Business Plan Material Exchange Platform

CHARM D.LT 4.2

Çetin, Sultan; Straub, A.; Gruis, V.H.

Publication date
2024

Document Version
Final published version

Citation (APA)
Çetin, S., Straub, A., & Gruis, V. H. (2024). *Business Plan Material Exchange Platform: CHARM D.LT 4.2*. Interreg.

Interreg North-West Europe CHARM

European Regional Development Fund

Circular Housing Asset Renovation & Management

D.LT 4.2 | Public Version | January 2024

Business Plan Material Exchange Platforms

Project No. NWE 760

Authors	
Name	**Organization**
Sultan Çetin	TU Delft
Ad Straub	TU Delft
Vincent Gruis	TU Delft

Table of Contents

1 Introduction

In this deliverable, we briefly introduce material exchange platforms (MEPs) and explain business models associated with CHARM MEPs. An overall mapping will be presented on the sustainable business canvas based on the outcomes of related work packages.

2 Material Exchange Platforms

Digital platforms are getting increasing attention within European countries to accelerate the material circulation within and beyond the building industry. There are mainly three types of digital platforms for circularity:

1. Platforms for sharing or exchanging products and services.
2. Platforms for managing information flows.
3. Platforms for co-creation.

The main function of the first type of digital platforms is to link the supply and demand sides and enable material sharing across the construction supply chain. These platforms can take shape as *sharing platforms*, giving temporary access to products or space without transferring the ownership, or as *digital marketplaces*, allowing different actors to trade reclaimed building materials. An example from the Netherlands is Insert[1]. Insert is an online marketplace allowing market stakeholders to list reclaimed construction materials and components. The NWE Interreg Project FCBRE made an inventory of around 1000 SME's operating such marketplaces (see, e.g., Salvo and Opalis tools). In addition, The Digital Deconstruction Project has also published a detailed analysis of such platforms actively operating in North-West Europe (Interreg NWE Digital Deconstruction, 2022).

The second type of platforms are used to manage life cycle information of buildings and/or building products to manage building operations as well as to allow stakeholders to reuse building components. For example, platforms like Madaster[2] provide their clients with a material passports service along with financial and environmental evaluation of buildings for the aspect of circularity. Lastly, online platforms enable various industry actors to come together and co-create circular building solutions.

Material exchange platforms (MEPs), in this context, are the combination of the first and the second type of platforms. Their main functions are:

- To list building materials and products in existing buildings that can potentially be reused in another project in the future,
- To provide stakeholders with reliable and detailed information on the reusable materials and products,
- To enable stakeholders exchange or trade reclaimed building materials and products.

[1] https://marktplaats.insert.nl/

[2] https://madaster.com/

In addition to these *digital functions*, MEPs can be set up as *physical* places where reclaimed building components are stored temporarily, cleaned and repaired if necessary until they are transferred to a new location. These physical MEPs are also called "circular hubs" where different actors in the construction value chain can make transactions.

As part of CHARM Project, WP2 leader Paris Habitat has developed a *digital platform* called Reflexe[3] that covers the three digital functions explained above. The platform is being used in Paris Habitat's daily operations to reduce waste and downcycling and increase reuse and upcycling. On the other hand, LeefGoed (i.e., Zonnige Kempen) created a *physical platform* as a storage place to allow their employees to reuse building components in maintenance operations. In the next sections, we will further explain the principles behind both platforms, employing the sustainable business model canvas.

3 Sustainable Business Model Canvas

A business model canvas is used to map how a company creates, delivers, and captures value. As shown in Fig. 1, *the sustainable business canvas* places the triple bottom line – people, planet & profit—at the center of the value proposition and targets to positively impact both society and the natural environment while making profit.

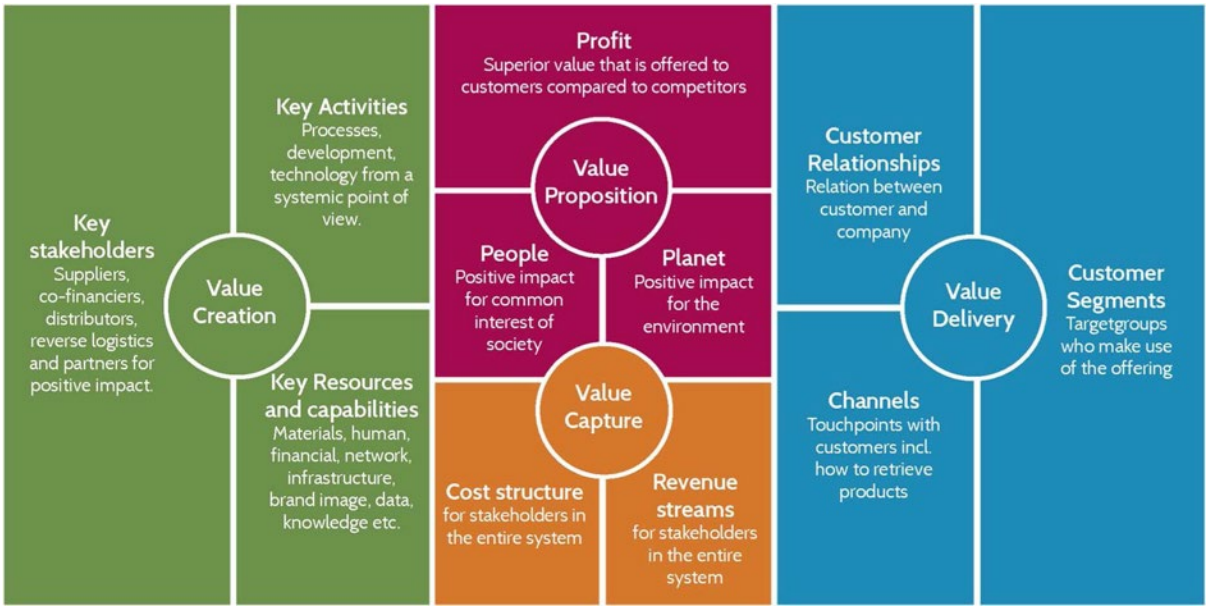


Fig. 1 Sustainable business model canvas (Source: (Bocken et al., 2018)).

The sustainable business canvas consists of four distinctive aspects:

- Value proposition: It is the core element of a business model that outlines the unique value of a product or service that is offered by a company.
- Value creation: It consists of the activities and processes a company undertakes to design, produce, and deliver its products or services.

[3] https://reflexe.parishabitat.fr/

- Value delivery: It relates to how a business ensures that the value promised in the value proposition is effectively delivered to customers.
- Value capture: It is the aspect of a business model that addresses how a company generates revenue from the value you provide to customers.

4 CHARM Business Model Workshop

On 13 January 2023, an online workshop was organised by TU Delft with CHARM partners. The goal of the workshop was to map two MEP approaches, the *digital MEP* and *physical MEP*, on a sustainable business model canvas. An online whiteboard application was used to interact with the participants. As shown in Fig.2 and Fig.3, participants were divided into two groups and allowed to add comments/inputs via virtual post-its. Following an introduction, instructors guided participants with the following questions to ask themselves about their MEPs which are based on the building blocks of a business model canvas:

1. **Customer segments:**
   - Who are the users of the MEP?
   - What are their needs?
2. **Value proposition:**
   - What does the MEP offer to the users?
   - What value do we create for the users?
   - What needs do we fulfil?
3. **Channels:**
   - In what way do we deliver the services of the MEP? – digital and physical
   - How are the services of the MEP followed up by concrete activities?
   - What follow-up activities are needed to deliver the services of the MEP?
   - What channels do we use to communicate about the MEP?
4. **Customer relationship:**
   - How do we guarantee and monitor the use of the MEP by the users?
5. **Key activities:**
   - Which key activities must we ourselves perform in order to deliver our value proposition?
6. **Key resources:**
   - What key resources do we need to fulfil our value proposition?
7. **Key partnerships:**
   - Which partners and suppliers do we work with to deliver our value proposition?
8. **Cost structure:**
   - What types of costs are made to operate our business model and deliver our value proposition?
9. **Revenue streams:**
   - How do we create revenues?

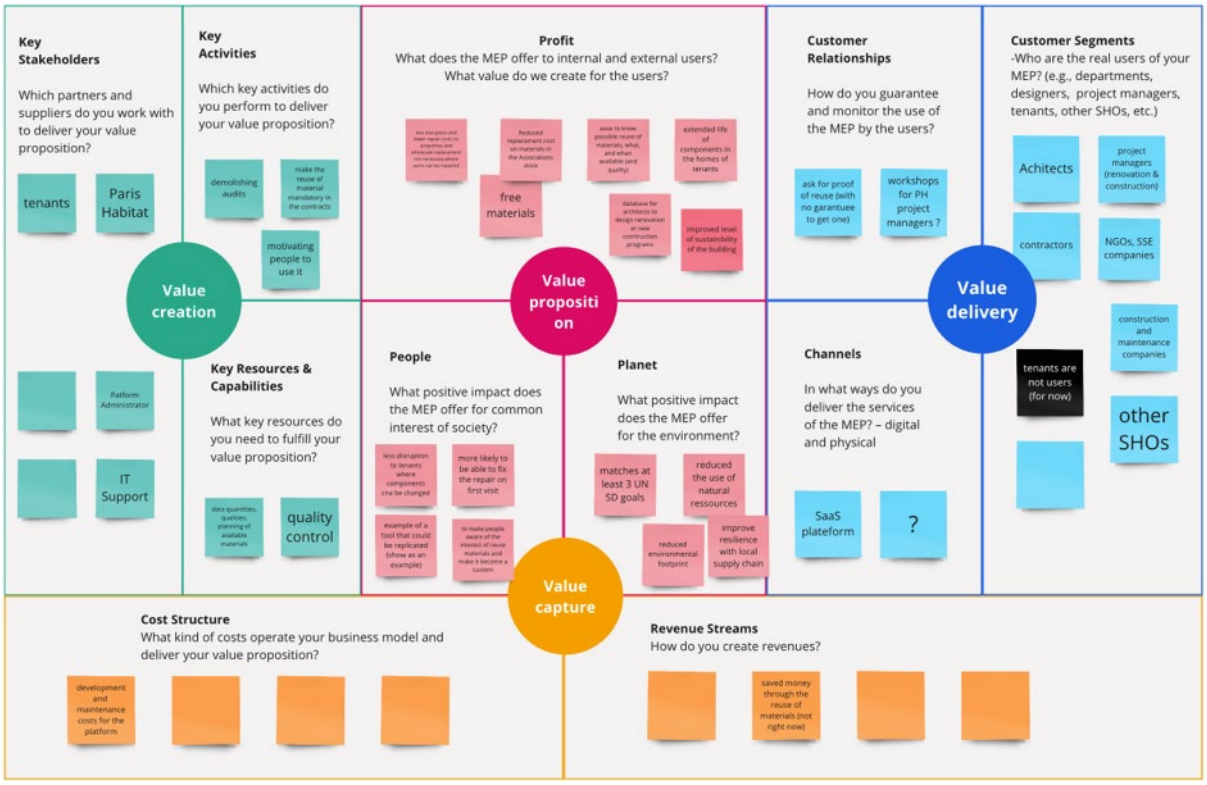


Fig. 2 Workshop results for the digital MEP of Paris Habitat

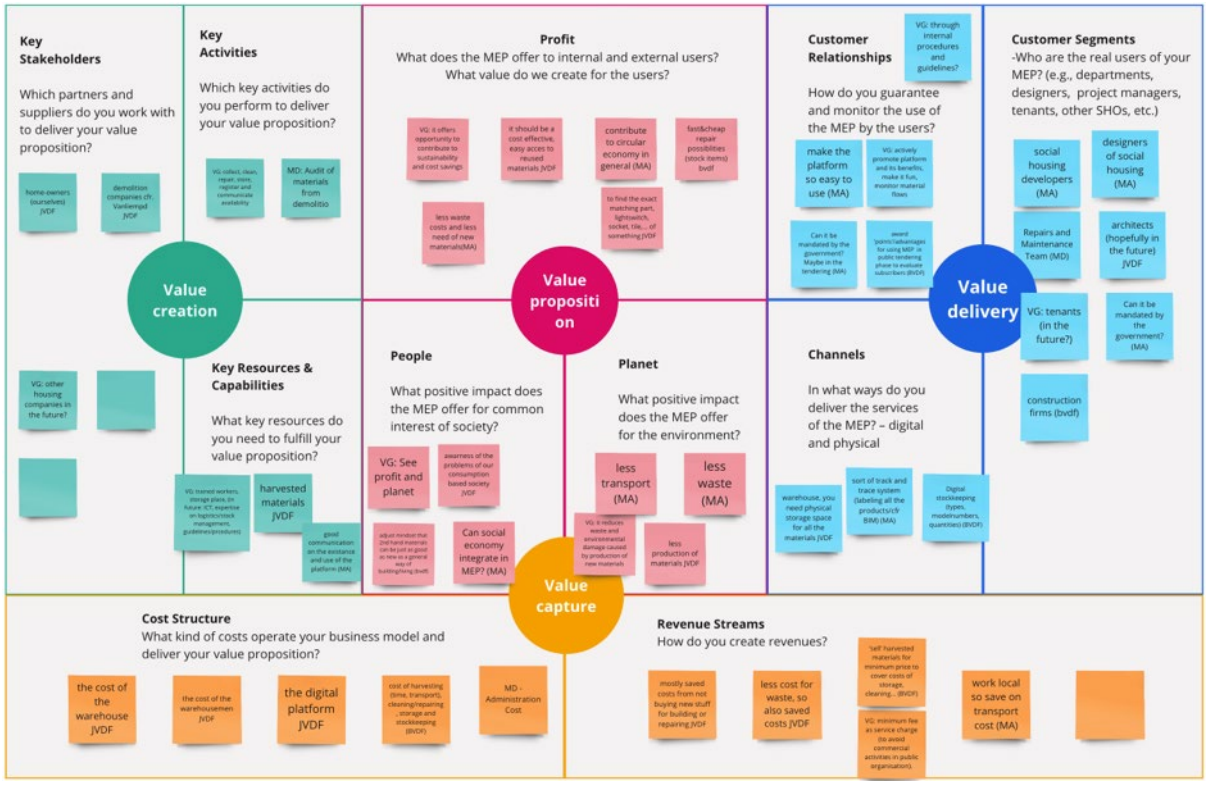


Fig. 3 Workshop results for physcial MEP of LeefGoed (Zonnige Kempen)

5 Business Plan of CHARM MEPs

Following the sustainable business model canvas that is based on people, planet and profit, all CHARM demonstration projects give priority to the planet motivation. The primary goal is to reduce waste and emissions, achieved through both immediate material reuse and the proactive prevention of future waste. In this context, CHARM MEPs also put the environment in the center. It's important to emphasise that this approach doesn't necessarily translate into immediate profitability. The undertaking comes with its own set of costs, including those associated with making materials reusable and operating and maintaining the platforms. However, on a positive note, it significantly mitigates the need to acquire new materials, which in itself is a valuable benefit. The value delivered to 'people' is derived from environmental approaches. Also, CHARM partners aim to increase awareness of their employees towards circular approaches with the help of physical and digital MEPs. Next, we will explain how digital (Reflexe— Paris Habitat) and physical (storage space—LeefGoed) MEPs create, deliver and capture value.

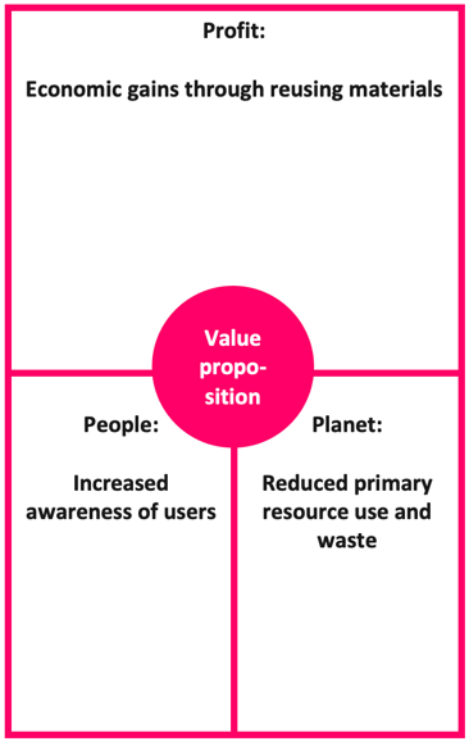
Value proposition

Overall CHARM partners have 'circular' value propositions, focussing on reducing the need for using raw materials and materials that cause environmental hazards. *Paris Habitat* prevents waste and minimises primary material use by renovating their buildings with reclaimed building components. *GreenSquare Accord* developed and built a plastic free building where the aim was to prevent pollution in the long term. *LeefGoed* (*Zonnige Kempen)* approaches circularity in multiple ways in their demo projects: increasing reuse of materials, preventing waste, educating the employees, and raising tenants' awareness towards circularity. *Woonbedrijf* designed reusable housing units with the intention of them being used for 15 years on a temporary location and afterwards being re-used at another location.

The value propositions of the two CHARM MEPs follow a similar logic with the demonstration exemplars. The physical MEP of *LeefGoed* (Fig. 4) and digital MEP of *Paris Habitat* (Fig.5) enable employees of their own and partner organisations to reuse materials, which in return contributes to the reduction of waste as well as environmental and financial costs. Through these platforms, organisations avoid having to unnecessarily use new products and also prevent downcycling.

Whilst the main customers of housing organisations are their tenants, the primary customers of the MEPs are simply the "users" of the platforms. These are professionals involved in the construction supply chain, ranging from internal users, such as project managers or maintenance professionals, to external users, such as architects and contractors. The value the MEPs offer to these users is to access information regarding

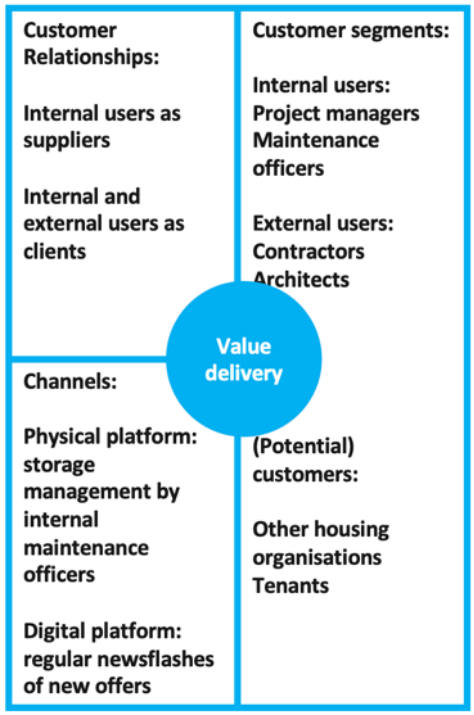
the reclaimed building components harvested from the building portfolio of housing organisations.



The physical platform that *LeefGoed* offers, the storage space, supports the maintenance team in finding second hand building components, instead of new ones, to perform repair works quickly. And they are exploring if it can also be opened up to tenants who want to carry out relatively simple maintenance activities themselves.

The digital MEP (Reflexe) that *Paris Habitat* developed provides users with detailed information regarding the available reclaimed building materials and components within Paris Habitat. This information includes the product name, a picture, main physical properties as well as the duration that the component remains available to be claimed for reuse.

Value delivery



In terms of value delivery, one needs to make a distinction between internal and external users -customers-. Internal users, such as project managers, can act as suppliers – providing reclaimed materials as well as associated information to the platforms. They can also potentially be clients as they might demand certain reclaimed components for their ongoing projects.

The digital MEP of Paris Habitat sends regular notifications to its users once a reclaimed material or component is registered to the system. This way, the users are informed about the availability of materials within the building stock of *Paris Habitat*. This platform allows external users like project architects to access such data so they can make use of reclaimed materials in new construction and renovation design projects. Paris Habitat is investigating whether it is possible to open the platform to other social housing organisations in the region. Because social housing organisations have to comply with certain rules and regulatory frameworks, material exchange and trade potential is limited.

On the other hand, the physical platform of *LeefGoed,* typically provides access to their own employees thus internal users. However, LeefGoed plans to integrate tenants into their platform so the tenants can acquire reclaimed components with a reduced price.

Value creation

In CHARM MEPs, the list of key stakeholders consists of internal stakeholders like project managers, maintenance and communication officers as well as external stakeholders like contractors and architects who have expertise in working with reusable materials. In the case of the digital MEP of *Paris Habitat*, an external ICT firm was hired to develop, design and maintain the platform. As for the physical platform, employees of *LeefGoed* developed expertise on assessing reuse potential of reclaimed materials. These are needed for additional activities such as the collection, cleaning, repairment, registration and storage of materials.

Overall, for both type of platforms, the key resources are trained employees who perform tasks for reusing materials. As for the digital platform, the ICT-tooling and for physical platform the storage place are the other key resources.

Ideally, physical and digital platforms should be interconnected to ensure that materials do not go unused during their initial availability period.

Value capture

The final component of the sustainable business model canvas is value capture. As previously discussed, the CHARM demonstration projects were driven by the desire to enhance the environmental and societal aspects of the triple bottom line. Consequently, there was no anticipation of generating financial profits from the circulation of materials and components within the developed MEPs. The primary expenses were associated with tasks such as reclaiming materials (including labor costs for cleaning reclaimed materials), waste prevention, and the establishment and operation of MEPs. In the context of CHARM, the primary financial benefit for partner organisations lies in cost savings achieved by reducing the use of new products.

6 References

Bocken, N. M. P., Schuit, C. S. C., & Kraaijenhagen, C. (2018). Experimenting with a circular business model: Lessons from eight cases. *Environmental Innovation and Societal Transitions*, *28*, 79-95. https://doi.org/10.1016/j.eist.2018.02.001

Interreg NWE Digital Deconstruction. (2022). *Analysis of digital trading platforms for construction products in North-Western Europe*. https://vb.nweurope.eu/media/20548/ddc_analysis-of-digital-trading-platforms-for-reused-materials_report.pdf