change through action-based projects in iterative learning cycles. The Living Lab methodologies offer approaches to co-identify priorities, co-create ideas, co-design, and co-experiment with concrete solutions in real-life environments. They generate knowledge through research, exchanges, and co-evaluation processes, offering avenues for fostering open innovation, generating mutual benefits, and facilitating sustainable transformational changes.

To address the limitations of existing studies – as a first step towards the development of the theoretical framework for the RECHARGE<sup>1</sup> MODELS, their matrix and indicators – this chapter investigates the essential elements, processes, and outcomes of Living Labs that can be used by cultural heritage institutions and beyond to set up and develop them, monitoring and evaluating their outcomes and impact.

We propose a different approach compared to existing literature reviews on Living Labs (Følstad, 2008a; Hossain et al., 2019; Laminen & Westerlund, 2016; Scaillerez & Tremblay, 2017) to operationalize a definition based on the distinction between process, key elements, and intended outcomes (see Figure 3).

- The characteristics that describe Living Labs processes can be grouped into four different stages: (1) research and exploration, (1a) including stakeholders' identification, (1b) needs assessment, and (1c) identification of challenges and opportunities; (2) co-creation, including (2a) co-ideation, (2b) co-design, and (2c) co-experimentation; (3) monitoring, and (4) evaluation.
- Those that constitute the LL key elements throughout these stages are (1) stakeholders' (diversified) participation, (2) PPP partnerships, (3) collaborative governance, management, leadership, and ownership, (4) structured set-up, (5) real context, and (6) user-centred practices.
- Lastly, the characteristics that define LL intended outcomes are (1) open innovation, (2) mutual benefits for society and organisations, (3) sustainability of practices and transformative change – measuring their direct, indirect, and diffused impact.

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<sup>1</sup> The HORIZON Europe funded RECHARGE project "Resilient European Cultural Heritage As Resource for Growth and Engagement" aims to support the development of participatory business models for cultural heritage institutions through the implementation of nine Living Labs throughout Europe.

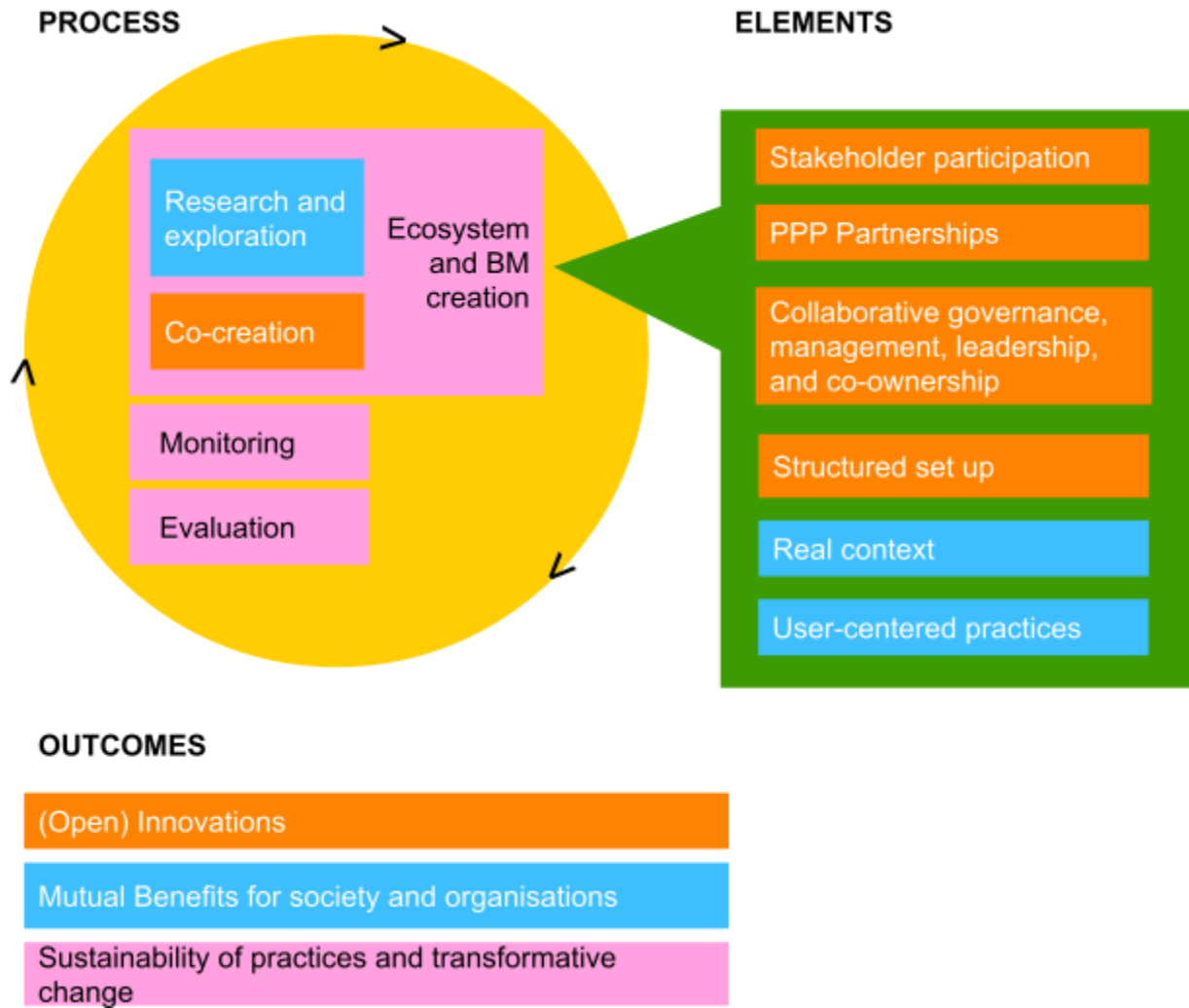
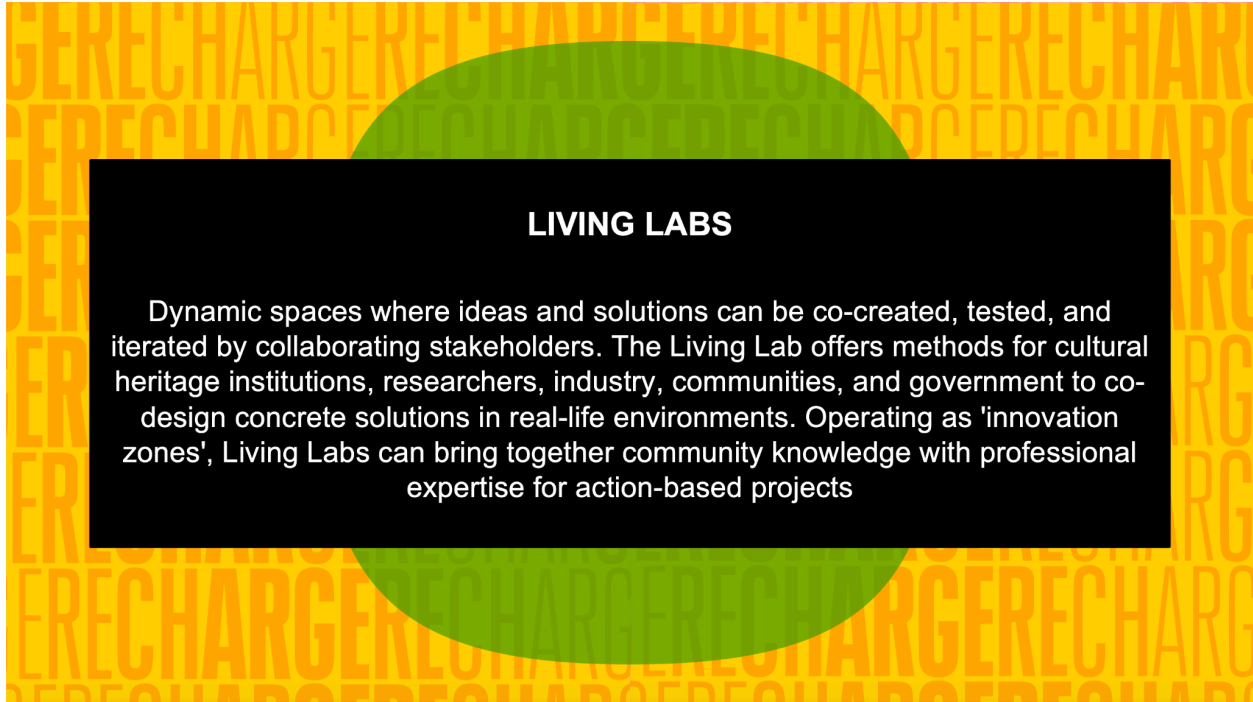


Figure 3. Living Labs' process-elements-outcomes model

Based on this, the RECHARGE project adopts the following definition:



As part of the RECHARGE project, this investigation represents a starting point for the development of a common theoretical framework between the characteristic elements of Living Labs and those of Participatory Business Models. The approach adopted by this study is considered functional for the development of such a theoretical framework that will inform the work of multiple Living Labs across Europe to experiment with participation-based business models for cultural heritage institutions to foster a more resilient cultural sector in a post-COVID-19 pandemic environment.

## Process-based review approach

A modelling of the main characteristics of Living Labs is developed through the review of 19 interdisciplinary peer-reviewed articles. 9 out of 19 were selected among the 20 more relevant records found in Scopus<sup>2</sup> based on the explicit mention of Living Labs' characteristics, and 10 via snowballing forward searching (Boland, Cherry, & Dickson, 2017, Chapter 4). The resulting pool of documents is interdisciplinary, covering Living Labs applications ranging from urban regeneration and green mobility to sustainability culture, circularity, and open innovation, and includes multiple literature review studies (Følstad, 2008 [32]; Hossain et al., 2019 [114]; Laminen & Westerlund, 2016 [195]; Scailerez & Tremblay, 2017 [166]). An inductive content analysis of these records offered a list of all the addressed characteristics of Living Labs and, while a subsequent thematic analysis of the coding resulted into a list of the main commonly

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<sup>2</sup> Using "Living Labs" and "culture" as key words for the titles, abstracts, and keywords.

referred ones, a deductive content analysis revealed the most mentioned (Popay et al., 2006, op. 18).

Despite the wide applications of Living Labs, and probably due to such variety, there is not a common definition that has significantly influenced the development of later literature (Baran & Berkowicz, 2020, p. 5; Schuurman et al., 2015, pp. 1–2; Tyl & Allais, 2021, p. 3). Multiple publications have addressed this issue in the attempt to draft a universal definition of Living Labs and their characteristics to facilitate the communication exchange of knowledge among them, enabling mutual learning and their improved implementation (Hossain et al., 2019; Laminen & Westerlund, 2016; McCormick & Hartmann, 2017; Mulder, Velthausz, & Kriens, 2008). However, Living Labs are a construct, a concept that tries to reflect certain characteristics, goals, outcomes, following a certain process. There may be many instances where actions are not labelled as Living Labs, yet this paper focuses on the specific literature that does mention them.

## Characteristics

The 21 most addressed characteristics of Living Labs have been identified and prioritised according to the frequency of mentions (see Annex 2 for a list of the most mentioned characteristics). They can be analysed distinguishing them into “process”, “key elements”, and “outcomes”.

### a. Process

Research and exploration are considered by many a key component of Living Labs (Bergvall-kåreborn, Box, & Box, n.d.; Cerreta et al., 2020; Florez Ayala et al., 2022; Følstad, 2008a; Schuurman et al., 2015; Tyl & Allais, 2021). As part of these processes, the need to identify relevant stakeholders, understand their needs, challenges, and opportunities, and build a network are often mentioned as necessary starting point for collaborating towards common goals (Baran & Berkowicz, 2020; Falanga & Nunes, 2021; Følstad, 2008b; Hossain et al., 2019; Laminen & Westerlund, 2016; Scaillez & Tremblay, 2017; Schuurman et al., 2015).

Co-creation is the most mentioned characteristic across the examined studies (16 out of 19). It's processes are commonly further distinguished into co-ideation, co-design, and co-experimentation activities for the temporary testing of a common vision of transformation (Florez Ayala et al., 2022; Følstad, 2008a; Hossain et al., 2019; Tyl & Allais, 2021; Voytenko, McCormick, Evans, & Schliwa, 2016).

During the stages of research and exploration, and co-creation, a Living Lab ecosystem is created with its actors, networks, governance and management structures, dynamics, and fields of action. Naturally, this also becomes the avenue where the value creation for the multiple

stakeholders involved is addressed and business models are developed (Bergvall-kåreborn et al., n.d.; Hossain et al., 2019; Laminen & Westerlund, 2016; Mulder et al., 2008; Voytenko et al., 2016).

Monitoring and evaluation are considered fundamental to the functioning of Living Labs as spaces of reiterative learning and knowledge development that can facilitate change and innovation (Baran & Berkowicz, 2020; Cerreta et al., 2020; Florez Ayala et al., 2022; Følstad, 2008a; McCormick & Hartmann, 2017; Rollin et al., 2021; Schuurman et al., 2015; Voytenko et al., 2016). The collaborative definition of indicators among the stakeholders and the periodical discussion of their relevance and performance is important to assess and validate the impact of the Living Labs. Therefore, monitoring and evaluation actions need to be integrated into Living Labs processes to ensure the allocation of the necessary time, financial, and human resources for their undertaking (Cerreta et al., 2020, pp. 7–8).

## b. Key elements

Among the identified characteristics, there are a few elements that are considered essential to the creation of Living Labs, providing a distinct combination of perspectives and defining them as such together with their processes:

- Multi-stakeholders' (diversified) participation (16 out of 19)
- People-Public-Private partnerships (7 out of 19)
- Collaborative governance, management, leadership, and co-ownership (7 out of 19)
- Structured set-up (6 out of 19)
- Real context (14 out of 19)
- User-centred practices (3 out of 19)

As embedded throughout the different stages of research and exploration, co-creation, monitoring, and evaluation, they contribute to addressing the ideal outcomes of Living Labs.

## c. Outcomes

Living Labs are generally advocated for fostering open innovation, mutual benefits for society and organisations, sustainability of practices and transformative change.

As a form of open innovation, Living Labs enable the confluence of multiple perspectives (Baran & Berkowicz, 2020; Falanga & Nunes, 2021; Følstad, 2008b; Hossain et al., 2019; Lafontaine, 2013; Mulder et al., 2008; Ståhlbröst, 2012). On the one hand, this can bring innovative power to development processes and fast progress, while on the other hand, it can trigger costly and slower actions (Ståhlbröst, 2012, p. 66). In any case, Living Labs create a space for mutual knowledge exchange among intersectoral stakeholders and its effectiveness is closely bound to the adoption and implementation of its elements (inclusiveness and variety of participatory practices, partnerships, and governance structures) and processes (co-creation) that contribute to the openness of their innovation outcomes (see Figure 1).

Living Labs are intended to bring mutual benefits for society, users, and organisation – for and non-for profit (Baran & Berkowicz, 2020; Følstad, 2008b; Lafontaine, 2013; Mulder et al., 2008; Ståhlbröst, 2012). By bringing together different stakeholders they are meant to generate value for each one of them to ensure the continuity of collaboration and maintain the openness of the innovation process (Ståhlbröst, 2012, p. 68). To this end, adopting a people-centred approach in dealing with real context issues is instrumental and requires a thorough identification of relevant stakeholders to understand their needs, challenges, and opportunities (see Figure 1) (Baran & Berkowicz, 2020, p. 6). However, there's a lack of empirical studies that measure the generated value for different stakeholders and no comparative analysis of the most effective management approaches in Living Labs (Hossain et al., 2019, p. 986).

Lastly, Living Labs are adopted as spaces where transformation processes can be mediated to improve the sustainability of practices, guide their change, and enhance their impact (Hossain et al., 2019; McCormick & Hartmann, 2017; Schuurman et al., 2015; Ståhlbröst, 2012). They have been used to implement projects aimed at fostering the culture of sustainability at multiple scales through initiatives on inclusive governance, green mobility, sustainable urban development and regeneration, and circularity; however, these projects often belong to short-term funded programs, preventing the reiterative cycles of sustainable Living Labs processes and the evaluation of their longer-term impact (see Figure 1) (Falanga & Nunes, 2021, p. 8). Attempts have been made to track the transformative changes of Living Labs' activities by looking at their direct impact through indicators-based co-assessment processes, their indirect impact monitoring changes in the field dynamics and policies, and their diffused impact observing shifts in societal perception and value system; however, measuring changes poses multiple challenges and no common approaches have been adopted (Rollin et al., 2021, pp. 2–4).

## 4. Conclusions

The goal of this report is to provide a framework that identifies the key characteristics that make participatory business models operational. We have conducted a systematic literature review of the key search term “participatory business model” across three large text repositories (Scopus, Web of Science, and Google Scholar) and analysed the process, elements, and characteristics discussed in their implementation across sectors. Isolating the key characteristics lead to a process-based approach to define Participatory Business Models for RECHARGE.

Borrowing from our love of cooking, we envisioned the process as a recipe that includes a preparation phase, co-designing phase, implementing phase, and reflecting phase. Following these four phases systemically and iteratively reaps best results, as the long-term gains to engaging in integrated and regulated participatory processes are considerable and far reaching.

Knowing that there is no one size fits all, and that every household has its characteristic taste, we envision the use of ingredients freely as elements defined by the specific case, based on the questions: who is engaging? How is participation executed? How much value is generated and captured? And What is the result of the exercise?

The framework presented reflects the state of the art regarding participatory business models relevant to CHIs. The next steps are implementing the model in the field, exploring metrics that reflect the gains to participatory practices, defining the extent to which some gains may be more or less responsive to the critical success factors, and replicating in different scales and scenarios the proposed model. The next report includes an analysis of relevant practices in the CHIs.

During our first year at RECHARGE, we already applied the model in our Living Labs, to the extent possible. Lacking a clear definition of Living Labs, we engaged in the exercise and provide a second process-based framework to define our methodology. Why not pilots? Living Labs are characterised by taking place in real contexts, by including diverse stakeholders, by engaging in public and private partnerships, by collaborating in engagement, by considering a user-centre practice, and by having a structured set up. The richness of this process, in addition to the promise of sustainable and transformative outcomes, provided the ideal conditions for RECHARGE to advance resilient solutions for the sector.

We invite you to test the proposed approach to engage with your stakeholders in reflecting about value, the value creation, value capture, and value delivery in your organisation, and the extent to which you get the most out of your effort. Most importantly, the long-term gains of the participatory process are hardly ever documented. By highlighting them, we invite CHIs and stakeholders to become aware of their latent impact.

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# Annex

## Annex 1. Description of literature analysis to define Participatory Business Models

As a key search term, “participatory business model” was surveyed across three large text repositories: Scopus, Web of Science, and Google Scholar. This search led to ten relevant and retrievable peer-reviewed interdisciplinary articles (Table 1).

Participatory business models are researched in a wide range of fields, including energy transition (Krithika & Palit, 2013; Lennon et al., 2019), forest management (Marques, Borges, Sousa, & Pinho, 2011), trade unions (Chica Pérez & Ruiz-Roqueñi, 2022), journalism (Pettersen & Krumsvik, 2021), design (Buur et al., 2013; Gudiksen et al., 2014), cooperatives (Manuel-sinde, n.d.; Quinonez Zuniga & Laverde Urrea, 2019), and NGOs (Suteu & Perondi, 2016). As can be concluded from this list, no reference to cultural heritage is made (yet).

From this bundle of ten articles we gain an insight in what is meant with participatory business models. A list of the main characteristics of participatory business models was developed through an inductive content analysis, which was then reduced by thematically clustering them by frequency, by means of a consecutive deductive analysis (Popay et al., 2006, pp. 17–18). These characteristics have then been further thematically clustered to identify the participatory business model design and development process (Popay et al., 2006, p. 17). 28 characteristics have been identified to typify participatory business models. They are listed and organised according to the frequency of their occurrence in the literature (see Table A1).

CHARACTERISTICS	(Lennon, Dunphy, and Sarvicente, 2019)	(Gudiksen, Poulsen, and Buur, 2014)	(Buur, Ankenbrand, Mitchell, 2013)	(Quinonez Zuniga, Laverde, and Luz, 2019)	(Chica Pérez and Ruiz-Roqueñi, 2022)	(Krihika and Palit, 2013)	(Marques, Borges, Sousa, and Pinho, 2011)	(Manuel-Sinde, 2021)	(Pettersen and Krumsvik, 2021)	(Suteu and Perondi, 2016)	INCIDENCE COUNT
Multiple perspectives	x	x	x			x	x		x		6
Inclusive participatory business model making	x	x		x			x			x	5
Process-oriented		x	x	x	x		x				5
Shared benefits					x	x		x	x		4
Participation in decision-making/deliberation					x		x	x		x	4
Participatory methods and tools		x	x				x			x	4
Co-ownership and shared control					x			x	x		3
Cross-sectional engagement	x		x	x							3
Sustainability of practices and resilience		x						x		x	3
Inclusive innovation		x	x						x		3
Adaptation of language		x		x						x	3
Monitoring and evaluation				x		x		x			3
Mediation and facilitation								x	x	x	3
Participatory action research and planning	x			x							2
Integrated approach	x	x									2
Co-creation and co-design	x								x		2
Co-management and co-governance					x			x			2
Needs-based				x			x				2
Systemic approach				x			x				2
Cooperation and collaboration					x			x			2
Co-financing					x						1
Iterative engagement	x										1
Partnerships						x					1
Stakeholders management						x					1
Trust and transparency								x			1
Regulated participation								x			1
Social and environmental responsibility								x			1
Empowerment										x	1

Table A1: Most mentioned characteristics of Participatory Business Models



From the analysis of the sources, it emerges that key to Participatory Business Models is that they are the result of an inclusive participatory business model-making process (Gudiksen et al., 2014; Lennon et al., 2019; Marques et al., 2011; Quinonez Zuniga & Laverde Urrea, 2019; Suteu & Perondi, 2016). In a second step, the 28 characteristics have been further clustered and analysed as divided into different features of the business model design and development process.

## Annex 2. About Living Labs

### History and Objectives of Living Labs

Living Labs are proliferating across fields and literature, including under their umbrella a variety of practices and approaches (Schuurman, Mahr, De Marez, & Ballon, 2015, p. 1). This trend, combined with the limited amount of theories and diversified empirical applications, results into the lack of a consistent seminal definition that is commonly accepted and used across fields, scopes, and contexts (Baran & Berkowicz, 2020; Florez Ayala, Alberton, & Ersoy, 2022; Schuurman et al., 2015; Tyl & Allais, 2021). As a result, Living Labs are at risk of becoming a buzzword (Leminen, 2015, p. 29), but their innovative potential and transformative inclusive processes are leading to the increasing adoption and implementation of this early stage development methodology and further research into its key elements (Baran & Berkowicz, 2020; Rollin, Bamberg, Ketterl, & Weiland, 2021).

Living Labs present some early mentions in medicine and biology for the fast advancement of treatments, but the term became widely used in the 1990s in the United States in association to the research on collaborative smart homes design of the Massachusetts Institute of Technology (MIT) (Baran & Berkowicz, 2020, p. 5; Falanga & Nunes, 2021, p. 3). These living experimental environments – called Place Lab – resembled real-life 1-person households designed for the observation of volunteer participants' interaction with smart home technologies for a variable period of time (Intille et al., 2005, p. 1941). This research infrastructure and methodology evolved to include nowadays projects on places and products for work and living; urban modelling, prediction, and simulation; and mobility services, under the coordination of the MIT City Science research group (MIT Media Lab, n.d.).

Contextually, the concept of Living Lab has been adopted, adapted, and implemented also abroad, leading to the development of alternative strands of research. In Europe, the main divergence from the American model is the study of users and participants into their real-life environment (Schuurman et al., 2015, p. 3). This shift allowed for experimentation from the start with a wider application of Living Labs, beyond the collaborative development and testing of technology in a controlled environment. Co-creation practices are embedded into real-life challenges with impact at multiple scales, enabling the participation of different stakeholders, and integrating it throughout different steps of innovation processes (Baran & Berkowicz, 2020,

p. 5). While these Living Labs proliferated mainly in urban context on short term project-basis, in other world's regions, for instance in South African countries, they found longer term application in rural environments, answering different dynamics of knowledge exchange and communities' engagement (Schuurman et al., 2015, p. 5).

In the past two decades, the Living Lab approach has been actively promoted at a European level through policy, funding schemes, and implementation toolkits, resulting in the creation of the European Network of Living Labs (ENoLL) in 2006, with headquarters in Brussels (Cerreta, Elefante, & La Rocca, 2020, p. 4). With the support of the European Commission, the network grew to include a variety of countries in Europe and beyond in its federation, and partnerships among different stakeholders, such as civil society, governmental bodies, academia, and industries, engaging with a diverse range of fields and applications (Schuurman et al., 2015, pp. 1, 2).

Overall, Living Labs allow to set in place processes of knowledge sharing and knowledge generation in regulated environments, which can be translated into theories, methods, and models to re-test, refine, and replicate in different contexts as part of iterative learning processes (Hossain, Leminen, & Westerlund, 2019, p. 986; Schuurman et al., 2015, p. 3). They facilitate the collaboration of different stakeholders in experimental co-creation approaches, prototyping, testing, and validation of solutions to local problems, resulting in the development of new or improved technologies, products, and services (Baran & Berkowicz, 2020, pp. 2, 6; Fanzini, Venturini, Rotaru, Parrinello, & de Cocinis, 2020, p. 2; Florez Ayala et al., 2022, p. 1; Hossain et al., 2019, pp. 979, 986; Schuurman et al., 2015, pp. 2–3).

Much research focuses on the advancement of ICT and their application and integration into society. In this contexts, Living Labs become spaces to explore emerging social needs and trends enhancing research, inclusion, and innovation, and improving the usability and usefulness of technology, providing a promising methodology to address societal problems (Baran & Berkowicz, 2020, pp. 5–6; Schuurman et al., 2015, pp. 2–3). As such, they can play an important role in the sustainability transition across sectors and fields, contributing to the research on environmental awareness and behaviour, the development of more responsible patterns of production and consumption, and the adoption of more equitable and deliberative decision-making processes (Baran & Berkowicz, 2020, p. 6).

In the past few years, such potential has been largely tested and leveraged at a city scale with the increase of Urban Living Labs worldwide, and particularly across Europe, where they were adopted in line with the existing traditions of action research and appreciative enquiry (Rollin et al., 2021, p. 2; Wendt, Bastian, & Jones, 2021, p. 695). Their implementation aims at various innovative and transformative improvements of the urban landscape, ranging from efficient transportation, the creation of green spaces, support to local food systems (Florez Ayala et al., 2022, p. 3), to regeneration schemes (Falanga & Nunes, 2021, p. 10), cultural heritage adaptive reuse (Cerreta et al., 2020, p. 4), and place-making (Fanzini et al., 2020, p. 2). Moreover, they aim at facilitating the adoption of transition management models towards multi-actors urban governance systems that can support the necessary policy changes for the sustainable

transformation of urban systems and the local economy (Fanzini et al., 2020, p. 2; Florez Ayala et al., 2022, p. 3; Rollin et al., 2021, p. 2). In short, Living Labs have been widely used so far in multiple contexts to “produce pathways of change” towards sustainable development goals and circularity through open innovation (Baran & Berkowicz, 2020; Florez Ayala et al., 2022, p. 3; Hossain et al., 2019; Rollin et al., 2021, p. 2; Tyl & Allais, 2021, p. 2).

## Forms of Living Labs

Living Labs are considered practice-driven experimentation environments, that can be both physical and virtual spaces or controlled networks, and act as arenas, forums, and “research think-tank” to foster innovation (Baran & Berkowicz, 2020, pp. 2, 6, 11; Cerreta et al., 2020, p. 4; Florez Ayala et al., 2022, pp. 1–3; Hossain et al., 2019, p. 980; Schuurman et al., 2015, pp. 2–3; Tyl & Allais, 2021, pp. 2–3; Wendt et al., 2021, p. 695). Overall, they can be considered as regulated ecosystems and networks that mediate and empower processes of collaboration between industry sectors, research organizations, institutions, and citizens through participatory methodologies to facilitate the implementation of transformative approaches to intervention in real-life contexts (Baran & Berkowicz, 2020, pp. 2, 6, 10, 11; Cerreta et al., 2020, p. 4; Falanga & Nunes, 2021, p. 3; Fanzini et al., 2020, p. 2; Florez Ayala et al., 2022, p. 3; Heinrich, Million, & Zimmermann, 2022, p. 188; Hossain et al., 2019, p. 979; Rollin et al., 2021, pp. 2–3; Schuurman et al., 2015, p. 2; Tyl & Allais, 2021, pp. 2–3; Wendt et al., 2021, p. 695).

Eventually, different forms of Living Labs can be set up according to their activities and actors involved. Nevertheless, two main overarching categories can be identified: on the one hand, Living Labs that focus on supporting structured approaches to in-context research of systemic issues, which are characterised by participatory design methodologies and co-creation processes; and on the other hand, those that focus on open innovation, which adopt a user-centred perspective to test new technologies and services and function as collaborative socio-technical platforms (Baran & Berkowicz, 2020, p. 6; Schuurman et al., 2015, p. 3).

These definitions and models are either rooted in theory or developed from the experience of specific cases, presenting challenges in their application in different contexts and fueling the need to further interdisciplinary discussions on the nature and main characteristics of Living Labs (Rollin et al., 2021, p. 2). Moreover, the establishment of new avenues of participation brings the attention to the variety of possible forms of engagement and their challenges, due to the temporary nature of the initiatives, the short term agenda, and the lack of governmental structure as well as human and financial resources (Falanga & Nunes, 2021, cols. 8–9). Furthermore, while a variety of tools has been created to facilitate the setting up and implementation of Living Labs, ranging from serious games to multi-dimensional communication and planning tools, limited common evaluation approaches have been developed to produce empirical knowledge on their effectiveness (Cerreta et al., 2020; Mulder et al., 2008; Tyl & Allais, 2021).

## Annex 3. Table of Living Lab key word characteristics in the literature

CHARACTERISTICS	(Flores Ayala, Alberman, Ersov, 2022)	(Hossain, Leminen, Westerlund, 2019)	(Falstad, 2008b)	(Mulder et al., 2008)	(Bergvall-Kärebom et al., 2009)	(Leminen and Westerlund, 2016)	(Voytenko et al., 2016)	(TVJ and Allais, 2021)	(Stålbrost, 2012)	(Lafontaine, 2013)	(Scallier and Tremblay, 2017)	(Rollin et al., 2021)	(McCormick and Hartmann, 2017)	(Falanga and Nunes, 2021)	(Correia et al., 2020)	(Schuurman et al., 2013)	(Falstad, 2008)	(Fareini et al., 2020)	(Baran and Berkowicz, 2020)	INCIDENCE COUNT
Stakeholders' participation and co-creation	x	x	x	x		x	x	x	x	x		x	x	x	x	x	x		x	16
Real context	x	x	x			x	x	x	x				x	x	x	x	x	x	x	14
Experimentation	x						x	x		x	x	x				x	x		x	10
Research and exploration	x				x			x							x	x	x		x	7
Co-ideation and co-design		x	x					x				x		x	x				x	7
Stakeholders and partners' mapping		x			x						x	x		x	x				x	7
Facilitated PPP partnerships and collaborations		x						x				x		x	x	x			x	7
(Open) innovation processes and outcomes		x	x	x					x	x				x					x	7
Collaborative governance, management, leadership, ownership				x	x		x			x	x	x								7
Sustainability of practices and transformative change	x	x						x	x		x			x		x				7
Needs-based action		x									x			x		x	x		x	6
Structured set-up	x	x		x	x					x									x	6
Iterative learning and knowledge development	x						x					x	x			x			x	6
Collaborative methods, tools, and approaches		x		x	x	x				x					x					6
Evaluation	x						x						x		x		x			5
Mutual benefits for businesses, society and users		x		x					x	x									x	5
Networks, ecosystems, and business models development		x		x	x	x	x													5
Identification of challenges and opportunities		x	x														x			3
User-centred approach								x	x										x	3
Monitoring												x			x					2
Diversified participation		x																		1