



TALLINN UNIVERSITY OF TECHNOLOGY
SCHOOL OF ENGINEERING
Department of Mechanical and Industrial Engineering

RESHAPING EXHIBITION PRACTICES

**ENABLING COLLABORATION FOR A SUSTAINABLE CHANGE IN
EXHIBITION MAKING**

**NÄITUSEPRAKTIKATE ÜMBERKUJANDAMINE:
KOOSTÖÖ VÕIMALDAMINE JÄTKUSUUTLIKEKS MUUTUSTEKS
NÄITUSTE KORRALDAMISEL**

MASTER THESIS

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THESIS TASK

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Thesis main objectives:

1. Develop an understanding on exhibitions and exhibition practices engaged with sustainability.
2. Explore opportunities for supporting and improving exhibition practices for a sustainable change.
3. Develop a design concept enabling sustainable change in exhibition making.

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ABSTRACT

Exhibitions are the core function of museums and galleries, holding great social and environmental impact. Organising exhibitions uses a lot of valuable resources such as materials, time, money, effort and power. Sustainability as one of the defining themes in the current decade requires everyone to respond to the challenge, including for changes to be made in exhibition practices.

Heavy use of raw materials occurs each time an exhibition is organised, and minimal reuse of leftover objects and materials exists due to absence of structures supporting circularity. A concerning factor in the exhibition field is also lack of storage options for leftover objects and materials, which almost forces exhibition teams to make unsustainable choices. Excessive planning and organising takes place due to poor planning capacity and lack of collaboration between exhibition stakeholders.

This thesis considers exhibitions in their temporary physical form, where exhibitions take place in institutions intended for exhibition making; that is mainly museums, galleries. For research, expert interviews and a co-design workshop, as well as various observational and participatory methods were used.

The thesis proposes a collaborative service platform for connecting exhibition professionals to support the sustainable planning and organising of exhibitions. The platform allows for leftover objects and materials to be uploaded to a digital environment, where they can be booked by other members for further use. The platform also incorporates physical storage options for objects and materials that cannot be stored elsewhere. Besides keeping objects and materials in circulation, the digital environment enables members to share their knowledge and expertise for improving exhibition practices.

EESTIKEELNE KOKKUVÕTE

Näituste organiseerimine on muuseumide ja galeriide põhifunktsioon ning see omab suurt sotsiaalset ja keskkondlikku mõju. Näituste korraldamisel kasutatakse palju väärtuslikke ressursse, sealhulgas materjale, aega, raha ja energiat. Jätkusuutlikkus kui üks praeguse kümnendi suurimaid väljakutseid nõuab muuhulgas reageerimist ja tegutsemist ka näituseasutustelt.

Näituseasutused on täna paljuski kapseldunud ning koostöö nende vahel on vähene. Samuti ei võimalda valdkond efektiivset planeerimist, mis arvestaks kõigi tulevaste näitustega muuseumide ja galeriide üleselt ning aitaks jätkusuutlikult ette mõelda. Näitusemeeskondade tegevust piirab oluliselt ka näitustel kasutatavate materjalide hoiustamisvõimaluste puudumine, mis osaliselt sunnib neid tegema mittejätkusuutlikke valikuid.

Käesolev lõputöö käsitleb ajutisi näitusi, mis toimuvad selleks ettenähtud asutustes, peamiselt muuseumides ja galeriides. Uurimismeetoditena on lõputöös kasutatud ekspertintervjuusid ja koosdisaini töötuba ning erinevaid vaatlus- ja osalusmeetodeid.

Lõputöö pakub välja näitusekorraldajate ühendamiseks mõeldud platvormi, mille abil toetada näituste jätkusuutlikku planeerimist ja korraldamist. Platvorm hõlmab nii digitaalset kui füüsilist keskkonda ja võimaldab näitustelt ülejäänud esemeid ja materjale läbi digikeskkonna suunata edasikasutamisele. Füüsiline keskkond pakub hoiustamisvõimalusi esemete ja materjalide jaoks, mida ei ole võimalik näitusepaikades ladustada. Lisaks jääkide ringluses hoidmisele võimaldab digikeskkond liikmetel jagada oma teadmisi ja kogemusi, et näitusepraktikaid ühiselt parandada.

PREFACE

This thesis project started out from a Sustainable Design course that took place in Spring semester of 20/21, during the studies of the Design & Technology Futures programme. The Sustainable Design course is an Estonian Arts Academy course that was taught by professors Reet Aus and Harri Moora. This is a practical course covering contemporary methodologies and approaches in sustainable and circular design. The practical design projects are carried out with the cooperation of companies/organisations so that students would have the opportunity to apply the approaches in a real-life context.

In the Spring semester of 20/21, the partnering organisation for the Sustainable Design course was Kumu Art Museum (Kumu). Kumu itself is part of the Art Museum of Estonia Foundation, and there are five museums in total that are a part of this foundation. Kumu, as the partnering institution for the course, expressed its interest in becoming a sustainable museum and being a pioneer for other museums in Estonia as sustainable practices were not at all prevalent in the museum sector.

Students were divided into three groups and had the task to either investigate the museum's everyday operations and find ways for these operations to be performed more sustainably, focus on exhibition making, or find practical ways to reuse leftover materials that would otherwise go to waste. At the end of the course, each group shared their vision and proposed some ideas as to the next steps Kumu could take in the sustainability journey.

The project gave an excellent insight into what goes on behind the scenes, especially in such large museums. The whole experience was eye-opening, because as a visitor it is difficult to imagine how resource heavy running a museum can be.

The end of this course did not mean the end of the sustainability project for Kumu. In fact, it was just the beginning, and not only for Kumu but for the rest of the Estonian museum landscape as well, and so there was an opportunity to take this project on as a master's thesis topic. Feeling passionate about the topic and the project already during the course, I decided to take on this journey.

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1 INTRODUCTION

1.1 Introduction

Sustainability is one of the defining themes in the current decade. Museums as spaces with great social, cultural, economic and environmental impact hold a responsibility to respond to current global challenges.

Amongst the museum sector in Estonia sustainable movement is not yet prevalent but considering that there is a real need for sustainable practices across the world, it is an urgent topic to address. Reckoning the diversity of museums, there are various possibilities for museums to engage with sustainable development.

One of the common and core functions of museums is exhibitions. Whatever size or type of a museum, they are all involved in exhibition making, and exhibitions are arguably the most impactful of all museum functions, being resource heavy on the organizational side as well as influential on the audiences.

The life cycle of a single exhibition can span for several years entailing myriad of challenges. Temporary exhibitions organised by museums and galleries tend to last anywhere between one month up to four or five months, while planning for those exhibitions usually takes well over a year. It is the pre-exhibition phase, where decisions made by exhibition teams are crucial in the sustainability context.

Organising exhibitions uses a lot of valuable resources such as materials, time, money, effort and power. The research done for the thesis led to a realisation, that these resources could be much better utilised, when more collaboration was happening between exhibition teams, leftover materials from exhibitions could go into circulation, and knowledge on organising exhibitions could be exchanged.

This thesis project sets out to explore museums on the sustainability journey with the focus on exhibition making to discover how a design-based solution can improve exhibition practices for a sustainable change. The goal is to find a solution that would involve and influence all stakeholders in bettering exhibition making to reduce the negative impacts that it encompasses.

1.2 Research question

Having set on the overall theme for the thesis, the first step was to build an understanding on museums and museology as well as learn about the aspects of sustainability and realize the correlation between museums and sustainability, not only in a technical sense, but also, and especially, from creative and social perspectives. Sustainability considers our wellbeing without compromising future generations, and museums as respected cultural institutions can empower the message of sustainable development. Hence the first part of the research is led by the following question:

How can museums engage with sustainable development?

The initial research phase led to analyse exhibitions as the key and most resource-heavy aspect in museums. Exhibitions involve a broad range of stakeholders and come with a myriad of challenges, so the whole exhibition life cycle, which can last up to many years, has great impact on the environment, society and economy.

With the focus initially being solely on museums and museum exhibitions, then mainly through expert interviews it was evident that exhibitions held in galleries follow a similar logic having the same actors and activities involved, and so the focus was set on exhibitions organised in institutions intended for exhibition making.

The aim was to identify key actors in organising exhibitions in Estonia with the most influence on all other stakeholders throughout an exhibition life cycle. Through analysing those actors as well as all involved activities, the goal was to locate possible points of entry for design to be able to improve the effectiveness of the current system.

The thesis throughout its research and design phase was led by the following question:

How can exhibition practices in museums and galleries be improved for a sustainable change in exhibition making?

With the help of the research question, the following hypothesis was constructed to serve as a tool for developing a design concept:

Through recognizing resources used in exhibition making and identifying how these resources could be better utilised, exhibition practices in museums and galleries can be improved for a sustainable change in exhibition making.

The composed research question and hypothesis serve as guides for developing a thorough understanding on exhibition making and the challenges it entails, as well as creating a design solution for improving exhibition practices in a sustainable manner.

1.3 Research methodology

The research was guided by the model of Constructive Design Research, as presented by Bang, Krogh, Ludvigsen and Markussen (Bang et al., 2012). The model provides a framework to structure design research projects allowing to understand the hypothesis's relation to research motivation, questions, experiments, evaluation and knowledge production. Design projects are often non-linear, therefore applying an iterative approach allowed to first explore the topic at large and eventually define the points of interest.

Following is the Constructive Design Research model representing the process of this thesis (Figure 1.1):

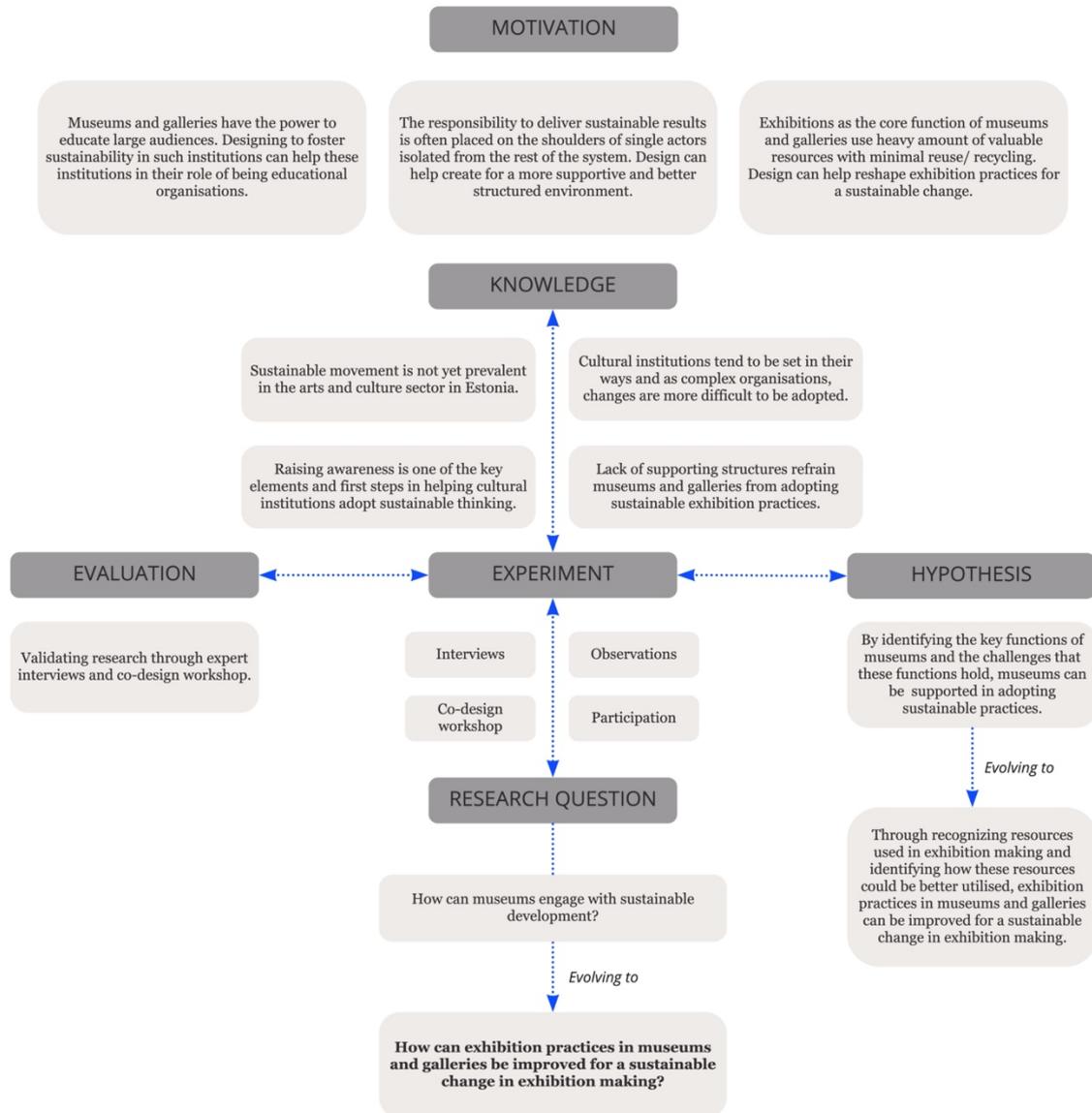


Figure 1.1. Constructive Design Research Model. Made by the author.

The methods used for research included expert interviews and co-design workshop, as well as observations and participation in various events and seminars that were held by different organizations around the topics of green transition and sustainability. The thesis project lasted for around 9 months, throughout which the research was spread out mainly to stay aware of developments that were happening in the field and maintain relevance for the design phase.

2 BACKGROUND

2.1 Culture and sustainability

Culture and sustainability often occur in similar contexts. It can be argued that without culture there is no sustainability. Culture can be defined as elements in a community that are able to be socially transmitted, whereas cultural sustainability refers to the values and attitudes that can be maintained or improved despite outer influences (Jeffrie, 2020). The notion of sustainability is that we should leave the Earth in as good or better shape for future generations than we found it, while also being able to live a flourishing life ourselves (Voetmann et al, 2017).

Culture, as having the role of a forum for open, dialogue-oriented human interaction (Voetmann et al, 2017) and the capacity to connect with people on a deeper level, has a unique role to play in the discussion of sustainability. Culture is said to be able to evoke empathy and compassion in a way that can drive change in perspective and habits. (Southwick, 2021) Cultural sustainability can thus be regarded as an enabler and driver of sustainable development (Jeffrie, 2020).

2.1.1 The arts and culture sector

The arts and culture sector, often also referred to as the cultural and creative sector, involves a broad mix of industries due to which there is no commonly recognized definition that would illumine the breadths and depths of it (Artscape, 2020). The sector is comprised of all industries whose activities are based on cultural values, or other artistic individual or collective creative expressions (European Commission, 2019).

By one classification, the sector encompasses three key components: core creative fields, cultural industries and creative services. Core creative fields focus on the production of 'originals' (e.g., visual arts and artisan crafts) and 'experiences' (e.g., dance, and music). Cultural industries regard creative content-producing, which exploits intellectual property through mass production (e.g., film and television production, book and magazine publishers, computer games). Creative services operate on a fee-for-service model providing intellectual property that has a high degree of expressive and functional value (e.g., advertising agencies and architecture practices). (Artscape, 2020)

The cultural and creative sector is at the heart of the creative economy and its importance lies in ensuring the continued development of societies. Being knowledge-intensive and based on individual talent and creativity, the sector generates considerable economic wealth. The arts and culture sector is also critical to a shared sense of identity, culture and values. (European Commission, 2019)

2.1.2 Sustainability

Sustainability is a topic that many people care about, but most are unsure as to what to *do* about it (Southwick, 2021). In a narrow sense, sustainability refers to the ability to last or continue for a long time. In a broader sense, when talking about sustainability, we talk about the connections between the environment, society, and the economy, which are often referred to as the three pillars of sustainability. Sustainable development is all about achieving a future where people, communities, society, and nature better support one another in a harmonious way and ensuring that the development in one pillar of sustainability does not have negative impacts on other dimensions. (McGhie, 2019)

In 2015, the United Nations adopted 17 sustainable development goals (SDGs) addressing a wide range of social and environmental challenges to set the world on a path to a sustainable future by 2030 (McGhie, 2019). The SDGs are an invitation to all sectors of society, including the arts and culture. In fact, cultural aspects such as cultural rights, heritage, diversity and creativity are some of the key components of human and sustainable development and play a pivotal role for the set goals to be achieved (UCLG Committee on Culture, 2018).

It has been broadly agreed that sustainability consists of three pillars- ecological, economic, and social and we could discuss sustainable development in the arts and culture sector through these three pillars. In recent years, however, it has been widely suggested that the cultural dimension, originally considered as a component of social sustainability (Loach and Rowley, 2021), could act as a fourth pillar in sustainability (see Figure 2.1: A) (Jeffrie, 2020; Voetmann et al, 2017). Culture encompasses fundamental qualities, such as, e.g., critical thinking, empathy and mutual respect, that are just as important for the society as the ecological, social and economic perspective (Voetmann et al, 2017).

Culture can also be seen as an instrument which, as the fourth pillar, connects and balances the other pillars of the sustainability concept (see Figure 2.1: B). It can be

argued that without culture, there can be no interaction between ecological, economic and social perspectives in sustainable development. Finally, arts and culture can be viewed broadly as being almost synonymous with human action and interaction- being synonymous with sustainable development (see Figure 2.1: C). The understanding of culture as sustainable development refers to arts and culture, through active participation and engagement, as being able to enhance empowerment, ensure freedom of expression, contribute to economic growth, consolidate peace and reconciliation as well as promote intercultural dialogue and co-operation. In this context, cultural policy focuses on culture's contribution to the broader transformations in society. (Voetmann et al, 2017)

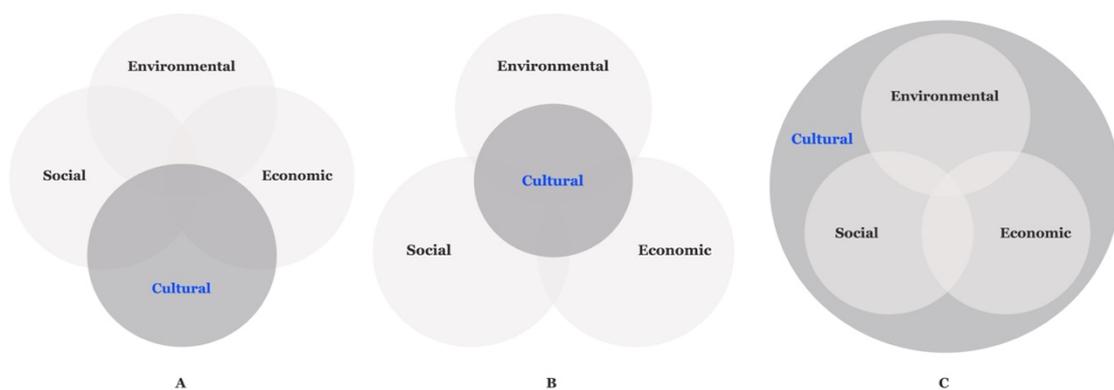


Figure 2.1. The four pillars of sustainability. Credit: Voetmann et al. (2017), modified by the author.

The overwhelm of sustainability- the ethical and moral issues, the confusion about energy and carbon and a mountain of other related problems can seem insurmountable. When talking about sustainability, it is important to recognize that current systems, models, and structures are simply not sustainable and doing the same but better is not going to reverse the damage already done to the environment. Sustainability affects everyone, and thus everyone must be a part of the solution. (Southwick, 2021)

Sustainability is a broad term, that often stands beside other related visions, models and theories. For one, the need for sustainable development is caused by the appearance of a new geological age- the Anthropocene. Along with sustainable development, the way forward is supported by the notions of net zero (1.5°C target) and circular economy. The mentioned concepts are explained further below.

The Anthropocene

The Anthropocene refers to a new geological epoch we are currently living in. This era considers the human as, through its activities, the single most influential species on the planet with lasting impacts on its systems, environment, processes, and biodiversity. Until now, all major and ultimately catastrophic events in Earth's history have all been triggered by natural causes. For the first time ever a single species (homo sapiens) has, consciously, caused such destructive effects on the natural world with no reassurance that the damage can ever be reversed. (Pavid, 2019)

The concept of the Anthropocene has reached many disciplines, including the arts and culture sector. For one, it is becoming a critical area for museum inquiry because it assumes an end to basic frameworks of science, society, and scholarship (Oliveira et al 2020). Exhibitions, along with other museum's activities, have been established around the world to document, communicate and challenge the Anthropocene thinking. Artists and curators have experimented with the very form of the museum to critique the Anthropocene as an emergent state of the planet. (Sterling, 2021)

We have never been in such a critical state, but we have also never been better equipped with the tools to analyse what is happening and understand what needs to be done. To give an example- museums, through their collections and research, possess invaluable information for understanding the past, through which to predict and plan more effectively for the future. (Pavid, 2019) The Anthropocene concept is sufficiently open ended allowing for each museum (as well as all cultural, and other, institutions) to narrate and interpret the concept in unique ways, which best reflect the specific collections and curatorial research perspectives of the institution (Oliveira et al 2020).

The Anthropocene can be regarded as the best available frame of reference for change and increasing relevance. It is the optimal alternative we have to guide us out of the notion of modernization, or at least act as a catalyst for change. (Oliveira et al 2020) Raising awareness about the current situation is the first step in making people understand the need for change, so knowing the influence that the arts and culture sector has on large audiences, engaging with the Anthropocene is indispensable.

Net zero and the 1.5°C target

In 2015, at the same time of the UN 2030 Agenda for Sustainable Development with its 17 SDGs, the Paris Agreement was adopted, both setting out a globally agreed agenda within which climate mitigation efforts must be located (IPCC, 2022). The Paris Agreement is a legally binding international treaty on climate change with the goal

to limit global warming well below 2°C, preferably to 1.5°C (UNFCCC, 2020). To meet the 1.5°C global warming target, global carbon emissions should reach net zero around mid-century (Cran-McGreehin, 2018; UNFCCC, 2020).

Net zero (or carbon neutral), an often-seen term around the sustainability topic, refers to any emissions being balanced by absorbing an equivalent amount from the atmosphere (Cran-McGreehin, 2018). Releasing greenhouse gases in the atmosphere causes global warming by trapping the sun's energy. Achieving net zero means reducing emissions as much as possible, as well as balancing out any that remain by removing an equivalent amount. (BBC News, 2021) Simply put, the longer it takes us to achieve net zero, the more the climate will change (Cran-McGreehin, 2018). The challenge of 1.5°C underlines that humanity is now living with the 'unifying lens of the Anthropocene' that requires a sharpened focus on the impact of human activity on the climate system and the planet more broadly (IPCC, 2022).

Along with all other sectors, the arts and culture sector is also responsible for a large amount of emissions. On the other hand, the cultural sector is arguably one of the most powerful ones in being able to bring on a systemic change from within as well as champion transformative behaviour through maximising the impact of its advocacy. The challenge of net zero is not only technical; it is also creative and social (Design Council, 2021).

Circular economy

The circular economy framework, as opposed to the current linear economy, is seen as a sustainable economic system (Corona et al., 2019) tackling global challenges like climate change, biodiversity loss, waste, and pollution, and it is underpinned by a transition to renewable energy and materials (Ellen MacArthur Foundation, 2019). Circular economy comprises three core principles: designing out waste and pollution, keeping products and materials in use, and regenerating natural systems (Ellen MacArthur, 2017).

The economy, society, and environment are interdependent systems – systems within systems where the economy is embedded within society and the environment. The vitality of one system affects the vitality of them all. (Ellen MacArthur Foundation, 2017) Circularity should thus be simultaneously sustainable for the environment, economy and society (Corona et al., 2019).

The framework is aimed at shifting prevailing systems, whereas changes to existing models are often framed under the concept of 'sustainable product service systems'. The potential and actual impacts of such shifts, where our role is regarded as one of general passivity, accepting or rejecting new models, are argued to not have the anticipated results. The barriers for achieving these results are believed to stem from a poor understanding of how human action correlates with complex material cultures. (Hobson, 2020) Thus, an emergence of a new form of cooperation is required to support the large-scale transformation of socio-technical processes.

2.1.3 Arts and culture in the context of sustainability

As previously mentioned, culture is often considered the fourth 'pillar' of sustainable development, but the role of culture in building a sustainable future can be viewed from different perspectives. It is now widely agreed that culture is of equal importance to economic, environmental and social concerns in enabling sustainable development (Loach and Rowley, 2021). Although difficult to integrate due to the continuous evolution of the arts and culture industry, adequate policies are needed to regulate, enable and empower the role of cultural industries in building a sustainable growth (Sabatini, 2019).

In the notion of cultural sustainability, as the fourth dimension of sustainability, Loach and Rowley describe seven storylines: heritage, vitality, economic viability, diversity, locality, eco-cultural resilience, and eco-cultural civilization. Each of these storylines apply a unique and diverse meaning to the concept. When looking at culture from the perspective of 'shared patterns of thought and behaviour, values, and beliefs', then culture is not only integral to the existence of a society but can also be seen to provide us with the means of comprehending and implementing the changes required to enable a more sustainable society to be feasible. (Loach and Rowley, 2021)

A sustainable model for the arts and culture sector is not something optional to adopt. It is vital for the sector to be able to live and grow and fulfil its purpose, which is to inspire and educate the audiences, to strengthen their ties, to empower them. Sustainability is not just about survival – it is also very much about being able thrive in life and culture can enhance sustainability by simply being accessible and inclusive (Voetmann et al, 2017). In a sustainable society, art and culture enable individuals to participate in and help develop the society. Having an active cultural life promotes democracy and participation as well as generates the preconditions for a good life. (Voetmann et al, 2017)

During the nearly 9-month span of working with this topic and writing the thesis it was noticeable how much the cultural environment was changing in this arguably short amount of time. In the beginning, hardly anyone in the sector would discuss the topic of sustainability. There was not much information that could be found on the internet about sustainability in the arts and culture sector in Estonia. Then, quite suddenly, several trainings and seminars on sustainability were held and everyone in the sector was abruptly made aware of the sustainable movement. Although not an entirely foreign topic it had never been in the centre of attention before, whereas now, everyone in the sector has a common goal, while still able to walk many different paths in the sustainable movement.

2.1.4 Design for sustainability: A need for systemic approach

The current discussions on solutions to climate change are largely based on technology, however behavioural patterns, lifestyles and culture have a considerable influence on emissions, thus, systemic approach is vital when addressing climate change. Redirecting lifestyles towards sustainability to reduce carbon footprints should not be construed as merely restrictive measures, but instead as opportunities for improved quality of life for ourselves as well as future generations. (Akenji et al., 2019)

Sustainability is a dynamic and moving target responding to our ever-increasing understanding of interdependencies between social and ecological systems. It is a system property and not a property of individual elements of systems, therefore requiring systemic change. (Ceschin & Gaziulusoy, 2016)

System innovation refers to a transition from one socio-technical system to another, targeting cultural change in the society rather than only focusing on technological interventions. Designing for system innovations and transitions focuses on transformation of socio-technical systems through strategic design, but while a broad view is integral when dealing with complex matters, it is just as important to support it by approaches that focus on development of products and services that can be part of new socio-technical systems. (Ceschin & Gaziulusoy, 2016)

2.2 Museums

The first half of the research focuses on getting to know museums. The previously mentioned Sustainable Design course in collaboration with Kumu Art Museum gave a great overview on what running a large museum, where many resources are available in-house, looks like, and how the accessibility to these resources enables to approach sustainability. But there are museums of any size, most of which can be considered small or small-to-medium sized, which also means very limited resources and so the engagement with sustainability differs from institution to institution. This sub-chapter is led by the question *'How can museums engage with sustainable development?'*

2.2.1 The definition and the ongoing debate

Museums have a unique opportunity to maintain the continuity of culture over time while being a link between the past and future experiences (Ministry of Culture, 2020). With great social and economic impact museums have the potential for creating an educated, more sustainable, and open society (Ministry of Culture, 2020) through addressing key social issues, offering spaces for us to re-establish common ground and give us perspective in order to avoid certain futures and inspire better ones.

According to the Museum Act in Estonia (2014), a museum is defined as follows:

"A museum is a non-profit, permanent institution in the service of society and its development, open to the public, which acquires, preserves, researches and communicates the tangible and intangible cultural heritage of humanity and its environment for the purposes of education, research and enjoyment. Upon the performance of its functions a museum shall, among other, take account of the needs of children and disabled persons. (Riigi Teataja, 2014)"

This definition stems from the official museum definition accepted by ICOM Statutes (The Statutes of the International Council of Museums) in 2007 (International Council of Museums, 2021) and will also be applied in this thesis.

As the role of museums is evolving, a universal definition of "museum" has started to stir up controversy. At the heart of the matter is an attempt to outline how museums' contribution to the society could look like. The proposed new definition describes museums as democratizing, inclusive and polyphonic spaces for critical dialogue about

the pasts and the futures, where their goal is to contribute to human dignity and social justice, global equality, and planetary wellbeing, all of which are elements of sustainability. (Haynes, 2019) The proposed new definition will be voted on at ICOM's next general conference, scheduled to take place in September 2022 (Adams, 2021).

2.2.2 Original vs new museology concepts

In the past, museums were based around collections while holding a role of 'cultural authority' by upholding and communicating truth. Museums were seen as exclusive institutions with a major social role to 'civilise' and 'discipline' people to fit their position within society. This was achieved through distinguishing the 'high' and 'elitist' cultural forms from the 'low' or 'mass' ones. (Espacio Visual Europa, 2015) In the original museology concept museums were, thus, mainly seen as depositories of exhibit objects and collections.

Exhibitions held in museums were one dimensional and linear in the sense that they followed the evolutionary process along with the historical development. The aim of exhibiting was portraying the objective 'truth' about 'things' and about reality, but this 'truth' was only presented to the elite. The information shared in such exhibitions was scarce and no social or other contexts were given. The presupposition was that the audience consists of educated people and no pedagogical efforts were required to integrate visitors in the discourse. (Smeds, 2014)

In the second half of the 19th century, with the introduction of political ideology, texts and pedagogical means in museums, they became commonplace (Smeds, 2014), but the real breakthrough happened in the second half of the 20th century, when it was recognised that the role of museums in society needed to change. Museums were claimed as being isolated from the modern world, elitist, obsolete and a waste of public money. (Espacio Visual Europa, 2015) If the museums were to be opened to the public (everyone), and the audiences were to understand anything of the contents of the museum, some elementary texts (labels) and explanations were needed (Smeds, 2014).

So far, museums had displayed accurate scientific results of research and documentation but lacked comprehensible context and historical reconstruction. The visitor lacked guidance, means of associating and meaning making. A narrative had to be introduced, stories had to be told, and concrete examples from "real life" had to be added to the exhibition context. (Smeds, 2014) The "new museology" concept emerged

encouraging new communication and new styles of expression in contrast to object-oriented museum models. (Espacio Visual Europa, 2015)

The 'new museology' concept invites to rethink the relationship between museums and their communities. Museums are seen as inclusive places open for all. They have established a platform to actively tackle social issues through shifting the focus from objects to ideas (visitors). (Espacio Visual Europa, 2015)

In practice, the idea of rethinking of the purposes of museums has not been universally achieved since museums have been left to find their own routes to link the new museology concept to their daily practices. It is therefore important to acknowledge that today both, the original and the new museology concepts co-exist and when analysing the different types of museums, then in very general terms it can be said that smaller museums (so-called house museums) tend to be more object-oriented while larger museums have the space to play around with the idea-oriented approach and focus more on being visitor-centred. This generalisation does not, however, try to place small museums in one category and large museums in the other as there are several other factors that can determine whether new or original museology concepts are being applied in each museum, just as there are museums who are in the mid-way of shifting their focus from being object-oriented to being idea-oriented and more visitor-centred.

The white cube gallery style

According to Tate Museum, the term 'white cube' "refers to a certain gallery aesthetic characterised by its square or oblong shape, white walls and a light source usually from the ceiling (Tate, 2017)". Displaying exhibit objects in defined spaces, such as cafes, shopping malls, gardens, etc. the exhibition quickly becomes about the space itself, or the context, rather than the ideas that are hoped to explore with the exhibition. In order to keep the focus on the ideas, the white cube gallery style offers an experimental space, a test site, a place for reporting back on experiments and sharing the results. (Dunne and Raby, 2013) The aesthetic was introduced in the early twentieth century, where artists started preferring to exhibit their works against white walls to minimise distraction (Tate, 2017) and nowadays, many museums make use of this gallery style.

Taking the idea of 'non-places', a neology proposed by French anthropologist Marc Augé to refer to spaces where humans remain anonymous (Augé, 2008), the white cube gallery style can be analysed even further. At first glance this gallery style is easy to consider as non-place seeing that it has been designed with the intention of the gallery space itself not being concerned with identity while the objects displayed in the gallery

can have all the attention and be full of identity. A 'non-place', however, can become a 'place' (space that has identity) when organized in certain ways.

Combining the idea of non-place vs place with the original and new museology concepts and taking from Brian O'Doherty's book "Inside the White Cube: The Ideology of the Gallery Space" (O'Doherty, 1999) on a matrix, the relationships between non-places and places as well as non-objects and objects can be analysed (see Figure 2.2). Similarly, to the definition of a non-place, a 'non-object' is hereby considered to be an object without identity, an anonymous object.

Although the elements in the matrix can be placed around endlessly depending on the perspective, a visitor-oriented ethos seems to fit best inside the white cube when it is considered a 'place' and where the artworks or artefacts could either be objects or non-objects, depending on how the visitor interacts with the space. The idea-oriented ethos might then be placed in the 'non-object' space where the white cube could either be considered a place or a non-place, depending on how the curator has defined the space between the artworks or artefacts, the visitor, and the space.

This analysis of the white cube helps to better understand how museums differ from one another and how their approach to exhibiting artworks and artefacts changes their orientation. When analysing the matrix, it can be concluded that the left-side spectrum of the matrix proposes a more innovative space that is receptive to change. The matrix also raises an interesting question on what must happen to the 'white cube' and what must happen to the 'objects' for sustainability to be able to enter this space.

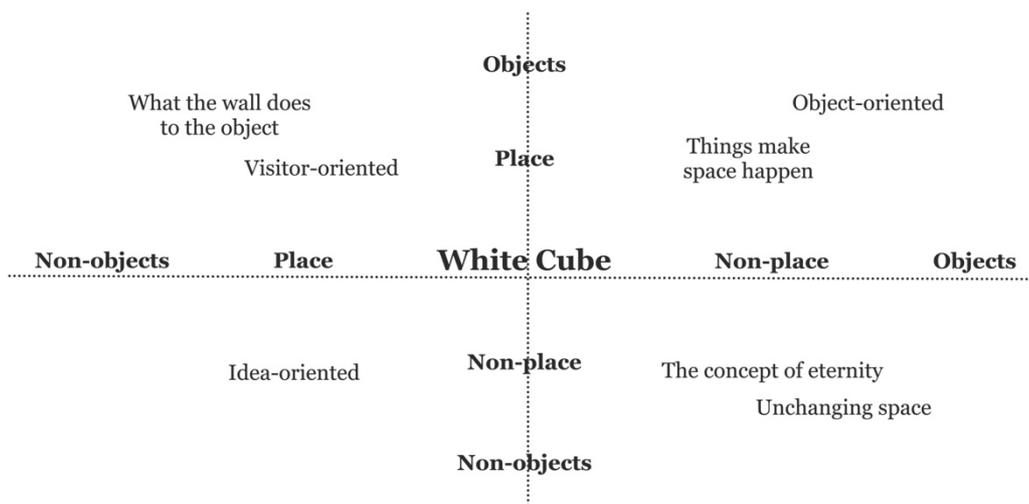


Figure 2.2. White cube matrix. Made by the author.

2.2.3 Museum operations

Museum work is considered a service to society demanding highest standards of professional practice. Museums' day-to-day activities include administrative operations, managing collections, exhibitions, and programmes, caring for the visitor, and other varied activities that take place within these complex organisations. (Boylan, 2004) ICOM (2004) has released a practical handbook on running a museum, which is intended to give an overview of the key aspects of museum operations. Following provides a synopsis of the aspects brought out in the handbook:

- **Collections management** involves registration and preservation of collections as well as providing controlled access to these collections through exhibitions or research activities (Boylan, 2004).
- **Inventories and documentation** involve controlling and cataloguing, which is an essential resource for collections management, research, and public services (Boylan, 2004).
- **Care and preservation of collections** means deciding on priorities and assessing on risks. Collection risk management is considered under this aspect. (Boylan, 2004)
- **Display, exhibits, and exhibitions** contains everything related to exhibition management including planning, developing, production, completing and evaluating of an exhibition (Boylan, 2004).
- **Caring for the visitor** involves planning and managing visitor services and understanding the visitors' needs (Boylan, 2004).
- **Museum education** refers to developing and managing educational programs, but can also involve museum publications (Boylan, 2004).
- **Museum management** considers leadership styles, teamwork, financial management and the general planning process (Boylan, 2004).
- **Staff management** involves everything around the personnel- recruitment, working conditions, training, and professional development (Boylan, 2004).
- **Marketing** contains activities for museum promotion, advertising, public relations and building a museum "brand" (Boylan, 2004).
- **Museum security** considers implementing a strategic plan for museum protection (Boylan, 2004).
- **Illicit traffic** refers to protecting heritage from theft, which is an important duty of all museum's directors, curators, and other professionals (Boylan, 2004).

Museums have been created for a variety of purposes. They serve as recreational facilities, scholarly venues, or educational resources; they contribute to the quality of life of the areas where they are situated; they attract tourism as well as advance civic pride or nationalistic endeavour; they impart overtly ideological concepts. Given such a variety of purposes, museums are remarkably diverse, but despite that they are bound by a common goal, which is to preserve and interpret some material aspect of society's cultural consciousness. (Lewis, 2021)

Types of museums

There are many different types of museums in the world and there are also different ways of classifying museums. For one, museums can be classified according to source of funding, e.g., state, municipal, private (Lewis, 2021) and when considering the sustainable movement, the source of funding also means different possibilities to approach sustainability. Classifying by source of funding, however, fails to indicate anything about the museums' collections (Lewis, 2021).

Categorizing museums based on the nature of their collections, although it fails to demonstrate disparities of scale and quality, enables a distinction between general and specialized museums. Classified by collections, we can count five basic types of museums- general, natural history and natural science, science and technology, history, and art. (Lewis, 2021)

General museums hold collections in multiple subjects and are therefore sometimes known as multidisciplinary or interdisciplinary museums, most common of which are those that serve a region or a locality. Museums of natural history and natural science are concerned with the natural world, while museums of science and technology are concerned with the development and application of scientific ideas and instrumentation, both of which have their origins in the Enlightenment era. (Lewis, 2021)

A wide variety of museums, where collections are amassed and, in most cases, are presented to give a chronological perspective, are often called history museums. Museums of this type usually hold so many objects of art and science that there is a fine line of classifying them as history vs general museums. Art museums, on the other hand, are primarily concerned with the exhibit object as a means of unaided communication with its visitors, and the aesthetic value of these objects is a major consideration. (Lewis, 2021)

2.2.4 Museum stakeholders

Due to the complex nature of a museum as an organisation, museums can contain a variety of stakeholders. This thesis divides stakeholders into two categories- internal, that is people employed by a museum, and external, that is people who engage with museums (collaborating partners, audiences) (see Figure 2.3).

Internal stakeholders for larger institutions (in the example of Kumu) include administrative department, curators, exhibit designers, conservators, publishing department, collection keepers, archive and library, sales and communication, as well as finance departments (Kumu kunstimuseum, 2022). While larger institutions have the necessary resources to employ in-house specialists (such as conservators) and enable each employee to focus on their specific field, then staff members in smaller institutions usually carry many different tasks not always related to their job description, and specialists are outsourced, when necessary.

External stakeholders include all partnering institutions and organizations (mainly cultural and educational), as well as the public sector, not to mention the audiences (visitors and community), but also, more so depending on the museum type, artists, who are inevitably affected by the evolution of museums.

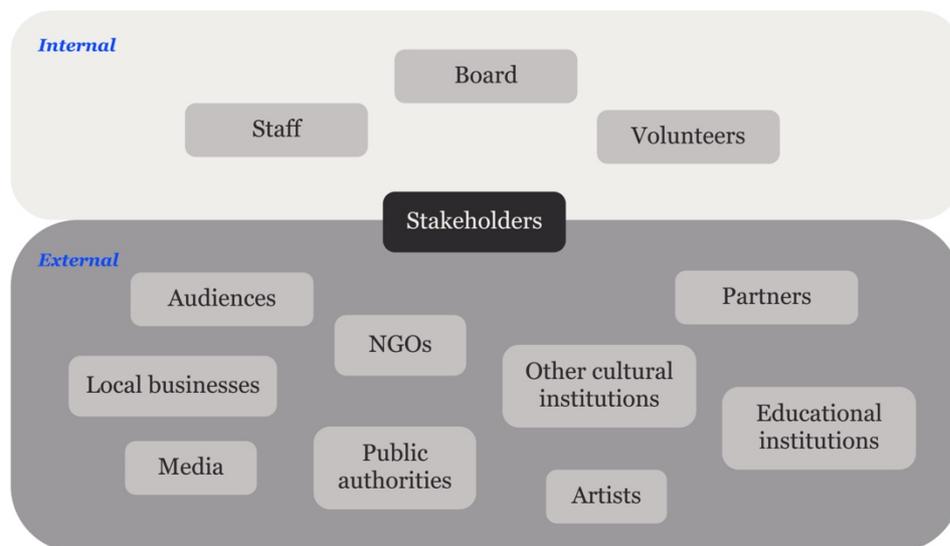


Figure 2.3. Museum stakeholders. Made by the author.

2.2.5 Museums through the educational lens

Education is argued to have a central position in museums (Jung, 2011) where networks among people are located at the centre of their mission and where visitors' voices are heard and reflected in their practices (Dilenschneider, 2017). Adding special values to the formal school education system, museums are part of the informal sector of education. They offer different ways of learning, enjoying, and discussing for people of all ages. In museums, visitors enjoy the opportunity for open, informal visiting and for communication with others while having different experiences from those of their usual learning environment, which enriches the learning process. (Boylan, 2004)

Education in museums is, unfortunately, very often regarded as of only secondary importance. Even with a specialist in-house education department, this may well have a low position in the museum's departmental hierarchy. When wanting to be a strongly visitor-oriented museum, the educational aspects should receive central attention. (Boylan, 2004)

Not only are museums excellent in educating audiences, but they are also considered as trusted institutions with highly credible sources of information. Museums are also believed to be the type of organizations that can and should suggest or recommend certain behaviours or ways for the general public to support certain causes and missions. (Dilenschneider, 2017) This means, that whichever agenda museums introduce, the audiences will likely support.

A range of educational methods can be used in museums. Some methods are aimed at a passive recipient, while others encourage the visitor to become actively involved in examining the collections. Consequently, it is important that all of museum's actions are aimed at serving the public and their education. (Boylan, 2004)

2.2.6 Museums in the context of sustainability

Becoming sustainable is arguably the most important focus in the current decade for any organization, including museums. Sustainable development is highly relevant for museums due to museums being in a unique position with a unique set of resources, which allows them to promote positive social and environmental outcomes (McGhie, 2019).

Museums already contribute to several key areas of cultural sustainability, including heritage preservation, cultural skills and knowledge, memory/ identity, new audiences/

inclusion, cultural diversity/ intercultural dialogue, creativity and innovation, and artistic vitality (Loach and Rowley, 2021). On top of protecting and promoting the cultural and natural diversity, museums as spaces for cultural transmission, intercultural dialogue, learning, discussion, and training, also play an important role in education, social cohesion, and sustainable development (McGhie, 2019).

The society has, in general, built a strong trust towards museums as they are seen as respectable institutions who are expert, factual and impartial (Dilenschneider, 2017). A museum visit is built on a personally constructed experience within a very specific environment and considering the pace of a visit, we can call museums a slow medium, which gives a visitor an opportunity to engage with complex and multifaceted concepts (Oliveira et al 2020), such as sustainability.

Museums can also be considered high energy consumers, mainly due to a narrow allowance for room temperature and relative humidity required to be maintained for objects in collection and on display. While museums can adjust energy use to some extent, as well as introduce other environmentally sustainable choices (such as sorting waste) to their practices, it can be argued that their role in sustainable development is coherently in social and cultural dimensions.

Museums in Estonia

According to Statistics Estonia, there are 175 museums in Estonia with 227 locations. There is no registry of museums in Estonia and museum activities do not require a separate permit to operate. Less than a third of all museums in Estonia are either state museums, museums of state foundations or museums that use the state museum collection. Third of all museums are owned by local governments and more than third belong to third sector organisations and individuals. (Ministry of Culture, 2020)

Deeper desktop research was done in November 2021 with ~50 museums, where each of their websites was analysed to find out how many, if any, mention 'green transition', 'sustainability', 'environmental protection', or anything in the likes on their homepages or in their development plans. The results were rather expected- 10 museums were found to mention 'green' or 'sustainable' principles in their development plans or standpoints, but besides mentioning, not much else could be found to indicate what was being done in practice for the transition towards sustainability.

It can be concluded that sustainable movement is not yet prevalent in the museum sector in Estonia, however considering that there is a real need for sustainable practices

across the world, it is an urgent topic to address. When it comes to the Estonian museum sector, then so far museums have been hesitant to commit to the sustainability challenge, but it can be said that certain sustainable practices are already present in these organisations even, if the matters have not yet been framed as sustainability-action.

2.3 Exhibitions

The previous sub-chapter introduced the complex nature of museums and attempted to answer the question '*How can museums engage with sustainable development?*'. Considering all the many different types of museums that exist, including their differences in size and scale, there are various potentials for engaging with sustainable development. One aspect in common for all museums is that their core function is exhibitions, hence this sub-chapter proceeds to explore the anatomy of exhibitions.

2.3.1 On the meaning of exhibitions

An exhibition can be defined as a spatially organised and visualised expression of thoughts, things, and systems of knowledge (Smeds, 2014). The primary role of an exhibition is to build common understanding on the general idea and message of the exhibition. The viewer should be invited into a space free from any pre-convinced ideas and prejudices and encouraged to explore the exhibition with an open mind. (Liggett and Corcoran, 2020)

By virtue, exhibitions are engaging, inclusive and creative social spaces providing simple means of communicating messages to a wide variety of audiences. Exhibitions, therefore, play a role in building relationships and trust between different groups of people, and by being open and inviting to all, exhibitions can constantly entice and motivate new audiences to join and be a part of the communication flow. (Liggett and Corcoran, 2020)

Modern exhibitions can be characterized as a 'hybrid medium' comprising of several forms of visualization and presentation (Smeds, 2014) often taking place in both, physical and digital spaces. A modern exhibition is an outline of several discourses, that is, enabling and prescribing several ways of communicating and thinking that participants in the discourse can use (Smeds, 2014).

The ambition to increase comprehensibility and attraction of exhibitions has resulted in a continuous addition of multimodal elements: more texts, pictures, films, slide shows, computers, design elements, colours, lights, and so on. This again can create perceptual problems for the visitor as the exhibitions are often so 'heavily loaded' with information and options for 'experience' that instead of helping visitors to acquire knowledge, to get the message, they can create fatigue. (Smeds, 2014) Perhaps a constant struggle, but finding the right balance is always essential.

Types of exhibitions

An exhibition can be realized in different typologies, aimed at presenting a coherent and effective story of an artistic research, a specific theme, or as testimony of a collection, public or private. Exhibitions diversify according to typology, purpose, duration, set up, location and promotion. (Art Rights, 2020)

Solo exhibitions encompass the search for a single artist and are supported by a historical-critical or curatorial analysis, whereas collective exhibitions are dedicated to exhibiting multiple artists, living or otherwise. Collective exhibitions can share a theme, fit into the same artistic movement, or belong to a specific historical-cultural cross-section. (Art Rights, 2020)

Besides solo and collective, exhibitions can be realised in several other typologies. There are itinerary or traveling exhibitions often focused on a specific theme or topic, including set-ups in different locations and times. Thanks to digital and new media, online exhibitions are now taking place with the format often being applied to reach new audiences and ensure an experience on multiple dimensions. We can also distinguish anthological or monographic exhibitions, which are reserved for a selection of particularly significant works that illustrate the evolution of the search for one or more artists; and retrospective exhibitions, which illustrate the artist's entire career. (Art Rights, 2020)

Finally, we can distinguish temporary exhibitions, especially from permanent installations. Temporary exhibitions are a type of exhibition, that have a short duration from a few weeks to several months (Art Rights, 2020). The above-mentioned types of exhibitions can, in essence, also be considered temporary, as the main difference is whether the exhibition being organised is meant to stay up permanently, or not.

This work considers exhibitions in their temporary physical form, where exhibitions take place in institutions intended for exhibition making (museums, galleries) and are open for a short period of time. This work does not analyse permanent installations, as such exhibitions follow a different logic and have a separate care routine as opposed to temporary exhibitions. This work does also not consider alternative exhibition spaces (old factories, display windows, etc) since the logic of organising exhibitions in such spaces is different from the ones organised in institutionalised spaces, but also differs from space-to-space. Moreover, alternative exhibition spaces are also more often used by emerging artists with small production teams and the scope and reach of such

projects is usually much smaller than the one for institutionalised spaces with established networks.

2.3.2 Exhibition stakeholders

Similar to museum stakeholders, this thesis divides exhibition stakeholders into two categories- internal, that is professionals involved in making of an exhibition, and external, that is people who engage with exhibitions during the run of an exhibition (see Figure 2.4).

From an internal point of view, a curator can be placed at the centre of an exhibition. In a sense, each exhibition begins and ends with a curator- curator creates a narrative, chooses artists/ objects, works closely with an exhibition manager, the design and production team, and everyone else within or outside of an institution who has a role in exhibition making. Curator is also engaged with external stakeholders, communicating with the media and, directly or indirectly (through guides/ educators), speaking to the audiences.

From an external point of view, audiences are perhaps the most central of an exhibition. The whole idea of an exhibition is that it is meant to be seen, heard and learned by audiences, so in a way, all stakeholders work towards the same goal- getting a message (or a set of messages) through to the audiences. It is also remarkable to note that while the audiences, from an external point of view, are at the centre of an exhibition, they do not interact with most of the stakeholders. In other words, audiences are often unaware how much time and effort the many actors put into making of an exhibition.

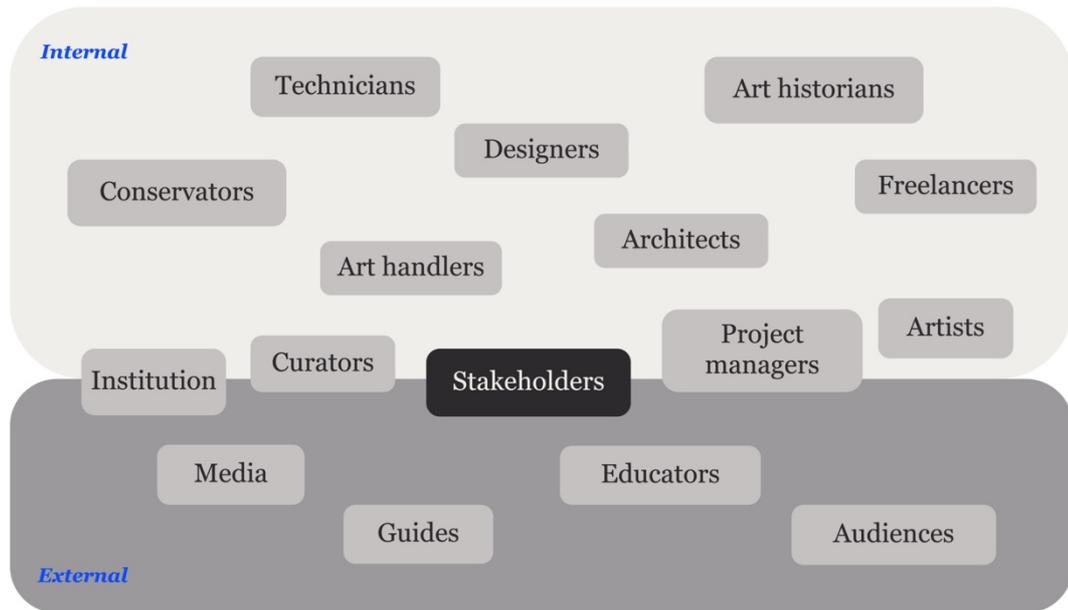


Figure 2.4. Exhibition stakeholders. Made by the author.

Curatorial discourse

As explained above, from an internal point of view on exhibition stakeholders, a curator can be placed at the centre of an exhibition, where each exhibition begins and ends with a curator. Taking on the importance of the curator's role in the exhibition context, this section further explores the curatorial discourse.

According to Tate Museum "a curator is someone employed by a museum or gallery to manage a collection of artworks or artefacts (Tate, 2017)". Typically, museums employ curators whose role it is to acquire, care for and develop a collection, but they will also arrange displays of collection and loaned works. It is the curator, whose responsibility it is to interpret a collection in order to inform, educate and inspire the public. (Tate, 2017)

A curator is generally identified with exhibition production, being the key person who transmits information through exhibit objects. Curating practice, however, requires myriad roles. Curators tackle nuances of cultural mediation challenging modern perspectives. (Chávez-Maza, 2016)

Curator's role is ever evolving. There are staff curators (curators employed by museums and galleries) and independent curators, who work as freelancers. Museums and galleries often bring in independent curators and pair them with their staff curators to introduce fresh perspectives and new voices into their programming. (Indrisek, 2018)

Kumu museum has, for example, created a one-year guest curator position where an independent curator is invited to join the museum for a year. On top of organizing exhibitions, the guest curator has the opportunity to contribute to the museum's various programs and have a say in the museum's developments, offering fresh perspective and expertise. (Kumu kunstimuseum, 2021)

For staff curators, the work depends on the kind of museum they are working at which can define, whether the curator is working with living artists (e.g., contemporary art museum) or with collections (e.g., natural history museum). Being employed by a museum also better enables curator to engage with research activities, through which they considerably contribute to the museum's exhibition, acquisition, and publication programs. For independent curators, the work is dependent on the projects they take on, and while a developed portfolio can bring more prestigious projects, freelance curators can still occasionally (especially in the beginning years) find themselves painting walls of a gallery or tweaking lighting by themselves. (Indrisek, 2018)

Swiss curator Hans Ulrich Obrist has defined curatorial work's core to be building temporary communities and creating the conditions for triggering sparks between different people and practices (Chávez-Maza, 2016). While all stakeholders have a role to play in the sustainable movement, it can be argued that curators are one of the most influential ones.

The past and the present of curating exhibitions

During the 17th century there were designated spaces called "Cabinets of Curiosities", where people gathered and displayed various valuable objects. Over time, these objects started accumulating thematically (Smeds, 2014)) and such tasks, as well as taking care of collections of objects, required someone's full time attention. (Chávez-Maza, 2016)

The word 'curator' comes from a Latin word 'curare', meaning 'to take care of' and it emerged during the 18th century, when museums as institutions started gaining more momentum. The curator's role, in the context of museums, was recognized as the keeper or guardian of collections. (Chávez-Maza, 2016)

During the second half of the 20th century, exhibition making was acknowledged as a medium in the transmission of knowledge and ideas (Chávez-Maza, 2016). With the rise of conceptual art, an art form for which the idea behind the work is considered more important than the art object itself (Tate, 2017), curators were encouraged to rethink

their practices of mediation. The artistic practices renounced object-oriented aesthetics and artists began focusing on the idea and theory behind their artistic creation. (Chávez-Maza, 2016)

The 90s saw the proliferation of biennales, large international art exhibitions held every two years (Tate, 2018), which started delineating the curatorial practice (Chávez-Maza, 2016). This was also the time when an understanding arose, that curatorial studies should be provided in universities. New study programs emerged not merely on the foundations of the transformed function of exhibitions, but also reflected it. (Vogel, 2013)

The past 50 years of art history has, in fact, been the history of exhibitions. An increasing visibility and transformation of exhibitions can be detected, so considering their rapidly evolving and dynamic nature, exhibitions might well be the medium needed for sustainable development.

2.3.2 Exhibition life cycle

Different sources divide exhibition making into a different number of phases, but most reviewed sources either suggest four or five phases. Some sources also divide the main phases into sub-phases. For this work, considering that it takes into account temporary exhibitions held in museums and galleries, exhibition making has been divided into three main phases to provide a general overview (see Figure 2.5). Each phase includes the actors and activities that are commonly involved for this type of exhibitions organised in institutions intended for exhibition making.

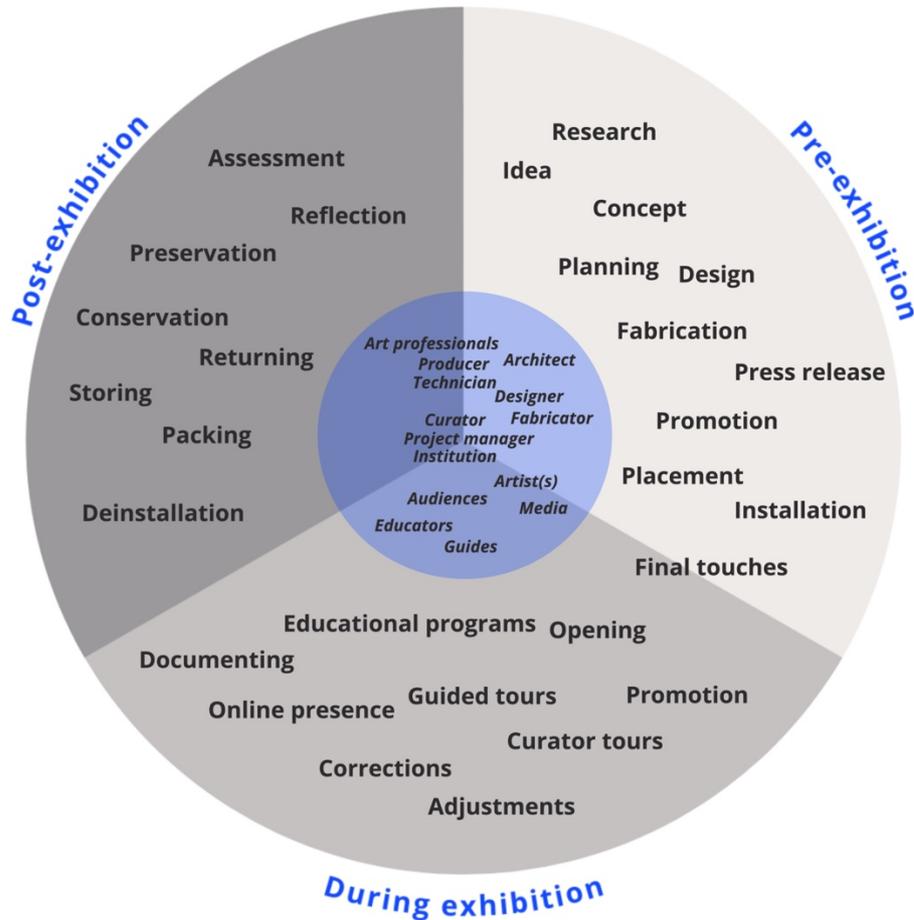


Figure 2.5. Exhibition life cycle including actors and activities. Made by the author.

The exhibition life cycle begins when the idea of an exhibition is born. The author of the idea, or at least the one presenting it, is usually the curator, who is one of the few actors that is present throughout almost the whole exhibition life cycle. Through vast research an idea becomes a concept, and the planning stage begins, where all the technical elements of an exhibition (described below) are decided. At this stage, many actors such as an exhibition manager, production team, designers, and fabricators (depending on the exhibition), not to mention the institution itself, enter the cycle and start preparing for the exhibition. Pre-exhibition phase ends with installation and placement works. (Espacio Visual Europa, 2016)

Each exhibition, when ready to be opened for public, usually begins with an opening event, which can be public or private. During the run of an exhibition, curator and guided tours are offered for the public and, depending on the institution, educational programs can be created to support and communicate the message(s) of the exhibition. Occasionally, some adjustments or corrections are necessary to be made in the space, and each exhibition is also properly documented. (Espacio Visual Europa, 2016)

Post-exhibition phase begins with deinstallation, where the artworks are first carefully inspected to ensure, that they are in the same condition as they were when installed. If the objects are from the institution's own permanent collection, then they are returned to the vault. If the objects came from outside the institution, then they need to be properly packaged and transported to the next location, whether that be the next institution where the artworks are exhibited again, or the place of storage, which could be another institution, an intermediary's warehousing or the artist's own studio. (Wolfer, 2020)

Post-exhibition phase is also a time for assessment and reflection about the held exhibition. In practice, due to the fast-paced nature of the field, by the time an exhibition has opened, most actors have already moved on to next projects and the learned lessons as well as the general evaluation of the success of the exhibition receives little attention. (Espacio Visual Europa, 2016) Analysing and sharing of the successes and the failures would potentially be valuable for all actors across the field, but this requires change of dynamics in the exhibition life cycle.

Technical elements

When planning for an exhibition, there are several technical elements to consider. Following is not a definitive list, but the mentioned elements are usually all considered in exhibition making:

- **Space.** When talking about exhibitions in physical spaces, we can differentiate institutional and non-institutional, alternative spaces. In institutional spaces the most used gallery model is the white cube, as it is aesthetically the most neutral atmosphere in which art can be experienced without superfluous distractions (Pimenta Carneiro, 2021). While a neutral environment makes a suitable space to exhibit most objects, it is also difficult to "activate" such spaces. Manipulating the white cube requires a good sense of composition and space design, and a lot of meaning-making type of work. In alternative spaces it can be much easier to design exhibitions as the space works for the artist/ curator, but it generally requires a lot of manual work.
- **Displays.** Exhibit objects can be displayed on walls, plinths, stands, podiums, and the likes. Besides aesthetic considerations, displays provide protective layers for the objects. The need to protect objects is understandable, but at the same time it can also reduce the object's accessibility. When leaving a generous amount of space between the object and the viewer, not every viewer is able to

“access” the object due to visual, or other, impairment. Then again, creating personal space for objects is important as it helps concentrate the view and create intimacy in the space. Additionally, display stands also help divide the space, support the idea of the exhibition as well as create democracy among objects; make them more equal in relation to each other.

- **Light.** Lighting plays a vital role in guiding visitors through an exhibition- from entrance to exit. Lighting is used to draw attention to the objects and alter the mood of the exhibition space. The visitor journey begins from the exterior façade of the museum/ gallery and lighting enables to create anticipation on arrival as well as communicate drama or contemplation within the exhibition space. (Sylvania, 2015) Light also helps prepare the viewer on how to “receive” the artworks.
- **Sound.** Sound is arguably the most evasive of all elements that make up an exhibition. Sound fills every single gap of the space. With objects, the viewer can decide whether to look at them or not but with sound, the viewer cannot move past it, cannot turn it down or switch it off, as sound is total. The extraneous sounds (noise) in the exhibition space should also be considered when choosing whether to use sound or not. (Frieling & Zimbardo, 2017)
- **Text.** When beginning to plan an exhibition, it is usually necessary to put the general idea into words to get consent or funding for the exhibition. Exhibitions also need texts to inform the public about the exhibition (press release) and texts to guide the viewer through the exhibition. It is also important to note that text is not only words on paper that the viewer can read; it can also be a video interview, a recording, or any other medium that can help communicate the exhibition to all actors.

2.3.4 Exhibitions through the communications lens

Every exhibition is an act of communication (Ahmad et al., 2014). In fact, all types of visual and performing arts can be thought of as acts of communication. In performing arts, such as a concert or a theatre performance, artists get live feedback to the message they are delivering. In visual arts, such as exhibitions, artists are generally isolated from the people their art is being presented to, so whatever message(s) the artist and/ or the curator wishes to deliver, it will be seen and understood without the artist/ curator standing next to the exhibit objects and explaining it.

An exhibition must communicate to the visitors deep to their mind and feeling, and this is achieved with two elements: collection (objects or archives) and knowledge (facts or

stories) (Ahmad et al., 2014). Exhibitions serve as a unique tool of communication (Ahmad et al., 2014; Liggett and Corcoran, 2020), making them a powerful instrument to influence the masses.

For a more thorough understanding of how exhibitions help communicate a message, the Shannon and Weaver Communication Model in contrast with an exhibition can help comprehend how communications are comprised (see Figure 2.6). The model starts with the sender or "information source" (Drew, 2019), which in the exhibition context is the ideas of the exhibiting artist and/or the curator (Liggett and Corcoran, 2020). The next step is the encoder or "transmitter" responsible for converting ideas into signals that can be sent from the sender to the receiver (Drew, 2019). In exhibitions, the artworks in their curated arrangement, serve as the transmitters (Liggett and Corcoran, 2020). The third step in the model is the channel through which all the ideas pass (Drew, 2019), which in the current context is the exhibition environment (Liggett and Corcoran, 2020), followed by a decoder or "receiver", which is the opposite of an encoder (Drew, 2019). In the exhibition context the receivers of the ideas are the senses of the exhibition's audiences (Liggett and Corcoran, 2020). The fifth step in the model is the receiver or "destination" (Drew, 2019), which in exhibitions is the given subset of the exhibition's total audience (Liggett and Corcoran, 2020).

The model involves two more elements which complete the communication loop. The first element is "noise", which, as the word suggests, is everything that can interrupt or distort the message while it is going through the channel (Liggett and Corcoran, 2020). The second element is "feedback", which occurs when the receiver of the message responds to the sender confirming, that they have received the message (Drew, 2019). The structured nature of exhibitions allows for multiple stable feedback cycles through the objects being exhibited in a constant background (Liggett and Corcoran, 2020). Each object carries the general idea/ message behind the exhibition, and the setting, where the objects are being exhibited at, acts as a supportive instrument for communicating the message repeatedly.

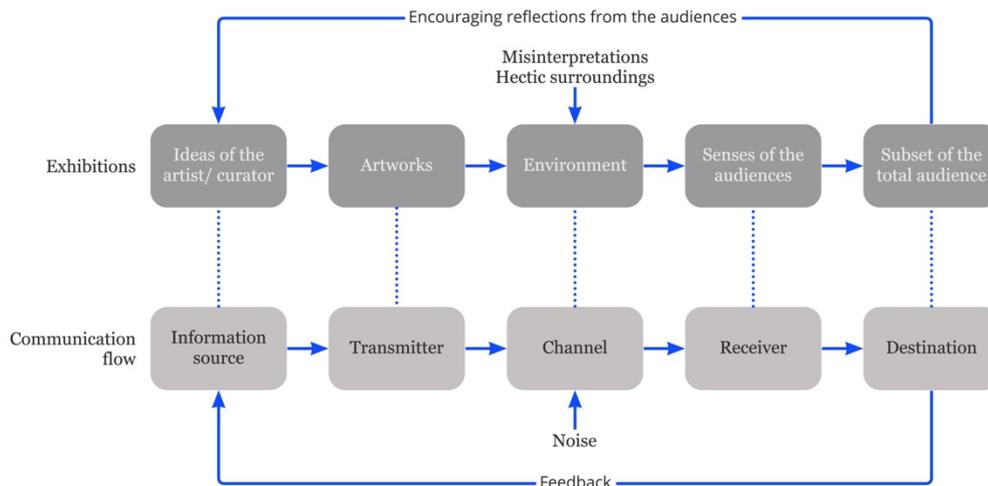


Figure 2.6. Shannon and Weaver Communication Model in contrast with Exhibitions. Made by the author.

Museums as cultural institutions, with exhibitions as the core function, communicate meaning through exhibition making for the purpose of learning. Exhibitions as a medium of communication can provide a variety of learning styles promoting the shaping of knowledge, and considering that learning is a dynamic process, then exhibitions are a powerful space for effective learning. (Ahmad et al., 2014)

2.3.5 Exhibitions in the context of sustainability

Exhibitions as the core function of museums are the one area, where well-considered design and production can make a significant difference. Building and installing a temporary exhibition is highly resource intensive, therefore reconsidering exhibition practices to be more environmentally-conscious is important.

Environmental sustainability, however, is not the only focus that should be considered when rethinking exhibition making. The role of museums and galleries as educational institutions, as well as the role of exhibitions as tools for communication, offers a platform for all four pillars of sustainability to be encompassed.

In the exhibition context, when engaging with sustainability, it is essential to recognise where valuable resources, besides materials, such as time, money, effort and power are being wasted. From there on, a strategy of sustainable change can be created, which involves reimagining every single aspect of exhibitions within the means of what is realistic and attainable. Museums and galleries tend to experience a conflict between

role (exhibition impact on audiences) and environment, so it is important to acknowledge which of the changes are indeed viable. (Hammond, 2017)

Each of the three phases of exhibition life cycle comes with a unique set of challenges. Whatever the challenge, however, it should be kept in mind that people (that includes exhibition staff as well as audiences) are the key in the success of any sustainable efforts. Taking an inclusive approach and, first and foremost, finding ways to empower people on the journey is how sustainable change can take place.

3 METHODS

In order to continue investigating the topic, qualitative research methods were used for a better understanding of social phenomena within the exhibition context. The purpose of qualitative research is to understand human beings' richly textured experiences and reflections about those experiences relying on the participants to offer in-depth (rich and detailed) responses to questions (Jackson et al., 2007). The understanding was built through expert interviews and co-design workshop, both methods explained further below.

3.1 Semi-structured interviews

Semi-structured interviews are conducted conversationally, usually with one respondent at a time, and they consist of a blend of closed- and open-ended questions, often accompanied by follow-up 'why' or 'how' questions. Having identified the target group for the interviews, the next step is to select respondents. For an in-depth understanding of the research topic, perspectives of more than just a few people are required (Adams, 2015).

For each interview, it is wise to create an agenda for the interview guide- the outline of planned topics, and questions to be addressed. This agenda should be modified for each interview, considering the interviewee's profile. The agenda might also need adjusting for future interviews based on the information gained in the previously conducted ones. (Adams, 2015)

With semi-structured interviews, once completed, the results should be analyzed, and conclusions made through finding consolidating themes (Adams, 2015). In case interviews are not recorded and only notes are taken, then conclusions should be written shortly after the interviews so that all the insights and information gained would not go missing.

3.2 Co-design workshop

A co-design workshop is a space for creative collaboration between stakeholders. The emphasis of the workshop is on designing *with the people* rather than *for the people*. It is a tool for discovery and exploring opportunities with the aims to start discussion among stakeholders and guide design decisions. (Fekete, 2019)

Co-design is grounded in the belief that all people are creative and that stakeholders, as experts of their own experiences, bring different points of view that inform design directions. The method that can be used in all stages of design process, but it is especially found to be useful in the ideation or concepting phases. (Naranjo-Bock, 2012)

A co-design session can yield a variety of outcomes, including a creation of cognitive maps or mock-ups of a product or service. Workshops are usually conducted with a mixed group of participants (as belonging to different stakeholder groups) to deliver rich results. Most co-design workshops have a duration of 1.5-2 hours, and the materials used (considering that the session is not held digitally) should be very visual or tactile with the location offering a large workspace. (Naranjo-Bock, 2012)

There are various research methods that can be used in co-design sessions for uncovering a variety of insights. Some of the most widely used methods include collages, intended for discovering emotions, feelings, or wishes; mapping, used for creating abstract concepts, events, processes, routines, experiences, or systems; and storyboarding, used to describe a series of events or steps in a journey. (Naranjo-Bock, 2012)

The data obtained from co-design workshops is usually visual and tangible. Due to the qualitative nature of the acquired data, results can be analyzed with methods such as affinity diagramming or parallel clustering. (Naranjo-Bock, 2012)

Co-design workshop is considered especially valuable in this thesis project, as it allows to bring different stakeholder groups together, which is important when dealing with complex matters, such as sustainability. Interviewing stakeholders one respondent at a time is excellent for a deeper understanding into their experiences, however only viewing these experiences in isolation does not provide a comprehensive understanding of how these stakeholders engage with each other, which is where co-design session comes about.

4 RESEARCH

As introduced in the previous chapter, the research methods used in this thesis for creating a better understanding of the topic and uncovering new information included expert interviews, co-design workshop, observations and participation. The methods were implemented throughout the thesis project, which span for nearly 9 months. Following gives an overview of the conducted interviews and the performed co-design workshop, as well as introducing the information gained during observations and participation.

4.1 Interviews

Semi-structured interviews with specialists were conducted with the aim to gain a deeper understanding on museums and exhibition making. A total of 8 interviews were conducted during the thesis project. Following presents a list of conducted interviews with the topics discussed (to see the interview summaries, refer to appendices):

Maria Arusoo, Director of Estonian Centre for Contemporary Art, and a Guest Curator in Kumu Art Museum; **Kaarin Kivirähk**, Communication and Project Manager in Estonian Centre for Contemporary Art. (10.01.2022)

- The elements of curatorial work.
- Differences in curatorial work for staff curators (curators employed by museums or galleries) vs independent curators.
- Sustainable curating practices.
- The struggles of practicing sustainable curating.

Karen Jagodin, COO of Vabamu Museum. (17.01.2022)

- Sustainability in the context of Vabamu.
- Differences between private and public museums.
- First steps to becoming a sustainable organisation.
- Differences in curatorial work in private vs public museums.
- How to begin a discussion on sustainability with museums.

Anders Härm, Curator, Lecturer and Head of the Curatorial studies module of the Art History MA programme at Estonian Academy of Arts. (28.01.2022)

- History of curatorship.
- How the curatorial study programme has changed over the years.
- Dividing curators into different categories.

- Different journeys to becoming a curator.
- Necessary characteristics for a curator.

Ketli Tiitsar, Project Manager of Exhibitions at Estonian Museum of Applied Art and Design (03.03.2022)

- Exhibition planning in a museum.
- Installing and deinstalling of an exhibition.
- Prejudices of state museums vs the actual situation.
- Job responsibilities of a project manager of exhibitions vs what the job actually entails.
- The time-consuming nature of reuse and recycling and the prejudices that come with reuse.

Jaana Jüris, Co-Founder of Valge Kuup Studio (04.03.2022)

- The gap in the art scene that Valge Kuup came to fill.
- What exhibition design and production entails.
- How much influence/ dictating power the production studio has over exhibitions.
- Trends in exhibition design and production.
- What is missing in the art scene today that would benefit everyone in the field.

Laura Jamsja, Visitor Experience Lead at Kalamaja Museum (04.03.2022)

- Community-based museum development concept.
- The pros and cons of being under the state for a community-based museum.
- The presence of community involvement in a community-based museum and how community involvement is organised.

Siim Preiman, Curator of Tallinn Art Hall (09.03.2022)

- The journey to becoming a curator.
- Sustainable curating- what, how and why.
- Working in alternative vs institutional spaces.
- Working together with communities.
- Current trends in conceiving and organizing exhibitions.
- What is lacking in the art scene today that would benefit everyone in the field.

Berit Teeäär, Export Manager at Valge Kuup Studio; **Jaana Jüris**, Co-Founder of Valge Kuup Studio (30.03.2022)²

² This interview took place during a visit to Valge Kuup Studio, where Berit and Jaana introduced the Studio premises and exhibition planning was discussed in more detail and examples of work were presented.

- The planning phase of an exhibition as the most crucial part of the sustainability discourse.
- Lack of warehouse space as one of the root problems.
- Lack of supporting structures- a need for a clear system.
- The positive influence that lack of resources has on sustainability.

Conclusion

Sustainability can be an overwhelming topic for institutions, so the first step towards change is raising awareness. Museums and galleries tend to have many fears, monetary and other, related to sustainability, so in order to begin the discussion, the topic should be broken to smaller pieces to make it more graspable.

Enormous pressure is put on curators, as well as other professionals, to constantly come up with new ideas for exhibitions, which, by essence, is not sustainable thinking. The audiences demand for constant novelty in terms of art fabrication (producing new artworks), exhibition design and production. Due to the fast-paced environment and all the many (technical) possibilities that have emerged, exhibitions have become more complex, and the pace can prevent teams from finding valuable information for smarter productions.

For exhibition project managers as well as production teams, a lot of unnecessary time is spent on tasks, that do not technically fall under their job description. This includes trying to locate leftover objects³ and materials for reuse in upcoming exhibitions, as well as dealing with leftovers from exhibitions, which requires a great deal of effort as there are no clear systems in place.

People in the art and culture sector are inherently helpful and supportive, but as all this extra organising takes up valuable time, then it is not sustainable in the long run. While each stakeholder group has its own challenges, then several repeating concerns could be identified through the interviews. For one, institutions tend to work in isolation- there is not much collaboration happening between them. In addition, the responsibility for dealing with complex matters tends to be placed on one group of stakeholders. Finally, it all comes down to a clear need for supporting structures and better planning capacity to help institutions in the sustainability journey.

³Hereinafter, an 'object' refers to an element in exhibition space supporting the display of artworks, e.g., plinths, showcases; not to mix up with 'exhibit object'. For better grasp, 'exhibit object' is hereby referred to as 'artwork'.

4.2 Co-design workshop

One co-design workshop was held during the thesis project. The session was organized towards the end of the research phase with the aim to gain input for the design phase. The workshop was physically held in Kalamaja museum and consisted of three parts, starting with an icebreaker and following with two exercises focusing on exhibitions and sustainability.

The participants of the workshop were:

Ketli Tiitsar – Project Manager of Exhibitions at Estonian Museum of Applied Art and Design (also an interviewee)

Berit Teeäär – Export Manager at Valge Kuup Studio (also an interviewee)

Siim Preiman – Curator of Tallinn Art Hall (also an interviewee)

Evelin Pääsukene – Exhibitions Project Manager at the Estonian Museum of Natural History

Kristi Paatsi – Head of Kalamaja Museum

Piret Karro – Curator and Head of Exhibitions at Vabamu Museum

In the first exercise (following the icebreaker), participants were first asked to individually write down all the keywords that came to mind when hearing the word 'sustainability'. The next step was to find common ground and so participants started discussing and grouping the keywords together. The final part of the first exercise was to divide the keywords between the three pillars of sustainability (social, environmental, economic), while it was explained that culture could be thought of as the fourth pillar, either as equal to the other pillars, or as connecting and balancing the other three. The first exercise led to rich and passionate discussions on sustainability.

The second and final exercise asked participants to envision the future world and imagine how the exhibition practices would be changed. Here, a method from IDEO Method Cards (IDEO, 2003) was used, where participants were asked to predict newspaper headlines in 8 years' time. This method helped better frame the exercise with a more playful approach. Halfway through the exercise, it was apprised that 8 years is also the time we have left to achieve the UN's ambitious Sustainable Development Goals.

Conclusion

The workshop confirmed many of the viewpoints that came out from interviews. While some of the workshop participants already knew each other from the field, and others

were meeting for the first time, there was a consensus on what is lacking in the field that is not supporting sustainable development.

For one, participants agreed that not much collaboration is currently happening between the different exhibition institutions, and the institutions tend to work in isolation from each other. It almost seems as if, unintentionally, institutions have become rivals competing on who is more successful in managing. Participants wondered, if the reason for this 'rivalry' might have to do with a feeling of shame- of not feeling like they can ask each other for help as this might make them seem weak.

Participants also agreed, even emphasized, that preliminary work for exhibitions is key. This includes planning (thinking ahead sustainably) as well as high level involvement (all stakeholders are always involved and informed). Planning capacity is currently clearly lacking, but it is also important to keep in mind that this task should not be put on the shoulders of one stakeholder group, where sustainable planning is seen as an added chore. Instead, it is important for institutions to find inspiration from sustainability, to be excited about it, even make it playful, to make the challenge more graspable and find common ground.

4.3 Observations and participation

Throughout the thesis process, observations and participation in various events, including visits to exhibitions, seminars and consultations took place, where valuable information on museum and exhibition discourse, at times in relation to sustainability, was gained. The observations and participation took place throughout the thesis project.

Meetings and seminars, visits to exhibitions

During the research period, several meetings and seminars, as well as visits to museums and exhibitions took place, most of which revolving around the sustainability topic from various perspectives. One of such seminars, in fact a first ever webinar on the topic of sustainability for museums organised by ICOM Estonia (14.12.2021) introduced a newly started program called "Green Museum" and gave an overview of the principles and criteria of the program (ICOM Estonia, 2021). It can be said that this seminar gave the official start to the sustainable movement in the museum sector in Estonia.

Consultations

During the initial stages of the research phase, meetings with Harri Moora, a consultant and a lecturer at the Estonian Academy of Arts and a Programme Director at the Stockholm Environment Institute took place. Harri works closely with several organisations in the culture sector with the purpose of helping those organisations become sustainable, so the consultations mainly involved being updated on what was happening in the culture sector, especially with museums, and exchanging ideas.

Exhibition Planning course

Over the course of six weeks in Spring semester of 2022, during the studies of the Design & Technology Futures programme, an Exhibition Planning course was taught in the Estonian Academy of Arts by the artist Urmas Lüüs, who has vast experience in organising exhibitions. As not having any prior experience with organising exhibitions the course gave a great overview on all technical elements that each exhibition taking place in a physical space consists of. This proved to be important knowledge for the thesis, as sustainability in the exhibition context should consider technical elements, as opposed to artworks being displayed (sustainability should not be equalized with “good art”).

4.4 Research conclusion

Sustainability in museums and galleries, as well as in the exhibition context, requires a substantive discussion. It can be an imperceptible and an intimidating topic for institutions, hence the first step towards change is awareness. Sustainability matters should not be placed on the shoulders of one stakeholder group, but everyone needs to be included in the discussion, as it inevitably affects all those involved in exhibition making.

The research led to a realization, that not much collaboration is happening between the different exhibition institutions, and the institutions tend to work in isolation from each other. This is concerning because many of their practices are similar and they require same resources for exhibition making, so sharing knowledge and expertise would help avoid wasting a lot of unnecessary time, which is currently spent on dealing with excessive planning and organising. For a sustainable exhibition life cycle, there needs to be a very clear system in place. Information on best practices as well as available resources needs to be shared, transparent and accessible. Support for engaging with sustainability is required from all levels (public and private).

Institutions, today, are also technically not prepared to further handle leftover objects and materials post-exhibition. One of the major concerns for most is lack of warehouse space, but in the end, it all comes down to planning. Instead of dealing with leftovers in the post-exhibition phase, the cycle should be considered well ahead which, once again, needs supporting structures.

As brought up by most interviewees, as well as discussed in the co-design workshop, a slowing down trend is emerging in the field. In essence, it refers to organising less exhibitions per year and allowing for each exhibition to be open for public for longer. This means more time for planning out the various activities as well as enabling objects and materials to live a longer life. In practice, the current systems in place do not entirely support this trend as fewer exhibitions means less work for artists, for example, whose livelihood depends on producing and exhibiting works of art. Artists might be asked to not only exhibit less often, but also produce less works, which, however, is non-feasible in today's world.

Sustainable solutions should be seamlessly integrated to the exhibition context and be able to offer a 'real' exhibition experience. Exhibition space (design and production) should not lose out on the fact that sustainability is entering the discussion. Instead, sustainability should inspire and unite stakeholders for shared expertise and improved collaboration.

On top of all the knowledge gained and inputs given to the design phase from the various research methods used, what proved to be highly valuable was getting the different stakeholders together behind one table to discuss sustainability. The value was not only given to the thesis project, but it was clear that participants themselves were empowered by the conversation. It rarely, if ever, happens that the different stakeholders have a chance to just sit down and have discussions on important matters as such, but those are the conversations that are perhaps most precious, and certainly, hugely inspiring.

To conclude, following are the key findings from research:

- Lack of collaboration between stakeholders
- Poor planning capacity
- Heavy use of raw materials each time an exhibition is planned
- Minimal reuse/ recycling of leftover objects and materials
- Lack of storage space for leftover objects and materials

5 DESIGN BRIEF

5.1 Problem space

The previously described exhibition life cycle demonstrated the complexity that exhibition making encompasses. The whole cycle can last up to several years, thus entailing myriad of challenges.

The three phases of exhibition life cycle – pre-, during-and post-exhibition – each come with distinctive challenges. Sustainability is a huge topic to tackle, and in combination with the whole exhibition life cycle it is certainly too wide for a single design project. The research revealed several possible leverage points within the system, most of which in the pre-exhibition phase, where smaller interventions have the potential to create a ripple effect through the wider system.

Lack of collaboration

The current system does not allow for much collaboration between institutions as well as the people involved in exhibition making to happen. Institutions tend to work in isolation from each other when organizing exhibitions, which results in a lot of unnecessary time spent on dealing with excessive planning and organising.

Stemming from lack of collaboration, getting everyone involved is a challenge. As discussed in previous chapters, one common way to approach sustainability is assigning the topic to a single person (or a small group of people), but in reality this will only influence the institution at the surface level. Instead, we need everyone involved in a way that does not necessarily take away from their responsibilities, but positively transform the way everyone works on their own and as a team.

Wasting of valuable resources

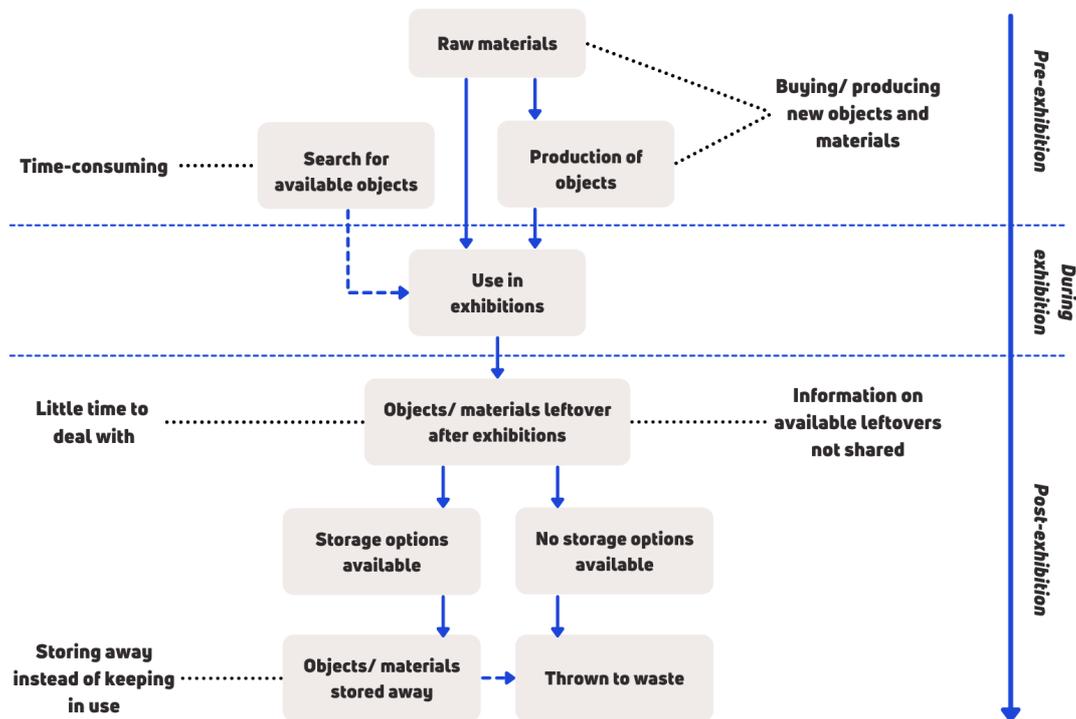


Figure 5.1. Resource handling in exhibitions. Made by the author.

Organising exhibitions uses a lot of valuable resources such as materials, time, money, effort and power (see Figure 5.1). New materials are often purchased, and new objects produced, or excessive time spent on searching for available items for exhibitions to fulfil the space design requirements. Once an exhibition ends, there are leftover objects and materials, which have not been planned for. The deinstalling stage of an exhibition tends to be extremely quick, so decisions must be made fast on what happens to those leftovers. Due to insufficient planning, enormous time pressure and lack of supportive structures (for keeping items in circulation), leftover objects and materials can easily end up in waste.

A major practical concern from the field which kept being repeated was lack of storage space, which almost forces exhibition teams to make unsustainable choices. Not only do smaller museums and galleries have minimal to no storage space, but objects and materials produced/ bought can be rather specific and the museum/ gallery (owner of the objects/ materials) might not immediately find another use for those items, so keeping them in storage where they take up valuable room is not ideal. Whether storage options exist or not, leftovers still eventually end up in waste, while they could instead be kept in use.

Concluding problem space

Based on the research and in support of the hypothesis (recognizing resources used in exhibition making and identifying how these resources could be better utilised) this work emphasises the need to focus on the pre-exhibition phase of exhibition life cycle. It is evident that by improving exhibition practices, with focus on the pre-exhibition phase, there is huge potential to positively influence the whole life cycle of exhibitions. For a sustainable change to be able to happen, it requires a consideration of all stakeholders as well as the activities they are involved in to be able to shift the exhibition practices for the better.

5.2 Design approaches

5.2.1 System-shifting design

The existing social, environmental and economic challenges we are facing require profound shifts to be made. The current systems are failing us, and thus the future depends on our collective ability to make and to remake the systems we live by at a deeper level. A major constraint to transformational change comes from the fact that most innovation starts from the vantage point of our current systems meaning that we are extending the lifespan of systems that no longer serve us. (Design Council & The Point People, 2021)

A system is a set of interconnected elements that is coherently organised to achieve a purpose (Ellen MacArthur Foundation, 2017). A system functions through its elements interacting and it is vital to acknowledge both, the relationships between elements as well as the elements themselves. By nature, systems are complex, dynamic, unpredictable, interconnected, and emergent, due to which they cannot be 'controlled', but they can be intervened at leverage points (Design Council & The Point People, 2021)

The *system-shifting* way of designing moves further from the *systems-conscious* way, where, instead of focusing on diagnosis, analysis and evidence-based decision-making, the emphasis is put on imagining, perceiving, making and mobilising that is needed to realise a new systemic opportunity. (Design Council & The Point People, 2021)

System-shifting design is proposed to have five characteristics. First, it challenges the deep structure of current systems by digging into the deeper layers. Second, it works at different levels of a system, such as the micro, macro and meso levels. Third, it facilitates a shift in the makeup of a system's purpose, power, relationships and resource

flows through designing and making system-shifting products or services at the micro level. Fourth, it supports the transition from one system to the next by creating conditions conducive to transition. Lastly, it avoids creating single solutions and instead developing multiple complementary things that can operate together. (Design Council & The Point People, 2021)

5.3 The guiding principles for the design concept

- **Collaboration** – The network of museums and galleries should be better utilised through deeper collaboration. To achieve a sustainable change in exhibition making, institutions need to work together and share their best practices as well as combine their knowledge and expertise to find solutions that work and identify those, that do not.
- **Inclusiveness** – Changes in exhibition practices towards a more sustainable approach affect everyone in an exhibition team, thus all stakeholders must be involved in the decision-making processes. All exhibition professionals should be able to participate and give equal input as everyone has something to teach as well as something to learn.
- **Circularity** – Leftover objects and materials from exhibitions, instead of being stored away or thrown to waste, should be kept in use. For this to happen, information on leftover objects and materials must be sharable and accessible, and reuse organised in a seamless way to keep objects and materials in circulation.
- **Storage solutions** – Lack of storage options for museums and galleries is one of the key concerns which often forces them to make unsustainable choices. Offering storage solutions for leftover objects and materials from exhibitions can help reshape the practices and allow for the items to stay in circulation.

5.4 Conclusion

In the beginning of the research process, it was evident that sustainability was not yet a central topic in museums- it was too overwhelming and likely felt insurmountable, so people were hesitant to discuss it. Over this arguably short period of time, the attitude towards sustainability appears to have positively changed- museums have seemingly

found a new collective goal and are motivated to work towards achieving it. This, of course, does not take away the overwhelmingness of the topic, but it can be said that the very first step- achieving a level of awareness among institutions- has been taken.

What is required now is for an enabling environment to encourage collaboration and allow and motivate all stakeholders to be involved in the planning and decision-making processes of exhibitions. Exhibition planning should be a cohesive process, where institutions and all the people involved are not isolated from each other, but work towards a common goal. This requires for a system to be in place, which allows for leftover objects and materials from exhibitions to stay in circulation, as well as for knowledge and information to easily be shared between professionals.

6 DESIGN CONCEPT

The design brief shows a need for a unifying platform that enables exhibition stakeholders to collaborate and collectively develop sustainable exhibition practices. The platform should allow for a seamless reuse of leftover objects and materials, resolve the lack of warehouse space and provide an inclusive environment for sharing knowledge and expertise.

The described needs led to the creation of VÄLI- a conceptual model proposing a sustainable approach to exhibitions encompassing collaborative digital and physical space. The goal of the concept is to illustrate how an emergence of a new service platform would reshape the current network through enabling collaboration and allowing for leftover objects and materials from exhibitions to stay in circulation. Each of the components and functionalities of the platform are illustrated and discussed in detail below.

6.1 VÄLI platform

VÄLI is a collaborative service platform for connecting exhibition professionals to support sustainable planning and organising of exhibitions. "Väli" translates to "field" in Estonian, and this name emerged from discussions with research participants, where the word "field" (e.g., "This is how the field works", "Everything is available in the field") was often used in sentences. The name also suits the proposed platform well, as it is aimed to be used within the 'art field'.

Currently in the ecosystem, all stakeholders (institutions as well as professionals) are connected in a sense that they all operate in the same field and are involved in similar activities, occasionally joining forces over certain projects. The links between the stakeholders, however, are weak as there is not much collaboration happening (see Figure 6.1).

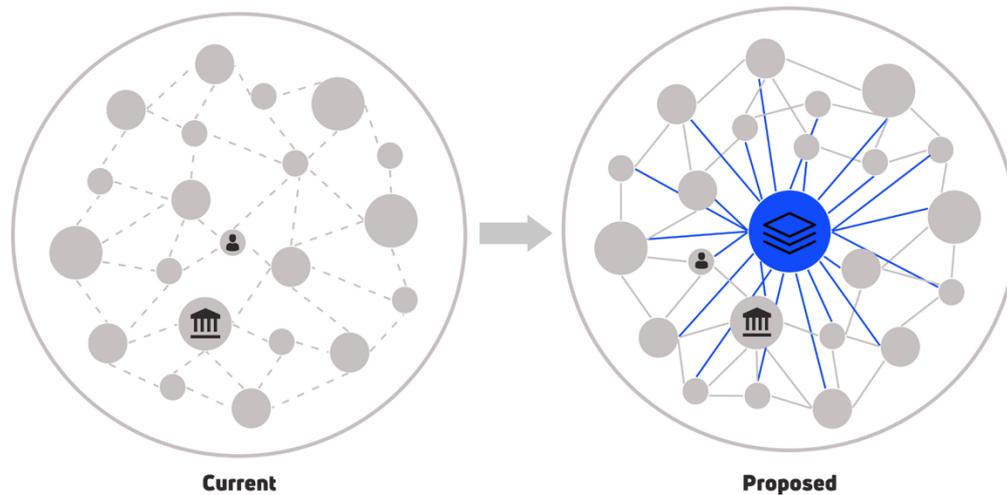


Figure 6.1. VÄLI platform reshaping the network of exhibition professionals and institutions. Made by the author. Figure contains resources from canva.com.

In the proposed concept, a unifying platform positions at the centre of the network, through which all stakeholders are linked together (see Figure 6.1). The system allows for improved communication and better collaboration, which ultimately results in strengthened ties.

VÄLI platform incorporates physical and digital space (see Figure 6.2) to solve the lack of storage options, make information about available elements for exhibition space transparent and accessible, and improve planning for exhibitions, all through member contribution and collaboration. The platform is managed by a non-governmental organization (NGO), that oversees the smooth running of the online-offline symbiosis.

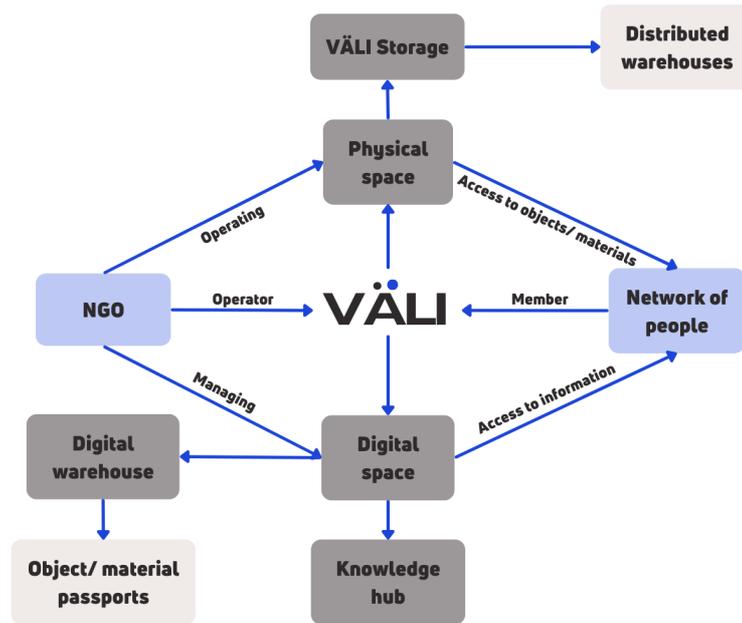


Figure 6.2. VÄLI platform. Made by the author.

Digital space

The digital space of the VÄLI platform brings together all the information on available items to be used in exhibition making. This information can be accessed by all members and items can be booked as well as arrangements made for exhibitions via the platform. The platform also gathers all the expert knowledge from the practices of the professionals in the field, to which all members can contribute, and this knowledge can freely be accessed by all members for improved exhibition practices.

Physical space

VÄLI has its own warehouse spaces distributed in strategic locations across the country. For items that are not in constant use and need storing in between exhibitions, VÄLI storage options provide a space for them. The NGO operating the warehouses oversees that the items are safely stored, takes inventory and ensures that the information about the items shared in the digital space is correct.

6.1.1 VÄLI service system

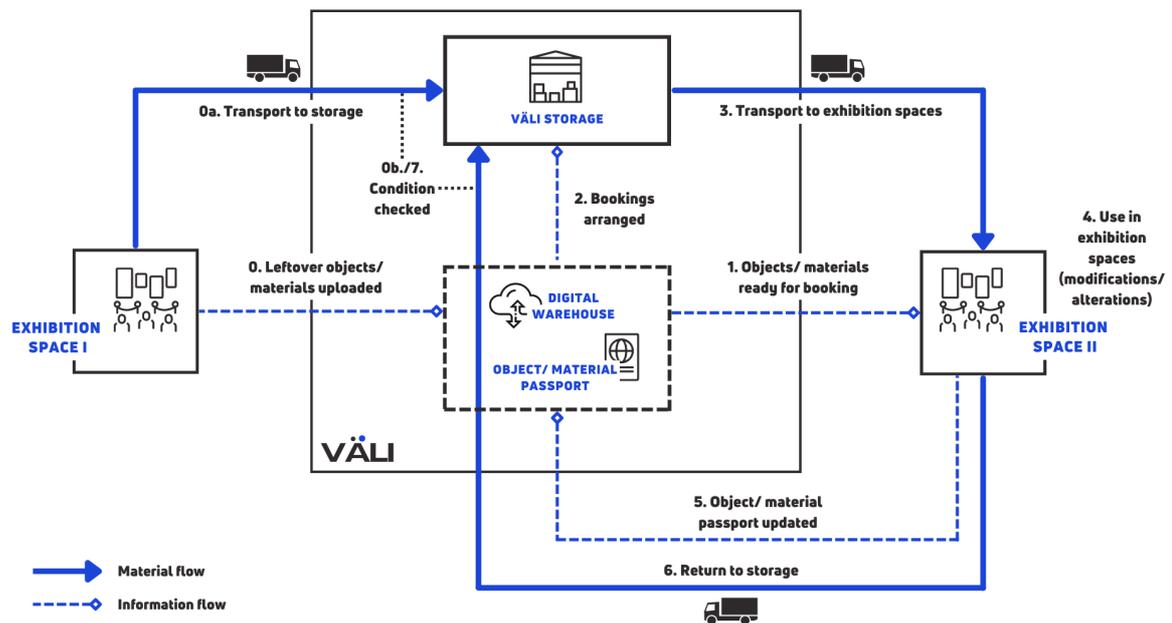


Figure 6.3. VÄLI service system. Made by the author. Figure contains resources from canva.com.

A simplified map of the VÄLI service system is displayed above (see Figure 6.3). The map shows two essential parts of the service: how leftover objects and materials reach the platform and how they are kept in circulation. Steps 0 through 0b demonstrate, how leftover objects/ materials become available through VÄLI, while steps 1 through 7 show the circulation of these objects and materials.

0. Leftover objects/ materials uploaded

Objects and materials left over from exhibitions are uploaded to VÄLI by a member in the exhibition team.

0a. Transport to storage

Leftover objects and materials, while uploaded to VÄLI, are transported to one of VÄLI storages.

0b. Condition checked

As leftover objects and materials arrive to VÄLI storage, the condition of the transported items is checked by the NGO to ensure the information displayed in object/ material passports is accurate.

1. Objects/ materials ready for booking

As leftover objects and materials are uploaded to VÄLI, they become available for booking for other exhibition spaces.

2. Bookings arranged

As objects and materials are booked, bookings need to be arranged by the NGO. This includes preparing and packaging the items as per booking, as well as arranging deliveries.

3. Transport to exhibition spaces

Booked objects and materials are transported to exhibition spaces. Transportation can be organised by the institution (member) renting the items, or, on request, by the NGO.

4. Use in exhibition spaces (modifications/ alterations)

As objects and materials arrive to exhibition space, they might need some modifications/ alterations to fit the exhibition design. Items are booked until the exhibition is over.

5. Object/ material passport updated

During exhibition, or after it ends, object/ material passports are updated by the institution (member), who rented the items. The updates include all changes that were made to the object/ material, and a description of how the items were used in the exhibition.

6. Return to storage

Once the exhibition (booking period) ends, the objects/ materials are returned to storage and available for reuse.

7. Condition checked

As leftover objects and materials arrive back to VÄLI storage, the condition of the transported items is checked by the NGO to ensure the information displayed in object/ material passports is accurate.

The described system provides a general overview of the journey of repurposing leftover objects and materials through VÄLI, however considering the complexity of exhibition making, there are other possible journeys, where some of the described steps are either switched, left out, or changed. A comprehensive overview of the service platform is given in the following sub-chapters.

6.2 Platform components and functionalities

VÄLI platform allows for leftover objects and materials from exhibitions to stay in circulation, which is achieved through enabling collaboration between exhibition professionals. The platform also allows professionals to exchange knowledge and expertise to improve exhibition practices.

The following sections give a detailed overview of the platform components and functionalities, starting from becoming a member, followed by how the circulation of objects and materials happens, and ending with how professionals can exchange ideas and share knowledge. The components and functionalities are visually supported by wireframes to demonstrate key elements and pages.

6.2.1 Becoming a member

Everyone involved in exhibitions is free to become a member of the platform. This involves museum and gallery staff, freelancers, as well as professionals from private companies who have a role to play in exhibition making.

Member profile

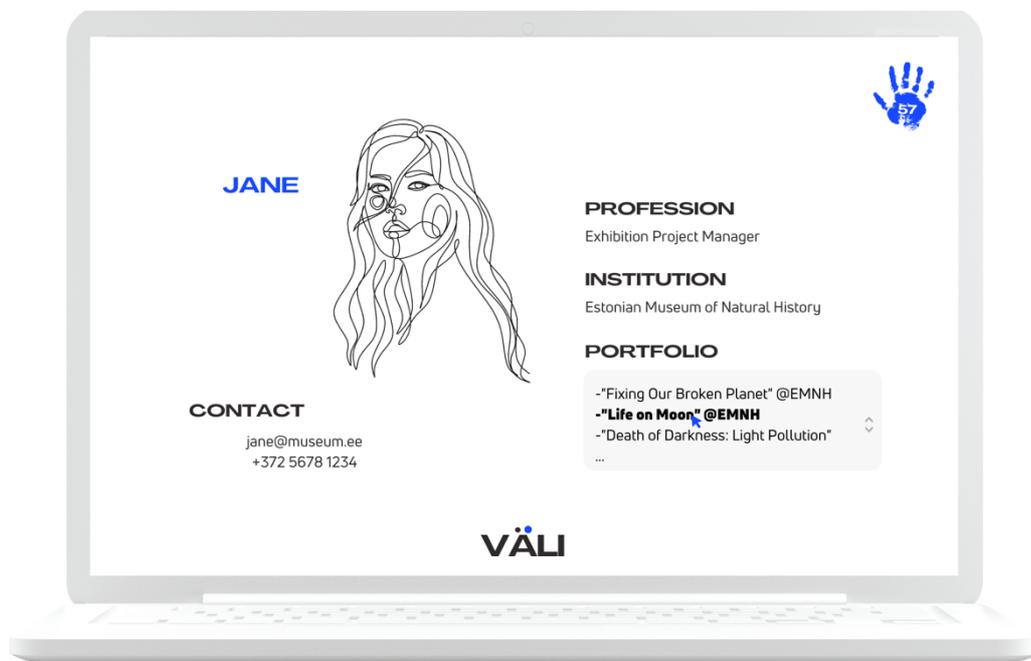


Figure 6.4. Member profile. Made by the author. Figure contains resources from canva.com.

When signing up to the platform, each member will identify themselves via their institution or note themselves as a freelancer, as well as add their profession and contact information. Members will also be able to share their portfolios of exhibitions they have been part of, and this list can always be updated. (See Figure 6.4)

All platform members can upload leftover objects and materials to VÄLI for circulation, as well as book available items for use in exhibitions. Members will also have access to

knowledge hub, where information is shared, and knowledge exchanged on exhibition making.

6.2.2 Making objects and materials available for circulation

Various materials and objects are used in exhibition making to display artworks and support the idea of an exhibition. Hereby, objects and materials are defined as follows:

- **Object**- element used in an exhibition space which has been produced to display or support the display of artworks (e.g., pedestals, glass showcases, benches).
- **Material**- article used in exhibition design, that can be considered as raw material from which objects can be made, or material used on its own as is (e.g., drapes, plexiglass sheets, building materials).

Digital warehouse



Figure 6.5. Digital warehouse: Floor displays under 'Objects' category. Made by the author. Figure contains resources from canva.com.

The digital environment of VÄLI contains a so-called 'digital warehouse', where all the items available in the field are stored (see Figure 6.5). The digital warehouse serves as an online catalogue that can be browsed for available items and where the available items can be booked.

The digital warehouse would potentially help solve many problems at once. First, when planning for an exhibition, members would have access to all the available objects and materials, all displayed in one place, which would save a lot of time from trying to find all the items needed for the exhibition space. It could also act as an inspirational space when deciding on the objects and materials to be used in an exhibition.

Digital warehouse would also partly solve the problem of lacking physical warehouse space. As exhibitions are mostly planned at least few years ahead, then items could also be booked ahead, keeping them in constant circulation.

Object/ material passports

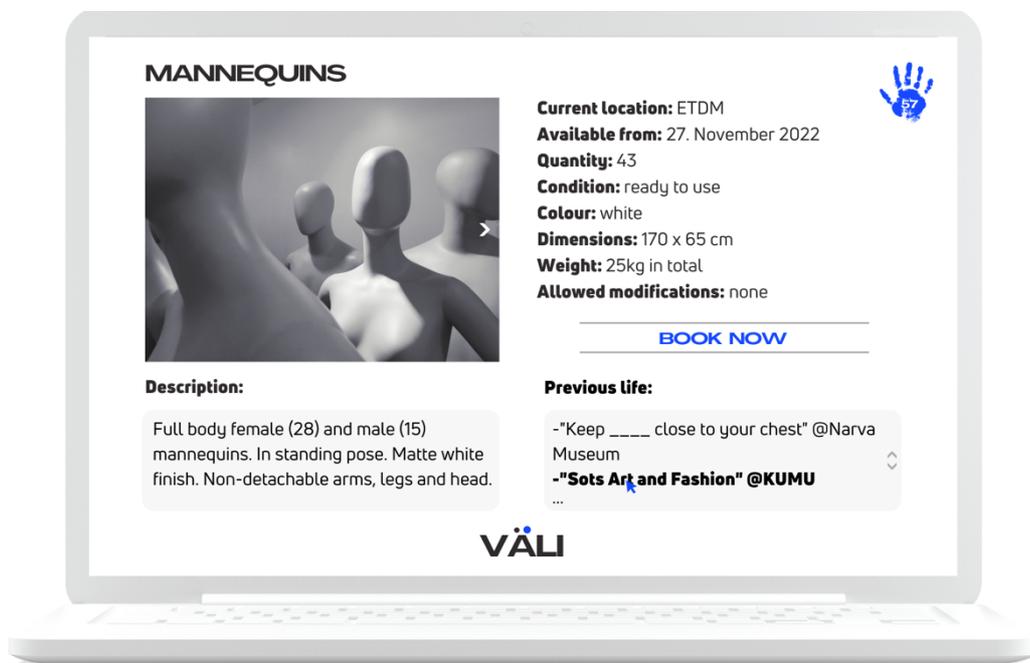


Figure 6.6. Object/ material passport. Made by the author. Figure contains resources from canva.com.

To keep objects and materials in circulation and allow them to live many lives, they should be respected and looked after with care. Each item displayed in the digital warehouse has a 'passport' (see Figure 6.6). Object/ material passport enables to personify the items giving a profile-like overview and a full backstory of the item.

An "object" in a passport can be a single element (e.g., a bench) or a set of elements (e.g., a set of mannequins), whereas a "material" in a passport can be an article in one piece (e.g., one plexiglass sheet) or in separate pieces (e.g., multiple plexiglass sheets).

Following is the suggested (but not definitive) information to be displayed about an object or a material in a passport:

| | |
|------------------------------|--|
| Name | A word or a set of words by which an object/ material is referred to. |
| Image(s) | Visuals depicting the objects/ materials. |
| Description | Overview of the object/ material, including information on any discrepancies from displayed images, flaws, or other facts about the object/ material that should be known. |
| Colour | The colour(s) of the object/ material. |
| Quantity | The total number of articles or elements in an "object" or a "material". |
| Dimensions | Dimensions of an "object" or a "material". In case a set of objects or separate pieces of material, then dimensions of each separate piece. |
| Weight | Total weight of "object" or "material". |
| Condition | Indication on whether the object/ material can be used right away or might need some work. |
| Allowed modifications | Mark whether none, minor or major modifications are allowed to be made to the objects/ materials. |
| Location | Where the item is currently located (exhibition space, museum or gallery storage, VÄLI storage). |
| Availability | Date of when an object/ material is available for use. |
| Previous life | Documentation of where (in which exhibitions) an object/ material has previously been used and how. |

Uploading objects/ materials

Items can be uploaded to VÄLI by any member and uploading means 1) filling out all the above information for the passport and 2) submitting the passport.

Objects and materials can be uploaded for renting, lending, selling, or giving away for free. While the concept mainly focuses on the renting model to keep leftover objects and materials in circulation, then the nature of the four different models is explained in the following sub-chapter under "Platform costs".

Modifications and alterations done to objects/ materials while in circulation

Objects and materials can be altered beyond recognition. In case an item is reused for another exhibition, there is a high chance that it will need some form of modification to suit the new exhibition design, so altering is already a normal process in the field.

Objects (e.g., floor displays, glass showcases) tend to remain more in their original shape while materials (e.g., fabrics, building material leftovers) can be utilised for different purposes, hence changing their look and shape. For all objects and materials submitted to VÄLI, the member uploading the items can set the level of alterations/modifications that are allowed to be made, whether it be none, minor, or major.

Categorizing objects/ materials



Figure 6.7. Digital warehouse: Categorizing. Made by the author. Figure contains resources from canva.com.

Items in digital warehouse are divided between objects, materials and audio-visual (AV) equipment (see Figure 6.7). Exhibitions often use AV equipment, which there is always a need for⁴, so on top of allowing for leftover objects and materials to stay in circulation, a need is hereby recognized to also enable AV equipment to be shared.

⁴ The need was brought up by Valge Kuup, who mentioned, that AV equipment is often searched for around the field, whether it be a projector missing from one exhibition or a screen missing from another.

Each of the three categories can also include sub-categories. Objects might include different types of displays (wall, floor, ceiling) as well as complementary items, such as benches and mirrors. Materials might include fabrics and various (leftover) building materials, such as sheets of glass and acrylic, pieces of wood. Sub-categories can be requested to be added, as members see fit.

Digital warehouse also includes search and filtering options, which allows for items to be searched by entering keywords, and filter by colour, quantity, dimensions, weight, condition, availability.

Physical storage

VÄLI physical storage includes warehouse spaces distributed in strategic locations across the country. Majority of museums and galleries are located in Harju and Tartu County; others are spread across Estonia. As setting up warehouses is not an easy, nor inexpensive task, then first two warehouses would be set up in Harju and Tartu County to develop a system that works best for the field. The first two warehouses will also help provide valuable data on where subsequent warehouses could be set up.

Uploaded objects and materials can either be stored in the institution's own storage, if possible, or in VÄLI warehouses. Storage space in warehouses can be rented for leftover objects and materials for a fee⁵, and this fee also ensures those items are taken good care of. Warehouses are managed by NGO staff, who oversee that information displayed on object/ material passports is always accurate. When objects and materials are stored in VÄLI storage, then NGO also takes care of bookings.

⁵Cost structure is further explained in following sub-chapter.



Figure 6.8. Objects and materials in VÄLI storage linked to passports via QR code. Made by the author. Figure contains resources from canva.com.

Sorting system in the warehouses imitates the categorizing in digital warehouse, so that the logic is the same throughout the platform and therefore easy to follow. VÄLI members are also able to visit the warehouses to browse items with their own eyes. Each item is linked with a QR code, which opens the item's passport in the digital environment and allows to make a booking (see Figure 6.8).

6.2.2 Renting objects and materials for exhibitions

Objects and materials, that have been made available through VÄLI, can be rented by all platform members to be used in exhibitions.

Booking objects/ materials



Figure 6.9. Digital warehouse: Complementary objects category. Made by the author. Figure contains resources from canva.com.

Items are available for booking right after they have been uploaded to the digital warehouse. Members can browse the items in the digital warehouse (see Figure 6.9), see their availability and view object/ material passports for detailed information. Items can be booked by any member of the platform for any amount of time. The booking period must be set when booking the item, but the period can be changed, if the schedule allows.

When booking an item, which consists of a set (quantity is more than 1), then a member has the option to either book the full set or a part of it. When booking a part of an “object” or a “material”, then the passport automatically splits into two, making the remaining part available. This triggers the NGO to check that both passports are depicting accurate information.

The member booking the item must also add a short note to the booking informing other members, whether any alterations are planned to be made which would change the

appearance of the object/ material. This will allow other members to evaluate, whether the item, after alterations, might be fit for their exhibition and can thus be booked.

Transporting objects/ materials

Transporting items can be organised by the member, who has made the booking, or provided by VÄLI on request. In case the booked item is in another museum/ gallery, then collection is organised directly with the museum/ gallery (with the member who has made the previous booking). If the item is in VÄLI storage, then collection is organised with the NGO.

Modifying and altering objects/ materials during use

If object/ material passport allows for minor/ major modifications to be made to the items, then as the items are modified, the passports get updated and the object/ material journey is constantly being documented, which is great for recollection. If modifications are only done to a part of an "object" or a "material" instead of a full set (e.g., colour is changed for half), then a new passport is created for the modified part, making it two separate "objects" or "materials". This is to ensure that each passport represents a cohesive set of elements.

Updating object/ material passports

After every use (booking) the object/ material passport gets updated, whether the item was altered or not. The member who made the booking for the item is also required to provide the updates to keep the object/ material passport accurate.

If the object or material itself was not modified and it is in the same exact condition as it arrived, then the member would only need to document the "previous life" section (which exhibition the object/ material was used at and how).

End of booking

Ideally, objects and materials would constantly be in use from one exhibition to the next, so as one booking ends, another one begins, and the objects/ materials would be in a circulation flow. Planning for exhibitions years ahead can make this possible for certain number of objects and materials, moreover, by making the information on available objects/ materials accessible, lesser new objects and materials would eventually have to be purchased, and more would be in circulation. Realistically, however, not all items will always be in use.

A few scenarios are possible at the end of booking:

- a) As one booking ends, another one begins, so booked item(s) are transported from one exhibition space to the next.
- b) There is a gap between end of one booking and beginning of another one, so depending on the possibilities and prior arrangements, the booked item(s) can
 - a. stay in the previous exhibition space, until they are collected by the next renter,
 - b. be transported to the following exhibition space to be stored until they can be installed,
 - c. be transported to VÄLI storage, if either of the above options is possible (either museum/ gallery has enough storage space).
- c) No further bookings have yet been made, or the gap between bookings is too long, so the item is transported back to owner of the object/ material, or to VÄLI storage.

6.2.3 Knowledge hub

On top of keeping objects and materials in circulation, VÄLI digital environment enables members to share knowledge and expertise, learn from each other's experiences and inspire innovation in exhibition practices. This is a way of connecting members and enabling collaboration between them.

VÄLI knowledge hub is organised by taking into consideration that a) information can quickly become overwhelming, when not properly organised, and b) not all information is useful for everyone. The knowledge hub consists of "digital notice board", "search board" and "knowledge base".

Digital notice board

Digital notice board is where all important announcements valuable for all members are shared. Anyone can share notices on the board but should ensure, that the information will be found useful by all members of VÄLI. Notices can be liked, saved and commented.

Search board

Although the digital warehouse is bound to be extensive, there can be occasions where objects or materials needed for an exhibition are highly specific and are not available in the warehouse. Search board is meant to be used for searching objects and materials that cannot be found on the digital warehouse.

Search board falls under the digital notice board in that information shared on search board is visible to all members, however it keeps the information separate and easier to follow. Members can make a post about whatever it is they are trying to find, and other members can comment to help solve the quest.

The created threads in search board will be marked as “solved” once the searcher has found the item they were looking for. The threads can also be saved by other members for when they believe, they might be needing this information in the future.

Knowledge base

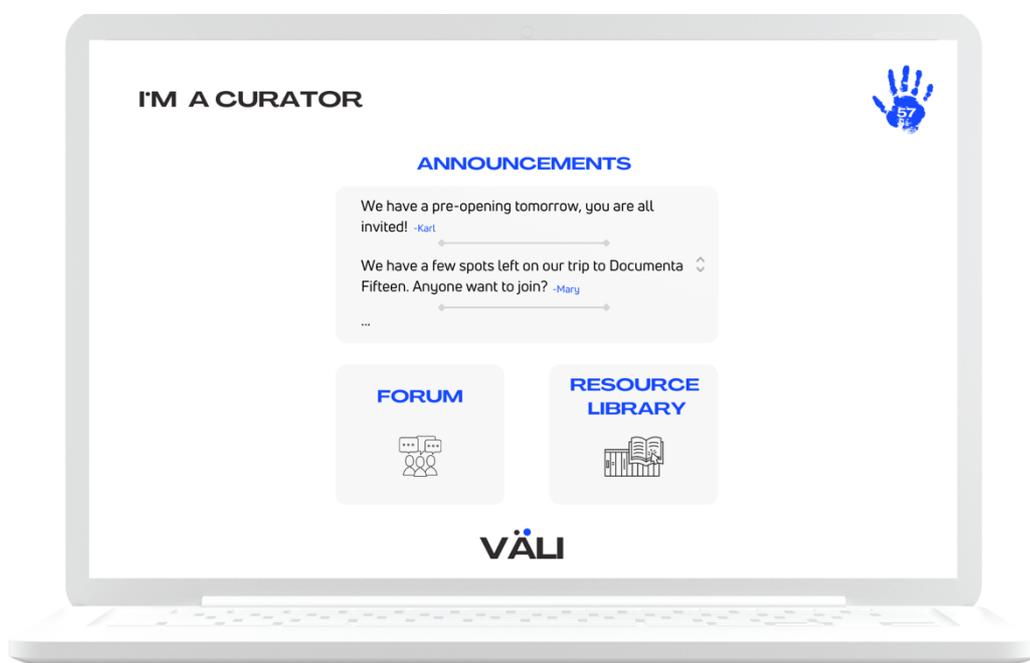


Figure 6.10. Knowledge base home page view. Made by the author. Figure contains resources from canva.com.

VÄLI members are automatically divided into groups based on professions added to Member profile. This means that each member group has its own “base” for sharing information and knowledge on their practices specifically related to their profession. All members are still able to view and contribute to each group’s base, but as a default will only see their own group’s activities.

Knowledge base includes a set of collaboration tools to make it easier for group members to sort the information and organise their “base” (see Figure 6.10). Available tools include:

- **Home page-** provides a general overview of the group's latest activities and shows group announcements.
- **Forum-** allows to ask questions and have conversations, share experiences with group members and discuss solutions to problems.
- **Resource library-** includes a collection of images, videos and editable documents with instructional information on specific aspects in exhibition planning; co-created with group members.
- **Announcements-** allows to share important announcements valuable for all group members.

Member contributions

Counting the carbon footprint of an exhibition, an organization, or even each individual actor can become unmotivating, as it holds a negative undertone. Carbon footprint is a great indicator for measuring the negative impact of our activities, but it generally refers to having to introduce restrictions or entirely change the way things have been done so far, which threatens to have an opposite effect where, instead of being motivated to change, the matter is ignored or postponed.

Instead of counting carbon footprint, VÄLI introduces a "handprint" element to the digital part of the platform. The handprint brings in an element of playfulness and serves as a source of excitement and inspiration, as well as a healthy dose of competition and a unifying symbol.

The idea behind the handprint element is that sustainability requires a hands-on approach, and everyone must be engaged with the process. The "handprint" counts member contributions to the platform (community) showing how engaged and active a member is- how much they collaborate and share knowledge, how involved they are in different activities. Every contribution (e.g., posting in forum, commenting on a post, contributing to resource library) counts as a 'point'.



Figure 6.11. Handprint as a signifier in an exhibition space. Made by the author. Figure contains resources from canva.com.

The “handprint” also has the opportunity to become a unifying symbol in the field. The symbol can be used to show exhibition audiences, how many people contribute to exhibition making, acting as a signifier in online and offline marketing materials as well as in an exhibition space (see Figure 6.11), where it would not affect the overall aesthetics or the idea of the exhibition itself.

6.3 Managing and cost

Incorporating digital environment with physical space (warehouses) as well as having an NGO operate the platform requires a cost structure to be set up for the platform to be self-sufficient. While the general approach to the platform is that it is meant to be open and accessible for the whole network, then keeping the platform running needs a system to be in place.

6.3.1 Platform management

The platform is managed by an NGO, who oversees that the digital environment functions properly as well as operates the two warehouses and organises transportation of objects/ materials on request. The minimum requirement for the platform to be able to run smoothly would be 4 staff members, each responsible for one of the above tasks: two people operating the two warehouses, one organising transportation/ transporting items and one managing the digital space.

6.3.2 Platform costs

The platform offers two types of services for a fee. Firstly, the digital platform allows for objects and materials to be uploaded for renting, selling, lending or giving away. Secondly, the physical warehouses offer storage options, which can be rented from VÄLI.

Renting objects/ materials

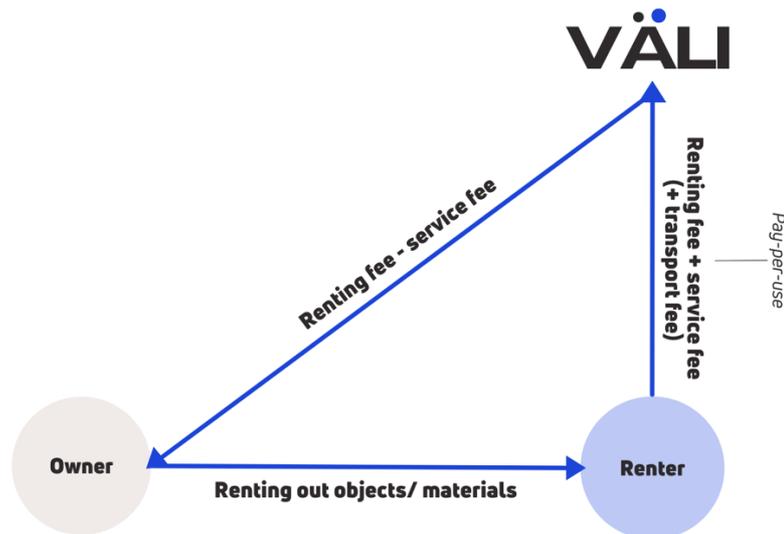


Figure 6.12. Pay-per-use model for renting objects/ materials. Made by the author.

As the owner of objects/ materials uploads leftover items to VÄLI for rent, other members can rent them out on a *pay-per-use* basis (see Figure 6.12).

- **Renting fee-** 'per-day' fee set by the owner, fee for renter calculated in total renting days.
- **Service fee-** platform fee calculated as a percentage from total renting fee, or a set fee.
- **Transport fee-** transport can be chosen as an additional service provided by VÄLI.

Renter pays when making the booking and renting fee is released to the owner once the booking period is over. Transporting the objects from owner to renter is either organised between the owner and the renter, or by VÄLI (for a transport fee).

At the end of renting period, as previously described, few scenarios are possible:

- a) If there is another booking right after, then booked item(s) can be transported from one renter to the next.
- b) If no further bookings follow, then booked item(s) are
 - a. transported back to VÄLI storage,
 - b. transported back to owner.

For the owner and renter, the renting model always stays the same, whatever the scenario, but what changes is the location of the objects/ materials. Location is dependent on bookings and determines, where the items can be collected from and where they should be dropped off. Sufficient planning will help avoid unnecessary transportation and allow for better circulation of objects and materials.

Selling objects/ materials

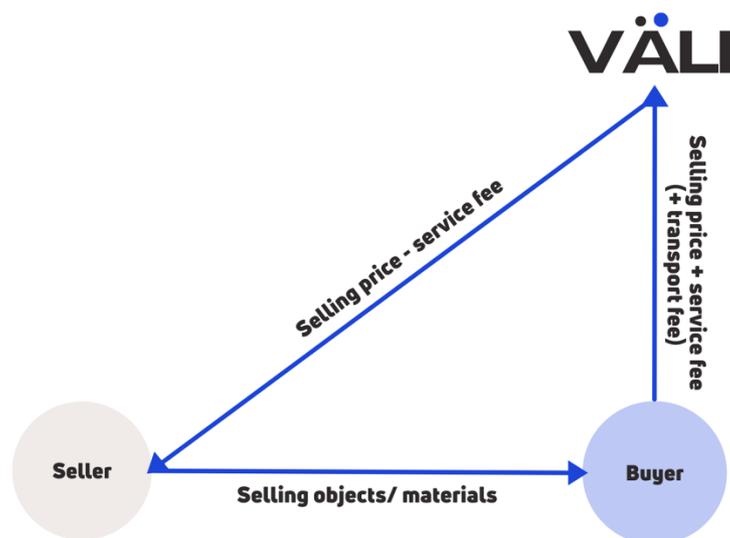


Figure 6.13. Cost model for selling objects/ materials. Made by the author.

Similar to renting model, selling model includes three types of costs (see Figure 6.13).

- **Selling price-** price set for the object/ material being sold.
- **Service fee-** platform fee calculated as a percentage from selling price.
- **Transport fee-** transport can be chosen as an additional service provided by VÄLI.

Buyer pays for the item through VÄLI and transporting the objects from seller to buyer is either organised between the seller and buyer, or by VÄLI (for a transport fee).

Museums and galleries might be interested in buying instead of renting especially when the renting period would end up being too long, they wish to completely modify the items and/ or believe that they could use the object/ material for several exhibitions in a row and hence it would be useful to own rather than rent.

Lending objects/ materials

On occasions, institutions might prefer lending to renting objects and materials. Since the essence of 'lending' is that it is meant to be a free service, then the platform would also not add any additional costs to lending.

Giving objects/ materials away for free

Certain leftover objects and materials might already be near the end-of-life stage when uploaded to VÄLI but could still be found useful in some exhibition. Those objects and materials can be given away for free and since the essence of 'giving away' is that it is meant to be for free, then the platform would also not add any additional costs to this model.

Renting warehouse space

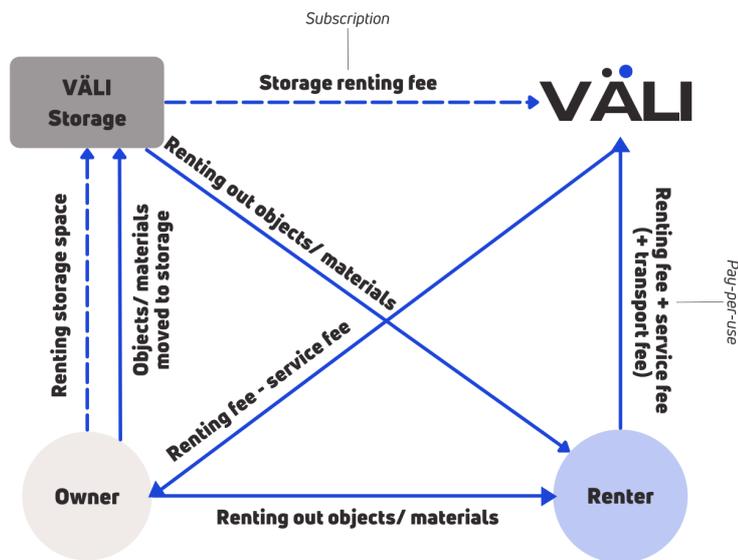


Figure 6.14. Subscription model for renting storage space. Made by the author.

If the owner has no storage space in their institution, then VÄLI warehouses can be utilised for storing leftover objects and materials. Storage space can be rented out for a subscription-based fee (see Figure 6.14) and is calculated based on how much room the "object" or "material" takes.

When storing items in VÄLI storage, then VÄLI takes care of renting out the items (included in storage renting fee), so the owner and renter would not need to come into contact to organise transport, but interaction would only take place between the renter and VÄLI. The cost model for the renter does not change and at the end of booking, the owner will still receive the renting fee.

6.4 Other considerations

End-of-life

While the platform aims to keep leftover objects and materials in circulation for as much and long as possible, then eventually, the items will reach the end-of-life stage, where they can no longer be utilised for exhibitions. End-of-life management can be carried out by the NGO, who oversees that the objects and materials are properly recycled. As described in the service system map (refer to Figure 6.3), every time an object or a material is made available through VÄLI and delivered to VÄLI storage, the NGO performs an assessment on the condition of the objects/ materials. The same happens, when items have been in use (rented out) and are returned to VÄLI. This is where the state of the objects and materials is checked and where it can be evaluated whether the items can be used further or need to be recycled.

Open platform concept

While the platform is meant to be used by professionals involved in exhibition making, then considering that there exist material leftovers from other fields which can find use in exhibition design and production, an open platform concept is proposed. This means that while only exhibition professionals will have access to the platform, other organizations, companies and individuals not directly involved with exhibition making will be able to offer their leftover objects and materials for use in exhibitions. The NGO acts as an intermediary between these agents and VÄLI, and evaluates which items are accepted (can be reused for exhibitions) and which are not.

The open platform concept allows for partnerships to be developed between VÄLI and organisations, businesses and individuals. Considering the "search board" component of the platform (refer to section 6.2.3), the NGO can assist platform members in finding needed objects and materials through these partnerships.

6.5 Use cases

Following use cases illustrate possible scenarios for actors engaging with VÄLI platform. All use cases described below have been concluded in a journey map available in appendix B.

Planning ahead

As new objects and materials are acquired for an exhibition, it can already be evaluated by exhibition teams, if the acquired items will be left over after the exhibition and can be rented out or passed on. Exhibition teams can upload the items to VÄLI before they even go to first use and set the availability as from beginning of deinstallation phase of the exhibition. This will allow for other exhibition spaces to pre-book the items and for objects and materials to enter the circular system right when they are bought or produced.

Overlapping exhibition phases

VÄLI allows exhibition teams to organise for leftover objects and materials to move directly from one exhibition's deinstallation phase to another one's installation phase. This is made possible through sharing information on leftover items well before they are actually "left over". Exhibitions are usually planned more than a year ahead, so connecting different exhibition teams across museums and galleries will allow to see where the phases can overlap and plan accordingly.

Leftovers without a storage option

VÄLI storage solutions can be utilised, when museums and galleries have no storage space of their own. Objects and materials are accepted to VÄLI storage by the NGO, who then handles all bookings and ensures that the items are taken good care of. Responsibility can be taken off from the shoulders of exhibition institutions, who have many leftovers, but lack time or have no people to assign to the task to handle leftovers, but still wish to contribute to circularity.

Assembly of objects and materials from various exhibitions

As exhibitions are mostly planned at least over a year ahead, then exhibition teams can assemble all the necessary elements together from various exhibitions. Some objects and materials from different exhibitions might end up being merged into one "object", whereas others, that come in sets, might be split between different exhibitions and start different journeys.

Documenting exhibitions

As objects and materials are used in various exhibitions, their journey is documented via the 'Previous life' section in object/ material passports. This will eventually result in an extensive exhibition database, where the "behind-the-scenes" type of information on exhibitions is gathered, which is especially useful for exhibition teams when wanting to know about the specifics of a certain exhibition.

6.6 Concept evaluation

For evaluating the design concept, the VÄLI platform was introduced to two participants from the co-design workshop, one of whom was also an interviewee. On both occasions, the concept presentation took place over a video call, where service maps and wireframes were presented.

Both evaluation sessions confirmed that the platform flow with its described components and functionalities as well as the management and cost structure were understandable and logical. The sessions also corroborated that the developed solution would be practical and useful for improving exhibition making and would help tackle several challenges at once.

In one of the sessions, it was mentioned that the end-of-life of materials and objects could use a developed system as, not only do the objects and materials require the checking of the condition, but the utilisation aspect also needs attention. While it is suggested that utilisation is mostly done by the NGO, who ensures that the objects and materials that can no longer be used are properly recycled, then a more detailed utilisation structure could be beneficial for the platform.

Another session referred to the circularity aspect where it was discussed, that through VÄLI, many objects and materials could move from exhibition to exhibition and constantly be in use, instead of being returned to storage after each exhibition and then transported to the next space. This means that exhibition spaces (exhibition teams) would also be responsible for checking the items (evaluating the condition), as the NGO would not be able to perform this task.

Finally, the funding of the platform was one of the elements that raised curiosity in both sessions. It was discussed that public funding (e.g., EU green/sustainable investment funds) would be an option to explore, but the platform could also be developed on private funding as the goal is for the platform to be self-sufficient.

6.7 Further development

The cost structure developed for the platform, although validated with two exhibition professionals, certainly has room for further development. While the described solution suggested that lending and giving away for free is done without any costs, then it should be investigated how much the two models might occur and whether the zero cost is feasible.

This thesis did also not explore funding opportunities for the described platform, however the cost model of VÄLI has been developed while keeping in mind, that the platform should be self-sufficient. As many museums and galleries are publicly funded, then public investment opportunities could be explored. At the same time, factoring in the self-sufficiency of the platform, the platform could also be privately funded.

Another area to explore would be the inclusion of exhibition audiences in the pre-exhibition phase. Exhibitions could be co-created together with audiences, and audiences would experience first-hand, how resource-heavy exhibition production is and what exhibition teams are doing to improve the practices. This could be a way of influencing the audiences to think and act sustainably in every aspect of life.

The thesis did also not investigate any legal frameworks which, considering that many museums and galleries are also publicly funded, would be one of the next steps for further concept validation. This would point out, which policies affect the platform and how, as well as demonstrate any limitations that might affect museums and galleries engaging with the platform.

Finally, it would be highly recommended to explore, how the rest of the culture sector could and would engage with the developed concept. The platform model could potentially work for the whole sector, but further research would be required to understand, if a cohesive platform is the most optimal solution, or each branch in the sector would be more effective having (at least part of the platform) personalised for their field.

6.8 Conclusion

The proposed solution for the design concept helps tackle the key findings from research. VÄLI platform allows for leftover objects and materials from exhibitions to stay in circulation, and through making the information on leftover items transparent

and accessible, lesser new objects and materials might eventually need to be purchased or produced.

The platform improves planning capacity as stakeholders will be able to merge the planning for exhibitions across museums and galleries. Instead of only planning for a single exhibition from its pre-exhibition to post-exhibition phase, the use of resources can be planned from one's pre-exhibition to another's pre-exhibition phase.

While the platform can help leftover objects and materials to stay in constant circulation, moving from exhibition to exhibition, not all items will always be in use and the lack of storage solutions is still relevant. VÄLI solves this by introducing warehouses, where leftover objects and materials can be stored. Storing items with VÄLI ensures that the objects and materials are taken good care of, and bookings are handled by VÄLI.

Finally, the platform enables stakeholders to exchange ideas and share their knowledge and expertise. Each stakeholder group has its own "base" in the digital environment for sharing practices specifically related to their profession. A set of collaboration tools are included to make it easier for group members to sort the shared information and organise their "base".

The proposed solution can cater to many different journeys that emerge in the exhibition field. By bringing stakeholders together and enabling collaboration, it can help reshape exhibition practices in museums and galleries to be more efficient, but also kind towards the social and environmental spheres.

SUMMARY

This thesis project explored museums on a sustainability journey with the focus on exhibition making. Organising exhibitions uses a lot of valuable resources, so recognizing these resources and identifying how they could be better utilised, exhibition practices in museums and galleries can be improved for a sustainable change in exhibition making.

Through the research it was visible that heavy use of raw materials occurs each time an exhibition is organised, and minimal reuse of leftover objects and materials exists due to lack of structures supporting circularity. A concerning factor is also lack of storage options for leftover objects and materials, which almost forces exhibition teams to make unsustainable choices.

The research also made it apparent, that not much collaboration is happening between the different exhibition institutions and exhibition teams. Exhibition practices as well as resources required for exhibition making are similar across museums and galleries, so sharing knowledge and expertise would help avoid wasting a lot of unnecessary time, which is currently spent on dealing with excessive planning and organising.

As a solution for the design concept, VÄLI platform is proposed, which illustrates how an emergence of a new service platform would reshape the current network through enabling collaboration and allowing for leftover objects and materials from exhibitions to stay in circulation. VÄLI is a collaborative service platform for connecting exhibition professionals to support sustainable planning and organising of exhibitions. The platform incorporates physical and digital space to solve the lack of storage options, make information about leftover objects and materials available and accessible, and improve planning for exhibitions, all through member contribution and collaboration.

The thesis concludes that a platform like VÄLI can help reshape exhibition practices in museums and galleries for a sustainable change in exhibition making. The platform tackles the key concerns that emerged through research and offers a solution, which can help shift the current system in place.

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APPENDICES

A. Interviewees and discussed topics

Maria Arusoo, Director of Estonian Centre for Contemporary Art, and a Guest Curator in Kumu Art Museum; **Kaarin Kivirähk**, Communication and Project Manager in Estonian Centre for Contemporary Art. (10.01.2022)

- The elements of curatorial work.
- Differences in curatorial work for staff curators (curators employed by museums or galleries) vs independent curators.
- Sustainable curating practices.
- The struggles of practicing sustainable curating.

Conclusions:

In simple terms, curatorial work involves exhibition production and development, dialogue with artists, space design. Curators can be divided into two groups: staff curators (employed by museums or galleries) and independent curators (freelancers). Curatorial work is dependent on many different factors, such as the museum type, size of the institution, production type, program type, etc. One of the main benefits of being a museum curator is that museums allow the curators become specialists in a specific subject. By allowing the curator to be a researcher, the curator can considerably contribute to the museum's exhibition, acquisition, and publication programs.

Curators must constantly accommodate their working methods to best fit the current trends and coming times, therefore with the current sustainability movement curators are also adjusting their practices. Sustainable curating considers many different elements, such as environmental aspects and travel related matters as well as mental health concerns, family matters, fair pays and slowing down the work-pace, but also how the work speaks to different cultures and the representation of a variety artists.

The main concerns with the sustainability movement in curatorial practices involve lack of supporting structures and changes being required to be made at all levels, going up to the state level, which makes the process slow. The system also demands constant novelty from curators (and art professionals in general), so enormous pressure is put on curators to constantly come up with new ideas, which in itself is not sustainable

thinking. Institutions also tend to place full responsibility on the shoulders of the curator/artist, which is rather short-sighted, as everyone should be aware and involved in sustainable practices.

Karen Jagodin, COO of Vabamu Museum. (17.01.2022)

- Sustainability in the context of Vabamu.
- Differences between private and public museums.
- First steps to becoming a sustainable organisation.
- Differences in curatorial work in private vs public museums.
- How to begin a discussion on sustainability with museums.

Conclusions:

Vabamu, as a private museum, is much more receptive to changes. Private museums tend to be more dynamic, and changes can be applied quickly. At the same time, private museums are also more vulnerable to changes happening in the economy and the society as their income is directly related to how many visitors they have. Private museums rely heavily on the visitor count as well as on private investments.

When talking about sustainability, the first step needs to be awareness. Museums also need to understand, what benefits becoming sustainable brings. While everyone needs to take responsibility, it is also important for someone to fully be responsible on sustainability matters and draw others to it. Sustainability in museums is a much more substantive discussion, then might appear at first as we also need to consider the balance between impact vs benefit for museums.

When talking about curatorial work, then the main difference for curators in public vs private museums comes in from curators in private museums also needing to bring in investments to be able to create exhibitions. In private museums, curators usually also have several roles in one- they are also project managers of the exhibitions (which can be a separate person in larger institutions).

Vabamu works closely with their community and feels very strongly about being a museum, but also being so much more than that. They also see themselves as community supporters-enrichers and work closely with various NGOs. They have a very open and inclusive culture and one of their core values is providing a platform in the society for a unifying debate.

Museums are not yet very keen to talk about sustainability matters as it certainly is an imperceptible and an intimidating topic, hence museums tend to have many fears, monetary and other, related to it. In order to begin the discussion with museums, one of the options would be to offer support and help museums make a self-analysis, from which the museum will become more aware of their current situation and will be able to discuss sustainability more openly.

Anders Härm, Curator, Lecturer and Head of the Curatorial studies module of the Art History MA programme at Estonian Academy of Arts. (28.01.2022)

- History of curatorship.
- How the curatorial study programme has changed over the years.
- Dividing curators into different categories.
- Different journeys to becoming a curator.
- Necessary characteristics for a curator.

Conclusions:

Curatorial studies are relatively new around the world. The first universities started offering curatorial studies back in the 80s and we can distinguish two types of ways curatorship is being taught- one is more practical usually taught in art institutions, and other is more theoretical usually taught in academic institutions. In EKA, the curatorial program is rather balanced between theoretical and practical.

Since the curatorial practice itself is relatively young, the contents of the curriculum haven't changed much, but the studies are certainly affected by various trends, such as sustainability or digitalization. There are also two fighting paradigms in teaching curatorship- we either teach curators several craft techniques that they can apply for their work, or we teach that each curator should reinvent curation for himself.

The history of art in the last 50 years has been the history of exhibitions. Major breakthroughs have been illustrated through exhibitions- exhibitions are influential. On the one hand, exhibitions have mapped the changes happening in the world, and on the other exhibitions have been the cause for change. Curatorship started out as a compromise between art that had been longing to get out from the institutions in the 1960s. Contemporary art became a commodity.

In the 1980s, curators started taking over the role of art critics and in the 1990s there was an explosion of biennales in the world, which lead to the realization that curatorship

should be taught in universities. Prior to being taught in schools, and today, curators can have diverse backgrounds and don't necessarily need to be art history majors. Educational diversity is enriching, however, those from elsewhere backgrounds lack deep knowledge of art history, which can be both- a good and a bad thing. On one hand, those with no knowledge of art history also have no prejudices, but at the same time they lack ideology. Having a different background, it is generally easier for the courier to ignore ideologies and overcome the hierarchical pyramid in the field; at the same time being an expert in the field requires certain knowledges that can't be overlooked.

One way to divide curators is to divide them into two groups- ones who work with works of art and others who work with artists. The first ones try to make sense of processes through the works. They are theoretician-curators, rather observing processes from the side. The second ones very clearly base their work on the wishes and needs of artists. They are more managerial types, organizationally competent. While curatorial work involves many different elements and differs quite a bit from curator to curator, then one of the characteristics that each curator must have to excel is self-criticism. Whether working with artists or works of art, whether working freelance or in a museum, whether doing public or private work, it is very important for the curator to be highly critical of oneself.

Ketli Tiitsar, Project Manager of Exhibitions at Estonian Museum of Applied Art and Design (03.03.2022)

- Exhibition planning in a museum.
- Installing and deinstalling of an exhibition.
- Prejudices of state museums vs the actual situation.
- Job responsibilities of a project manager of exhibitions vs what the job actually entails.
- The time-consuming nature of reuse and recycling and the prejudices that come with reuse.

Conclusions:

The Estonian Museum of Applied Art and Design is a state museum run by a relatively small team of less than 10 people. Although being under the state gives the museum stability and access to a supportive network, then despite many prejudices there is no constant flow of funding and exhibition budgets are rather small. This, in turn, means that the team often has to go to extra lengths for the exhibition production, where

sustainability is not the driving force for the museum to be sustainable, but it rather stems from a practical need (lack of resources).

While the exhibition manager is responsible for overseeing entire exhibits from the initial planning process to the installing, running and deinstalling of the exhibitions, the reality is that most of the time is spent on finding people who know people who, in their attics and garages (hidden spaces), have the sought items needed to build up the exhibition. Another large part of time is spent on lending the items on, as almost after each exhibition, several people in the art and culture sector are interested in some of the details that were used in the exhibition. This, however, requires the exhibition manager to take photos of the items, measure the items, exchange messages and organise the meet ups.

Lending inventory from the museum often comes with prejudices that the museum has prepared and wrapped everything for the lender and will help carry the stuff out from the museum, which is not part of any of the employee's job responsibilities. People in the art and culture sector are inherently helpful and supportive, but as all this extra organising takes up valuable time, then it is not sustainable in the long run.

Jaana Jüris, Co-Founder of Valge Kuup (04.03.2022)

- The gap in the art scene that Valge Kuup came to fill.
- What exhibition design and production entails.
- How much influence/ dictating power the production studio has over exhibitions.
- Trends in exhibition design and production.
- What is missing in the art scene today that would benefit everyone in the field.

Conclusions:

Valge Kuup is a production studio offering artists and various art institutions (museums, galleries) exhibition design and production services, art fabrication and artwork installation. Valge Kuup began offering their services in 2012, when the founder, who was then offering design services for TV and film, realised that artists rarely had the opportunity to organise large productions, because they lacked the necessary team. Back then, production teams were also scattered, and institutions used to only offer exhibition spaces without any additional services/ help, so the exhibition organisers always had to assemble their own teams. Valge Kuup came to change the situation.

Exhibition design and production can begin from different stages in the planning phase and is dependent on how much the artist/ curator has prepared beforehand. The production team can come in right in the beginning, when the exhibition is still in its 'idea' phase, but the team can also be invited in later, when the artist/ curator already has a clear vision and Valge Kuup will help with technical drawings, budgeting, and all that follows to bring an exhibition to life.

Exhibition productions are highly resource heavy. Due to the fast-paced environment (deinstallation and installation of exhibitions is required to happen extremely fast) and all the many (technical) possibilities that have emerged, constructions have become more complex and there is a constant lack of time, which in turn can prevent teams from finding valuable information for smarter productions.

When it comes to the different elements needed to build up an exhibition, there would be no need to invest in new materials/ products. Much is already out there that could be put into use again, but it is often hidden away (in attics and garages, across the country) and not readily available. While buying new materials or renting some products for the whole exhibition period can be much more costly than lending those items from someone's garage, then finding this 'garage' can be very time-consuming with no clear way of knowing, if the mission is going to be a success.

Although the Estonian art scene is currently fast paced, there are some detectable signs showing the slowing down trend (planning fewer exhibitions per year, while each exhibition can then be open for longer). Exhibition production is also directly influenced by the sustainability trend, and it is noticeable, how people's mindsets are changing, and reuse is getting more attention. Exhibition design and production teams also have the power to dictate quite a bit, especially when it comes to choosing whether to use new or existing products and materials, meaning that they have a key role to play in the whole field moving towards sustainable thinking.

Laura Jamsja, Visitor Experience Lead at Kalamaja Museum (04.03.2022)

- Community-based museum development concept.
- The pros and cons of being under the state for a community-based museum.
- The presence of community involvement in a community-based museum and how community involvement is organised.

Conclusions:

Kalamaja community museum is a jointly run project with locals (the community). Such method of creating and running a museum is unique in Estonia and started out from a simple survey asking locals what they were missing in the Kalamaja area. The community has contributed to the creating of the museum by sharing their stories and donating items, and the Kalamaja museum collection is ever evolving.

The museum is also unique in the sense, that it is not community-owned, but belongs to the state. The Kalamaja museum belongs under the Tallinn City Museum and this has given the museum several advantages, but also comes with some disadvantages. When the idea of wanting to develop a community-based museum first emerged, it was not warmly welcomed nor strongly supported, but rather received some scepticism resulting with a bumpy start. With strong belief, enthusiasm and help from the community the team managed to keep going and finally proved themselves and the concept. Now, being a state museum gives them stability, the platform to reach wider audiences and a supportive network.

The Kalamaja community is always present in the museum and involved in most of the decisions taken. Next to the permanent exhibition the museum also provides a space for the community to organise their own exhibitions or events and tell their stories in a more intimate way. It is during these various events that the community comes together, and the museum space is filled with new extra stories about life in Kalamaja in the past and present.

Siim Preiman, Curator of Tallinn Art Hall (09.03.2022)

- The journey to becoming a curator.
- Sustainable curating- what, how and why.
- Working in alternative vs institutional spaces.
- Working together with communities.
- Current trends in conceiving and organizing exhibitions.
- What is lacking in the art scene today that would benefit everyone in the field.

Conclusions:

The journey to becoming a curator can vary a lot. While theoretical knowledge is important, then through practical work is how the curator finds their path. For Siim, the topics for curating are always autobiographical, and so did the topic of sustainability

become a constant part of his work through his own belief system. Art is a way of communication and communication is done best, when the topic being presented comes effortlessly to the person telling the story (their values are represented in their creation).

Creating an exhibition is both, physical and mental work- all levels are very important. When still in the beginning of the curating journey, most exhibitions are organised in alternative spaces and require a lot of hands-on work. The budgets are low, and the reuse (sustainability) element comes in from the pure need. Later, when work moves to institutional spaces and possibilities increase, the opposite effect emerges (or should emerge) in how to reduce the format. But the wish to create a 'real' exhibition always stays and there is a constant dilemma of wanting to be sustainable but not wanting to compromise for the aesthetics. Sustainable solutions should be seamless and able to offer the 'real' experience.

Being close to people (the community) is important for the curator as the curator is the one mediating the ideas topical in the society. Curator-led tours are integral for both, the curator and the audience as they allow for an intimate space between the two actors where direct dialogue and feedback are enabled.

Besides the sustainability trend, also a slowing down trend can be detected in the field. These two trends certainly go hand-in-hand, but the slowing down is something everyone in the field is noticing. It's about organising fewer exhibitions per year and leaving more room for the planning, installation, and de-installation phase, but it's also about wellbeing, about valuing handicrafts, about bringing back lost skills (investing in people rather than in lifeless objects). Another trend worth mentioning in the arts sector is dystopia. Visualizing the future through a warning prism is a noticeable theme in artworks as well as exhibitions.

Sustainability is one large battle and all the small individual and isolated battles we fight for sustainability are part of the same large battle. The understanding needs to get through that we're fighting for the same planet, we're trying to better the same system and we are all in this together. We are currently lacking competence and hoping for the value systems of the different agents to develop for the processes to start running more seamlessly, so that everyone could again focus on the contents (= what's important for each) and leave other matters for the relevant entities.

Berit Teeäär, Export Manager at Valge Kuup Studio; **Jaana Jüris**, Co-Founder of Valge Kuup Studio (30.03.2022)

- The planning phase of an exhibition as the most crucial part of the sustainability discourse.
- Lack of warehouse space as one of the root problems.
- Lack of supporting structures- a need for a clear system.
- The positive influence that lack of resources has on sustainability.

Conclusions:

For a sustainable exhibition life cycle, there needs to be a very clear system in place. Information needs to be available and transparent, and access to information as seamless as possible. Support is needed from all levels- not only institutions themselves or specific stakeholder groups should be assigned with the task, but the public level should also support, even encourage sustainable development.

Reusing and repurposing objects and materials has always been a part of exhibition planning, but this stems from actual need, not necessarily principles. It can thus be said that poverty in the arts field has had a positive effect on sustainability. It is only as of late, that sustainable thinking is reaching the disciplines.

Institutions, today, are not technically prepared to further handle leftover objects and materials post-exhibition. One of the main concerns for most is lack of warehouse space, but it all comes down to planning. Instead of dealing with leftovers in the post-exhibition phase, the cycle should be considered ahead. Exhibition teams know the objects and materials that are going to be used in an exhibition ahead of time, so making this information available for everyone in the field would be highly beneficial for other teams planning for future exhibitions.

B. Use cases journey map

