Luna

Rethinking museums after Covid-19

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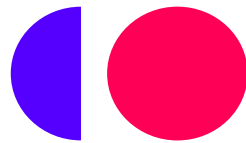
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"Culture makes us resilient and gives us hope. It reminds us that we are not alone. We need a concerted and global effort to support artists and ensure access to culture for all."

UNESCO 2020

Abstract

English version

The COVID-19 pandemic represents not only a global health crisis, but also an unprecedented socio-economic crisis. Culture is one of the most affected sectors with huge income loss. While many digital initiatives to deliver alternative and innovative forms of learning and inspiration are born, existing gaps and differences between institutions around the globe emerged, such as lacking skills, knowledge and flexibility. These factors can lead to museums having to decrease or stop their main activities in service of society, or even facing the threat of permanent closure. On the other hand, the pandemic is accelerating the societal change and transformation, highlighting new opportunities such as taking advantage of the digital channels and tools and therefore connecting and engaging the public, but also collaborating with other institutions in order to become stronger together.

Italy is certainly one of the Countries most severely hit by COVID-19 since March 2020. The pandemic has suddenly stopped the increasing trend of tourism resetting the cultural participation with a decrease of more than 70%. For 2020 only, it can be estimated that the public of museums, monuments and archaeological areas under state management (so not considering 4.416 independent institutions) would have been of 59.2 million visitors, and that would have made it possible to realize revenues of over 273 million €. In general, the Italian system appears fragmented because it is characterized by many small territorial museums, different resources available, by the presence of public and private management (municipal, national, ecclesiastical, etc.) and different territorial policies and visions. Overall, the digital innovation, with a few exceptions, is often limited to the management of the website and communication on social media. One of the main barriers to the development of digital in the sector is the lack of economic resources to invest in technological infrastructure.

The cultural participation of Italian people is very low with only 3 out of 10 who have visited a museum at least one time in 2019, in addition the majority of the public is focused mainly in the most well-known structures at international level. Cultural institutions in the world are trying to know better their public with its needs, expectations and desires in order to offer the best experience. Unfortunately, some of these needs and motivations in visiting museums and in general in practicing leisure activities have suddenly transformed due to COVID-19, so changes are happening in behaviors and habits of people lives.

The situation is very uncertain and unpredictable, but some future trends are emerging and must be considered when thinking about the future cultural experience in a new normality.

Today, cultural consumers do not only seek educational enrichment but also a holistic and engaging experience which provides pleasure, fun and emotions, as well as the opportunity to satisfy their desire to get together and share experiences. Furthermore, users are more and more interested in co-creating their experience, also by means of technology which helped a lot in the development of new interactions between visitors and museums and which extended the experience beyond the physical visit. Indeed, both the on-site and on-line visit must be understood as experiences for the user which must be part of a design systems with which users can interact effectively and naturally.

In this context, discipline such as Interaction Design, Ser-

vice Design and Graphic Design are fundamental in order to provide a high-quality and highly satisfying experience perceived by cultural visitors to be worthy.

On these premises, this thesis aims to explore whether definition and role of museums can be considered the same after COVID-19. Furthermore, it seeks to analyze future configurations of the museums space and the relationship with the public redesigning and reconfiguring the cultural fruition integrated in a new normality.

Analyzing pain point and opportunities emerged, the project is based on four key points:

- **Taking advantage of the digital**
- **Creating collaborations and connections**
- **Spread cultural experiences on the territory**
- **Considering a participatory approach with the public**

A User Centered Design approach was followed from research (desk and field), to ideation, prototyping and implementation. Users were involved in the phase of research with questionnaires and during the concept development with a co-design and test session. UX Design tools were employed to facilitate the process, usability and accessibility principles were always considered when designing the UI.

Luna is a phygital service which offers to the public scattered and changeable cultural experiences designed by groups of museums and based on desires and suggestions of the public itself. Indeed, people can express their desires and opinions on the exhibits through social media and can access different contents (pictures, videos, information) before the visit in order to be prepared on the topic and after the visit in order to deepen their knowledge and reinforce the memory of the experience. In addition, as souvenir they receive discounts or vouchers to use in cultural places related to the topic of the exhibit in order to encourage future visits. On the other side, museums participating to the service have different benefits: scattered spaces with technological equipment, consultation team, intermediation with third parts (for example logistics, insurance, advertising, exhibit management, etc.) and visibility.

The Luna spaces consist in unused buildings or areas of buildings integrated in a recent MIBACT initiative of urban regeneration. They are scattered around the Italian territory and functions as little branches of museums, therefore recalling the idea of satellites (from which derives the name Luna). The exhibits can vary in surface and configuration, but they are all divided in four parts with different interactions to engage every kind of user and to offer a complete experience. Up to four museums can share the space for a limited period of time since the service propose only temporary exhibitions in order to stimulate more the public and to allow experimentation for the cultural institutions.

The service website collects all the information about Luna features, functions and offer giving a complete view to the users. Registered museums and partners have their private area on the website while Luna smartphone application is available for visitors.

Luna is therefore a new cultural service that encourages innovation and resilience in the museum sector by supporting and promoting the dissemination of culture.

Italian version

La pandemia di COVID-19 rappresenta non solo una crisi sanitaria globale, ma anche una crisi socioeconomica senza precedenti. La cultura è uno dei settori più colpiti con enormi perdite di guadagni. Se da un lato sono nate molte iniziative digitali per fornire forme alternative e innovative di apprendimento e ispirazione, dall'altro, sono emerse lacune e differenze tra le istituzioni di tutto il mondo, come la mancanza di competenze, conoscenze e flessibilità. Questi fattori possono portare i musei a dover diminuire o interrompere le loro principali attività al servizio della società, o addirittura ad affrontare la minaccia di una chiusura permanente. D'altro canto, la pandemia sta accelerando il cambiamento sociale e la trasformazione, evidenziando nuove opportunità come sfruttare i canali e gli strumenti digitali e quindi connettere e coinvolgere il pubblico, ma anche collaborare con altre istituzioni per essere più forti insieme.

L'Italia è certamente uno dei Paesi più duramente colpiti da COVID-19 da marzo 2020. La pandemia ha improvvisamente fermato la crescente tendenza del turismo resettando la partecipazione culturale con una diminuzione di oltre il 70%. Solo per il 2020, si può stimare che il pubblico di musei, monumenti e aree archeologiche sotto la gestione statale (quindi non considerando 4.416 istituzioni indipendenti) sarebbe stato di 59,2 milioni di visitatori, E questo avrebbe permesso di realizzare ricavi per oltre 273 milioni di euro. In generale, il sistema italiano appare frammentato perché caratterizzato da tanti piccoli musei territoriali, da diverse risorse disponibili, dalla presenza di una gestione pubblica e privata (municipale, nazionale, ecclesiastica, ecc.) e da diverse politiche e idee. Nel complesso, l'innovazione digitale, con poche eccezioni, è spesso limitata alla gestione del sito web e alla comunicazione sui social media. Uno dei principali ostacoli allo sviluppo del digitale nel settore è la mancanza di risorse economiche per investire in infrastrutture tecnologiche.

La partecipazione culturale degli italiani è molto bassa con solo 3 persone su 10 che hanno visitato un museo almeno una volta nel 2019, inoltre la maggior parte del pubblico si concentra principalmente nelle strutture più note a livello internazionale. Le istituzioni culturali nel mondo stanno cercando di conoscere meglio il loro pubblico con le sue esigenze, aspettative e desideri per offrire la migliore esperienza. Sfortunatamente, alcune di queste esigenze e motivazioni nella visita ai musei e in generale nella pratica di attività ricreative si sono improvvisamente trasformate a causa del COVID-19, quindi nella vita delle persone stanno accadendo dei cambiamenti nei comportamenti e nelle abitudini.

La situazione è molto incerta e imprevedibile, ma alcune tendenze future stanno emergendo e devono essere prese in considerazione quando si pensa alla futura esperienza culturale in una nuova normalità.

Oggi, i consumatori culturali non solo cercano un arricchimento educativo, ma anche un'esperienza olistica e coinvolgente che offra piacere, divertimento ed emozioni, oltre che l'opportunità di soddisfare il loro desiderio di stare insieme e condividere esperienze. Inoltre, gli utenti sono sempre più interessati a co-creare la loro esperienza, anche attraverso la tecnologia, che ha aiutato molto nello sviluppo di nuove interazioni tra visitatori e musei e ha esteso l'esperienza oltre la visita fisica. In effetti, sia la visita in loco che quella online devono essere intese come esperienze che devono far parte di un sistema di progettazione con il quale gli utenti possono interagire in modo efficace e naturale.

In questo contesto, discipline come Interaction Design, Service Design e Graphic Design sono fondamentali al fine di fornire un'esperienza di alta qualità e altamente soddisfacente percepita dai visitatori come qualcosa di valore.

Su queste premesse, questa tesi si propone di esplorare se la definizione e il ruolo dei musei possano essere considerati gli stessi dopo il COVID-19. Cerca inoltre di analizzare le configurazioni future dello spazio museale e il rapporto con il pubblico riprogettando e riconfigurando la fruizione culturale integrata in una nuova normalità.

Analizzando i pain point e le opportunità emerse, il progetto si basa su quattro punti chiave:

- **Sfruttare il digitale**
- **Creare collaborazioni e connessioni**
- **Diffondere le esperienze culturali sul territorio**
- **Considerare un approccio partecipativo con il pubblico**

Un approccio User Centered Design è stato seguito dalla ricerca (a tavolino e sul campo), alla progettazione, prototipazione e implementazione. Gli utenti sono stati coinvolti nella fase di ricerca con questionari e durante lo sviluppo del concept con una sessione di co-design e test. Gli strumenti di UX Design sono stati utilizzati per facilitare il processo, l'usabilità e i principi di accessibilità sono stati sempre considerati nella progettazione dell'interfaccia utente.

Luna è un servizio phygital che offre al pubblico esperienze culturali sparse e mutevoli progettate da gruppi di musei e basate su desideri e suggerimenti del pubblico stesso. Infatti, le persone possono esprimere i loro desideri e opinioni sulle mostre attraverso i social media e possono accedere a diversi contenuti (immagini, video, informazioni) prima della visita al fine di essere preparati sul tema e dopo la visita al fine di approfondire la loro conoscenza e rafforzare la memoria dell'esperienza. Inoltre, come souvenir ricevono sconti o buoni da utilizzare in luoghi culturali legati al tema della mostra al fine di incoraggiare le visite future. Dall'altro lato, i musei che partecipano al servizio hanno diversi vantaggi: spazi sparsi con attrezzature tecnologiche, team di consulenza, intermediazione con terze parti (ad esempio logistica, assicurazione, pubblicità, gestione di mostre, ecc) e visibilità.

Gli spazi Luna consistono in edifici inutilizzati o aree di edifici integrati in una recente iniziativa MIBACT di rigenerazione urbana. Essi sono distribuiti su tutto il territorio italiano e funzionano come piccole succursali di musei, richiamando così l'idea di satelliti (da cui deriva il nome Luna). Le mostre possono variare in superficie e configurazione, ma sono tutte divise in quattro parti con diverse interazioni per coinvolgere ogni tipo di utente e per offrire un'esperienza completa. Fino a quattro musei possono condividere lo spazio per un periodo di tempo limitato dal momento che il servizio propone solo mostre temporanee per stimolare di più il pubblico e consentire la sperimentazione per le istituzioni culturali.

Il sito web del servizio raccoglie tutte le informazioni sulle caratteristiche, le funzioni e l'offerta di Luna, dando una visione completa agli utenti. Musei e partner registrati hanno la loro area privata sul sito web, mentre l'applicazione Luna per smartphone è disponibile per i visitatori.

Luna rappresenta quindi un servizio culturale nuovo che incoraggia l'innovazione e la resilienza nel settore museale sostenendo e promuovendo la diffusione della cultura.

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CONCLUSION

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INTRODUCTION

0.1 Scenario

For over a year now, the world is facing a difficult and uncertain time. The COVID-19 pandemic represents not only a global health crisis, but also an unprecedented socio-economic crisis. The hardest hit sectors include travel, tourism and culture.

In particular, museums and cultural institutions across the globe have been heavily impacted at every level of their operations and structures, while many of them opened their doors again with restrictions, at present, museums in various parts of the world are still closed. In this context, technology has become an extremely valuable tool that is enabling museums to deliver arts and culture to their audience, offering alternative and innovative digital forms of learning and inspiration. It is the demonstration that technologies, if used in a strategic and coordinated way, can bring institutions closer to the different communities. Digital is first and foremost a tool of social participation that supports the museum in offering a more shared and participatory cultural program.
However, creating new products and services requires the allocation of resources and the expertise of professionals, two elements that are not so easy to afford for many institutions in this period.

COVID-19 has acted as magnifying glass on the role, structure and functioning of museums. Indeed, it has increased the existing gaps and differences, it has demonstrated that lacking skills, knowledge and flexibility can lead to museums having to decrease or stop their main activities in service of society, or even facing the threat of permanent closure.

In particular, in Italy the picture that emerges is a reality in which museums are working hard to welcome and use the digital, although strongly fragmented. The fragmentation is due to the peculiarity of the Italian system characterized by many small territorial museums, by different resources available, by the presence of public and private management (municipal, national, ecclesiastical, etc.) and different

territorial policies and visions of management. Overall, the digital innovation, with a few exceptions, is often limited to the management of the website and communication on social media. One of the main barriers to the development of digital in the sector is indeed the lack of investment in technological infrastructure. (Museum Sector Alliance 2016)

In addition to these factors, the crisis is forcing everyone to reconsider their role, their values, their actions and purpose in this world, it is accelerating the societal change and transformation, highlighting weaknesses and opportunities.

0.2 Research questions

After having introduced the background, it is possible to present the six main research questions regarding the near future after COVID-19, upon which this study is built:

- **How the crisis impacted the cultural and creative sector and its public?**
- **Which pain points and reflections emerged?**
- **Will the definition of museum be still effective?**
- **How will the museum experience change?**
- **What will be the role of the digital?**
- **How will the relationship with the public evolve?**

These research questions aim at defining the current crisis, understanding which is the actual cultural fruition and what are the present challenges of the cultural and creative sector, in order to define problems and opportunities for the project development.

0.3 Aim of the thesis

This research thesis explores the change which is occurring in the cultural sector due to COVID-19, focusing on the mirrors of society: museums. The goal is to redesign and reconfigure the cultural fruition integrated in a new nor-

mality, therefore, considering the evolution in the near future of:

- **the role and definition of museums**
- **the public's habits, behaviors, motivations, expectations and tastes.**
- **the museum experience (museum space, interactions, touchpoints, technologies)**

In particular the objectives are:

1. To construct an analysis - based on the combination of reports, statistical data, articles and case studies - on the ongoing situation of the cultural-creative sector impacted by the global pandemic, with a focus on Italy;

2. To understand role and contribution of design and digital tools in the museum experience;

3. To figure out attitudes and expectations of the public before and after COVID-19;

4. To identify the main features of an innovative cultural fruition in the near future;

5. To formulate a practical design solution which satisfies museums necessities and public's needs in order to support and promote the importance of culture.

The relevance of this thesis for the field of DID (Digital Interaction Design) studies is that it can represent an updated overview of the unprecedented context of global pandemic and its impact on: the cultural fruition, the relationship between museums and the interactions with the public through the digital. Research and project will be addressed to answer existing gaps, to encourage innovation in the cultural sector and to enhance the use of the digital to engage the public.

0.4 Methodology

In order to meet the objectives above, the whole process has been built upon the principles of design thinking following a User Centred Design approach from research (desk and field), to ideation, prototyping and implementation. During the design journey UX and UI Design tools have been employed to better define, develop and deliver the project. The process overview can be consulted in the GANTT chart (See the Annex) and the detailed explanation of each phase can be read in the dedicated thesis chapters. Shown below a summary of the main activities.

The first phase consisted in a desk research and two kind of surveys. Literature has been the initial step in which several sources were analyzed - academic papers, books, articles, reports and case studies - to find answers to the research questions. More specifically, the objectives were: to collect updated data about the COVID-19 impact on the cultural sector around the world, to investigate on digital culture and museums of the future, to learn about museum experience design and the state of art of technological devices used in the sector, to understand the visitor's perspective. At the end the main themes were summarized in research insights.

To gather deeper knowledge on the topic two kind of surveys were designed: one for the public and one for cultural institutions. In both cases the questions were both closed and open in order to collect qualitative and quantitative data.

The public survey objectives were: examining the visitor perception, expectations and attitude towards museums, their relationship before and after the visit and finally the COVID impact on their behavior. The questions were submitted remotely to people from 18 y.o. to 65 y.o. gathering 57 responses. Results have been analysed and quantitative data were aggregated and compared to the ones emerged from the desk research in order to gain insights.

The cultural institutions survey objectives were: examining the museums offer, impact and opportunities of COVID-19 and their attitude towards technology and the future of the sector. The questions were submitted remotely to different kind of museums around Italy gathering 12 responses. As for the public, insigths were obtained after having analysed results and having aggregated and compared quantitative data and desk research data.

The insights gathered during the research phase have helped in defining the design challenge and moving forward to brainstorm, ideas clusters and concept definition. After these steps, several weeks were dedicated at prototyping the project using service-design tools and schemes, following the precious advices of the book "This is service design doing" (2018). In order to test the idea in its first configuration users have been involved remotely in two different sessions (public and cultural institutions) which consisted in: presentation of the concept, storyboard referred to the user with questions for each step, UI wireframe analysis and co-design and final approval survey for feedbacks. The test sessions allowed a valuable insights collection that helped in adjusting the concept previously drafted. From this point, the project improvement and development started. Indeed, the concept was finalized in terms of visual representation and communication, the UX/UI were implemented by adding details and definition to complete the project.

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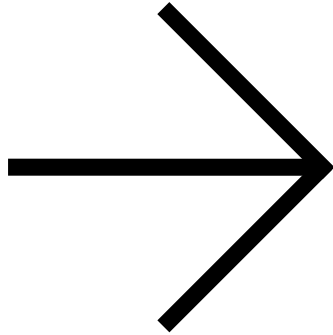
01

DISCOVER

1.1 Museums between recovery and evolution

"Everyone thinks they know what a "museum" is but, the boundaries of that definition are constantly evolving." (Brown and Mairesse 2018) We are living in a fractured, unequal world where the concept of "museum" differs significantly, sometimes completely, from one institution to another, from one country to another, one culture to another, and one language to another. The twenty-first century is bringing fast and disruptive changes, technologies, innovations, 2020 alone has swept the whole world abruptly, affecting every aspect of our lives. It is inevitable that art and cultural institutions have to adapt and make transformations towards the future to be-in-step with the society. In this context of evolution, Italy, a country famed for one of the broad cultural heritage in the world and a popular tourist destination, is struggling after huge income losses due to COVID-19 and it is still not exploiting the potential of the digital. In general, becoming more flexible, analysing visitor's needs and expectations, making a smart use of big data and using digital tools properly are just some of many future trends and good practices in the sector.

1.1.1 The museum definition and its role in the twenty-first century

ICOM (International Council of Museums) is the association and non-governmental organisation which establishes professional and ethical standards for museum activities. It was established in 1946, after WW2, with the wish and desire to reconnect the world through cultural understanding. Today, it has over 37.000 members, including experts from 141 countries and territories representing more than 20.000 museums. Every three years, ICOM's General Conference gathers the international museum community

around a theme chosen by the museum professionals and they meet for a whole week to exchange and discuss their concerns.

The current definition according to the ICOM Statutes, was adopted by the 22nd General Assembly in Vienna, Austria, on 24 August 2007 and it states that:

"A museum is a non-profit, permanent institution in the service of society and its development, open to the public, which acquires, conserves, researches, communicates and exhibits the tangible and intangible heritage of humanity and its environment for the purposes of education, study and enjoyment."

As a first impact, the sentence is very rational and consistent. In the first part the museum is described as "permanent", this word may show the stability of the institution, but also it gives a sense of something static and conservative. The public, and in general the society, is mentioned as the final subject of all the cultural activities which are the focus of the sentence. All of them are very correct but basic and taken for granted in 2021. This definition does not mention social and cultural values, technologies, digital culture, innovation and other fundamental concept for the period we live in.

Two years ago, the 2007 definition has been discussed in the ICOM General Conference which was held in Kyoto with the theme "Museums as Cultural Hubs; the Future of Tradition". (Arts & Culture Translated 2020) The definition proposal was more complex than the one in 2007, because it considered new challenges and new social roles going beyond the traditional roles of preserving, collecting, rese-

arching and communicating. It stated that:

"Museums are democratic, inclusive and polyphonic spaces for critical dialogue about the pasts and the futures. Acknowledging and addressing the conflicts and challenges of the present, they hold artefacts and specimens in trust for society, safeguard diverse memories for future generations and guarantee equal rights and equal access to heritage for all people. Museums are not for profit. They are participatory and transparent, and work in active partnership with and for diverse communities to collect, preserve, research, interpret, exhibit, and enhance understandings of the world, aiming to contribute to human dignity and social justice, global equality and planetary wellbeing"

This definition rises in a global context of climate change, poverty, conflict, natural disasters, human rights issues in which museums are urged to consider how they can contribute to a sustainable future. The idea of collaboration is highlighted with the purpose for museums to become relevant and resilient institutions which work together, through regional, national and international networks.

Nevertheless, a petition issued by 24 national branches— including those of France, Italy, Spain, Germany, Canada and Russia— stated that the definition constituted a considerable shift, so they requested the postponement of a vote on a revised definition of museums, in order to deliver a "new proposal".

Therefore, in the next ICOM General Conference in 2022 a new museum definition proposal will be submitted for a vote after a process of 4 rounds of consultation, divided into 11 steps with a duration of 18 months, started on 10 December 2020. (ICOM 2021) For sure, institutions will have many topics of discussion since the year 2020 has been like no other. The COVID-19 crisis affected every aspect of our lives, from the interactions with our loved ones, to the way we perceive our homes and cities, to our work and its organisation. ICOM and other international organisations

presented a dire situation for museums and their professionals, with serious economic, social and psychological repercussions in the short and long term alike. It is known that periods of socio-economic crises correspond to periods in which the social role of the museum and the community surrounding them is most discussed. This crisis also served as a catalyst for crucial innovations that were already underway, such as an increased focus on digitisation and the creation of new forms of cultural experience and dissemination. Now, it is the right time to reflect, rethink and reconfigure cultural fruition. The International Museum Day of 2021 (Figure 1) is exactly connected to this mindset

Figure 1: International Museum Day 2021. (Source: http://imd.icom.museum/download-the-poster/)

because it is titled: "The Future of Museums: Recover and Reimagine". (ICOM 2021) The recurring event was established by ICOM in 1977 to increase public awareness of the role of museums in the development of society through activities, conferences and social initiatives. This year the aim is to invite museums, their professionals and communities to create, imagine and share new practices of co-creation of value, new business models for cultural institutions and innovative solutions for the social, economic and environmental challenges of the present. The creative potential of culture can be the driver for recovery and innovation in the post-COVID era.

1.1.2 Museums and COVID-19: crisis and opportunity

In this moment, around the world cultural institutions are facing very different situations which are changing from week to week, from month to month according to the limitations imposed by the government and to the evolution of the pandemic. (Figure 2) Some buildings are closed, others are completely open and some other are partially open. Nevertheless, the impact and the consequences of the crisis are more or less severe for all the museums. The crisis has sharply exposed the structural fragility of some producers in the sector (which are largely composed of micro-firms, non-profit organisations and creative professionals, often operating on the margins of financial sustainability) and the inadequacy of public support schemes ill-adapted to CCS business models and forms of employment.

NEMO (Network of European Museum Organisation) reports data from a survey answered by 600 museums from

Figure 2: Museums during COVID-19 (Source: https://www.ne-mo.org/news/article/nemo/various-museums-forced-to-close-to-public-due-to-covid-19.html)

48 countries between 30 October and 29 November 2020.

75% of the museums had income losses between up to 1.000 to 30.000€ per week even in the time they were open to the public (mainly during the summer months) and as a consequence of the persisting income losses, the most common change undertaken or planned is to discontinue programmes and projects (55%), followed by reducing the visitor capacity (49%) and reallocating staff tasks (42%).

For what concerns the financial support during the pandemic 66% of the responding museums reported that they had received emergency government support from national, regional or local level, while 45% claimed that they did not receive government support. It is surprising that when asking for alternative sources of funding 50% of museums answered that they had not considered looking into them. In addition, larger museums (50%) have been more engaged in seeking alternative sources of funding than smaller museums (39%) which are usually lacking in skills, human resources or budget. Speaking of money, almost 7 in 10 museums expect budget cuts in the coming years. A sad prediction which means a huge loss of culture for the society.

Even when museums were open again to the public during the summer months of 2020, 5 out of 10 museums reported a drop between 25-75% of visitors, while 2 in 10 museums even reported a visitor drop of more than 75%. The drop in visitors resulted mainly from the drop in global tourism (73%), the discontinuation of school programmes (64%) and outreach and community programmes in general (50%), and increased safety protocols only allowing a fraction of visitors in the museum at the same time (53%). Museums calculate a long time until visitor numbers will be back at pre-COVID-19 level, reaching from Spring 2021 to Summer 2022. A majority of responding museums (45%) estimate that visitor numbers will return to pre-COVID-19 levels in the months between March and September 2021.

ICOM report analyses almost 900 responses from museu-ms and museum professionals across five continents, which were collected between 7 September and 18 October, 2020.

Around 14% stated that part of the staff was furloughed or laid off, 16.2% of respondents stated that at least a quarter of the museum staff had been laid off or furloughed between February and September 2020 following the COVID-19 crisis, a figure that rises to more than half of the personnel for 10.6% of participants. For the freelance museum professionals the situation is improved since April but it is still dramatic 10.7% of the respondents said they had been temporarily laid off, and 16% have not had their contracts renewed. Looking more to the big picture almost all museums around the world will likely have to reduce their resources and activities as a consequence of the COVID-19 pandemic: 30.9% of museums will downsize their permanent staff (this percentage will rise to 46.1% for freelance and temporary contracts), 62,4% will reduce exhibitions, 67,4% will reduce public programmes. The permanent closure was a real possibility for some cultural institutions in April and right now the 6.1% still thinks about it, while more than 50% of participants think that their institution will have to operate with reduced opening hours. The physical closure of museums has led these institutions to seek, throughout the crisis, alternatives and opportunities for recovery. The most evident reaction was the one which saw museums starting or increasing their digital services, activities on social network, digital initiatives and much more.

According to NEMO report 2021, 93% of the respondents have developed or launched online services during the pandemic, 75% invested in social media activities, and 53% of the museum produced video content.

The most popular digital offers for the online audiences since the onset of the COVID-19 pandemic were social media activities, which almost 60% of the responding museums reported as more popular than before, followed by video content (42%) and virtual tours (28%).

The production and treatment of the online content has been managed in different ways: more than a third of the responding museums added budget and/or resources to increase their online presence or communication in the pandemic and over 40% changed staff tasks of existing.

Again, it can be noticed a big difference according to the size of the museum because while the 81% of larger museums increased their digital capacities, only 47% of smaller museums indicated that they did. In general, it is evident that all the institutions were not properly equipped to deal with the pandemic and to the big shift to the digital. Over 8 in 10 museums suggested that they require additional support with digital tools and transition, in particular over 40% of the museums responded requiring assistance with building a digital strategy, followed by the need for new digital infrastructure (23.2%) and training of staff (18.7%).

Large museums with more than 100 employees show a low (9%) need of support for digital transition, while small and medium sized museums express a greater need (37% respectively 39%). With 100+ employees it is more likely that the museum already has someone in charge of digital or even a whole department dedicated to digital offers and activities. In comparison, a small staff may struggle to manage standard museum tasks alongside a committed digital transition.

With the progressive return to everyday life, even online interactions have returned to decline, although keeping to a higher level than before the lockdown. Almost 50% of the museums responded that online visits have either remained at the same level since reopening their museums, or seen an increase overall. However due to a lack of digital measurement frameworks and methods, almost 40% of the museums responded that they either did not track or did not know about the development of their online visitor numbers. In the next page a visual summary of all the data reported in this paragraph.

The approaches adopted during the online race vary from museum to museum but can be summarized in five main categories. (UNESCO 2020)

1. Use of previously digitised resources
Museums with a pre-existing level of digitization of the collections, with a website, with a social media profile or even with VR resources were more prepared to the transformation. Indeed, they could use and showcase contents they already had. One example was the Louvre Museum which offered virtual tours, accessible from its website, in three spaces of the building: from the Ancient Egypt wing and its moat (hidden in the basement) and online tour of the Galerie d'Apollon. You can click on the objects on display for a close-up look and basic information about the work. (NEMO 2020)

COVID-19 impact on museum around the world

INCOME LOSSES

Fonte: NEMO 2020

75%
Had income losses between up to 1.000 to 30.000€ per week.

VISITORS DROP

Fonte: NEMO 2020

5 in 10
Reported a drop between 25-75% of visitors.

FINANCIAL SUPPORT

Fonte: NEMO 2020

66%
Had received emergency government support from national, regional or local level.

59%
Had not considered looking into alternative sources of funding.

7 in 10
Expect budget cuts in the coming years.

STAFF AND EMPLOYEES REDUCTION

Fonte: ICOM 2020

31%
Will downsize their permanent staff.

46%
Will downsize freelance and temporary staff.

DEVELOPMENT OF DIGITAL SERVICES

Fonte: NEMO 2021

93%
Have developed or launched online services during the pandemic.

30%
Added budget or resources to increase their online presence and communication.

60%
Reported social media activities as the most popular digital offers.

40%
Did not track or did not know about the development of their online visitor numbers.

8 in 10
Require additional support with digital tools and transition.

2. Digitisation of planned activities during the months of lockdown

Since a big number of exhibitions, events and other activities had been canceled due to the pandemic, many institutions decided to re-schedule them online. Exhibits evolved into virtual tours or into digital content (images, videos, descriptions) in the museum website. Events and talks were held via social media (live or recorded) or uploaded on Youtube and similar platforms. In Spain the Museo Nacional Thyssen-Bornemisza showed online the exhibit "Rembrandt and Portraiture in Amsterdam, 1590-1670" which was scheduled from February to May 2020. The paintings can be explored from desktop and mobile device and even with Virtual Reality glasses. In addition, the public can navigate through videos, detailed descriptions and listen to a Spotify playlist selected by the curator for the occasion.

3. Increased activity on social media

Social media (Facebook, Twitter, Instagram) represented a great showcase and a source of numerous interactions during lockdown. Museums which were already active continued their investment through the community managers and also through part of the museum team (curators, mediation services, directors) who contributed to the creation of the content. This is the case of Fondazione Sandretto Re Rebaudengo, a cultural institution in Turin, which posted everyday stories showing family workshops, a performance by a group of art school students inspired by the exhibitions, training courses for teachers, hands-on activities for children. Other museums, which didn't use social media, understood that if they could not reach the real public they had to reach the digital one. NEMO reports +7,2% museums followers on Instagram and +5,1% on Facebook. Another channel which was enriched during lockdown is Youtube, the Egyptian Museum in Turin for example from March to June published the series called "Le Passeggiate del Direttore" (Youtube 2021) in which Christian Greco (the museum director) virtually brought the public in the rooms of the museum, to speak about the history of the collection, to discover the most meaningful artifacts and to talk about the reconstruction of the archaeological context.

4. Special activities created for lockdown

Some institutions developed very original projects in the context of lockdown. In particular, many museums have sought to take advantage of the deserted rooms to present an offbeat view of the collections or tours. The Hastings Contemporary (Hastings Contemporary 2021), United Kingdom, offered tours facilitated by telepresence robots, developed by tech firm Double Robotics in order to support families, children and older visitors in exploring the site from home. Furthermore, new forms of interaction between the public and the museum staff were born including the idea of participating in a "cocktail with the curators" (Frick Collection, New York) or the possibility to speak about art and culture for 10 minutes with a person of the museum staff (LAM Lisse 2021). Lot of initiatives emerged for children such as challenges, educational games, stories, quizzes and even video games (Centre Pompidou, Paris), as well as colouring activities. The aim was to support parents seeking to occupy their kids through fun and instructive activities.

5. Professional and scientific activities organised in the context of lock-down

Several museums, association and foundations organized more professional and scientific debates in shape of webinar, web conferences and meetings via Zoom, Skype, Google Hangouts and other videoconferencing media. These initiatives were very useful for the institutions themselves in order to discuss, exchange ideas and knowledge, support each other in a very difficult moment.

As mentioned before, the crisis has been a formidable accelerator of existing trends and new behaviours and needs emerged. In the next months and years cultural institutions

will have to face a recovery process, but also a deep transformation. Analysing reports from NEMO and KEA two main considerations can be done about the opportunities and change to carry out.

1. Acknowledge the acceleration of behavioural changes

The Covid-19 is accelerating a mutation that is familiar to the younger generation. It is more individualistic, concentrated on the private life, with smaller scale communities relying on digital and virtual networks. This is a threat to established cultural institutions or business structures unable to adapt to new sociological patterns. Culture fruition must evolve with the society. The communication has to change, it should be more visual, international, democratic, fast and direct. The new generation manipulate information at a faster pace and integrate such information with a minimum of cultural mediation. Indeed, the access to culture has moved to the online form with search engines, digital services and social media. (KEA 2020) It is time that all the museums of the world understand this because excluding the new generation from cultural access means excluding the future.

2. Investment in digital cultural heritage

The digital is the key and during the lockdown period has clearly proved its value in reaching and engaging the public. Nevertheless, it represents a big challenge for many museums which don't have the right tools and resources to invest and to manage the change which is inevitable. "Internet has cancelled the boundary between real and digital and today, for the cultural sector, avoiding the digital agora means condemning itself to irrelevance" (Mandarano 2020)
Therefore, governments should support the cultural institutions towards the technological process which include mainly digital services or infrastructure and social media. They should enable the digital literacy transformation of museums with adequate resources and knowledge to act in

the virtual world. (NEMO 2020)

3. Making museums fit for crises

It is clear that museums were not prepared for the crisis, their systems and methods were not suitable to the complete closure of the buildings. At the same time, they started considering new patterns and for sure they can have stronger and more prepared response methods in the future, including emergency plans for both the public and internal work processes. Two main concepts are fundamental for the future: flexibility and collaboration.

The first can be applied to every aspect of the museum such as the working method, the exhibitions and the offer in general. It is a concept related to the adaptability and the willingness to shift actions and thoughts patterns to respond to given situations. It is also directly connected with resilience, it has to say the capacity to recover quickly from difficulties.

The second concept is very important because cooperating is a great opportunity to learn from each other, to benchmark and to create a stronger voice for common concerns. Networks and associations represent a great resource which museums should consider more. Different partnerships both within and across the public and private sectors can bring major competitive advantage by helping different players reach critical mass and encourage cross-innovation. Moreover, teaming up can diversify the media landscape, ensuring a plural offer of content to audiences. It could be also desirable that large and well-funded cultural institutions show solidarity with smaller ones, acting almost like a patron.

1.1.3 Italian museums overview

Italy boasts one of the richest cultural heritage in the world, with 4.880 cultural sites among which 3.928 museums, gal-

Figure 3: Visitors at the Sistine Chapel (Source: https://www.nytimes.com/2020/06/03/arts/design/italy-museums-reo-pening.html)

leries and collections (80,5%), 625 monuments and monumental complexes and 327 archaeological areas and parks. (ISTAT 2020) Until 2019, visitors have rapidly increased year by year (+46.8% since 2010) at the rate of 1.7 million more on average each year. In particular, almost 130 million people visited the Italian cultural heritage 2019, 2 million more than 2018 and 12 million more than 2017. Only Museums and monuments collects around 80% of the public. Focusing on Museums, galleries and collections the 95% of them is independent from the state and welcome 74,5% of visitors (an average of 12.000 per institution) against 25,5% for state-museums (almost 76.000 per institution). In general, the 40,3% declare a number of visitors between 1.001 and 10.000, followed by 35,4% with less than 1.000. From this data is clear that there are many small museums in terms of visitors and few big museums which attract the majority of the public which is focused mainly on the most well-known structures at international level. Overall, the phenomenon of concentration, which is likely to congestion the usual main structures, has not only remained unchanged, but has intensified over time.

The 21,1% of Museums is about Art, followed by Archeological Museums (15,7%) and Museums of Ethnography and Anthropology (14,4%).

The 20,5% have from 501 to 2000 exhibition pieces in their structure, the 19,8% from 201 to 500, the 10,8% more than 2000.

In the 25,9% of the museums the exhibit space is between 101 to 300 m2, the 14,8% has between 501 to 1.000 m2 and 14,1% from 1.001 to 5.000 m2.

The 21,8% of Museums have from 3 to 5 people in their staff, the 20,6% 2 people. In general, there are 42.342 people working in the sector with an average of: 18 people for state museum and 9 people for independent museum.

The 77% of Museums earned less than 50.000 € from the ticket sales, in particular: 15,9% earned less than 1.000 €, 12,7% from 1.000 € to 2.500 €, 11,4% from 5.001 € to 10.000 €. The other part of museums (22,5%) earned between 50.001 and over 1 million. Overall, the incomes

are not so high to adequately manage all the necessary activities of a cultural institutions and may reflect the fragility of the system.

In 2018 only the 34,9% received public fundings (from Ministries, Regions, Provinces, Municipalities or other public administrations), the 24,3% received private fundings (for example, sponsorships, contributions from former banking foundations, liberal disbursements, donations, legacies, Art Bonus, etc.), the 27,6% received money from extra activities (for example bookshop, works loans, rents, concessions, royalties, etc.). (ISTAT 2019)

Between 2015-2018, the 59,7% of the museums had formal relationships of collaboration and/or partnership with other public or private cultural institutions present on the territory or it had joined networks/systems of integrated cultural services.

Very few museums included technology in their services for the public in 2019: only 28,6% had free wi-fi, 16,9% had audioguides/videoguides, 11,6% had an App, 28,3% had a video and/or touchscreen, 17,5% had multimedia board. These data suggest that a digital development is pretty necessary. The overview for the online services presents higher percentages but still lacking: 62,4% had a website, only 34,7% had a catalogue online for the visitors, 38,7% had an online ticket office, 28,2% had online virtual tours, 57% had at least one social network account.

Only 38,2% of museums had digitized its collection which is available on the website or in specific professional platforms. Unfortunately, the main deterrent for this operation is money, indeed 48,7% declared it as a reason to quit digitization. In the next pages a visual summary reporting the data about Italian museums before COVID-19.

In the last years, the Ministry of Cultural Heritage and Activities has acknowledged that Italy should improve in the digital area, for example in 2018 it issued the D.M.

n.113 Adoption of uniform minimum levels of quality for museums and places of public culture and activation of the national museum system. In Annex I to the decree, concerning Uniform levels of quality for museums, Part III is, significantly, dedicated to Communication and relations with the territory. It states: "The institutional purpose of museums is to offer the community a cultural service based essentially on the conservation and enhancement of their collections. Communication and the promotion of heritage are fundamental tools. [...] Adequate space must also be given to the use of technologies. The importance of the web as the first cognitive approach between the user/visitor and museum institutes has been highlighted several times. Therefore, the availability of online information on access to the museum, collections, services, extra activities - including social networks, applications, etc. - and their effectiveness in terms of updating and exhaustiveness of the information, become of primary importance. In this decree can be noticed that institutions are open to the digital transformation and understand its value in the creation of a positive relationship with the public. The preconception according to which the virtual world is superficial, negative and dangerous seems to be passed to welcome the idea that "digital does not damage, does not replace, does not distance, but prepares, remembers, calls and connects." (Colombo 2020) Producing content online which is consistent and coherent with the museum is an opportunity to be there, to be seen, to attract new visitors in order to create with them a special and durable bond. In this context, managing account on one or more social media platforms is important for museums which should consider them as a place of dialogue, listening, but also as a source of precious information to be used for building a community, for improving the communication and the offering.

Italy is certainly one of the Countries most severely hit by COVID-19 since March 2020. The pandemic has suddenly stopped the increasing trend of tourism resetting the cultural participation.
The availability of monthly data on inputs and receipts

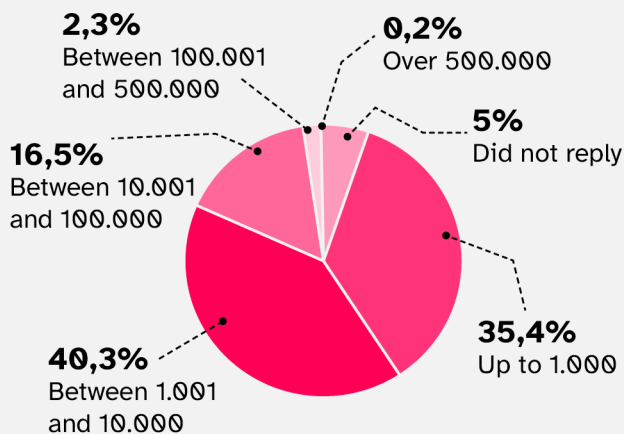# Cultural institution in Italy before COVID-19

VISITORS

130 millions
People who visited the Italian cultural heritage in 2019.

80%
Public collected by museums and monuments.

2,3%
Between 100.001 and 500.000

0,2%
Over 500.000

16,5%
Between 10.001 and 100.000

5%
Did not reply

40,3%
Between 1.001 and 10.000

35,4%
Up to 1.000

MUSEUM TYPOLOGY

95%
Is independent from the state.

21%
Art Museums

16%
Archeological Museums

STAFF

22%
Have from 3 to 5 people in their staff.

21%
Have 2 people in their staff.

18 people
Average staff number in state museums.

9 people
Average staff number in indipendent museums.

INCOMES

8 in 10
Earned less than 50.000€ in 2019.

16%
Earned less than 1.000€.

13%
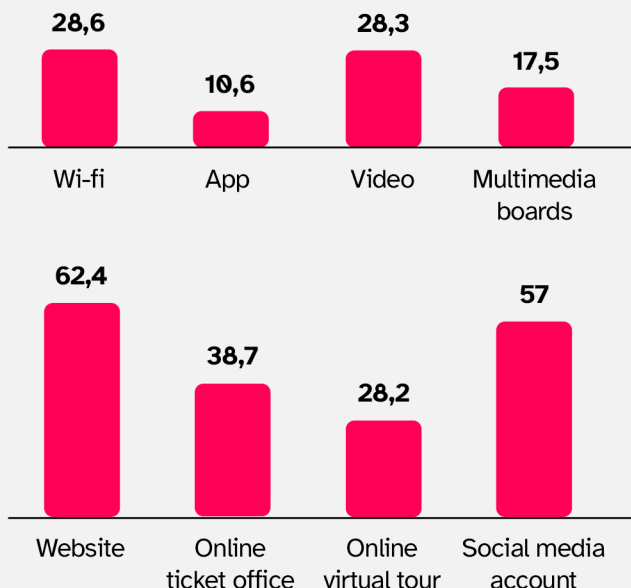Earned between 1.000€ and 2.500€.

NETWORKS

6 in 10
Had formal collaborations with other cultural institutions.

SERVICES

Chart 1

Service	Value
Wi-fi	28,6
App	10,6
Video	28,3
Multimedia boards	17,5

Chart 2

Service	Value
Website	62,4
Online ticket office	38,7
Online virtual tour	28,2
Social media account	57

4 in 10
Had digitized its collection.

49%
Declared that money is the main deterrent to digitization.

recorded in state structures in the last ten years allowed ISTAT to trace a trend dynamics, keeping in check seasonal factors and disturbances due to particular occasional or recurring circumstances. It is therefore possible to estimate that for 2020, in the absence of Covid-19, an increase in the number of visitors to state museums of +8.1% compared to 2019 and an increase in gross revenues of +12.8%. For 2020, in fact, it can be estimated that the public of museums, monuments and archaeological areas under state management would have been of 59.2 million visitors, and that would have made it possible to realize revenues of over 273 million €. For the months of March, April and May of 2020 alone the number of missed entrances to state facilities was approximately 19 million, with a loss, in terms of lost revenues, of approximately 78 million €. (ISTAT 2020) ISTAT at the moment has not released further details on the cultural sector regarding the year 2020.

As mentioned in the previous paragraphs, also in Italy the crisis has forced to question and rethink the meaning, the scope and the mechanics of use of the places of culture; in particular the physical ones which were deprived of the public and had to be reconfigured. Shown below two reflections on the Italian context in light of the pandemic impact.

1. Importance of digital presence and action

Responding to the call "#iorestoacasa, la cultura non si ferma", many cultural institutions have promoted initiatives to allow citizens to access the heritage online. (ISTAT 2020) Italian museums have made available virtual tours, online collections, digital and social initiatives to involve the public. These surrogacy and substitution processes have seen the digital alternative and the "hybrid" one ad the most natural and unavoidable responses which contributed to the reassessment of the role that digitalization can have in our society.

At the same time the crisis has produced extraordinary accelerations in terms of raising awareness about the strategic importance of digital activation of industry practices which were already starting slowly in the last year. Therefore, it is important to develop this process in order to overcome existing cultural resistances and to spread the digital in the

Italian museums. They should consider an increase and a strengthening of their digital presence, an optimization for lightweight devices, such as smartphones and, where possible, also the commitment to become places of physical and cognitive access to technologies and connectivity.

2. Connect with the local

COVID-19 highlighted the need to preserve and nourish relationships with people, both in the private life of each human being and in the society between public and culture. Museums in the future should connect more with their communities, especially the local ones, in order to listen, to suggest answers to emerging needs, to be found "close" even in dark moments of distance.
Furthermore, from March 2020 the phenomena of cities of proximity emerged: a rapid pandemic reorganization of the social functions of the city that makes services of various kinds accessible without the use of public transportation and without creating crowds.

From the cultural point of view, on one hand it is necessary to think about how to disseminate as much as possible cultural practices of proximity in every territory, in the cities (where the cultural offer is wider) and in the inner areas. In the near future it will be necessary to redesign some services and activities usually offered by museum structures and also to reduce the excessive concentration of the public in the same structures, also enhancing the less frequented destinations.

It is therefore important to design cultural production and enjoyment in a context of spatial democracy and cultural inclusion, which does not assign the B-class culture to the marginal areas but, on the contrary, it spreads quality culture precisely in those areas that are most at risk of inequality. (Arcagni, Bollo and Niessen 2020)

An initiative related to this reflection was launched by MI-BACT in 2018 and is called Creative Living Lab. Its aim is to finance and support cultural and creative projects of a multidisciplinary nature, to redevelop the relevant spaces within residential areas, in order to develop a model based on collaborative processes and social innovation in a context of sustainable communities. Creative Living Lab supports micro-projects of immediate implementation, innovative and quality, able to transform the remaining areas and spaces in places of exchange and learning, accessible, usable and functionally differentiated, in order to create a synergic relationship between the environment and the social, cultural and economic fabric. It is a great initiative of resilience which can be very useful to spread culture in a difficult time o recovery.

1.1.4 Museums general trends and prospects for the future

Before COVID-19 museums around the globe were striving to realise their full potential for society and were far more than just buildings and collections. They were becoming increasingly outward looking, building more relationships with partners. They were welcoming more people as active participants, reflecting a desire for enriched and healthier lives, more resilient communities and a more just society. Museums and audiences were engaging more closely together pursuing an engaging and inclusive approach. (Museum Change Lives 2020)

Kathleen McLean, the principal of the museum consulting firm Independent Exhibitions (Ind-X) and awarded designer of many exhibitions, in 2010 stated: "If museum exhibitions are to survive the major irreversible social changes brought on by technological advances, globalization, and shifting consumer expectations, we will need to radically evolve our practices over the coming years."

Her point of view is still very actual because the world is facing a huge social change and people understood more than ever the importance of museums in boosting people's

quality of life and improve mental and physical health. So, the question is how will museum evolve to survive?

The answer can't be univocal, furthermore, the effects of Coronavirus on the cultural system will be multiple, contradictory, opposed in sign, different in duration and such as to make very difficult assessments of an overall nature. However, some trends and interesting perspectives emerged in the last few years.

1. Visitors as partners

In 2034, the most important things in any museum will be the visitors. (Sohuami 2014) Museums will recognise that as sites of dialogue they have a responsibility to encourage, facilitate and enable evolving conversations not dominated by one authoritative voice. To further support this rotation of voices, regular rotation of collections is required too. This allows the museum and visitors to exist in a space where their position is constantly being rethought, evolving, and expanding knowledge. By rotating the collection this process retains a semi-permanent state of activity, ideally promoting repeat visits and more importantly repeat interactions, whether physically or when away from the physical space of the museum. To promote these interactions, museums must make increased efforts to understand their audience. Visitors know what they want to see and so must be included in the process of managing their own experiences.

2. Connecting Museums

Museums of the future actively support one another. One way is to encourage visitors to pursue their interests and continue their cultural journey by actively making links and recommendations to other museums. This could help to increase museums' reach and visitor numbers across the sector as people discover new interests and new places.
In addition, it is possible to believe that smaller museums would benefit from an expansion of cross-regional colla-

borations which enable wider exposure of collections. The small niche museum can find its target audience or another similar museum on the other side of the world, with which to collaborate and build projects. Building these networks of support and collaboration with colleagues and promoting the search for stakeholders also allows small museums to exit from that position of isolation that the territorial dimension or budget limits may have created. (Museum Sector Alliance 2016)

In this way cultural institutions could build territorial and thematic networks with local stakeholders, as well as with other cultural institutions, through dialogue, co-working and co-creation platforms. This "inclusive" strategic approach would also contribute over time at optimising management costs and investment in innovation.

3. Democratization and advocacy

The lockdown marked the end of hyperkinetic tourism, museums must become engines of reflection, training, dialogue, discussion and even protest. Becoming a political subject, because "museums are not neutral". Throughout the world the social role of museums is gaining agency, the institutions should advocate the fundamental values and take a stand. The relationship with the public is becoming more horizontal according to Fleming, indeed the past decade has seen increased democratization of museums and blurred boundaries between concepts such as "professional" and "public", bringing about fundamental change in museum values (Brown and Mairesse 2018).

They are evolving into hubs, connectors of knowledge, of thought, of people. Cultural institutions must be welcoming towards the impulses that come from society, approach and include in the first place the new and fertile minds of young people. So become hybrid places, informal training centers able to relate to different subjects, whether they are non-profit, public, companies, private. Places that are alive and able to navigate against the current, that pro-

duce value, and not just superficial factual knowledge, and that fully participate in people's life. (Broccardi 2020)

4. Making Data-Driven Museum Decisions

As the majority of museums continue to struggle with audience engagement, few cultural institutions are increasing audience growth and engagement through the use of Big Data. Businesses, brands, organisations and communities alike are using Big Data to provide value, deliver services and understand trends. (MuseumNext 2021) In a presentation in 2017, Brendan Ciecko, the CEO of museum technology start-up Cuseum, explored the role of AI and machine learning in helping museums to collect data. "Machine learning is a method of data analysis that automates analytical model building using algorithms that iteratively learn from data. It allows machines to find hidden insights without being explicitly programmed to look for." Museums have lots of data which must be analysed with the right resources, tools, times and expertise. Many cultural institutions around the world are starting to incorporate machine learning into their procedures in order to gain a clearer understanding of how their museum is being used by visitors. Data can provide valuable information in large quantities, which curators and organisers can then use to take the best museum decisions.

Angie Judge, the founder of the award winning big data analytics company Dexibit, explains "Big data allows museums to listen, rather than just talk and that turns curation into a conversation". In this way, the visitor of the future could even have a tailor-made museum experience which perfectly meets his/her needs.

1.2 The public: resource and nourishment for museums

The society, the people are more and more at the core of a museum mission which in the last decade shifted from a collection-centred to a visitor-centred approach. Cultural institutions are trying to know better their public (collecting data, making questionnaires, ecc.) with its needs, expectations and desires in order to offer the best experience. Nevertheless, these information are not so obvious to define, sometimes they are just quantitative data and statistics which are not sufficient to really understand the museum users. People generally think they know that museum visitors are better educated, older and wealthier than the public as a whole, but even if these statistics were on average true, visitors are not averages, they are individuals with very different ways of experiencing a cultural place. "There is no ideal visitor, but there is the concrete reality of an audience differentiated by age, culture, learning skills, computer skills and use of their visiting time." (Mandarano 2020) Once understood this perspective, museums can be more effective in meeting public's expectations. Unfortunately, some of these needs and motivations in visiting museums and in general in practicing leisure activities have suddenly transformed due to COVID-19 so behavioral

changes are happening in people lives. The situation is very uncertain and unpredictable, but some future trends in people habits are emerging and must be considered when thinking about the future cultural experience in a new normality. During the lockdown period it has been highlighted that the "physical" public, that is to say the people who visit or will probably visit the museum building, is not the only one who must be taken into account. Indeed, there are lot of people who, for different reasons (in this case a global pandemic), are not able to visit the museum in a specific period of time which should not be excluded from the cultural dialogue. Nancy Proctor, Director of The Peale Center for Baltimore History and Architecture and previously Head of New Media Initiatives at the Smithsonian's American Art Museum, affirms indeed that the largest audience ever will be the one who will never come to the museum for real. (Colombo 2020) The digital channels could help in reaching this public segment, considering the fact that just in 2020 there were close to half a billion new social media users according to Data Reportal (2021). A big shift in the cultural fruition and communication would be desirable and the COVID-19 crisis and its push towards digitization could be the right glimmer to restart.

1.2.1 Cultural participation in Italy

Involving and engaging the public is fundamental and, unfortunately, in Italy, a country rich of culture, only 3 out of 10 people have visited a museum in 2019 (See the graphic of the next page). Indeed, according to ISTAT, only the 31% declared to have visited a museum or an exhibition. (ISTAT 2019). Until 34 y.o. the percentage is higher than the average (31%), reaching the 51,5% in people between 11 and 14 y.o. The disaffection for this leisure activity spreads from the age of 20 years old and reaches the highest among the over 75 y.o. (86.7%). For what concern the frequency of the visits: over 70% goes to a museum/exhibition maximum 3 times a year and around the 8-9% goes more than 6 times a

year. The highest numbers of "strong" users is found between 18-19 y.o. (10.7 %) and over 65 y.o. (about 10%). These data can be related to the fact that in Italy most institutions are based on permanent arrangements and offers so after the first visit the user doesn't have a strong motivation to come back to see something new or different.

Despite the almost 4.000 cultural structures distributed around the Italian territory, the habit of going to a museum or to an exhibition at least once a year is affected by the opportunities offered by the context of residence. It is more common in the municipalities center of metropolitan areas (40.2%) where the offer is bigger and the lowest values are found in small centres (around 25.7%).

As mentioned in the first chapter, COVID-19 is deeply changing our society and the economy, the cultural sector is heavily impacted, therefore visitors and tourists are involved too in this change. On May 2020, indeed, Mibact launched a self-completed online questionnaire (Cicerchia and Solima 2020) through the official web pages of the Directorate and its social profiles (See the graphic at page 37) The state museums and those involved in the National Museum System were invited to send it through their newsletters and to post it in their web pages and profiles, also ICOM and the main cultural association contributed. The online questionnaire was filled out by 6,850 people. Shown below the most interesting data.

The 48% of respondent belong to the 25-44 y.o. age group, the 20.4% between 45 and 54 years old, the 17.1% between 14 and 24 y.o. and the 14.8% for the over 65 y.o. group.

People who replied to the questionnaire are frequent visitors to museums, which in the last year have gone on average 9 times, in particular around 10 times for 34-44 y.o. group and less than 8 times for younger and older.
The level of education of respondents tends upwards: the 69.7% have a degree corresponding to or after graduation, the 27.7% have a high school diploma and only 2.6% have

Cultural participation in Italy before COVID-19

FREQUENCY

3 in 10

Have visited a museum at least one time a year.
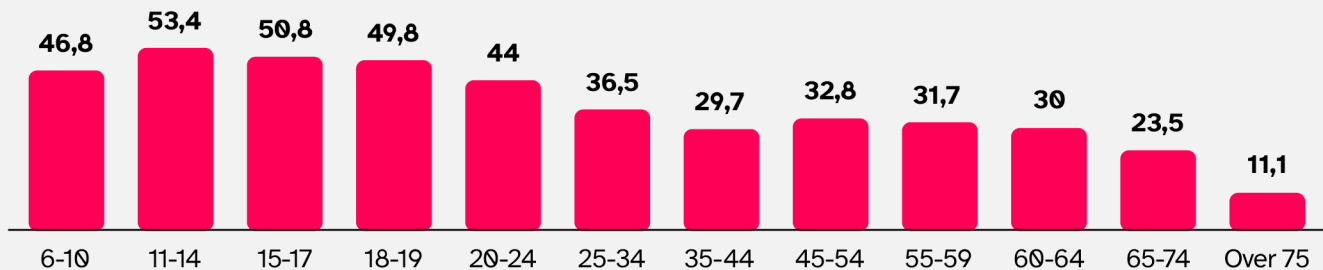
KIND OF RESIDENCE

40%

People living in the municipalities center of metropolitan areas who visited museums.

26%

People living in the small centers who visited museums.

VISITORS' AGE

Age	Value
6-10	46,8
11-14	53,4
15-17	50,8
18-19	49,8
20-24	44
25-34	36,5
35-44	29,7
45-54	32,8
55-59	31,7
60-64	30
65-74	23,5
Over 75	11,1

a "low" degree (secondary or elementary school certificate). Taking into account the fact that, in Italy only the 14,7% of Italian residents have a university or postgraduate degrees, it is clear that the profile of those who visit museums is in contrast. This can indicate that museums are not sufficiently inclusive and accessible to their audience.

While exploring the reasons why people decide to visit a museum, these data emerged: the 38.3% goes to deepen their knowledge, the 32.1% goes to learn new things, the 30% to see important works and finds, the 28.2% to spend a pleasant personal moment. For what concern the dichotomy between individual visit or group visit, the 20.5% of the interviewed went to the museum with family members (a solution that prevails among people aged 35-44), the 14.3% is organized with friends (at the youngest rate reaches the 22%) and the 12.1% prefer to go alone.

To investigate the museum perception of visitors four groups of words were proposed and people had to associate some of them to the museum.

MIBACT survey results collected during lockdown 2020

INTERVIEWED PROFILES

9 times
Average number of yearly visit of the interviewed.

80%
Public collected by museums and monuments.

48%
25-44 years old

14,8%
Over 65 years old

17,1%
17-24 years old

20,4%
45-54 years old

MUSEUM PERCEPTION

37,4%
Temple

50,7%
Documentary

44,8%
Travel

33,6%
Stimulating

SPENDING PURPOSE

79%
Would be interested in having an annual card to visit all cultural sites of Italy.

67%
Would be willing to contribute, with a donation to signifcant museums.
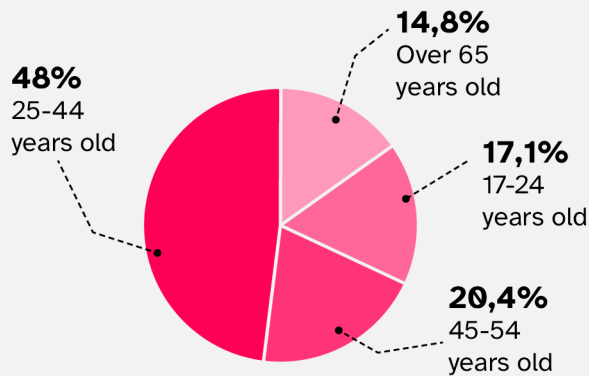
VISIT MOTIVATIONS

38%
Deepen their knowledge.

32%
Learn new things.

30%
See important works and finds.

28%
Spend a pleasant personal moment.

ATTITUDE TOWARDS MUSEUMS

9 in 10
Have missed museums and intended to return to visit them.

71%
Visited websites or social profiles of the institutions during the period of closure.

44%
Will continue to use the digital resources of museums with the same intensity as the closing period.

The first group linked to the social function of the museum, the choice was between: Workshop/ Laboratory, Square, School and Temple. The 37.4% of visitors selected the word Temple (maybe it is related to the perception of museums as important and authoritative places or even sacred), the 23.9% choose Workshop/ Laboratory (mainly people between 55-64 y.o.), the 17.8% Square and the 16,6% School (especially indicated by the youngest age group between 14-24 y.o.). In general a very conservative and conventional vision appears.

The second group suggested the words: Documentary, Film, Book, New Exhibitions and Videogame. The 50.7% of visitors choose the word Documentary (among young people the percentage is higher) which is expression of a medium-low degree of interactivity.

The third group proposed these actions in order to investigate the playful dimension: Play, Work, Study, Travel. The 44.8% of visitors choose Travel (mainly people between 55-64 y.o.), 39.9% Study. Also in this part interaction and innovation are lacking.

The last group proposed: Teaching, Telling, Stimulating, Astonishing. The 33.6% of visitors associated the museum with Stimulate, 32.2% Tell and 22% Amaze. This underline the importance of the engagement and entertainment of the museum which apparently is missing, at least in the visitor's perception which saw the museum more associated to Study than to Play in the third part.

The 79% of respondents would be interested in having an annual card to visit all museums, archaeological areas and monuments of Italy. More than 67% of interviewed would be willing to contribute, with a donation, even small (10€), to a particularly significant museum. This percentage among young adults (25-34 years) reaches 71%.

The 90% of respondent said they missed museums during the first lockdown in the Spring of 2020 and 93.3% intended to return to attend museums in general or a specific museum in the following months.

The 71.5% during the period of closure visited websites or social profiles of the institutions, among these: the 90% were satisfied with the quality of the proposals and the 91% believe that museums should continue to produce new digital content also in the future. The most appreciated were virtual and cultural insights explained by experts.

The 65.5% of people surveyed believed that even the best digital content could not replace the physical visit. Nevertheless, it could encourage and enhance the user to visit the museum or to complete the visit in person. In general, the 44.2% of respondents will continue to use the digital resources of museums with the same intensity as the closing period, which is another important evidence for cultural institutions which should take advantage of the digital channels.

1.2.2 Digital literacy in Italy

"Italy is a "mature" country in the use of the Internet and social channels, which are used in an increasingly diversified way for entertainment, information, sharing and conversation." (Data Reportal 2021) The use of the Internet involves more and more people from year to year. In 2020 over 1 million people have connected to the Internet for the first time (an increase of +2.2%). In January 2021 there were 50.54 million internet users representing a penetration of 83,7%.

According to ISTAT, in 2019, people between 11 and 59 had very high percentages of internet users (89% average). Between 65 and 74 this percentage is 44.6% and after 75 is 13.1%.

Smartphones are in pockets and hands of the 97% of the Italian population, while 3 people out of 4 use desktop

computers or laptops. In 2019, over the 54.9% of people claimed to use the personal computer. (ISTAT 2019) This device involves especially young people and reaches the highest levels from 11 to 44 years old (77% average), between 15 and 19 years old more than 80%. The lowest values are reached in the older age groups: 32.9% for 65-74 years old and 10.7% for 75 years old and more, although the latter percentage increased significantly by 3.4% compared to 2018. Considering the frequency of use, it can be highlighted the clear spread of daily use of both personal computers and the Internet: respectively 31% and 54.7% of people.

Speaking of platforms, 1 in 4 people regularly listens to podcasts and gaming continue to be relevant (over 4 out of 5 people play, regardless of their favorite devices). (Data Reportal 2021)

Italians spent 24% more than in 2019 regarding the macro-world of consumer goods thanks to the e-commerce.

Last but not least the increase in social platforms is considerable, indeed there were over 2 million new users, an increase of almost 6% that reaches 41 million overall.

The time people spend online is also remarkable with an average of over 6 hours a day connected to the internet and almost two hours on social media (the 98% do it from mobile devices). The social interaction online presents interesting consequences: people involvement increased by 4%. In fact, people who declare to have participated actively in the online dialogue, jumped from 81% in 2020 to 85% in 2021. In the next page a visual summary of the data about the Italian digital literacy.

Use of Internet, digital devices and online platforms in Italy

PERSONAL COMPUTER USE

Fonte: ISTAT 2019

6-10	11-14	15-17	18-19	20-24	25-34	35-44	45-54	55-59	60-64	65-74	Over 75
44,9	76,4	81,0	81,8	78,4	72,4	70,8	65,1	58,5	49,7	32,9	10,7
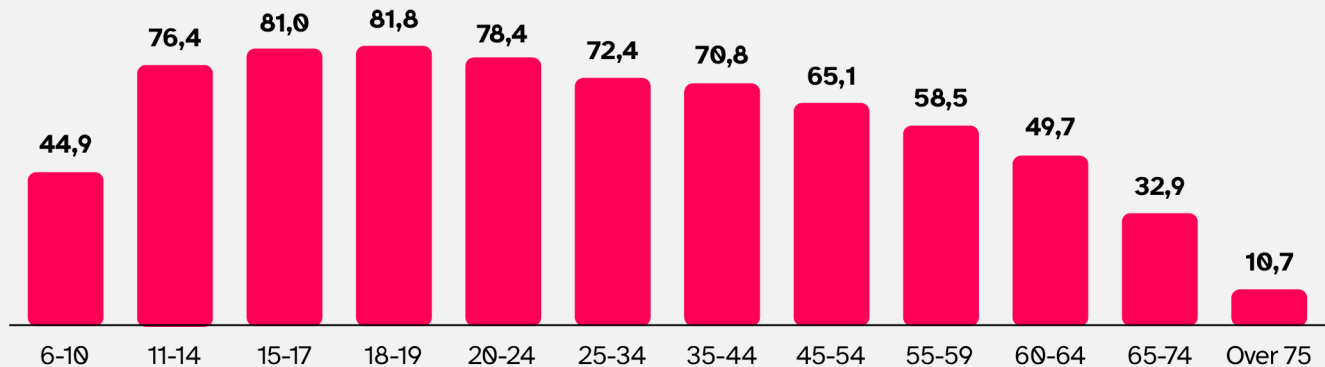
INTERNET USE

Fonte: ISTAT 2019

6-10	11-14	15-17	18-19	20-24	25-34	35-44	45-54	55-59	60-64	65-74	Over 75
62,5	90	94,7	93,2	94,2	90,6	87,9	83,2	76,2	65,2	44,6	13,1
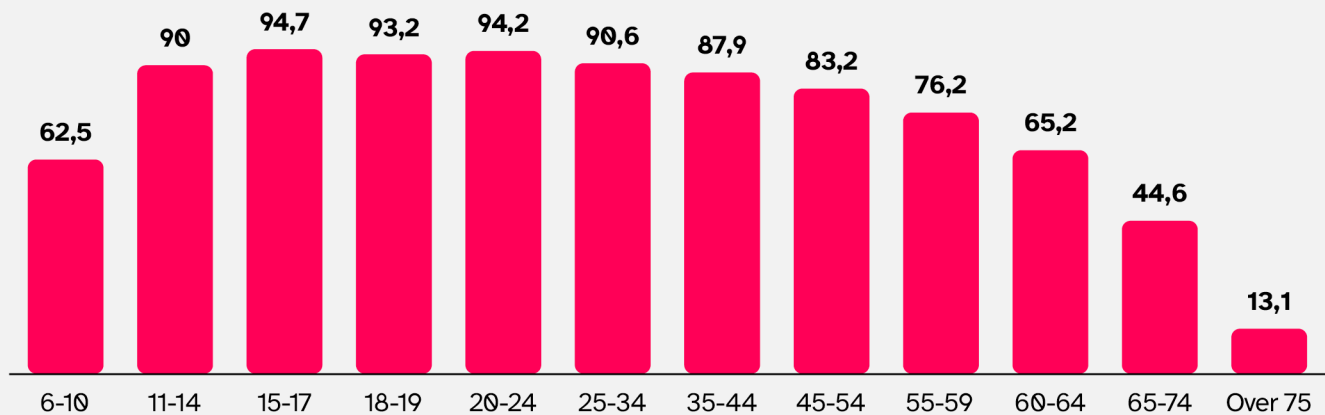
SOCIAL MEDIA

Fonte: Digital 2021

+6%
Increase in the number of social users.

41 millions
Social platforms users in 2021.

85%
Participated actively in the online dialogue.

2 hours
Average time spent on social media everyday.

1.2.3 Understanding the visitor

Nowadays, time and effort have been invested in understanding visitors and many times rationality has dominated, proposing unproductive cluster by age, gender or other demographic variables. More recently, emotions and motivations of visitors during the museum experience have been explored and connections with their meaning making have been found.

The cultural context is very complex because the visitor experience cannot be captured with tangible and immutable categories, it is dynamic, ephemeral.

As John Falk, Sea Grant Professor of Free-Choice Learning at Oregon State University, affirms: "It is a uniquely constructed relationship that occurs each time a person visits a museum and the same person can visit the same museum on two different days and be an entirely different visitor."

In addition, Dr. Folk associate the different kind of visitor's engagement with an exhibitions or a content to the different motivations related to the identity of that person in that moment. Indeed, according to Folk's studies when asking why people went to the museum or what they remember from the visit, the answer seems to be connected with something they were trying to accomplish through their visit.

Identity is a concept that include qualities, beliefs, personality, looks and/or expressions that make a person or a group. The creation of a self, the mental model of oneself is an endless process and it relates to self-image, self-esteem, and individuality. It can be said that identity is something malleable and always in construction which is expressed in the physical and sociocultural world. (Falk) Nevertheless, each of us has not a single identity, or rather, we have "primary" identities which are deep and enduring and other identities which are used in different times depending on the circumstances. (Falk) This inner plurality is reflected in the various kind of experiences, mentioned above, that the same visitor can have with the same museum.

People behave consistently with their personality, attitudes and social group also when visiting a museum, indeed they use their identity aspects before to justify the visit and after to make sense of the visit. In other words, they see the museum as a place that can satisfy their identity-related motivations and needs. For example, if a teacher views himself/herself as a good guide for his/her pupils and sees the museum as place where good teachers bring kids for a learning activity, then he/she could choose that place to "put in practice" his/her identity.

From the theoretical framework described above, Falk proposes five distinct cluster of motivations which visitors assign when going to a museum and which are identity-related.

1. Explorers

Curious people who are generally interested in the content of the museum and who expect to be stimulated and to learn something. This kind of visitors is more individualistic, self-centred and focused on what they see and find interesting.

2. Facilitators

On the contrary, facilitators are socially motivated people who want to enable someone else in learning or experiencing something (like a father towards his child, like a friend towards another friend of the group, ecc.). These visitors are focused on the person they care about and make sure that this subject sees what he/she finds interesting.

3. Professional/Hobbyists

Visitors who have a lot in common with the museum content due to their profession, passion or hobby. Their experience is typically motivated by a desire to satisfy a specific content-related objective. For example, a fashion designer who goes to an exhibition of a Gucci limited collection or a

person who practices paint of natural landscape who goes to a Monet exhibit. They use the museum as a vehicle to fulfill their interests.

4. Experience seekers

These people perceive the museum as an important destination where they must go. They focus on having fun during the experience and they get satisfaction on the mere fact of having been that and done that. Visitors who are motivated to visit because they perceive the museum as an important destination. For example, a tourist in Paris who feels the necessity to go to the famous Louvre Museum which is not to be missed in the journey.

5. Rechargers

People who search a peaceful and inspiring experience. Contemplation, relax and immersion are the main features of the experience they are looking for. They see the museum as a refuge from the real and noisy world or as a confirmation of their beliefs.
Clustering visitors in this way, according to Falk, can be used for capturing interesting insights about how people behave, interact during the visit and how they make sense of the museum experience once they leave.
Therefore, focusing on these five categories can be very useful for museum professionals to reflect not only in understanding their public, but also in customizing the visitor's experience and satisfy more people.

1.2.4 Behavioral change during and after COVID-19

As explained in the previous paragraph understanding or predicting public's expectations, motivations and needs is challenging, but during a pandemic is even more difficult, especially due to the uncertainty of the period with museums all over the worlds closing and opening at different ti-

mes. People are concerned about the impact of COVID-19, they tried and are trying to adapt with differing attitudes, behaviors and purchasing habits. Many of these will remain post-pandemic, so it is important to acknowledge also these aspects of people's life in order to have a complete overview. Nevertheless, there is significant variance in how consumers respond to the crisis. In general purchases are centered on the basic needs, the shopping activity has become more conscious and people are buying local and embracing digital commerce. Furthermore, to manage isolation people are using the digital platforms and channels to connect, learn and play, and they will continue to. (McKinsey 2020)

Analysing different sources, 7 main behavioral trends can be highlighted and can represent a cause for reflections.

1. Shift to value and essentials

In most countries, consumers intend to continue shifting their spending to essentials, while cutting back on most discretionary categories. In Italy categories like Entertainment, Travel and Transportation have seen a decrease in the expenses, while Groceries and Household supplies increased significantly. (McKinsey 2020)

2. Shock to loyalty

People across the globe tried different shopping behaviors and more than the 65% expressed the intent to continue these habits going forward. In Italy the 69% of people interviewed tried new shopping behaviors after considering 3 main reasons: Value, availability and quality. The intent to continue is between 72-83%. In addition, people are more mindful of what they're buying, some are striving to limit food waste, shop more cost-consciously and buy more sustainable options. In general, in this period of pandemic, when choosing where to shop convenience and availability are the most cited as top drivers, while when choosing new brands, quality and purpose (for example supporting local businesses) are the most important. (Accenture 2020)

Another important driver which can be related to availability and convenience is proximity. Indeed, there was a significant shift to stores closer to home due to COVID-19 measure and restrictions. The desire to shop local is reflected in both the products consumer buy (e.g. locally sourced, artisanal) and the way they shop (e.g. supporting community stores). Engaging and connecting with people locally is becoming always more strategic. Hygiene and no queue in the store are also affecting the choice.

3. Homebody economy

People around the globe are at different stages of resuming out-of-home activities, therefore also in this topic the engagement varies by category and country. (McKinsey 2020) In Italy, most intend to leave home to shop for necessities and non-necessities, get together with the family and dine at a bar or a restaurant, but maintain low engagement in shared services. It is probable that the "new normal" will include a shift toward more eating at home, which includes both cooking/groceries and takeout/delivery. Hanging out for leisure activities, including going to a museum, could

slowly restart and with less frequency than before COVID-19.

4. Flight to digital

"People are embracing technology more than ever to support all aspects and consequences of isolation." (Accenture 2020) The shift to digital persists across countries and, as mentioned before, people in most parts of the world keep low out-of-home engagement. (McKinsey 2020) Online shopping has seen a positive growth, food and household categories have seen an increase of over 30% across countries. Also post-COVID-19 more people expect to make a portion of their purchase online.

5. Holiday outlook

For what concerns holidays people across the globe plan to reduce holiday spending, even in countries that have exhibited signs of recovery. The 30-60% of consumers reports an intent to shift online to plan and spend money for a vacation. Because of changing economic conditions and re-

gulations, people will prefer local destinations, services and experiences. Therefore, tourism and cultural sector have to take into consideration this shift and taking advantage of it, trying to connect with local communities to establish a strong relationship.

6. Mobility

The COVID-19 pandemic is strongly questioning the mobility of people, both as regards the mechanisms of diffusion and, consequently, because of containment measures to avoid assemblage. (Capineri, Celata and Romano 2020) The world has shifted from hypermobility to #stayathome. The lockdown has therefore reduced mobility and at the same time has produced mobility itself. It first intensified proximity relationships: a return to the micro-place, the home, or at least not far from it. The data coming from the

"position chronology " of Google users between March and May 2020, show that in Italy movements towards the places of work have been reduced by 60%, 76% near the nodes of the public transport, 80% those for shopping and recreational reasons.

If a person before the crisis spent 8 hours a day away from home, during the lockdown he/she left about three and a half hours.

Finally, it can be observed that metropolitan areas have seen the disappearance of city users (commuters, students, tourists, men and women business). This is where the economic impact of the pandemic will be tougher, because those same elements that under normal conditions bring people, wealth, opportunity.

7. Relationship with the society

If on one side the 80% of consumers feel more connected to their communities, (Accenture 2020) density is no longer desirable. (Harvard Business Review 2020) Work places and big industries will have to adapt their offer and reconfigure the spaces. It may lead to a dramatic rethinking of living in big cities and use transportation services.
Also the ways in which people spend their leisure time will be impacted are changing because of the outbreak and related social distancing measures. (Accenture 2020) The 55% of consumers will prioritize more time with their family. Entertainment, learning and DIY have also seen a rise which is reflected in the types of apps that consumers are downloading. People's needs remain more or less the same, even if some of them have been emphasized in this difficult period, technology is changing the way it happens.

1.3 The magical duo: Museum + Design

In the last decade museums have become increasingly marketing oriented due to the increased competition, the reduction of public funding, and the new needs and desires of visitors. Therefore, as mentioned in the previous chapter, the museum world has rapidly changed from being collection-centred to being visitor-centred. Today, cultural consumers do not only seek educational enrichment but also a holistic and engaging experience which provides pleasure, fun and emotions, as well as the opportunity to satisfy their desire to get together and share experiences. Furthermore, cultural consumers are more and more interested in co-creating their experience, also by means of technology. Novel technologies helped a lot in the development of new interactions between visitors and museums and extended the experience beyond the physical visit. Indeed, both the on-site and on-line visit must be understood as experiences for the user which must be part of a design systems with which users can interact effectively and naturally. (Musem Sector Alliance 2016) In this context, discipline such as Interaction Design, Service Design and Graphic Design are fundamental in order to provide a high-quality and highly satisfying experience perceived by cultural visitors to be worthy.

1.3.1 Museum Experience analysis

Experience is an event or an occurrence that leaves some kind of impressions on someone. Furthermore, it functions as a source of information for the stories people tell about their lives and it is also important for self-perception. (Norman and Nielsen)

Pine and Gilmore (1999) view the experience as the final
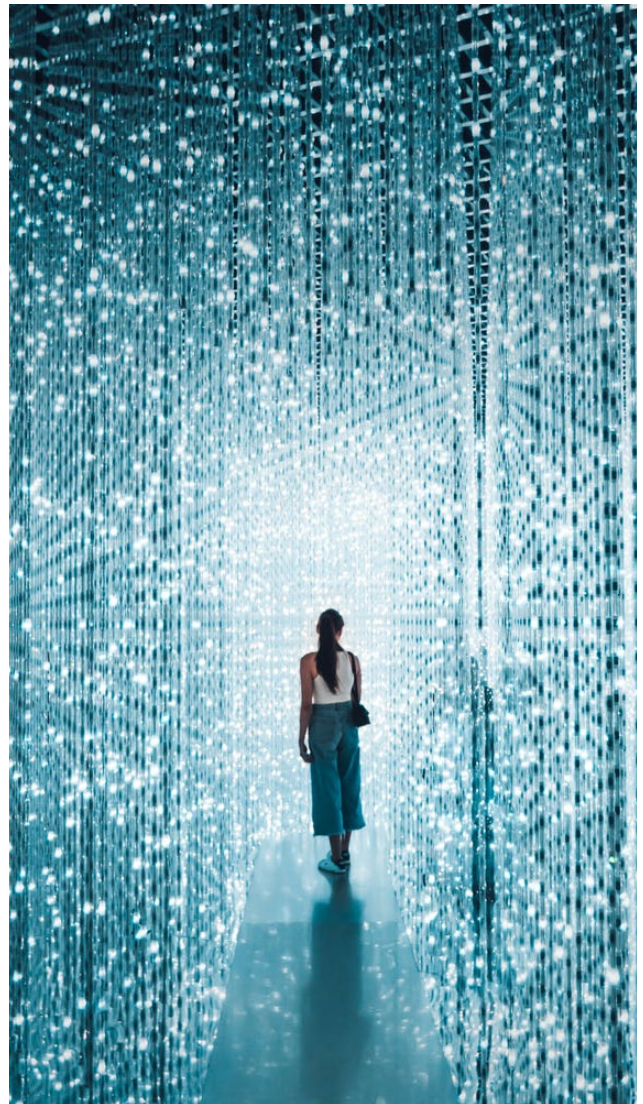
phase of an economic progression that has evolved through the stages of commodities, goods, and services economies. They don't talk about specific elements of what creates an experience, instead they "split" the experience into four main dimensions along two axes: the user's level of participation (passive vs active) and the user's connection with the environment or surroundings (absorption vs immersion).

In the first axis, when the user is active means that the person not only consumes the service but also produces it. On the contrary, a passive user doesn't affect the performance, he/she just sees and feels what is going on.

In the second axis absorption suggests that the user has a certain distance to the stage or the experience, while immersion indicates that the user gets involved and captured by the experience. By intersecting the two axes, four quarters are created which offer a theoretical framework for how experiences can be categorized (Figure 4).

1) Education (absorption + active)

Education is an experience that is absorbed as it happens, but also requires active participation, such as ski classes. Translated in a museum this dimension represents the visitors who want to discover more about art, history and other subjects, deepening their knowledge. The keyword is TO LEARN.

2) Entertainment (absorption + passive)

Entertainment represents the dimension in which the participant passively absorbs what is happening, such as watching a movie at the cinema. In a museum context it is depicted by the visitors who want to stay, to watch, to contemplate and who absorb experiences through their senses. The main action is TO FEEL.
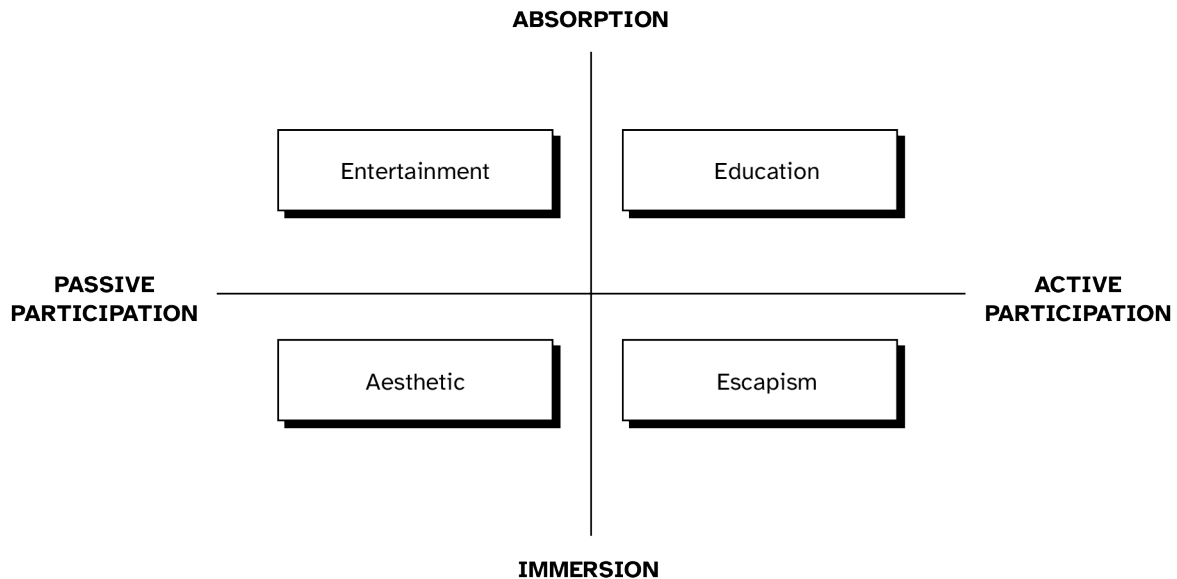
Figure 4: Four realms of experience.
(Graphycally readapted by the author)

3) Aesthetic (immersion + passive)

The aesthetic dimension involves passive participation, but with a greater depth and immersion with what is seen or experienced. Examples can be watching the breathtaking scenery of the Egyptian Pyramids. Visitors who want TO BE there, to be captured in a magic atmosphere.

4) Escapism (immersion + active)

Escapism represents experiences where the person becomes engaged in what is happening and participates actively, for example, by playing a videogame. In a museum it is reflected in visitors who want to try something, to use objects, to make questions to the guide or to interact with technologies. The focus is TO DO.

According to Pine and Gilmore (1999), experience is rarely related to only one of the four dimensions, or at least even if one dimension is emphasized, the experience will have elements of all the four realms. It is when users or customers perceive that they feel, learn, are immersed being in that place and do something actively, that all the senses become involved and that the experience feels meaningful. This is described as the "sweet spot" and represents the richest experience.

In the design field, we can speak about User Experience (UX) which consists in all the interactions occurring between the person and a product, a service or a system. Designing a high-quality experience means meeting user needs in the specific context where he or she uses the product, service or system. (Nielsen Norman Group 2021) Nevertheless, the focus is not only on the mere satisfaction of a need, but it is also about efficiency, pleasure, joy or fun. The higher the overall satisfaction, the greater the chance that the user will repeat the experience or recommend it to others. Research in psychology has consistently demonstrated an association between memory and emotion, indeed, emotionally arousing events are more likely to be remembered because of

the increased activation of the brain's limbic system, which has been correlated with enhanced explicit memory for both pleasant and unpleasant events.

This correlation means that designing a good user experience has a great power and applying this approach also to the museum context can bring very positive consequences. After understanding the visitor as explained in the previous chapter, the visitor's journey should be analyzed.

The physical visit to the museum is certainly the core of the experience but also the actions the user does before (like planning, discovering, buying the ticket, ecc.) and after (like, going to the coffee shop, deepening his/her knowledge, discussing about the visit, ecc.) the fruition of the exhibit must be taken into consideration. (Colombo 2020)

How visitors experience the museum, and thus what they learn, is related to a wide range of factors, like their prior knowledge and experience or their social group, but also their entering identity-related motivations which appear to have a particularly strong and important influence. (Falk) Indeed, the closer the visitor's perception of the occurring museum experience with his/her perceived identity-related needs, the more likely he/she will perceive that the visit was pleasing and will return to the museum again or encourage others to do so as well. What separates those who go to museums from those who do not is whether they perceive museums as places that satisfy those needs.

Furthermore, post-visit reinforcing moments such as conversations, news, articles or other kind of content play an important role in remembering and learning. To summarize the main phases, the visitor's experience it can be represented as a cycle (Figure 5).

At first, the user become aware of certain needs and is interested in the museum because he/she thinks that it is a place that can satisfy those needs. This thought can be due to past personal experience or word-of-mouth recommen-
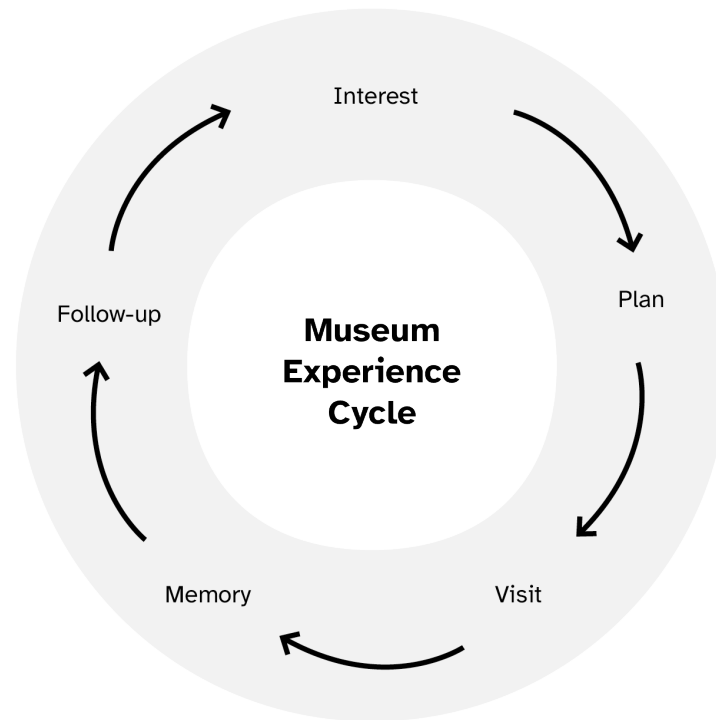
Interest

Plan

Follow-up

**Museum
Experience
Cycle**

Memory

Visit

dations from others.

In the second phase the user actually plans and chooses to visit the museum.

Later, he/she accesses the museum and use the space, the objects, the information in a personal way related to the fulfillment of the initial needs.

After the physical visit, the user remembers and learn about the experience that satisfied his/her needs.

Finally, the user is eager to revisit the museums another time when he/she will have again those needs and maybe he/she will suggest the experience in that museum to other people with similar necessity.

The entire process could restart, but it depends also on the cultural institution approach towards users. The key idea according to Falk is first to deeply understand why people choose to visit a specific museum and by learning more about this, it can be possible to design more attractive, sati-

sfying and memorable experiences for visitors.

Therefore, improving the likelihood that occasional visitors become regular users, and providing new ways to attract individuals who have never thought of museums as places that meet their needs.

1.3.2 Museum Experience Design: approaches and trends

In the museum world, a number of trends can be recognized that have an impact on museum experience design. In general, as already mentioned in the previous chapters, there is a shift from museums being collection-centered to being community/visitor-centered. Furthermore, thanks to the technological development the public can be more involved and supported both during the physical visit and beyond. Engaging the public is also possible through the digital, in addition, forms of crowdsourcing and co-designing are emerging towards increasingly democratic museums.

(Vermeeren, Calvi ans Sabiescu 2018) Shown and analyzed below four main trends useful to understand the ongoing change in this field.

1. From Visits to Continuous Dialogical Engagement

A considerable shift has happened from a focus on the collection and objects preservation to a focus on the visitors and on meaningful engagements. Speaking about museum experience means understanding how the visitor approaches the collection and all the touchpoints offered by the institution. With the advent of digital interactions experiences started to be enhanced exponentially. Over the course of time, visitors' involvement has increased its boundaries thanks to initiatives and projects where the public becomes a partner or a consultant in co-designing experiences or exhibitions. This participative approach brought new interpretations of the heritage and the museum content, going beyond the traditional system in which museums are the only knowledge holders towards a two-way conversation. Therefore, the experiences to be designed can be platforms that enable dialogues, multi-user content creation, collaborative activities and social learning practices. Going in this direction the shift is from the design of short experiences to the design of long-term dialogical relationships between the museum and its audiences paying attention to the balance of museums and user needs and control.

2. From a Focus on Individuals to a Focus on Crowds

In time, museums shifted from considering specific clusters (such as families and school classes) with particular needs and interest to involving the local communities connecting and putting down roots in the territory.
The new forms of communication emerged with the growth of social media have rapidly allowed museums to gain more visibility and to engage also with people unrelated to the museum, the geographical area or the community in which it is located. The crowd have been involved in different projects to gather ideas and opinions and doing micro-tasks, using the so-called crowdsourcing model.
"Crowdsourcing practices are rewarding on many levels: they enrich interpretive layers for museum collections, they strengthen relationships between museums and their public and they make audiences feel more connected, more

empowered and closer to culture and the arts." (Vermeeren, Calvi and Sabiescu 2018) The challenge in this approach is to find the right balance between seeing the crowd as an undifferentiated mass and considering it as a diverse multitude of audiences with tastes, wants, needs and interests.

3. From Printed Labels to DIY Technology and Internet of Things

Speaking about the tools supporting the understanding of the collection in the museum the change started from printed boards or labels summarizing the information of an object, later audio guides, displays and tablets were introduced with an increasing degree of interaction. In the last years it is expected that the museum experience becomes more integrated in people's daily practices through social media sharing of pictures, videos, reactions and comments or through Beacons merging the physical and the digital.
Other possibilities are related to 3D printing for making replicas of museum artefacts as tangible souvenirs or DIY technology, such as Arduinos, for creating museum experiences.

4. From Designing Individual Displays to Designing for Museum (eco) Systems

The traditional museum consisted in collections of objects, later on museums became more marketing oriented and needed to be branded, to be unique and recognizable in order to attract new audiences. Therefore, it was needed the design of an experience around the museums as a whole which evolved increasing the boundaries from single museums to connected museums as parts of various ecosystems.
Collaborations and co-operations in forms of partnerships and networks are born between cultural institutions, but also involving universities, libraries and other organizations producing positive influences, knowledge exchange and innovation. The challenge for designers following this approach is to think further and beyond the visitor's experiences occurring inside a museum, considering also actions and needs before and after the visit.

"Design needs to be rooted in a holistic vision that locates visitor experiences within a system of connected institutes without, however, losing sight of the museum's role within the system." (Vermeeren, Calvi and Sabiescu 2018)

1.3.3 Technologies

Over the past two decades, technology has cemented itself as one of the most important aspects of modern society. Today it's almost impossible to imagine a life unaided by digital devices, the Internet or computing tools. From business and leisure to communication and information, our reliance on technology is all consuming in almost every aspect of daily life, changing the way we see and interact with the world. In the cultural sector, sometimes it is seen as the enemy of culture, on the contrary, when used well, technology can help in bringing visitors closer to a museum and to the history a museum is trying to convey, increasing focus and interest on the collections. It is important to underline that a good practice for cultural institutions would be to use safe and tested technologies, not to intrusive and easy to use in order not to represent a barrier for the different kind of visitors. (Mandarano 2020) In addition, the object or masterpiece should be highlighted by the device or the digital tool, it should be the focus.

1. Totems and multimedia tables

Basically, all totems and multimedia tables have a screen where images or content are shown, but it is also common to have a touch screen display to allow the interaction with the user. While table have an horizontal structure which can enable multiple interactions at the same time, totems are usually designed for an individual use. Both the solutions implicate a standing fruition of the person. Through a connection to a computer the contents can be managed or modified.

2. App

Applications are part of our everyday life and are designed for smartphones and tablets. They are divided in two main categories: native apps and web apps.
The former are developed for specific operating systems (for example iOS or Android) and are installed in the user's device. The latter are accessible from the user's device through a connection with a remote application and require Internet access. Both the systems have pros and cons: a native app occupies space in the device but at the same time can be used for notifications and doesn't require Internet connection, on the contrary a web app requires a connection which is not so common to find in a museum, but the user doesn't have to download anything. Apps are usually designed to be used during the physical visit in a museum, but according to the goal they can be very useful also before and after the visit.

3. Proximity marketing

There are also interesting systems that allow a digital communication with people in a specific area.

Beacons are small, wireless transmitters that use low-energy Bluetooth technology to send signals to other smart devices nearby (the distance can vary from 10 cm to 70 m). They can communicate with smartphones, tablets and all mobile devices equipped with an app for decoding messages from devices. This smart technology is largely linked to the fact that it is economic and very useful for the exchange of data. Furthermore, beacons can map people or machinery within a given area and their usage is flexible for different sectors: from retails, to tourism or hospitals.

Near Field Communication (NFC) is a standard-based short-range wireless connectivity technology that makes life easier and more convenient for consumers around the world by making it simpler to make transactions, exchange digital content, and connect electronic devices with a touch. Indeed, simply placing a smartphone near the specific label it is possible to transmit contents, for example additional information regarding a masterpiece in the context of museums.

QR codes (Quick Response codes) are two-dimensional codes that if scanned by the camera of a smartphone allow instant access to information and content. They are capable of storing lots of data.

4. AR, VR, XR

XR (Extended Reality) is the "umbrella" term that includes systems that attempt to recreate or enhance the tangible reality through visual or textual content and also with the possibility for the user to interact with the content.

Augmented Reality is an experience where computer-generated objects and information are superimposed to the real world as additional layers and are visible through the use of a smartphone or special glasses. In the cultural sector this interaction is useful to visualize information about a masterpiece and for example in case of deteriorated or broken objects it is excellent to recreate the original shape.

Virtual Reality consist of a 3D environment created with specific software that completely covers the reality. The user must wear a VR headset in order to be immersed in a new world for example to see a reproduction of an ancient building or an historical scenario. In the last year this technology has been employed for example in the gaming context to amplify the experience.

MR, that is to say Mixed Reality, is the merging of AR and VR where physical and digital objects co-exist and interact in real time. Like Virtual Reality an headset or googles are necessary.

5. Videomapping

It is a technique that consists in the projection of light on more or less complex objects, surfaces and buildings. In particular, images, video and animations can be used to create extraordinary effects for artistic performances or for storytelling purposes. The surface become like a canvas or a screen.

6. Chatbot

A chatbot is a software that simulates human-like conversations with users via text messages on chat. Its key task is to help users by providing answers to their questions, guiding him/her through predefined options. This technology is particularly close to the new generations which are used to text friends through a chat. From a museum point of view
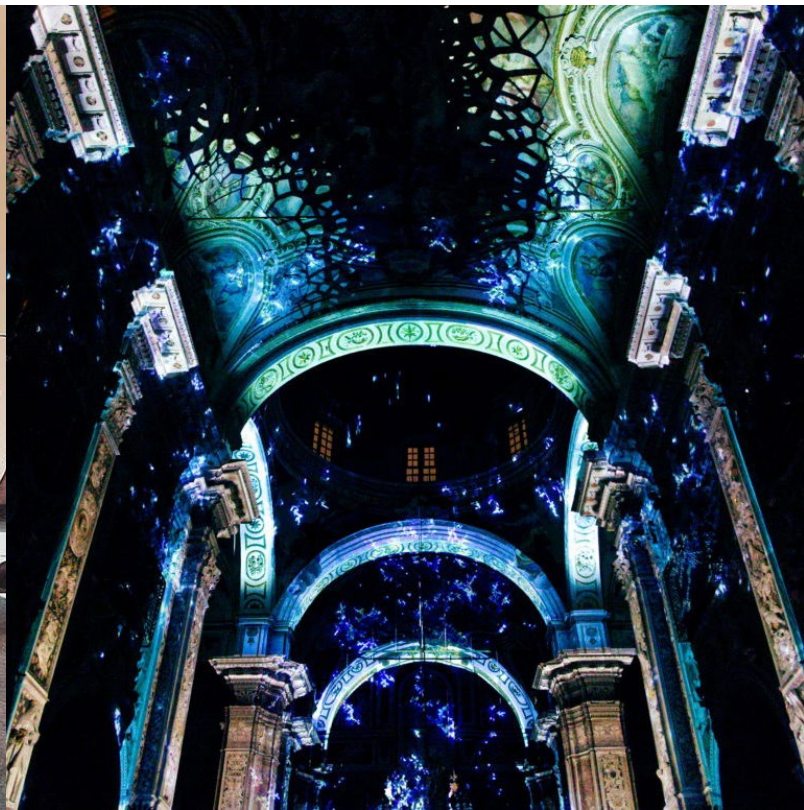
a chatbot can represent a direct and friendly interaction for a first contact with the visitor or it can be used as a digital assistant during the visit.

7. Videogames

Videogames have been present for many years in the lives of billions of people and have evolved radically thanks to the spread of broadband, new software and the influence of social media. For some time, they have been present in the Anglo-Saxon artistic and cultural sector and in recent years also in Italy. They can be very useful to bring new generations to the museums through entertainment and educational paths. Furthermore, they can recreate environment and scenarios that belongs to other historical period which are connected to the museum collection. With this tool the visitor can feel more connected with the cultural institution reinforcing the knowledge and the memory of the visit.

8. Technologies under trial

Wall ++ is a smart surface (Youtube 2021) that, thanks to conductive paint and electromagnetic sensors, can become a touchpad, can recognize the movement of the people near the wall and can track the use of electric appliances. If used in a museum can be very interesting both for recreational and educational purposes, in addition it is not bulky or intrusive.

As part of the CEMEC Connecting European Early Medieaval Collections project, the CNR Institute for Applied Technologies for Cultural Heritage, in collaboration with E.V.O.CA. (Encoding Visions on Canvas), has conceived an original holographic showcase. It is designed to recreate a sort of sensorial dimension around the real object in order to produce a narration more than just a presentation. The exhibited masterpiece is enhanced by projections and sounds as if it was the protagonist performing on a stage.

All the tools described above have a great power if used and applied properly considering the entire museum experience. Design disciplines like UX and UI are specialized in ensuring accessibility and usability, so the choice of colors, dimensions of the elements, intuitiveness of interactions are just some of the factors to take into consideration in order to give the best experience to visitors.

Figure 6: Holographic showcase (Source: https://www.archeomatica.it/musei/la-scatola-delle-storie-verso-una-drammaturgia-dell-oggetto-museale-con-le-vetrine-olografiche)

1.4 Case studies

After exploring the museum context with the impact and consequent reflections of COVID-19, the public's motivations and needs and the theory about museum experience design, it has been essential to analyze existing projects and initiatives that are linked to the trends emerged during the desk research.

Three categories has been analyzed:

- **Museums go to the public:** projects that are based on the decentralization of the museum or the collection in structures more or less far from the headquarters;
- **Listening to the public:** initiatives that actively involve the public in order to make design decisions, to co-create or to participate in the museum's life;
- **Museums beyond the visit:** digital services and contents that support the visitor before and/or after the visit.

In the following pages are reported four examples for each cluster, providing:

- **name of the initiative**
- **pictures**
- **general information (period of time, location, promoter)**
- **description of the main features**
- **value and purpose.**

Figure 7: Galleria degli Uffizi (Source: https://initalia.virgilio.it/uffizi-diffusi-luoghi-opere/gli-uffizi-diventano-8220diffu-si8221-luoghi-e-opere-del-progetto-41118)

WHEN 2021

WHO Florence's Uffizi Gallery

WHERE Tuscany, Italy

WHAT The initiative "Scattered Uffizi" has been launched by director Eike Schmidt who is planning to exhibit works from the Renaissance masterpieces collections at around 100 sites across the Tuscany region.
WHY This project can bring to a different type of tourism in which culture can be spread in people's daily lives and visitors are not gathered in a single place. Furthermore, the thousands pieces in the storage of the museum could be shown around the local territory in more intimate settings.

SOURCE Cascone 2021

Rijksmuseum Schipol Airport
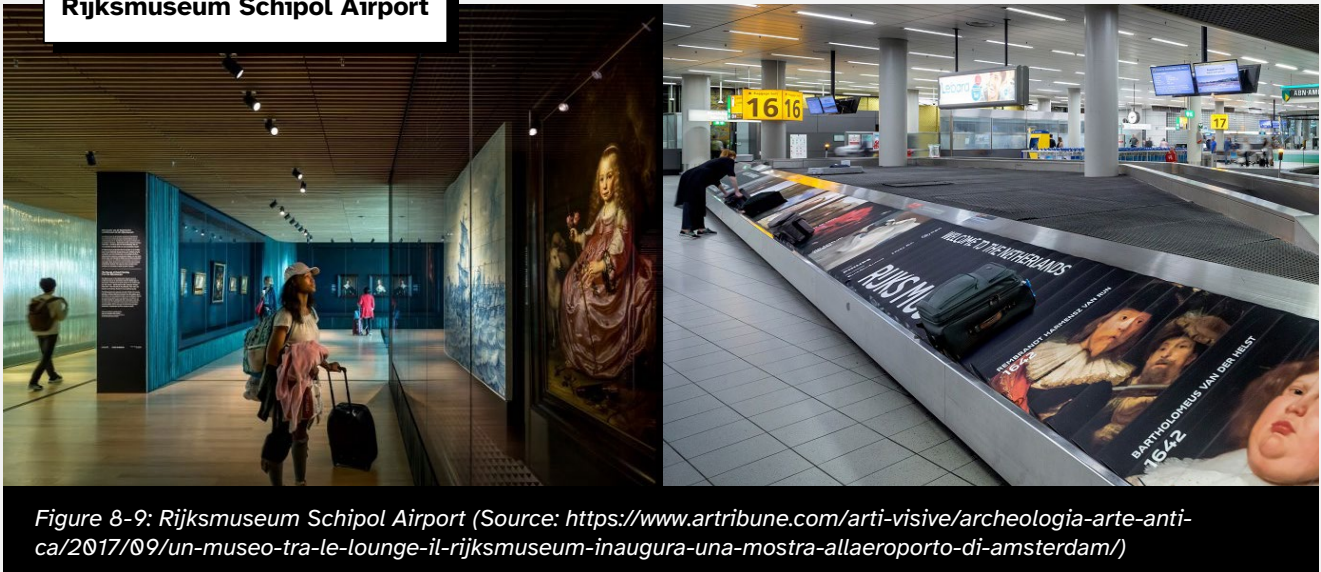
Figure 8-9: Rijksmuseum Schipol Airport (Source: https://www.artribune.com/arti-visive/archeologia-arte-antica/2017/09/un-museo-tra-le-lounge-il-rijksmuseum-inaugura-una-mostra-allaeroporto-di-amsterdam/)

WHEN 2002

WHO Rijksmuseum

WHERE Amsterdam-Schipol Airport

WHAT The space is the world's first museum "branch" located in an airport. In the limited area various paintings from the Rijksmuseum collections are on display along an S-shaped space of 167m2. It is also possible to buy gadgets and souvenirs from different Dutch museums at the shop adjacent to the exhibition area. In addition, to inform of the presence of the exhibition, in 2017 a carousel for luggage recovery was entirely decorated with images of the paintings on display

WHY This project represents the willingness of the museum to broaden its horizon, to connect and to communicate with an audience of vast dimensions and variety in order to promote culture.

SOURCE Maida 2017

Figure 10-11: MICRO installations (Source: https://micro.ooo/)

WHEN 2019

WHO Amanda Schochet and Charles Philipp

WHERE New York City and San Francisco, USA

WHAT MICRO is the first free distributed science museum and consist of six-foot-tall durable structure. A team of scientists, designers, engineers, and storytellers replicate a museum expressing some of the main contents or concepts in a small tower and place it in public places like hospital waiting rooms, community center and others. The product not only gives written and visual information but also offer simple interactions, effectively attracting the public due to the particular design.

WHY The project is on a mission to provide equal access to fundamental knowledge, both from the economical and geographical point of view.

SOURCE Micro 2021

Micro-folies

Figure 12: Micro-folies interactive space with students (Source: https://www.lesechos.fr/pme-regions/ile-de-france/culture-les-micro-folies-essaiment-dans-les-territoires-1149105)

WHEN 2017

WHO La Villette, French Ministry of Culture and 12 national institutions

WHERE France

WHAT Micro-folies are small cultural places spread in the French territory, bringing together artworks from French National Institutions and museums that have been digitized in very high resolution. Two modes of visits are possible. In the first, which is autonomous, tablets are available, allowing the visitor to search for more detailed information about each masterpiece. They can also zoom in and access video games related to the collection they discover. The second mode is supervised by a mediator to guide the visitor in his discovery. There are also other kind of possible configuration of the space: the cafe folie (playling area & book library), the performance area (public dance events, shows, movie screening, etc.), the fablab / the DIY corner (3D printers, digital sewing and embroidery machines, VR, etc.). These adaptations are designed according to the hardware avaialable and depends on the financial resources of each Micro-Folie.

WHY The purpose of the network is bringing the public closer to works of art, in order to solve the problems of geographical distance. This type of system makes sense in rural areas, but also in areas that are physically far from city centers and peri-urban areas. The Micro - Folies are aimed at all audiences and are designed to be accessible, furthermore, they seek to spread curiosity and let the user free to build his/her own cultural journey.

SOURCE La Villette 2021 - Ministère de la culture 2021

Click! A crowd curated exhibition

Figure 13-14: Click! A Crowd-Curated Exhibition (Source: https://www.brooklynmuseum.org/opencollection/exhibition-s/3168#:~:text=Click!%20is%20an%20exhibition%20in%20three%20consecutive%20parts.&text=culminates%20in%20an%20exhibition%20at,the%20same%20works%20of%20art)

WHEN 2008

WHO Brooklyn Museum

WHERE New York City, USA

WHAT The museum invited the community to participate in a two-month evaluation of pictures for a photographic exhibit, using an online tool developed for the occasion. The public voted the photographs using a scale from most to least effective and taking into consideration different factors such as: aesthetics, techniques used and the relevance to the exhibition's theme ("changing faces of Brooklyn"). In addition, people were asked to self-select their knowledge level (from "none" to "expert"). Around 400.000 evaluations were collected.

WHY This project is relevant because it represents a rare situation in which the museum, traditionally considered a wise and sacred entity, provides a framework to the public which achieves more agency and even determines the content on view.

SOURCE Colombo 2020

Figure 15: pictures posted by the Oakland Museum of California on its social media profile for the initiative "Vote on Posters of Our Collection" (Source: https://museumca.org/blog/thank-you-voting-posters-our-collection)

WHEN 2019

WHO Oakland Museum of California

WHERE Oakland, USA

WHAT The museum asked for the collaboration and the opinion of the public for the renovation of a gallery. The initiative was held in 24 hours and the goal was to select posters of the 60-70 years on the issues of women's rights, prison reform, the environment. The vote was held on Twitter and Instagram Stories and the chosen works had to be exhibited in June 2020.

WHY The initiative is a good example of a museum opening and listening to the public creating a funny and engaging moment. The use of social media is also very positive because it creates a dialogue and stimulates interactions.

SOURCE Colombo 2020

Design Library

Figure 16-17: Design Library app and exhibit space (Source: Vermeeren, Calvi, Sabiescu, 2018)

WHEN 2016

WHO Sophie Bonen

WHERE Design Museum, London, UK

WHAT This is a Master thesis project designed at the Delft University of Technology for the Design Museum in London. The service provides the possibility for the public to borrow one design object of the collection at a time for a limited period in which they can experiment with it and live with it. An application encourages users to share opinions, pictures and curators, designers and other people can ask questions creating discussions and reflections. Every month, the chosen design object is exhibited in a special area where people can see the pictures of other people using the product. Finally the photographs are used for a related exhibit.

WHY The aim of the project is to involve more the public with the design pieces of collection. In particular it pursues the objective of bringing people closer to the design field in general, communicating them the values of the objects displayed. It is innovative because breaks the traditional barrier between the visitor and the collection by allowing the public to touch and even experience the objects in their everyday life at their homes.

SOURCE Vermeeren, Calvi and Sabiescu 2018

Rijkstudio Award

Figure 18: Rijkstudio Award project example (Source: https://www.rijksmuseum.nl/en/rijksstudioaward)
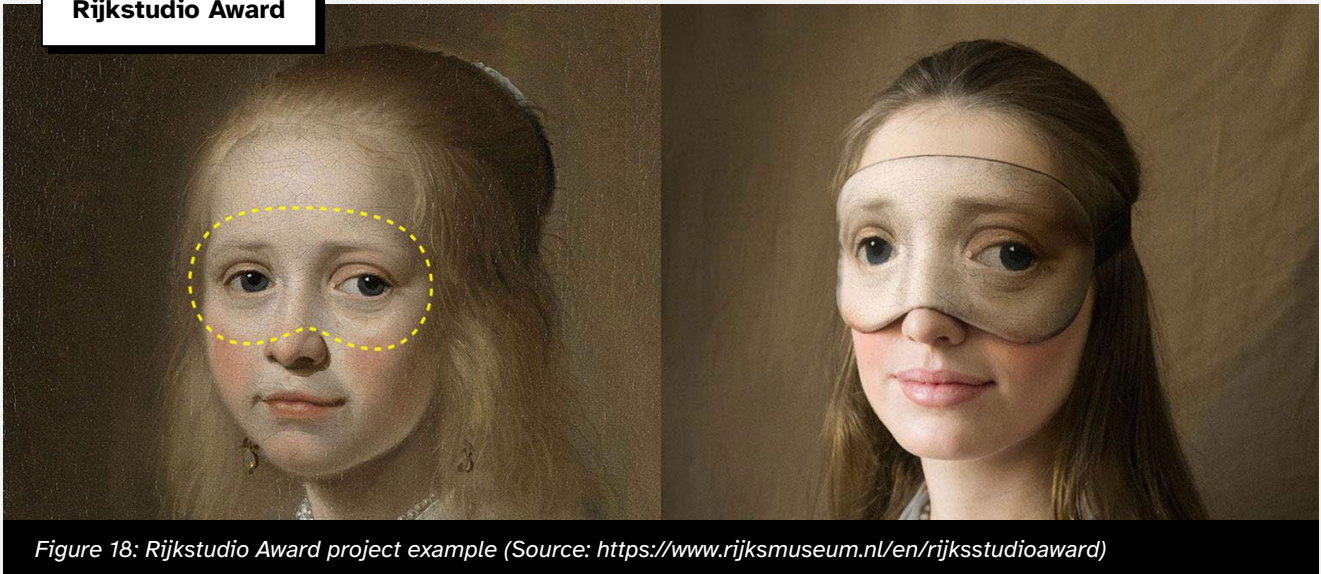
WHEN 2014-now

WHO Rijksmuseum

WHERE Amsterdam, Netherlands

WHAT It is a biennial art and design prize from the Rijksmuseum. The competition invites everyone to create their own masterpiece inspired by the museum's collection. Indeed, people can view and download more than 600,000 items for free and at high resolution anytime from the museum website. In this way they can print, modify, customize the masterpieces and therefore design their own creation. In the end, an international jury of experts assess 10 finalists and 3 winners who will get a money prize.

WHY The quote of the Dutch Museum is very clear: "Our art belongs to the world. Use our art to create new art." This initiative is the evidence of an open-minded museum which stimulates and encourages creativity and reward good ideas giving value to the public.

SOURCE Rijksmuseum 2021

Figure 19: Brera Plus homepage (Source: https://pinacotecabrera.org/news-pinacoteca/brera-diventa-plus/)

WHEN 2020

WHO Pinacoteca di Brera

WHERE Milan, Italy

WHAT An online platform that enhances the experience in the museum offering extra content in three main categories:

- DocPlus proposes unreleased documents, reportage and interviews about special events with the support of multimedia content;
- SpotPlus allows the exploration in HD of the artworks with texts, videos and music;
- LivePlus offers live-streaming events, concerts and conferences.

To join BreraPlus visitors can register and subscribe or use the museum card if they already have it.

WHY The initiative is relevant because presents a new and open way to experience the museum content. There is an unlimited space in which the user can freely explore and discover new information anytime and anywhere.

SOURCE Tanni 2020
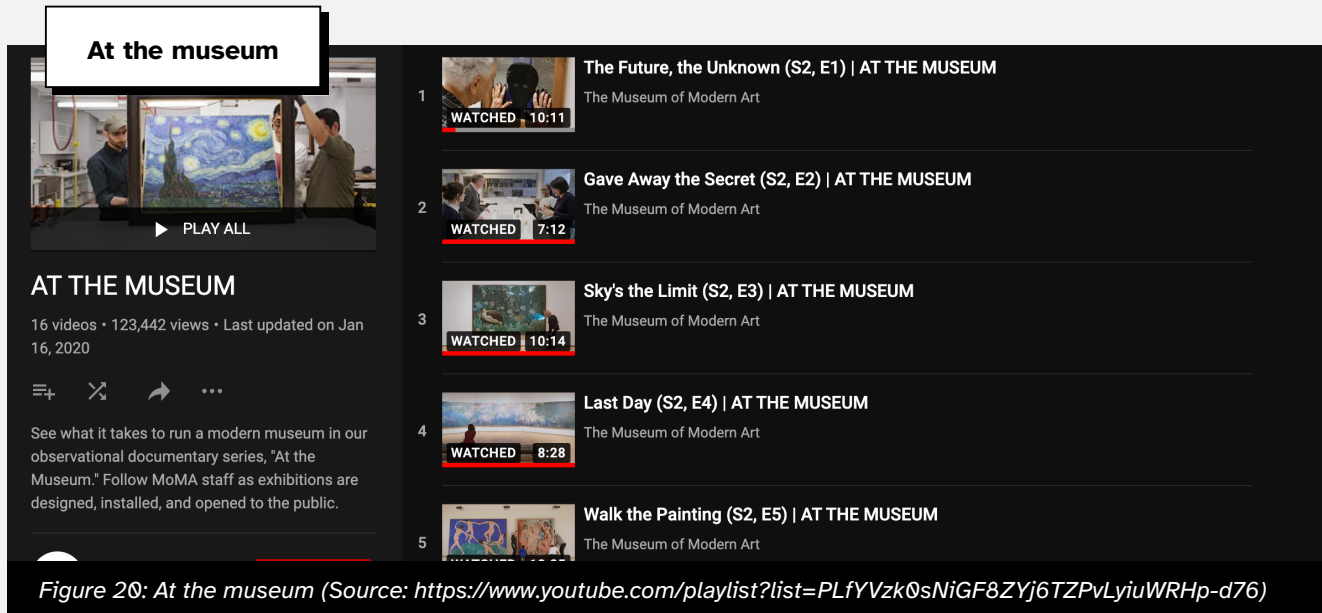
Figure 20: At the museum (Source: https://www.youtube.com/playlist?list=PLfYVzk0sNiGF8ZYj6TZPvLyiuWRHp-d76)

WHEN 2017-2019

WHO MoMa

WHERE New York City, USA

WHAT A two seasons web series composed by 10 minutes episodes which were posted on Youtube every Friday by the Museum of Modern Art. The documentary shows to the public backstage activities of the museum staff, from the exhibition design, to its installation and opening.

WHY The initiative is interesting because offers a different perspective of the museum presenting the hidden part of the institution. The visitor in this way can understand the big effort of the staff in taking design decisions, organizing the fruition, taking care of the masterpieces and so on. Furthermore, the choice of using a very popular format like a short web series is a smart way to attract and intrigue the public from the beginning to the end.

SOURCE Youtube 2021
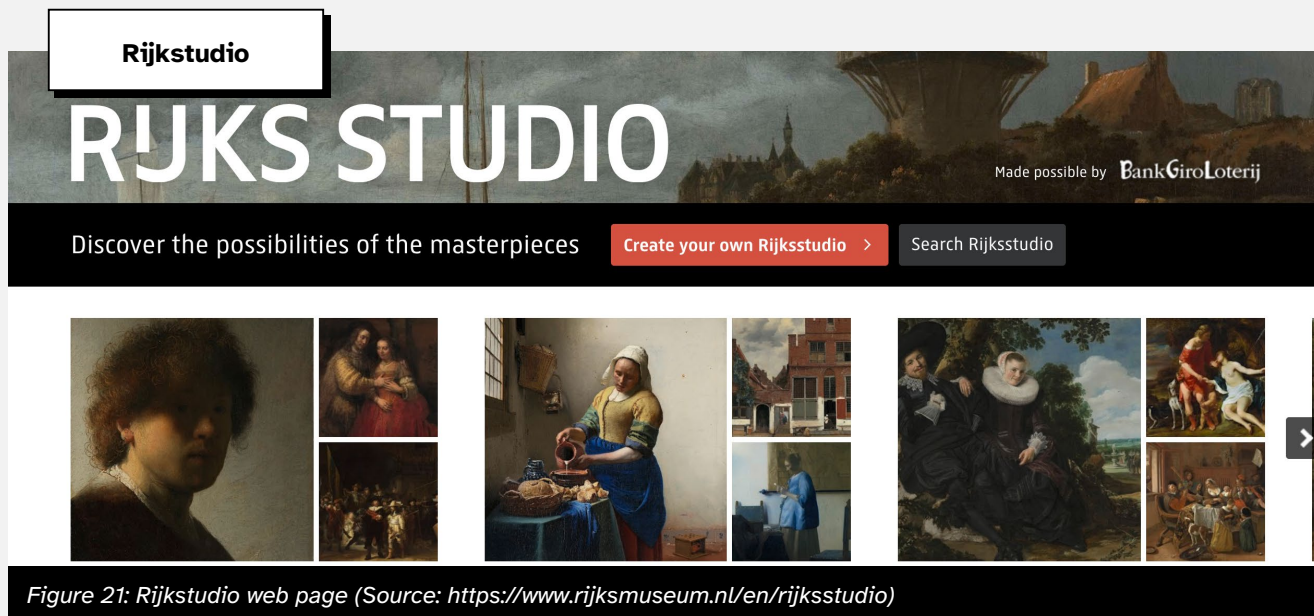
Figure 21: Rijkstudio web page (Source: https://www.rijksmuseum.nl/en/rijksstudio)

WHEN 2012

WHO Rijksmuseum

WHERE Amsterdam, Netherlands

WHAT A section in the museum website where the public can explore the masterpieces of the collection using predefined filters and with the possibility to save and download pictures of each work of art. In addition, people can create personal collections with their favourite pieces through which they can plan their visit in advance or for research reasons. This system creates a community of visitors who can appreciate and take inspiration from the respective collections.

WHY It is relevant that the institution's website brings both the collection and the museum closer to the public. In one touchpoint people are provided with many useful tools to customize their experience before the physical visit in the museum according to their tastes and interests. Furthermore, they can deepen their knowledge also after the visit and whenever they want to.

SOURCE Rijksmuseum 2021

The Pen

Figure 22: The Pen (Source: https://www.cooperhewitt.org/events/current-exhibitions/using-the-pen/)

WHEN 2015

WHO Cooper Hewitt, Smithsonian Design Museum

WHERE New York City, USA

WHAT An apparently simple object like a pen becomes a useful tool for visitors during the museum experience and after. Indeed, the digital pen is useful to draw and interact with the multimedia table around the exhibit, but also you can save and collect your favourite pieces of the collection. After returning the pen and leaving the museum, typing a code on the ticket in a private area of the website it is possible to see the objects collected during the visit with additional information.

WHY The Pen or in general, an object to use during the visit, can have a great power from the museum point of view in tracking how people experience the exhibit. On the other side, for people it is an original way to live the physical visit, it represents a moment to recall after the visit what they have seen and loved from the collection and finally it can create a special memory.

SOURCE Mandarano 2020

After analyzing each case study it was useful to compare and reflect on their main features, for this reason, two positioning maps were developed with the aim to look for unexplored areas.

Along the horizontal axis it was fixed the level of participation of the public while on the vertical axis it was indicated the opposite physical/digital for the first scheme and individual/collective for the second.

In the first scheme (Figure 23) the initiatives were almost distributed in all the quarters except in the area of physical + high participation.

In the second map (Figure 24) two areas were highlighted: low participation + collective and high participation + collective.

In the end, the second area was chosen as the space to position the design solution, because was more coherent with the trends found during the research phase.

DIGITAL

At the museum

Vote on Posters of
Our Collection

Rijkstudio

Click! A crowd
curated exhibition

Brera Plus

Rijkstudio Award

**LOW
PARTICIPATION**

**HIGH
PARTICIPATION**

The Pen

Design Library

Uffizi diffusi

Micro-folies

Rijksmuseum
Schipol Airport

Micro

PHYSICAL
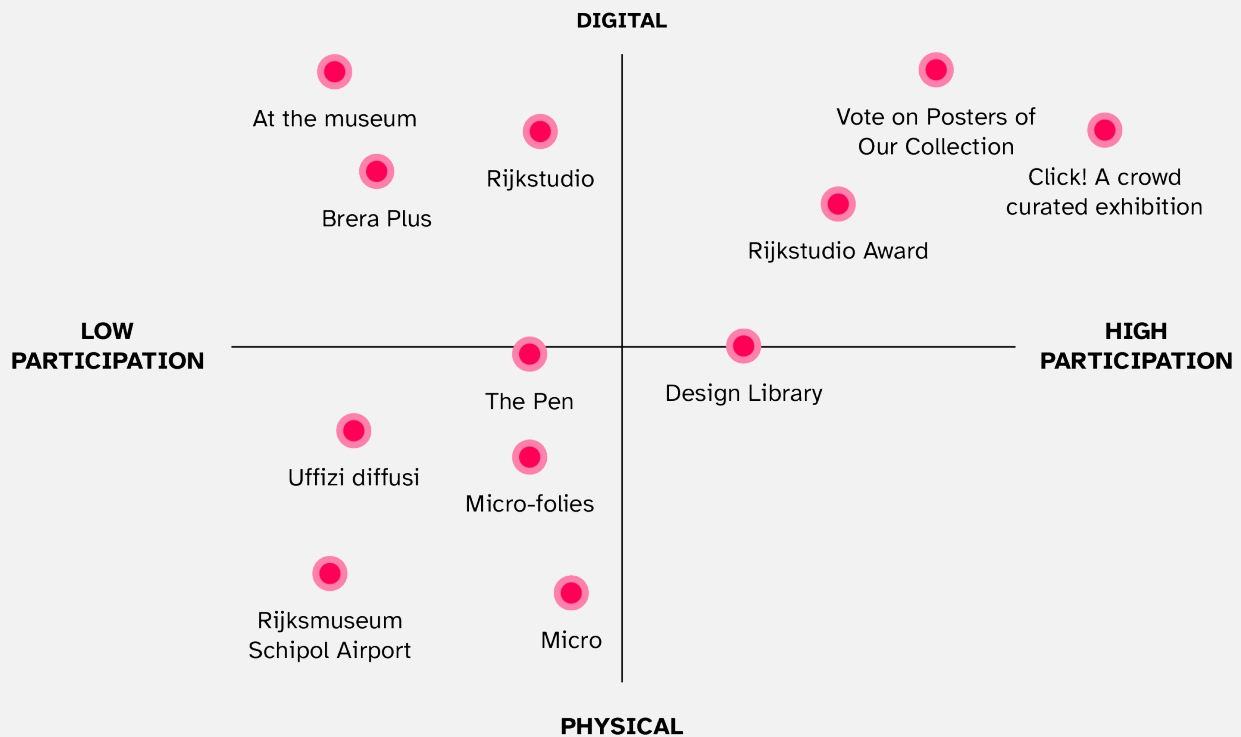
*Figure 23: Positioning map 1
(Graphycally produced by the author)*

COLLECTIVE

LOW
PARTICIPATION

HIGH
PARTICIPATION

Micro-folies

Uffizi diffusi

Brera Plus

Micro

At the museum

The Pen

Rijksmuseum
Schipol Airport

Rijkstudio Award

Design Library

Click! A crowd
curated exhibition

Vote on Posters of
Our Collection

INDIVIDUAL
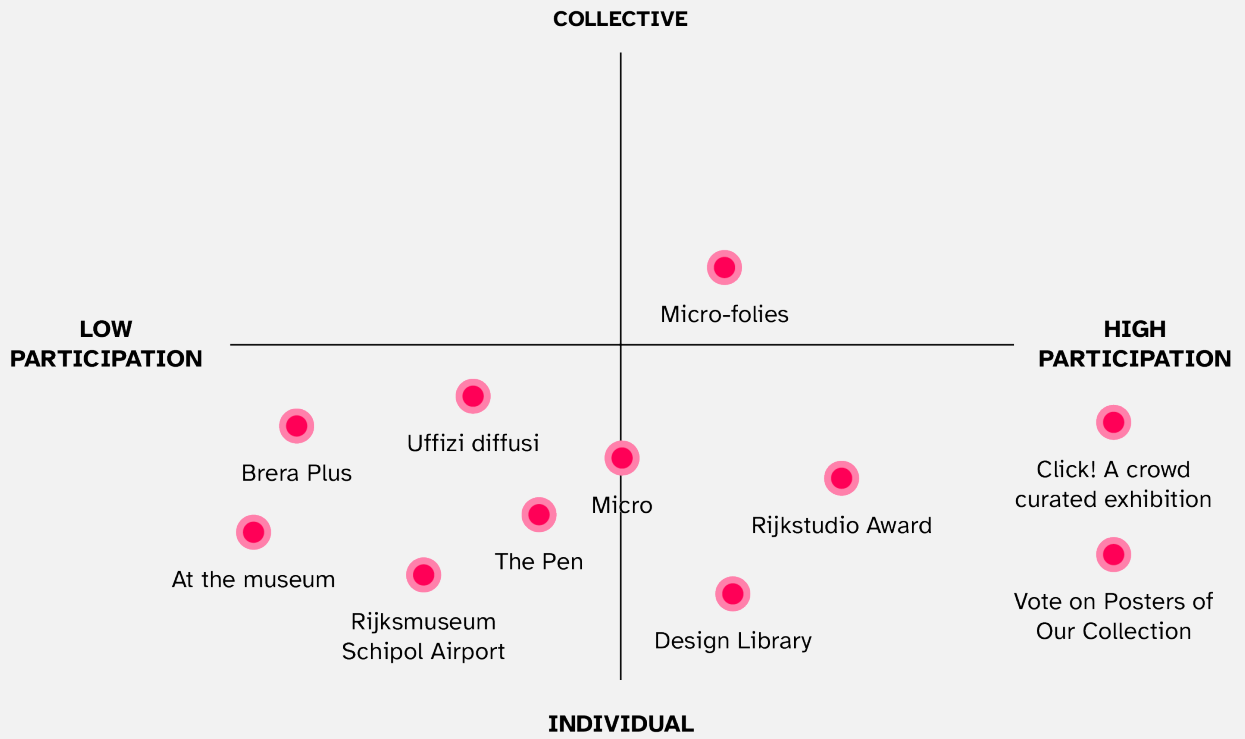
Figure 24: Positioning map 2
(Graphycally produced by the author)

67

1.5 User research

In order to gain a broader view on the topic of the thesis, two kinds of questionnaire were sent to the two main clusters of users: the museum institutions and the public. The remote submission has been chosen due to practical reasons: to reach more people in a short period of time and to comply to COVID-19 restrictions. Both the forms were designed in order to collect both quantitative and qualitative data and were composed by around 20 questions among which: closed, multiple selection, Likert scales and open questions. An important relevance has been given to opinions, thoughts and personal experiences. In order to create the questionnaires, Typeform has been used. It is an innovative website for the design of easy-to-use forms and surveys and for the smart collection of results in aggregated data. In the next step Microsoft Excel has also been used to better analyze the single answers. Thanks to the answers collected it was possible to learn more insights from specific opinions and thoughts that had not yet been discovered during the desk research.

1.5.1 Museums Questionnaire

The questionnaire has been prepared and sent to dozens of Italian museums of different sizes, from north, to south and to the islands, by e-mail during the months of December 2020 and January 2021. Unfortunately, due to the pandemic situation and therefore to periods of closure of the museums a total of 12 responses were collected, but this first contact was fundamental in order to create a connection for the following user tests. The goals were:

- **to obtain a cross section of the current museum offer (since the latest available data on museums from ISTAT dates back to 2019) and mission**
- **to analyze the impact and the opportunities emerged with COVID-19**
- **to understand the attitude towards innovation and evolution of the sector**

The questionnaire was composed by 4 main parts:

- general overview of the museum feature (kind, subject, ownership and staff)
- museum offer and support to the visitor experience (kind of access, exhibit area, kind of exhibit, communication channels, technology, services)
- COVID-19 consequences (number of visitors 2019-2020, COVID-19 effects on the museum and reflections on opportunities)
- museum's view on its mission, on the future and on collaboration with other institutions.

Analyzed below the results of each part.

From the first part of collected data it can be noticed that the interviewed were mostly medium sized museums. The 58% were non-state institutions (non-state museums, associations, foundations and others), the prevalent subject was Art (67%) followed by Archeology (17%), the museums' ownership was mainly public (83%) and the 58% had more than 20 people in the staff followed by the 17% which had only 2 people and by another 17% which had from 11 to 20 people.

Considering the experience offered to the visitors, the majority of the interviewed had a paying and mixed access (50% and 42%) and a big exhibit area of more than 5.000 squared meters for the 42% and from 1.000 to 5.000 for the 33%. The kind of exhibit organized was temporary for the 83% and permanent for the 50%. For what concern the communication, the favourite channels are: website (83%), social network (92%), flyers and brochures (75%) and poster (58%). The data regarding digital services and touchpoint support the lack in digitization spotted by ISTAT in 2019 and reported in the first chapter. Indeed, only 58% had an online ticket office, only 33% had a virtual tour and only 25% had an online catalogue. Among the technological services offered during the visit only the 58% had a free Wi-fi and 17% had totems.

Analyzing the period before and during COVID-19 the impact is clear, but the numbers are still discretely high, indeed, if in 2019 the majority of the museums interviewed (33%) welcomed from 100.001 to 500.000 visitors, in 2020 the 42% reached from 10.001 to 100.00. When asking the main effects of the pandemic, the three main topics were: new digital initiatives, creation of a new relationship with the public and reorganization of the museum system in terms of offer, staff and visit. Among the opportunities to seize after COVID-19 the answers were mainly about investing and using more the digital touchpoint in order to reach a bigger crowd and about reflecting on the

role of culture and museums considering a new configuration of the sector.

The 50% of museums declared to have organized at least one event outside the museums, such as artworks exchanges, international initiatives, exhibitions co-design, recurring events or itinerant shows. This is also supported from the willingness to collaborate and co-operate between institutions which on a scale of 1 to 5 is 5 out of five for the 100% of the interviewed.

Speaking of more abstract concept such as the mission of a museum, to the question "In general, which is the museum's mission in these recent times?" the answers reflected a traditional and conservative view, indeed the most chosen actions were: spread culture (83%), educate (58%), research (50%), exhibit (33%) and entertain/stimulate (8%). Looking at the future, the interviewed expressed three main trends: including digital interactions in the museums and online (50%), more co-operation between institutions at national and international level (25%) and being in step with the times becoming more contemporary (25%).

In the next page a graphical representation of the most significant data of the results is reported.

In conclusion, the answers confirmed and reflected the data collected during the desk research adding some interesting point of view on the future of the sector and on the mission of museums which will be more oriented on the digital and on collaboration between institutions. Nevertheless, the main perception is that museums are more focused on themselves than on the visitors' desires and needs, indeed, engagement, entertainment and interaction are not so emphasized in the answers.

User research:
Museums questionnaire results

GENERAL INFORMATION

12 institutions
Number of all the cultural institutions interviewed.

58% Declared to be an indipendent museum.

8% Science

16% History/ Natural History

67% Art

17% Archeology
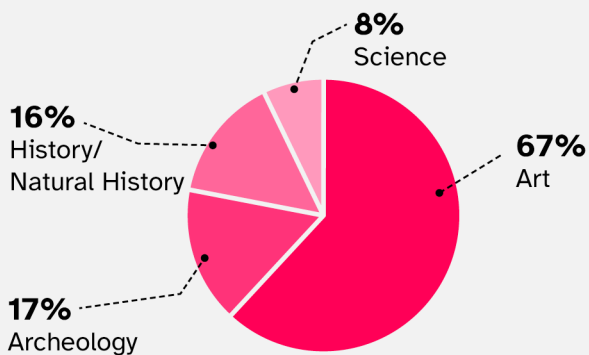
COMMUNICATION AND SERVICES

83% Have a website.

92% Have at least one social network account.

58% Have an online ticket office.

33% Offer a virtual tour of the museum.

COVID-19 IMPACT

33% Welcomed from 100.001 to 500.000 visitors in 2019.

42% Welcomed from 10.001 to 100.00 visitors in 2020.

75% Will invest and use more the digital touchpoint.

42% Will reflect on the role and configuration of the museum.

ROLE AND FUTURE TRENDS

83% Spread culture

58% Educate / Teach

50% Research / Study

50% Preserve

33% Exhibit

8% Entertain / Stimulate

10 in 10
Expressed the willingness to collaborate with other institutions.

50% Predict new digital interactions online and in the museum.

25% Predict more co-operation among cultural institutions.

1.5.2 Public Questionnaire

The questionnaire has been prepared and sent to people from 20 to 60 years old in order to analyze the public "slice" in which the interest to museum start decreasing according to ISTAT data presented during the research (see paragraph 1.2.1). People were contacted by e-mail and/or WhatsApp during the month of November 2020 with a great result of 57 answers. The goals were:

- **to understand the public's attitude towards museums and therefore their perceptions and expectations**
- **to analyze the impact of COVID-19 on the cultural fruition and on the choice of visiting or not a museum**
- **to discover their habits and actions before and after the visit.**

The questionnaire was composed by 4 main parts:

- general information on the user (age, job and interests)
- museum perception and expectations (adjectives, kind of mission, experience expectations on the present and on the future, attitude towards cultural fruition)
- factors contributing to the choice of visiting a museum or not before and during COVID-19 (such as distance, ticket cost, safety and others)
- actions the user does in the period of time before and after the physical visit.

Analyzed below the results.

The people interviewed were mainly from the youngest generations, indeed: 46% from the Generation Z (16-24

71
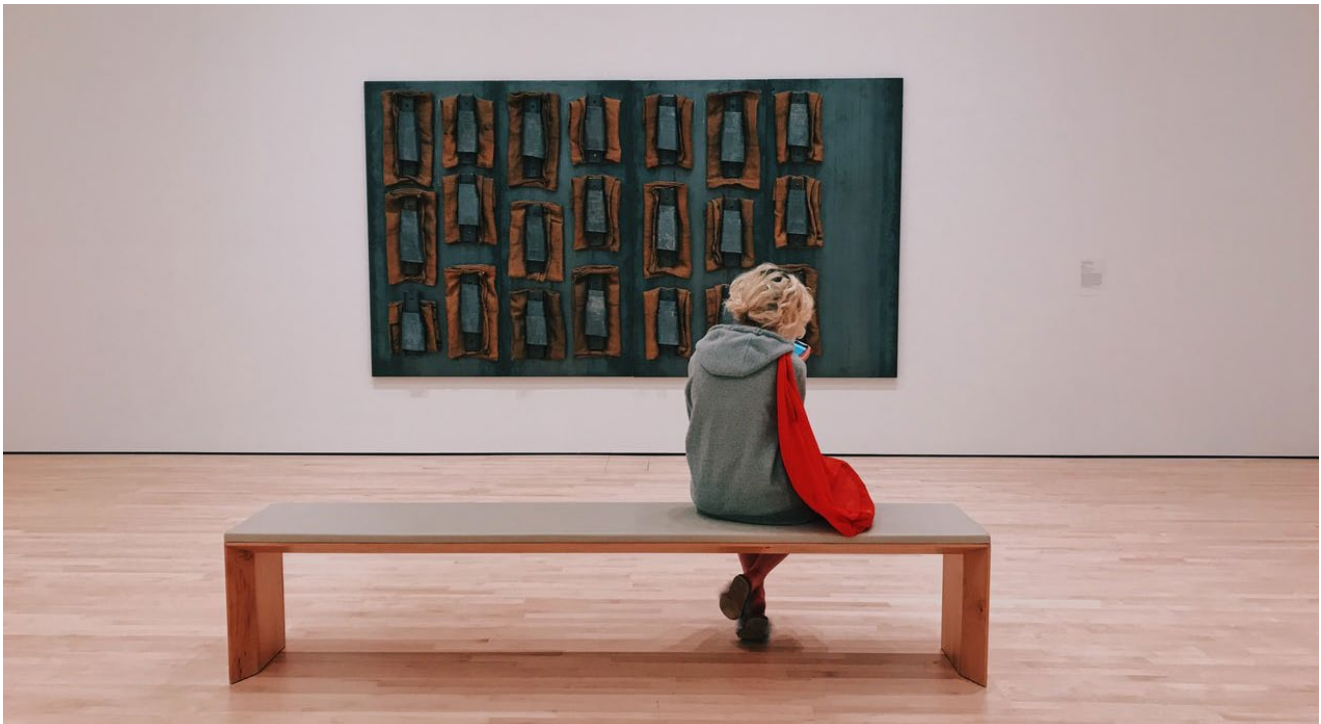
years old), 38% from the Millenials (25-39 years old), 14% from the Generation X (40-54 years old) and 2% from the Boomers (55-64 years old). The main interests and hobbies indicated were: sport (67%), art (60%), reading (36%) and travels (36%). Among the interviewed the 93% visit a museum gladly.

The museum is perceived from the public as interesting (50%), as cultural and historical (26%), educational (21%), engaging/stimulating (19%), boring (14%) and relaxing (10%). Furthermore, speaking of museums' mission people chose educating (45%), spreading culture (45%) and entertaining/stimulating (33%). For what concern the museum experience expectations, engagement (48%) and learning (46%) are the most important features. The importance of technology in a museum seems also to be very high with the 33% of people voting the maximum in a scale from 1 to 6. Thinking about the future cultural fruition, people desire and expect: technology (78%), participatory and sensorial experiences (32%), inclusion and accessibility (32%).

Analyzing the factors in the decision of visiting a museum before and during COVID-19, three main aspects stand out among the others: museum location, safety and transportation to the museum

Considering the visitor experience in general people before the visit gather information online about the exhibit (76%) and plan the visit (26%) while after the visit they usually reflect or discuss on the topic (33%) and search for additional information (28%). These answers were useful to build in the next step a visitor's journey and at the same time underlined the lack of touchpoint and services in the phases precede and follow the physical visit.

In the next page a graphical representation of the most significant data of the results is reported.

In conclusion, the attitude perceived is in general the opening and desire for digital and technological interactions and the expectation of inclusive and accessible experiences which welcome and engage the visitor. The educational and learning aspect is also very important in order to deepen the knowledge and stimulate the visitor's mind. On the other hand, museums are still perceived as places with very traditional features. In addition, the lack of support during the visitor's journey can represent interesting opportunities.

User research:
Public questionnaire results

GENERAL INFORMATION

57 people
Number of all the people interviewed.

93%
Declared to visit museums gladly.

2%
55-64 (Boomers)

14%
40-54 (Gen-X)

46%
16-24 (Gen-Z)

38%
25-39 (Millenials)
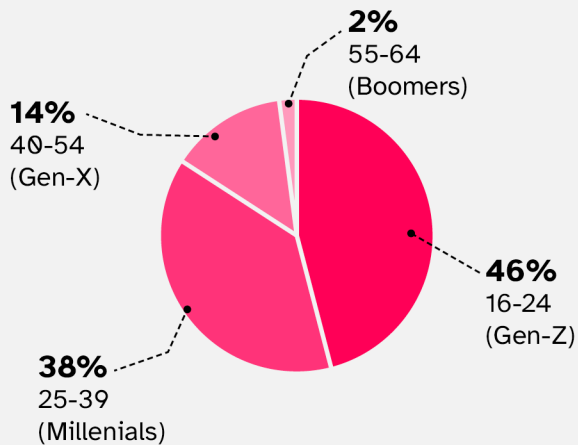
COVID-19 EFFECTS

83%
Spread culture

58%
Educate / Teach

50%
Research / Study

VISITORS EXPERIENCE

76%
Gather info online about the exhibit before the visit.

24%
Spend time in planning the visit before the visit itself.

33%
Reflect and discuss about the exhibit after the visit.

28%
Search for additional information on the exhibit after the visit.

PERCEPTIONS, EXPECTATIONS AND FUTURE TRENDS

50%
Intersting / pleasing

26%
Cultural / Historycal

21%
Educational

19%
Stimulating / Engaging

14%
Boring

10%
Relaxing

3 in 10
Expressed the maximum importance of technology in museums.

48%
Expect an engaging museum experience.

46%
Expect an educational museum experience.

78%
Think that in the future museums technology will be more present.

32%
Think that in the future museums there will be more engaging experiences.

→
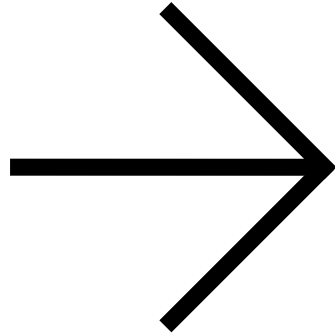
02
DEFINE

2.1 Research Insights

Gathering all the data and the information from the various stages of the research it was possible to obtain a big picture of the situation which identifies existing problems and possible opportunities. Reported below the main insights that were considered important and inspiring for the development of the following phase of ideation, divided in three main topics: museum context, museum audience and museum experience.

2.1.1 The museum context

Cultural sector crisis and digital push: Around the world museums are directly and heavily impacted by the global decrease of tourism, furthermore the lockdown experience highlighted the need to implement and develop alternative ways of enhancement and enjoyment of cultural heritage by the public and rethink the contribution that the digital technologies can provide.

Italian museums lack of resources and are still far from digitization: Italian museums are numerous (around 4.000) and the majority of them is independent from the state. The average staff is composed by 9 people who don't always manage at the best all the necessary activities. Overall, the incomes are not so high to adequately manage all the necessary activities of a cultural institution and may reflect the fragility of the system which lack of digitization knowledge and resources.

Necessity of redesigning the offer and redistributing the public: There are many small museums in terms of visitors and few big museums which attract the majority of

the public which is focused mainly on the most well-known structures at international level (usually state-museum). In the near future after COVID-19 it will be necessary to re-design some services and activities usually offered by museum structures and also to reduce the excessive concentration of the public in the same structures, also enhancing the less frequented destinations.

Visitors as partners: Museums should make increased efforts to understand their audience with a visitor-centered approach, but also, they should include them in the process of managing their own experiences, considering the public as a partner who actively participate in the system.

Museum connections: Museums of the future actively support one another by: encouraging visitors to pursue their interests and continue their cultural journey making links and recommendations to other museums, building territorial networks through dialogue, co-working and co-creation platforms. This approach would contribute over time at optimizing management costs and investment in innovation.

Democratization: Cultural institutions must be welcoming towards the impulses that come from society, approach and include in the first place the new and fertile minds of young people. The relationship with the public is becoming more horizontal.

2.1.2 The museum audience

Local and proximity tourism: The lockdown has reduced mobility, but at the same time has produced mobility itself. It intensified proximity relationships: at home or at least not far from home.

Cultural participation in Italy is particularly low: In 2019 only 3 out of 10 people visited a museum. The disaffection for this leisure activity spreads from the age of 20 years old and reaches the highest among the over 75 y.o.

(86.7%).

The cultural offer is more focused in the metropolitan areas: The habit of going to the museum, to the exhibitions at least once a year is affected by the structural opportunities offered by the context of residence.

Importance of understanding visitor's motivations and expectations: The closer the relationship between a visitor's perception of his/her museum experience and his/her identity-related needs, the more likely that visitor will perceive that their visit was good and the more likely they will be to return to the museum again and encourage others to do so as well.

The use of the Internet involves more and more people from year to year: Italian people are very active and par-

ticipatory in the conversations that take place online. The use of PC involves especially young people and reaches the highest levels from 11 to 44 y.o. The lowest values are reached in the older age groups > 65 y.o. The trend is similar for the Internet.
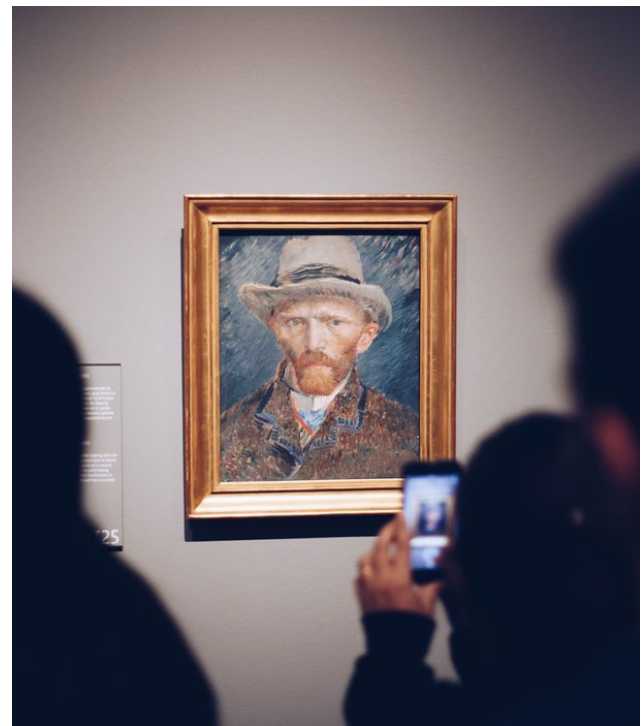
2.1.3 The museum experience

Considering the entire visitor experience /journey: It is when users or customers perceive that they feel, learn, are immersed being in that place and do something actively, that all the senses become involved and that the experience feels meaningful.

The physical visit to the museum is certainly the core of the experience but also the actions the user does before (like planning, discovering, buying the ticket, ecc.) and after (like, going to the coffee shop, deepening his/her knowledge, discussing about the visit, ecc.) the fruition of the exhibit must be taken into consideration

Continuous Dialogical Engagement: Over the course of time, visitors' involvement has increased its boundaries thanks to initiatives and projects where the public becomes a partner or a consultant in co-designing experiences or exhibitions.

Focus on Crowds: Crowdsourcing practices enrich interpretive layers for museum collections, strengthen relationships between museums and their public and they make audiences feel more connected, more empowered and closer to culture and the arts.

Designing for Museum (eco) Systems: Collaborations and co-operations in forms of partnerships and networks are born between cultural institutions, but also involving universities, libraries and other organizations producing positive influences, knowledge exchange and innovation.

2.2 Insight card and Design Challenges

After analyzing all the insights, in general, the main problems highlighted were four:

- **Lack of resources for medium-small museums**
- **Museums still far from the digitization**
- **Low cultural participation**

- **Scarce cultural offer outside the metropolitan areas.**

To better express the connection between needs and problems two insight card were created, one for each cluster of users. (Figure 25)

MUSEUM

Medium and small museums *want to* rethink and reinvent their offer *in order to* attract and create a bond with new and local visitors to survive to the crisis, *but* do not have the right tools and resources.

PUBLIC

People *want* a local engaging experience *in order to* fulfil their specific needs *but* do not perceive the museum as the right place to satisfy those needs.

Figure 25: Insight cards (Graphycally produced by the author)

The insights statements highlighted more specific problem areas that represent existing barriers for end-users. The following step has been reframing the insights into "How might we" question, particular design questions which have the function to shift from problem into design opportunities, provoking meaningful and relevant ideas. (The Interaction Design Foundation 2021)

Therefore, two HMW questions were formulated (Figure 26):
- How Might We give tools and resources to museums in order to rethink their cultural offer and survive to the crisis?
- How Might We offer to the public a local engaging museum experience in order to change their perception towards museums?

HOW MIGHT WE
give tools and resources to museums *in order to* rethink their cultural offer and survive to the crisis?

HOW MIGHT WE
offer to the public a local engaging museum experience *in order to* change their perception towards museums?
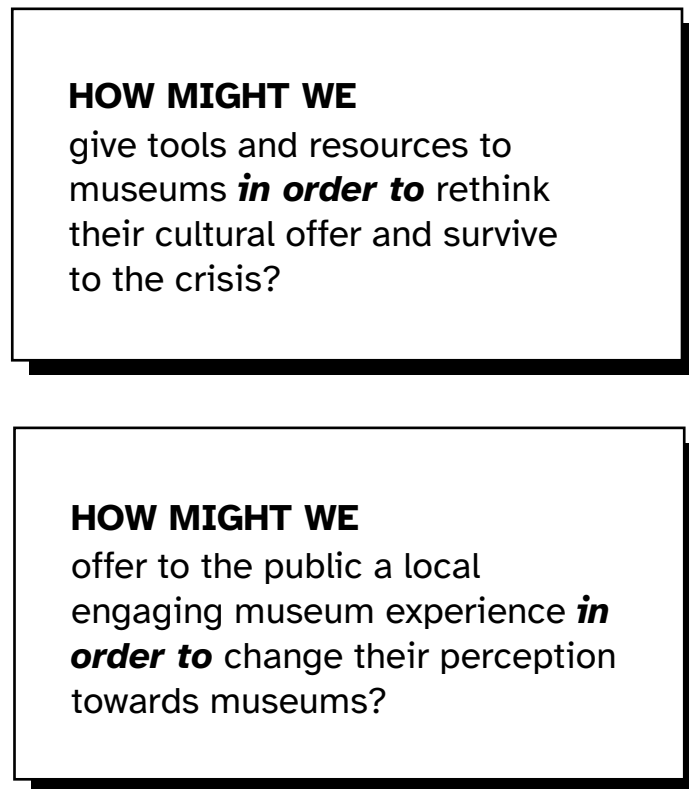
Figure 26: Design challenges (Graphycally produced by the author)

79

→
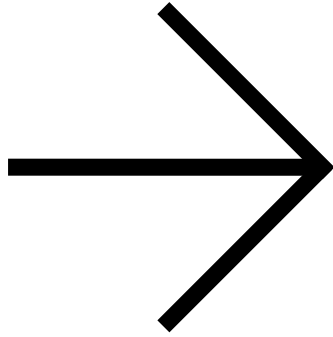
03

DEVELOP

3.1 Brainstorming and Ideas Cluster

One of the most important phases of the thesis project is represented by the ideation, the third stage of the Design Thinking process, in which creativity allows designers to generate ideas.

Once the design challenges were clearly defined, the brainstorming process started using Miro (Figure 27), a digital collaborative platform where it is possible to create post-it, schemes, uploading images and much more.

Actually, two sessions of brainstorming were necessary since the design challenges were considered equally important and it was difficult to mix them into one.

The approach was to encourage weird and wacky ideas, aiming for quantity and staying visual in order to help in bringing ideas to life. (The Interaction Design Foundation 2021)

After the brainstorming session (Figure 28-29), it was useful to start simplifying the scheme by: looking for similarities, identifying groups and combining ideas.

Four clusters emerged (Figure 30) which highlight interesting ways to solve the problems and to proceed with the project development:

- **Taking advantage of the digital**
- **Creating collaborations and connections**
- **Spread cultural experiences on the territory**
- **Considering a participatory approach**
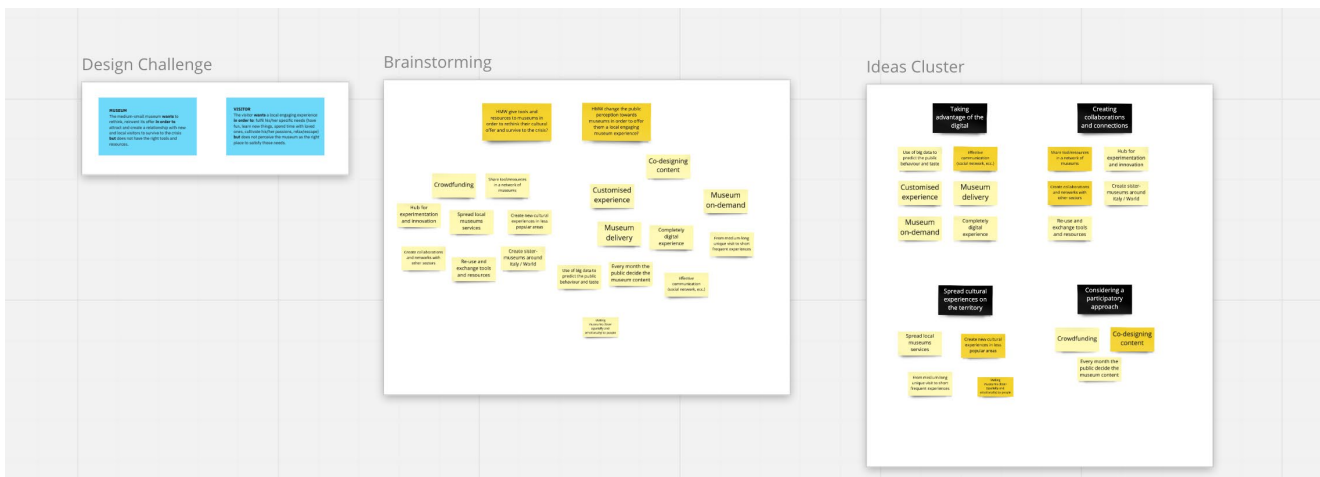
Figure 27: Screenshot from the Miro's board of the author

HOW MIGHT WE
give tools and resources to museums ***in order to*** rethink their cultural offer and survive to the crisis?

Share tool/resources in a network of museums

Create **collaborations** and networks with other sectors

Spread local museums services

Create **cultural experiences in less popular areas**

Hub for experimentation and innovation

Re-use and exchange tools and resources

Create **sister-museums** around Italy / World

Crowdfunding

Figure 28: Brainstorming HMW 1 (Graphycally produced by the author)

HOW MIGHT WE
offer to the public a local engaging museum experience ***in order to*** change the perception towards museums?

Co-designing the exhibit

Customized experiences

Museum on-demand

Museum delivery

Offering digital experiences

Every month **the public decide the exhibit content or topic**

Effective communication
(social media, advertising, ecc.)

Bring museums **closer to people (in space and emotions)**

From medium-long unique visit to **short frequent experiences**

Use of **big data** to predict the public behaviour and taste

**#1 CLUSTER
Taking advantage of the digital**

Use of **big data** to predict the public behaviour and taste

Museum delivery

Customized experiences

Effective communication
(social media, advertising, ecc.)

Offering digital experiences

Museum on-demand

**#2 CLUSTER
Considering a participatory approach**

Co-designing the exhibit

Every month **the public decide the exhibit content or topic**

Crowdfunding

**#3 CLUSTER
Creating collaborations and connections**

Share tool/resources in a network of museums

Create **collaborations** and networks with other sectors

Re-use and exchange tools and resources

Hub for experimentation and innovation

Create **sister-museums** around Italy / World

**#4 CLUSTER
Spread cultural experiences around the territory**

From medium-long unique visit to **short frequent experiences**

Bring museums **closer to people (in space and emotions)**

Spread local museums services

Create **cultural experiences in less popular areas**

3.2 Concept definition

Of all the ideas generated, the two most inspiring ideas from each cluster were selected (Figures 30), always taking into account the starting problems, combined together and implemented a little bit to obtain the first version of the concept presented in this paragraph.

The idea is to design a **digital and physical service** for museums, encouraging **collaboration** and involving the public in order to **co-design scattered cultural experiences** which meet the visitors' needs.

The concept consists of two parts:

- **areas equipped with devices** and with different setting up, spread over the territory in unused buildings

- **a website and an application** that allows the public and cultural institutions to connect, to interact and to access to different kind of contents.

The **museums** can:

- create a profile on the website to upload content to show to the visitor (both before and after the visit)

- choose one or more areas in the available buildings offered by the service to customize for one or more temporary exhibitions

- cooperate with each other, receive suggestions from the public in order to guide the design process before the exhibit and receive feedbacks after the visit.

The **public** can:

- express online his preferences on the topics and characteristics of each exhibition

- access to a cultural offer spread over the territory designed to meet his/her needs, each exhibition has its own particular interactions that are planned each time by museum institutions.

- access to extra content after the exhibit on the service app.

3.3 Concept development

With the objective of involving the users in the design phase and to really understand if the idea was effective and the service useful for people, two co-design/test sessions were organized. Co-creation is widely considered an essential tool of innovation: it allows people to join forces to regain possession of systems and logic that influence the context in which they live and, consequently, their daily lives.

A great reference to complete this phase was the book "This is service design DOING".

It is important to underline that, as for the questionnaire of the user research, the sessions were conducted remotely. Furthermore, they were designed to be completed by the user in an independent and autonomous ways with a duration time of maximum 1 hour and with the possibility to ask for a support when needed through a video call.

The digital platform Miro was chosen to create two boards where the users could perform the test. People who replied to the research questionnaires were contacted to understand their availability to participate, the sessions took place from the first to the second week of March 2020.

The first step consisted in planning all the activities to propose during the session, understanding their scopes and their sequence.

The result was this timeline:

1. Short overview of all the steps to perform during the session in order to give to the users a general idea of the tasks
2. Instructions on how to use Miro and on the main functions and tools in order to become more confident in using the platform
3. Explanation of the concept and analysis of the user storyboard (drawn using Procreate App) with questions, in order to understand pain points or missing components/touchpoints and to gather suggestions and ideas from the users
4. Presentation of the main UI wireframes with questions to guide the co-design of the contents
5. Space for free comments and reflections and final questionnaire (created with Google Form) composed by Likert scales in order to collect quantitative data with the users' evaluations.

The first and the second part were identical for all the users, while part three and four were differentiated according to museums or visitors.

The final questionnaire contained the same questions with slightly different terms to refer to the user, sometimes it was necessary to have a brief talk by phone or video-call after the session.

Reported below, a brief summary and the resulting insights for each cluster of users.

3.3.1 Museums test and co-design

Overall, the 12 museums which replied to the research questionnaire were re-contacted for this session and four of them decided to participate.

Using the platform was a bit difficult for them so an initial

Figure 31: User Journey to be (Screenshot from the Miro's board of the Museum test and co-design session)

support was necessary to guide the process.

The **journey-to-be** of the cultural institutions (Figure 31) was summarized in 8 fundamental episodes with a brief description and a visual representation. For each scene, one or two questions were asked to the users in order to deeply analyze his/her opinion and thoughts.

1) Discover and register to the service

The question in this first scene regarded the channels through which the users expected to get to know the service. The answers included social media, advertising in general and the service website.

2) Creating the museum profile and uploading content

In this phase it was interesting to know which kind of content they would have uploaded on their profile in the service website and if they would have needed the support of professionals to produce the content. The basic contents chosen were: the collection catalogue, videos, descriptions

and bibliography. Museums agreed in pointing out these third parts to help in the content production: photographer, video-maker, digital professional. Nevertheless, some of the institutions stated that these professional figures were already present in their staff or they already collaborated with trusted ones.

3) Search for exhibit spaces and participant institutions

The goal of this part was to understand at which territorial level the museums would have been interested in holding exhibits. According to the size of the museum and to its strategic objectives, the answers were divided in local/regional level and national/international level.

4) Contacting other museums and institutions

The museums were asked to tell how they would have contacted other museums participating in the service. From the replies it could be understood that communications between institutions are already happening, so direct and simple

channels like e-mail, phone, video-call would be sufficient.

5) Design the exhibit with consultation and public support

For what concerned the exhibit design, the service concept proposed consultation from professionals and public involvement but it was necessary to know more about these two aspects. For this reason, museums were asked which professionals would have been useful in this phase and how much time is usually needed to design a temporary exhibit. It was interesting to know that despite the variety of roles in the cultural sector, professional figures lacks so curators and third services which take care of the logistics, the insurance, the construction, would be necessary and very useful. To design an exhibition at least one year is necessary but it depends on different factors such as transfer of artworks, the space, the duration. It should be considered that the main stalls are due to the bureaucracy and deals with the stakeholders. Speaking of involving the public in the design process is not common for museums, but their feedback was positive. Indeed, it was considered interesting engaging people through social media questions and surveys or with direct contact with the museum, paying attention to the limits of the participation.

6) Opening the exhibit

In this part the temporary exhibits duration and quantity were discussed. Museums indicated an average time from 2 months to 6 months for the opening period, which again depends on different factors, and 3 or 4 as a possible number of exhibits held at the same time.

7) Uploading extra content for visitors after the physical visit

Considering the option of reinforcing the memory of the exhibit, museums were asked to point out the kind of contents they would have uploaded after the visit and which kind of "souvenir" they would have given to the visitor. These questions brought very interesting insights, indeed, the institutions expressed the idea of suggesting to the visitors other places/events/museums connected to the topic of the exhibit encouraging them with discounts or vouchers. Furthermore, other content for the public in order to deepen their knowledge could be: possible interpretations of the exhibit, interviews, literature references.

8) Collecting feedback from visitors and gaining more visibility

Museums affirmed that the public's feedback after the visit would be very useful for the museum awareness, even if in case of negative feedback could unpleasantly impact on the image of the institution. In general, the consequences of the participation in the service would be very positive for communication and promotion of the museum.

In the **second part** three wireframe of the main pages of the service website (Figure 32) were presented to the user, they were basically schemes of the UI representing content examples and general layout. Museums had to place their post-it to suggest the kind of content they wanted or expected in the page and there were specific questions to guide the tasks.

1) Home

In the homepage of the service, they expected a menu with the standard section such as About Us, News, Contacts, Search and Private Area for institution and for visitors. Speaking of content in the page they suggested: service explanation, latest news, current activities and events, how to access to the service.

2) Subscription plan
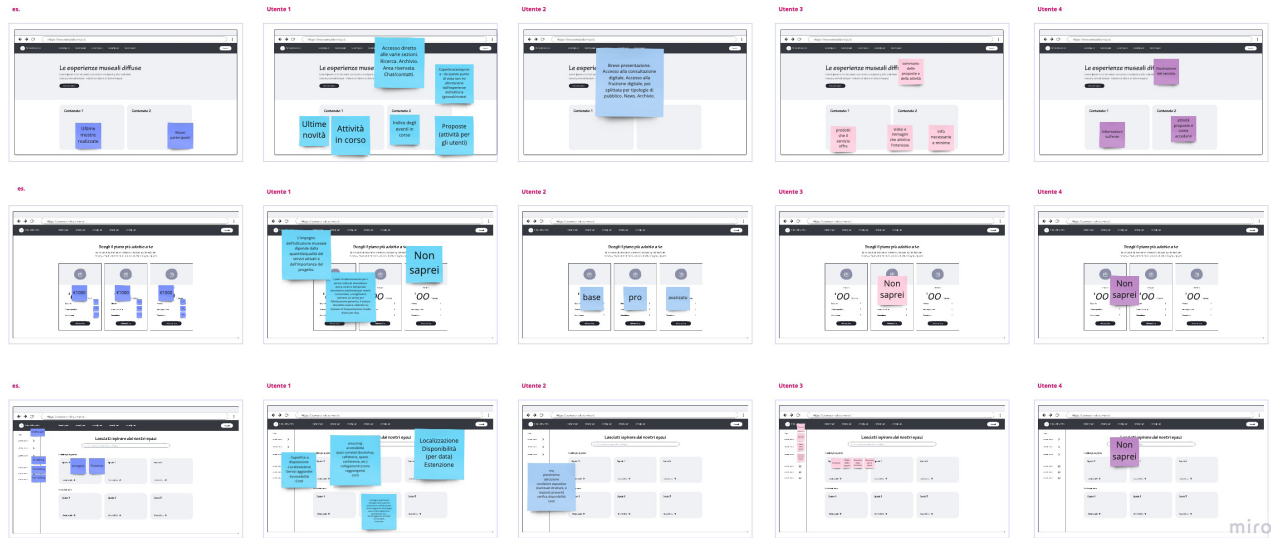
Figure 32: Website Wireframe (Screenshot from the Miro's board of the Museums test and co-design session)

The subscription was a sore point, indeed, museums had some difficulty in expressing price and features of the different plans. Someone stated that a subscription is not the best way to approach institutions. This was an interesting point of view which was deepened and taken into account when finalizing the concept.

3) Research

This section was easily completed by the users. The suggested filters to support the research of the exhibit space were: space dimension, location, cost, extra services offered by the structure and the maximum capacity of people. It emerged that there are also specific features important in the choice of an exhibit space such as the temperature or the humidity for the preservation of objects or artworks. For what concern the thumbnail of the spaces, three main information were considered important: an image, the location, the space dimension.

The comments in general about the service concept were both positive and negative, but all useful for the next pha-

ses. Listed below the **most significative opinions**.

• The idea was considered interesting, especially for medium-small museums, which have few budget and staff, could represent a significative support.

• Sharing space and resources and gaining visibility can bring to economies of scale.

• It could be interesting to involve the institutions themselves in sharing part of their building space for the exhibits.

The **main criticalities** highlighted were:

• the complexity of the service in terms of organization and variety of stakeholders

• the possible resistance of some cultural institutions that are not so open to new initiatives

• bureaucracy is complex and slow in terms of agree-

ments, authorization and insurance so the preparation of each exhibit is tricky

- the cost of the service could be a critical factor since many museums don't have sufficient funds to spend in other activities and initiatives in addition to the ones related to the maintenance of the museum.

The last task for the users was filling a **questionnaire** selecting from 1 to 5 how much they agreed on each statement.

Shown below the link to the form.

https://docs.google.com/forms/d/1oSerVcion_hr3Hti-Ru-hRf6QZKZisiqHqKmUgLXGdBE/edit?usp=sharing

In general, the feedbacks were quite positive, museums were intrigued by the concept and considered it innovative and useful.

On the other hand, doubts and criticalities were reflected in the last two questions regarding the willingness to try and subscribe to the service if it existed.

The questionnaire results are reported in the next page.

After all the users completed the session, little talks with

them clarified their perplexities which were mainly related to some lack of explanation in the service offer and also to the process of affiliation to the service.

In conclusion these were the **main insights** which were useful for the project development and finalization:

- **Define di offer in a clearer way**

- **Highlighting the intermediation role of the service for logistics, consultation and bureaucratical issues which is an appealing feature for museums**

- **Involving the public is a good idea but used in a careful way**

- **The service is more suitable for medium and small museums with few resources and staff**

- **If the exhibits involve the objects and artworks transfer requires more time and deals**

- **Using incentives like discounts and voucher can encourage the visitors to access culture.**

Concept test and co-design: Museums questionnaire results

GENERAL PERCEPTION

Average level of agreement with the statements

4,2 in 5
The service intrigues me.

4,5 in 5
The service is innovative.

3,2 in 5
The offer is clear.

3,7 in 5
The service is inclusive.

POSSIBLE EFFECTS

Average level of agreement with the statements

3,7 in 5
The service would bring more visibility to participating museums.

4 in 5
The scattered exhibitions would encourage a closer bond between visitors and institutions.

3 in 5
The service would produce positive influences and collaborations among museums.

ATTITUDE TOWARDS THE SERVICE

Average level of agreement with the statements

4,2 in 5
Listen and conceive the public as a partner is very useful for institutions.

2,7 in 5
If the service existed the institution would try it.

2,5 in 5
The instituion would be willing to subscribe to the service.

3.3.2 Visitors test and co-design

From the 57 people who replied to the research question-naire, 5 users were selected for this session, all between 20 and 25 years old which is the age in which the public starts to lose interest in museums according to ISTAT 2020.

The **journey-to-be** of the visitor (Figure 33) was summa-rized in 8 fundamental episodes with a brief description and a visual representation. For each scene, one or two que-stions were asked to the users in order to deeply analyze his/her opinion and thoughts.

1) Discover and register to the service

The question in this first scene regarded the channels through which the users expected to get to know the servi-ce. The most frequent answers were social media, outdoor and online advertising.

2) Selecting interests and fruition preferences

The discoveries in this part were related to the visitor's in-terests. The majority of people said that they don't change much, usually every 1-2 years. When asking in which case they would visit an exhibit which is not so close to their ta-stes, their answers were interesting because they mentioned the invitation from friends, the following of a trend or the usefulness for professional reasons

3) Search for exhibitions and information about parti-cipant institutions

The main criteria for the research were identified in: loca-tion, theme, available tickets and cost.

4) Choose the exhibit and buy the ticket

Figure 33: User Journey to be (Screenshot from the Miro's board of the Visitors test and co-design session)

At this stage users were curious and stimulated to try the service, the majority of them indicated monthly or yearly subscription, not excluding the option to buy a single ticket.

5) Participating in the exhibit design process by expressing opinions on social networks and through the service app

In this phase the focus was primarily on the kind of participation of the user and on the content uploaded by museums before the visit. The suggested content was functional to the preparation to the visit, people would like to have: artists/authors background, cultural background, objects preview and connections with other similar exhibits. When asking about the participation modality, the users showed great enthusiasm, in particular in the choice of the artists/authors or even specific objects/artworks through surveys.

6) Visiting the exhibit

For what concern the realistic frequency of visit in a month, people indicate from 1 to 4 times.

7) Accessing to extra content about the exhibit after the physical visit

In this part the questions were related to the kind of content the users would like after the visit in terms of information and souvenir. They were interested in: expressing their feedback with a short questionnaire, reading in-depth analysis and fun facts related to the exhibit, information about next events connected to the topic, statistics about the exhibit. Speaking about souvenir they mentioned: postcards, books, exhibit ticket, a digital badge on NFT (non-fungible tokens).

8) Sending feedbacks and visiting other linked exhibits or cultural places

The last step aimed at exploring the willingness to visit the participant museums building in addition to the exhibit offered by the service and the feedback was very positive. The presence of discounts or voucher to incentivize another experience was also welcomed.

In the **second part** three wireframe of the main pages of the service application (Figure 34) were presented to the user because the phone was identified as the predominant kind of device for the young generations. Museums had to place their post-it to suggest the kind of content they wanted or expected in the page and there were specific questions to guide the tasks.

1) Home

In the homepage, they expected a menu indicating different sections named in this way: About Us, How it works, Participant museums, Choose the next exhibition and Contacts. The kind of content suggested in the page consisted in exhibitions related to their interests or location and upcoming events.

2) Subscription plan

The opinions about the price and the kind of subscription were more or less similar.

In general, a freemium model was proposed with:

- a free trial of one exhibit
- a single ticket with cost range between 5-10€
- a monthly subscription of 15-20€
- a yearly subscription of 150-200€.

For what concern the details of each plan the answers were very different.

Someone mentioned also eventual discount for students, elderly over 65 and other categories which are usually supported by cultural institutions.
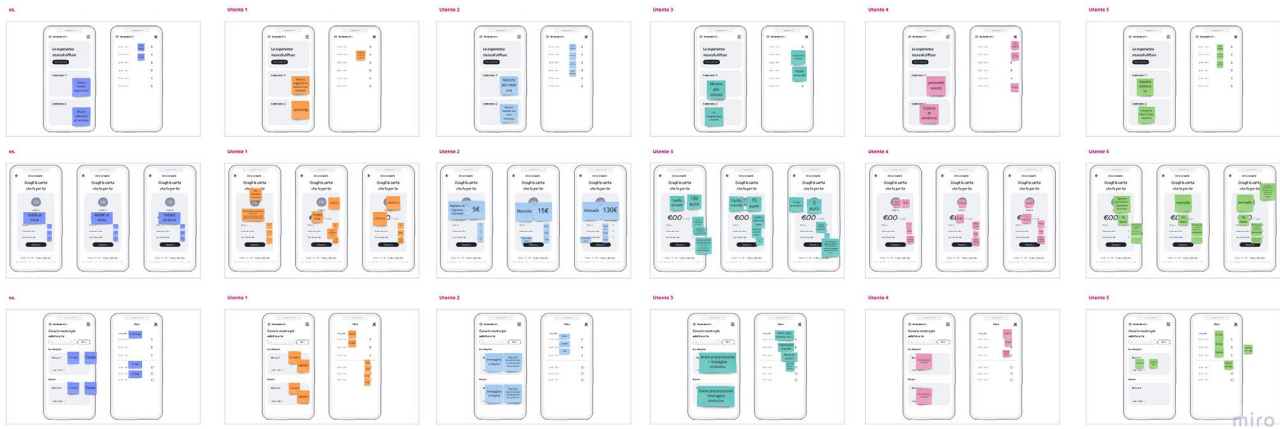
Figure 34: App Wireframe (Screenshot from the Miro's board of the Visitors test and co-design session)

3) Research

The suggested filters to support the research of the exhibit were: location, cost, topic and period of time. It emerged that the useful information for the thumbnail of the exhibit were: name, image, cost, topic.

The comments about the concept were not so many, but mostly positive and regarding the innovation and interaction of the service.

The **main criticalities** highlighted were:

- the voting system which can disappoint and exclude some people

- it can be tricky to define the perfect subscription plans

- the service is a little complex.

The last task for the users was filling a **questionnaire** selecting from 1 to 5 how much they agreed on each statement. Shown below the link to the form.

https://docs.google.com/forms/d/1Dnb8fnDGTJPB-zuUBw7pMMIIDnm1R3aqe5udjwFMPIfU/edit?usp=-sharing

The feedbacks were very positive confirming the general attitude of the users during the other parts of the session, as in the case of museums little talks with the visitors allowed to have some clarifications. People loved the participative approach proposed by the service, they were curious and intrigued indicating the highest willingness to try the service. On the other hand, when asking to subscribe to the service they presented some uncertainties.

The questionnaire results are reported in the next page.

In conclusion these were the **main insights** which were useful for the project development and finalization:

- **Define di offer in a clearer way**

- **The participatory approach is appealing and interesting for visitors while may exclude the elderly**

- **Using a freemium model and particular attention on the subscription features**

- **Using incentives like discounts and voucher to encourage other visits**

- **Considering the possibility to offer discount when inviting people in the service.**

Concept test and co-design: Public questionnaire results

GENERAL PERCEPTION

Average level of agreement with the statements

★★★★☆ **4,4 in 5**
The service intrigues me.

★★★★☆ **4,4 in 5**
The offer is clear.

★★★★★ **4,6 in 5**
The service is innovative.

★★★★★ **4,8 in 5**
The service is inclusive.

POSSIBLE EFFECTS

Average level of agreement with the statements

★★★★★ **4,8 in 5**
The service would bring more visibility to participating museums.

★★★★☆ **4 in 5**
The scattered exhibitions would encourage a closer bond between visitors and institutions.

★★★★☆ **4 in 5**
The service would produce positive influences and collaborations among museums.

ATTITUDE TOWARDS THE SERVICE

Average level of agreement with the statements

★★★★★ **5 in 5**
I appreciate that my opinion would be listened by museums.

★★★★★ **5 in 5**
If the service existed I would try it.

★★★★☆ **3,8 in 5**
I would be willing to subscribe to the service.

3.3.3 Concept reiteration

The co-design and test sessions represented the best chance to improve the initial proposal.

After having summarized and organized all the findings the initial hypothesis was called into question shaping the final idea accordingly. The initial offering proposal was confronted with the results of the activities drafting the basis for the final development.

First of all, the user journey was re-adapted, the offer simplified and clarified.
The affiliation plans for the different users were reviewed, analyzing similar services in other sectors.

Features that were considered strength were highlighted and the target users were better defined.

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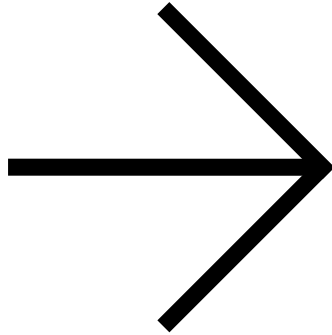
04

DELIVER

4.1 Luna. Scattered cultural experiences

4.1.1 What is Luna?

Luna is a phygital service which offers to the public scattered and changeable cultural experiences designed by groups of museums and based on desires and suggestions of the public itself. Indeed, people can express their desires and opinions on the exhibits through social media and can access different contents (pictures, videos, information) before the visit in order to be prepared on the topic and after the visit in order to deepen their knowledge and reinforce the memory of the experience. In addition, as souvenir they receive discounts or vouchers to use in cultural places related to the topic of the exhibit in order to encourage future visits.

On the other side, museums participating to the service have different benefits: scattered spaces with technological equipment, consultation team, intermediation with third parts (for example logistics, insurance, advertising, exhibit management, etc.) and visibility.

The Luna spaces consist in unused buildings or areas of buildings integrated in a recent MIBACT initiative of urban regeneration. They are scattered around the Italian territory and functions as little branches of museums, therefore recalling the idea of satellites (from which derives the name Luna).

The exhibits can vary in surface and configuration, but they are all divided in four parts with different interactions to engage every kind of user and to offer a complete experience.

Up to four museums can share the space for a limited period of time since the service propose only temporary exhibitions in order to stimulate more the public and to allow experimentation for the cultural institutions.

The service website collects all the information about Luna features, functions and offer giving a complete view to the users. Registered museums and partners have their private area on the website while Luna smartphone application is available for visitors.

To summarize the main features of the service, an offering map (Figure 35) was created.

At the center there is Luna, which originates different branches:

- resources
- communication and promotion
- intermediation with third parts
- participation
- knowledge and cultural experiences.

The six areas and the related components describe the general offer of Luna for museums, for the public or for both

Legend:
- 🔴 Public
- 🔵 Museum
- 📇 Luna website
- 📱 Luna app
- ⚙️ Social network

Knowledge
- Data about visitors feedbacks, opinions, flow

Communication
- Advertising

Resources
- Technological devices
- Exhibit set-up
- Exhibit space

Participation
- Design inputs of the public for the exhibitions
- Feedback after the visit

Luna

Intermediation
- Creative and cultural professionals
- Logistics
- Insurance
- Legal

Cultural experiences
- Scattered around the territory
- Varied and recurring
- Physical and digital content
- Discount and vouchers
- Extended opening hours
- Co-designed with the public

of them. The channels through which the offer is delivered are also represented in the map.

4.1.2 Goals and values

Luna represents a new cultural service that encourages innovation and resilience in the museum sector by supporting and promoting the dissemination of culture.

Its primary goals are connected to the insights gathered during the research and during the co-design and test sessions and they are:

- Providing useful resources, staff and visibility to medium and small cultural institutions in order to support

them after the COVID-19 crisis

- Encouraging the use of technology to enhance the visitor experience in all its phases (before, during and after the physical visit) and to create a dialogue

- Listening and involving the public in the cultural context establishing a horizontal relationship between visitors and museums

- Offering temporary exhibitions scattered around the Italian territory (inside and outside metropolitan areas) and carefully designed to satisfy the visitors' needs in order to redistribute the public

The first big value of the project is the participatory approach towards the public, which allows visitors to express

their needs, desires and opinions so on the other side museums can collect this data and learn from them in order to design the perfect user experience. In this way, the service creates a closer relationship between public and institutions, going beyond the concept of the vertical communication of culture.

The other important value lies in the ongoing connection and collaboration among cultural institutions outside the traditional museum walls. The satellite spaces offered by Luna are great opportunities to experiment with technological resources, to create new partnerships or relationships with other organizations and to "contaminate" each other between similarities and differences.

Considering as parameters these two main values of Luna, it was interesting to compare the service with the other cultural initiatives analyzed in the case studies chapter.

The following scheme (Figure 36) highlights the level of innovation in the area of participatory and collective projects which resulted empty in the matrix developed in chapter 1.4.

Figure 36: Positioning Map (Graphycally produced by the author)

COLLECTIVE

Luna

Micro-folies

LOW PARTICIPATION

HIGH PARTICIPATION

Uffizi diffusi

Brera Plus

Micro

Click! A crowd curated exhibition

Rijkstudio Award

At the museum

The Pen

Rijksmuseum Schipol Airport

Design Library

Vote on Posters of Our Collection

INDIVIDUAL
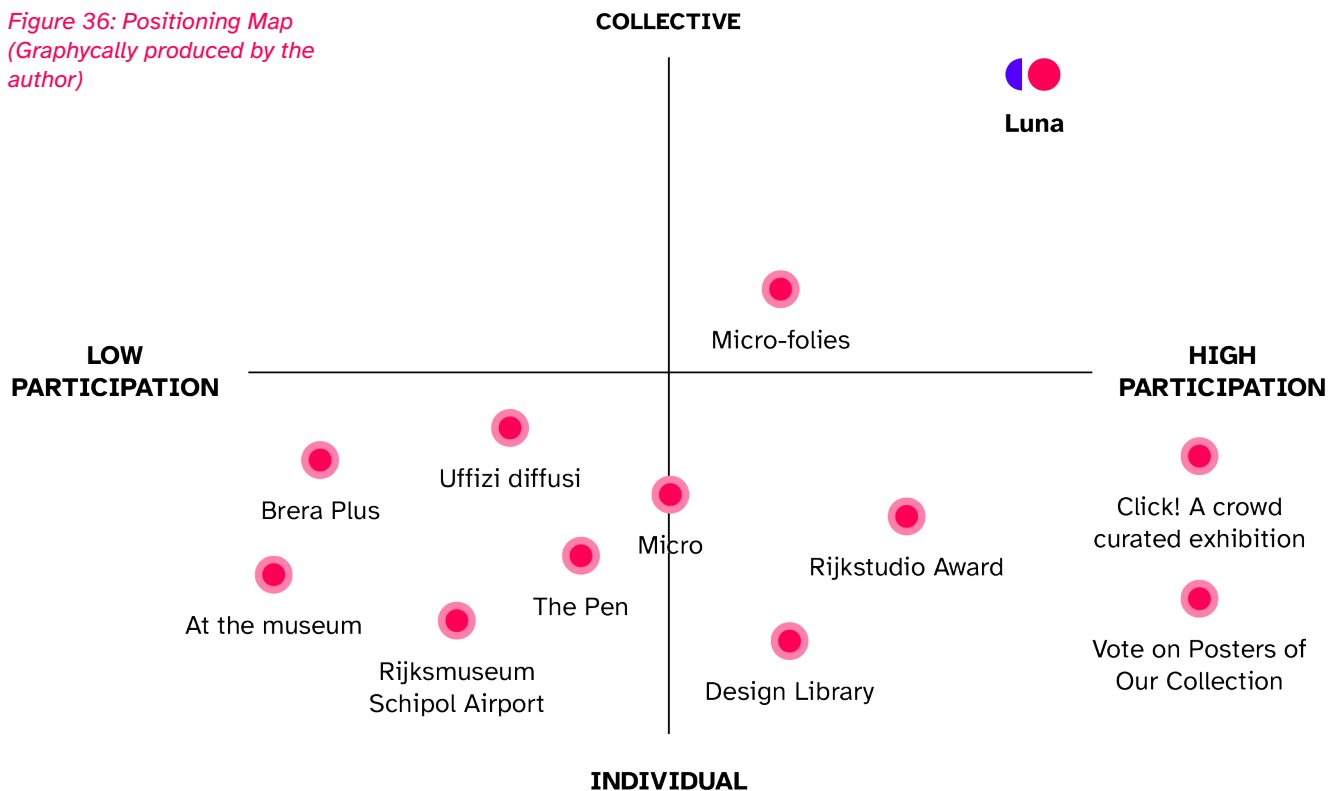
4.1.3 Brand image

The visual identity of Luna is based on the concept of future and innovation.

The main colors are black and white to recall the lunar atmosphere and to keep a neutral and minimal style in order to let the exhibit content stand out more.

Pink and purple help in gaining the attention of the user in specific points and represent the accents.

The logo is composed by the main colors, the pictogram is the synthesis of the moon shapes: the complete circle when it is completely illuminated or dark and the half circle when it is partially covered.

The chosen font is the Atkinson Hyperlegible which is designed to be accessible by everyone, especially on screens.

LANDSCAPE LOGO
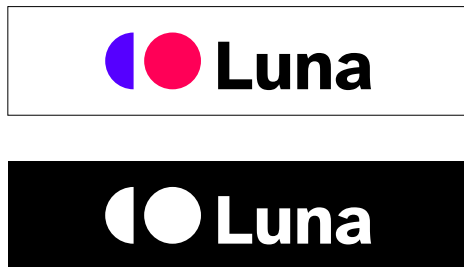
PORTRAIT LOGO

BRAND COLORS

#21232C

#FFFFFF

#5300FF

#FF0057
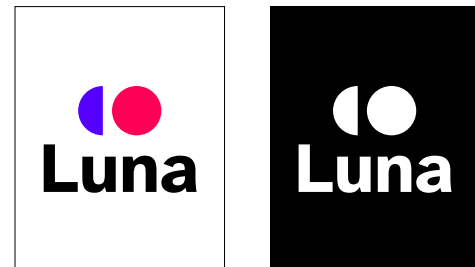
BRAND TYPEFACE

Atkinson Hyperlegible

Aa
ABCDEFGHIJKLM
NOPQRSTUVWXYZ
abcdefghijklm
nopqrstuvwxyz
0123456789

4.2 Who are the users?

4.2.1 User personas

The main target users of Luna belong to the two big cluster analyzed since the beginning of the research: museums and public.

Overall, 6 kind of people were identified and they were represented through user personas, that is to say fictional characters, deduced and based upon the user research and the test sessions, that might need or use the service in a similar way.

Based on the research, the questionnaires and the user test for each character were defined different features:
- name
- job
- needs
- pain points
- values/interests
- key attributes,
- used devices
- a typical quote.

In addition, for museums it was described the offer and for visitors the museum experience expectations.

For what concern the first category of users, 2 personas were identified:

- **small museum** (until 1.000 visitors a year)

- **medium size museum** (from 10.000 to 100.000 visitors a year).

Speaking of the public, it was divided into 4 kind of visitors, partially using, as a reference, the Falk categorization

described in the paragraph 1.2.3 of the research, which was based on clustering users according to their motivations connected to their identity-related needs.

Therefore, there are:

- **Explorer:** curious and interested in learning new things, therefore searching for an educational experience

- **Professional:** person with the goal of fulfilling his/her interest in the topic of the exhibit, actively participating in the discovery of new information

- **Experience Seeker:** person in search of a funny and engaging experience

- **Recharger:** looks for a peaceful and contemplative experience which can be an opportunity to reflect and relax.

The cluster of Facilitator was excluded because it was not relevant to the project.

Represented in the following pages the six personas in detail.

Name

Tiziana

Job

Archeological museum
director

Values/Interests

- Research
- Dedication
- History

Key Attributes

#affable
#professional

Museum offer

- Permanent collection
- Small exhibit surface
- Lack of accessibility

Devices

Small Museum

"COVID-19 is jeopardizing the survival of the museum, maybe together we can be stronger."

Needs

- Attract local and new visitors
- Improve the set-up with new resources
- Invest in digital touchpoint
- Improve the communication towards the public

Pain points

- Huge income losses due to COVID-19
- Difficulty in the communication with the public
- Difficulty in being in step with the times
- Low funds

Name

Matteo

Job

Modern Art museum director

Values/Interests

- Charity
- Art
- Literature
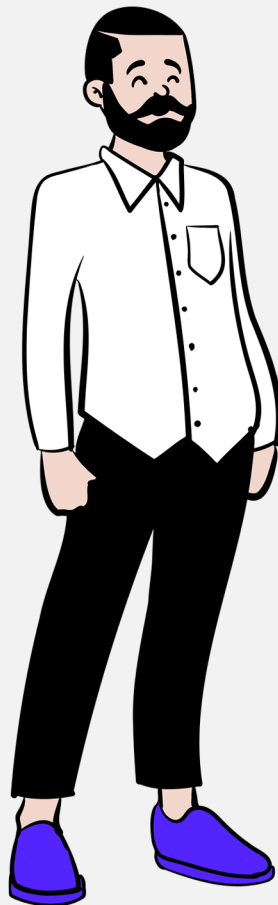
Key Attributes

#naive
#enthusiast

Museum offer

- Events with other museums
- Permanent and temporary collection
- Big exhibit surface

Devices

🖥️ 📱

Medium Museum

"We need to rethink the way we disseminate the collections, both physically and digitally."

Needs

- Attract new visitors
- Change and innovate
- Connect with the local community

Pain points

- Discrete income losses due to COVID-19
- Decrease of tourists and city visitors
- Overwhelmed by bureaucracy
- Low funds

Name

Benedetta

Job

Blogger

Values/Interests

- Open mindedness
- DIY
- Open air activities

Key Attributes

#curious
#individualistic

Desired Experience

- Stimulant
- Educational

Devices

Explorer

"I am open to whatever may hit me. Unconfortable things give you different perspectives."

Needs

- Discover more about art and history
- Put in practice what she learns
- Experiment

Pain points

- She easily gets bored if she is not stimulated enough by something interesting
- After COVID-19 she feels unconfortable is surrounded by the crowd

Name

Cristina

Job

Art Professor

Values/Interests

- Social Commitment
- Travel
- Art
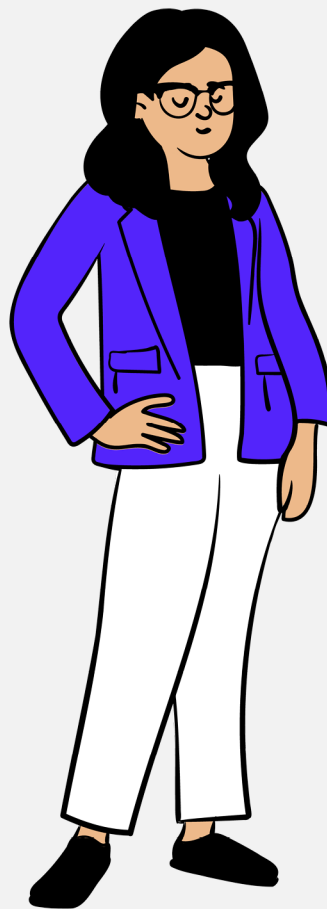
Key Attributes

#generous
#determined

Desired Experience

- Interactive
- Engaging
- Immersive
- Hands-on activities

Devices

🖥️ 📱

Professional

"Art is my life, I always want to see and learn about new artists and i often support the sector."

Needs

- Local activities not too far from home
- Cultivate her interests and passions
- Be updated on the art world

Pain points

- After a cultural visit she never feels completely satisfied because there is always something missing in the experience

Name

Sara

Job

Student

Values/Interests

- Sustainability
- Inclusion
- Technology

Key Attributes

#socialaddicted
#activist

Desired Experience

- Funny
- Captivating
- Changeable and innovative
- Accessible

Devices

📱

Experience Seeker

"LESS VISITS, MORE EXPERIENCES! After COVID-19 I don't wanna miss anything."

Needs

- In constant search of new activities and events
- Share her life on social networks

Pain points

- Low budget for leisure activities and travels
- Every time she enters in a museums she feels unconfortable because she sees it like a sacred temple

Name

Giovanni

Job

Developer

Values/Interests

- Culture
- Reading
- Walking

Key Attributes

#shy
#sensitive

Desired Experience

- Peaceful
- Immersive

Devices

Recharger

"I want to keep my mind fresh and open, admiring the beauty and not only the screen of my computer."

Needs

- Escape from the routine
- Reflect on his thoughts
- Spend some time relaxing alone

Pain points

- Lack of cultural offer in his area, he lives out of town

4.2.2 Stakeholder Map

After defining the core target group, a stakeholder map was useful in order to clarify the roles of all the actors involved in the service.

The scheme reports: core target users, secondary actors and tertiary actors.

As mentioned above, the first group is composed by museums and visitors which are at the base of Luna. With further analysis this group could include also galleries, cultural associations, artists, schools and universities.

Secondary actors are people and entities which strongly support the experience creation and are divided in: third parts services (construction, insurance, logistics, legal company, cultural-creative professionals and freelance), financial supporters (MIBACT and philanthropist in general) and the owners of the exhibit spaces (municipalities, private owners).

Finally, the last circle contains all the actors involved mainly in the launch and maintenance of the service.
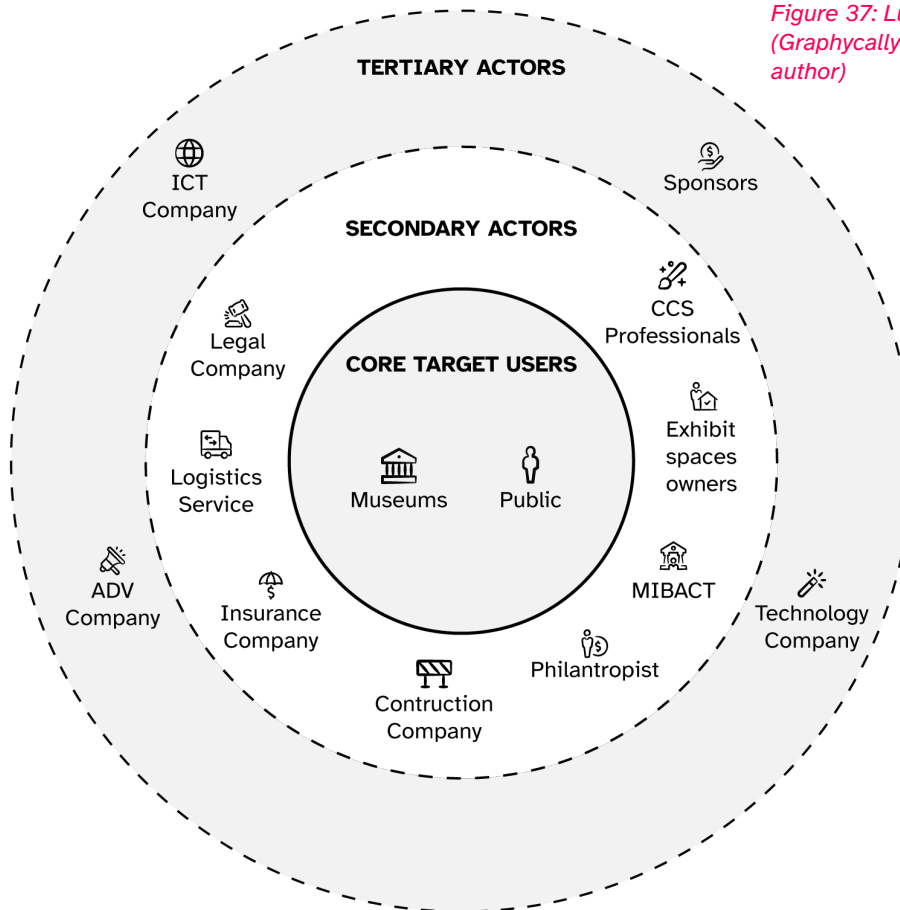
Figure 37: Luna Stakeholder Map (Graphycally produced by the author)

4.2.3 System Map

To get more in depth, the tool of the system map (Figure 38) was useful in visualizing the different relationship between the actors.

Three kinds of flows among them emerged as fundamental:
- information
- resources
- financial.

111
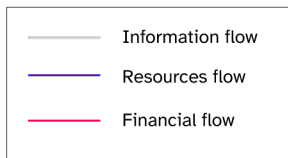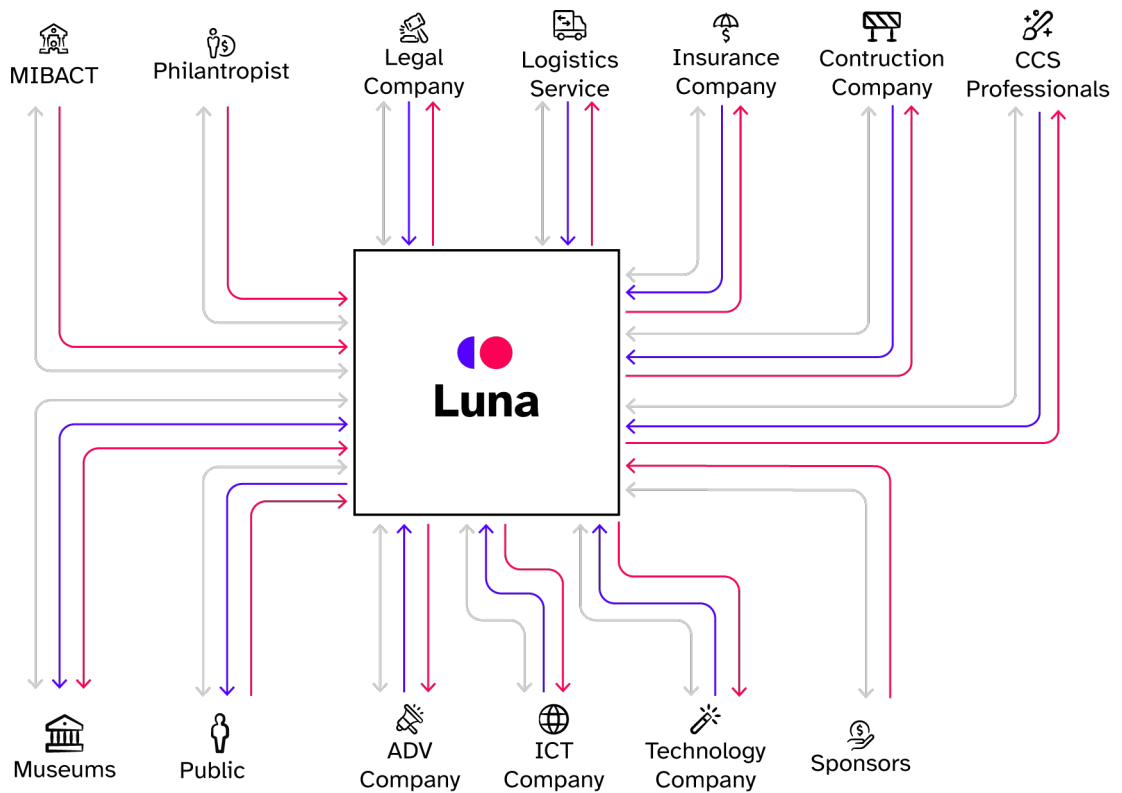
4.3 How it works?

4.3.1 The physical space

In general, there are two kind of Luna spaces:

1) Luna satellite: scattered buildings, areas and unused spaces regenerated or valorized to hold the temporary exhibitions

2) Luna pop-up: temporary prefab structure in few public places of Italian cities to launch and promote the service

In order to give the users a complete and satisfying experience and to guide the museums in the design of the perfect visit, both the spaces have been conceived following the framework of the four realms of experience of Pine and Gilmore (1999) analyzed during the research (see chapter 1.2).

In addition, to each part of the exhibit is associated the user persona whose needs and desires better fit with that kind of experience.

The exhibit space is therefore composed by four areas (Figure 39) which are generally characterized in the following way:

1) Entertainment: engaging and effort-less interaction where people can gather freely, have fun, take pictures and share the moment on social media.

It is the perfect space for the Experience Seeker who is curious and willing to be absorbed by the visit.

2) Education: experiencing and putting in practice techniques related to the exhibit following the guide of an expert in order to learn new things or to deepen the knowledge.

The Explorer is ready to be actively involved in this part.

3) Aesthetic: resting moment in which the visitor can lay down on soft couches and experience visual and/or auditive stimuli.

This atmosphere is perfect for the Recharger who is eager to immerse in a quiet space.

4) Escapism: exploring and analyzing objects or masterpieces through information written on the wall and more content through digital tools or devices.

Nothing better than diving into the knowledge for the Professional.

The Luna spaces can be customized by the cultural institutions which can use devices and structures provided by Luna to support and enhance the communication of their collection, their heritage and knowledge to the public.

A single museum can use one or more areas of the space and the maximum number of organizations for each exhibit is four.

For what concern the interior design of the areas, it varies for every event and it adapts to every building. It is the result of the collaboration between institutions, cultural and creative professionals affiliated to Luna and the public.

In addition to the four areas, another constant is the visual style of the set-up which must always be coherent to the Luna brand image in order to be recognizable in every exhibit without being too binding.

#1 Entertainment

#2 Education

#3 Aesthetic
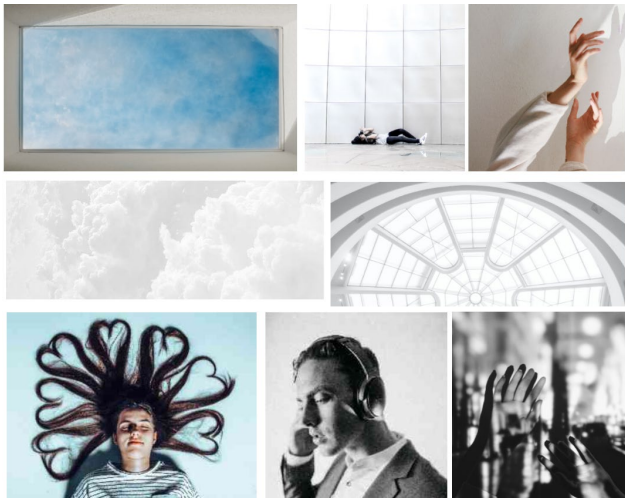
#4 Escapism
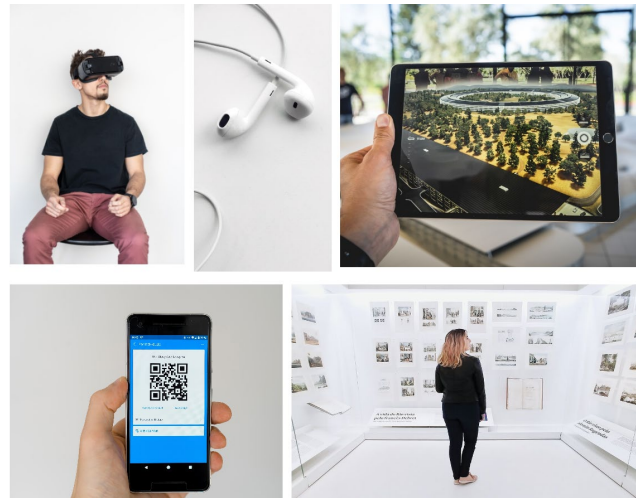
Figure 39: Moodboards of the four ares of Luna spaces (Graphycally produced by the author)

On the other hand, the Luna pop-up is an aluminum pre-fab with a pre-defined area of around 200 squared meters (10 m long, 20 m wide, 3 m high) with broad windows on the front and some round windows on the top to recall the moon craters. The mood is indeed influenced by the space world (Figure 40). To better represent the Luna pop-up,
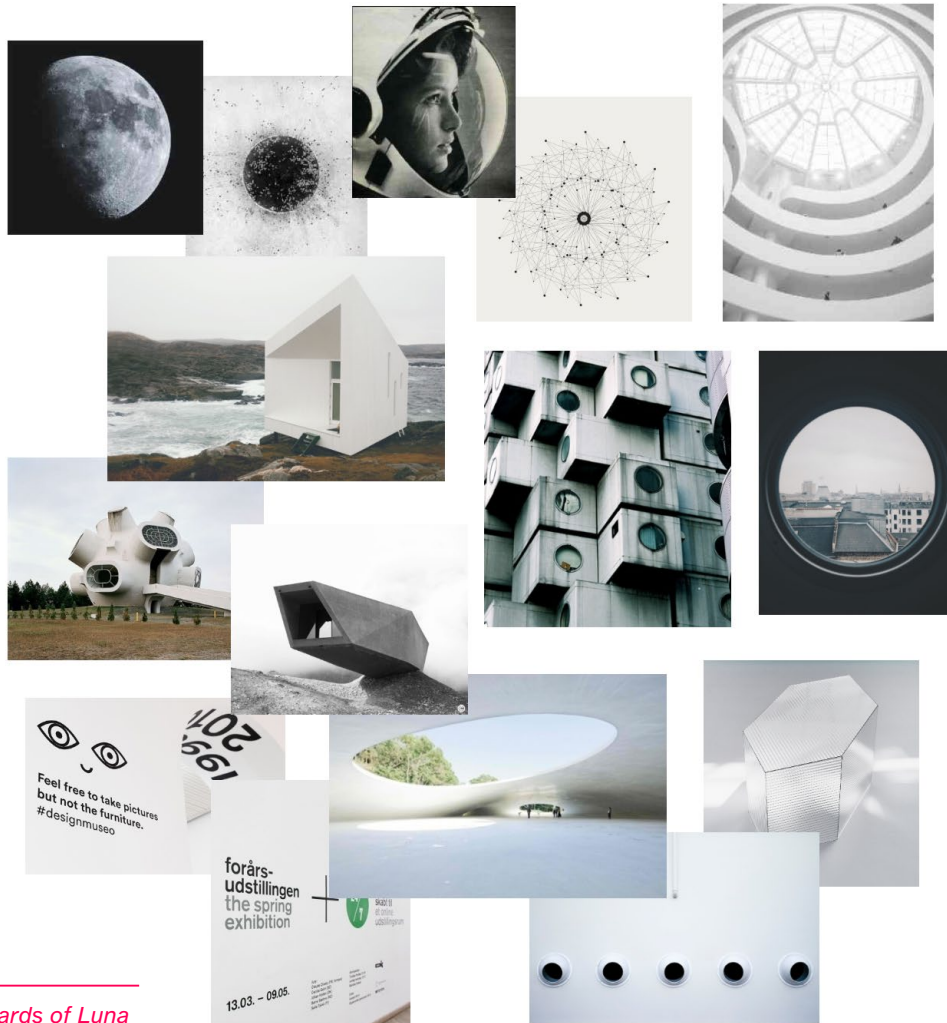
Figure 40: Moodboards of Luna pop-up structure (Graphycally produced by the author)

some sketches have been done about the architecture and the interior design (Figure 41) drawing the main shapes and features.

Furthermore, it has been drawn the space set-up for an illustrative exhibition (Figure 42) indicating possible interactions and available devices provided by the service. In this example the areas are equipped in the following way:

1) Entertainment: the area is covered by an interactive floor on which, thanks to presence sensors, beams of lights are projected and change according to the movements of the people, encouraging pictures, selfies and fun.

2) Learning: the area is set like a workshop with tables, chairs and a screen. There is a professional figure who explain and teach to the visitors a certain painting technique giving them all the necessary materials and supporting them in the process.

3) Escapism: the area is dedicated to the display of objects and artworks, the user can scan the QR codes near the
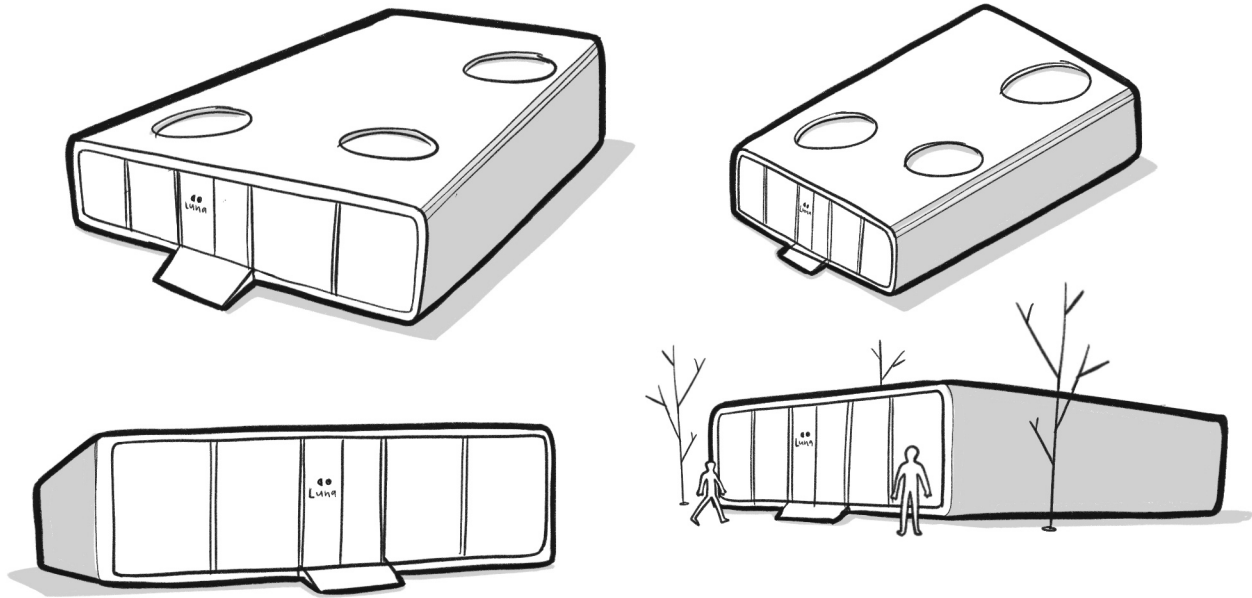
Figure 41: Sketches of the Luna pop-up (Graphycally produced by the author)

subject and can listen and read specific information.

4) Aesthetic: the area is decorated with soft couches on which people can lay down, listening to a pre-defined music playlist through headphones and watch pictures projected on the ceiling in a quiet atmosphere.

4.3.2 The museum experience

The museum experience with Luna can be summarized in twelve main steps, visually reported in the following pages.
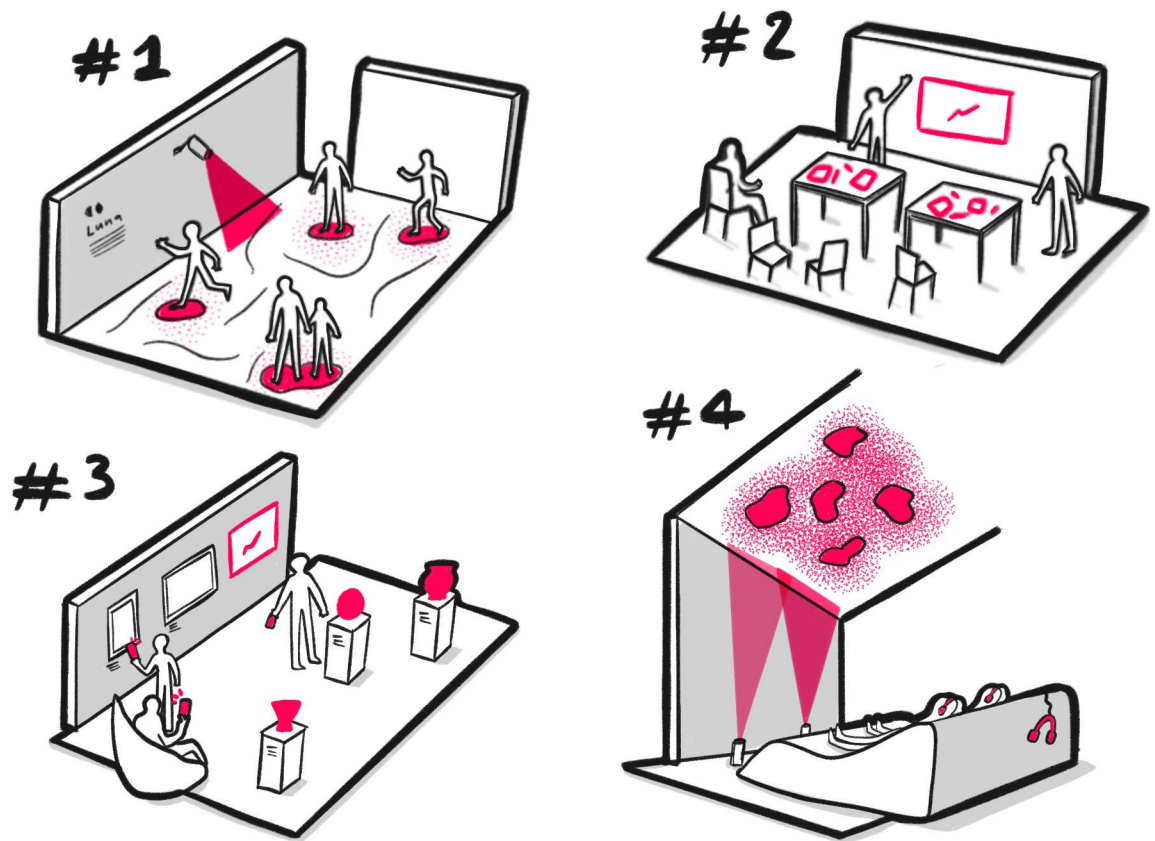
Figure 42: Sketches of the Luna pop-up - exhibit example (Graphycally produced by the author)

1 Discovering Luna

The visitor encounters Luna advertising on Instagram and becomes intrigued.

2 Gathering information

The museum wants to know more about Luna, therefore searches online and navigates service website.

3 Registering

Determined, the museum fills with its information the form to sign-up and pays a registration fee to become a member.

4 Creating the public profile

The museum uploads images of the collection, videos or other content it considers relevant, supported by professionals affiliated to Luna.
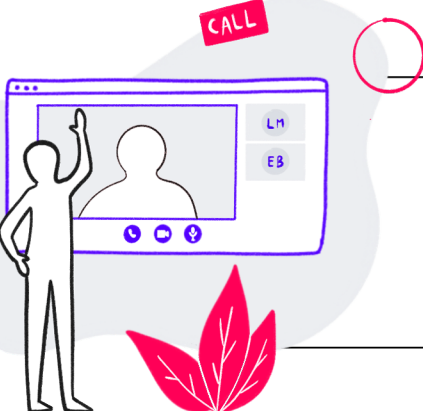
5 Analyzing the public

The museum can monitor on its dashboard data provided by Luna regarding people's desires on exhibits.

6 Selecting the exhibit space

The museums explores Luna spaces using filters to be more precise and select one or more interesting places.

7 Contacting other insitutions

The museum meets with the other institutions sharing the space and talks about the future exhibit.

8 Co-designing

The museum co-designs the exhibit with CCS professionals affiliated to Luna and with the public through surveys and questions on Luna social pages.

9 **Finalizing the exhibit**

The museum is completely supported in the organization and setting up by third parts services partners of Luna.

10 **Holding the exhibit**

All the museums sharing the space open the exhibit and welcome the users who are supported by Luna staff.
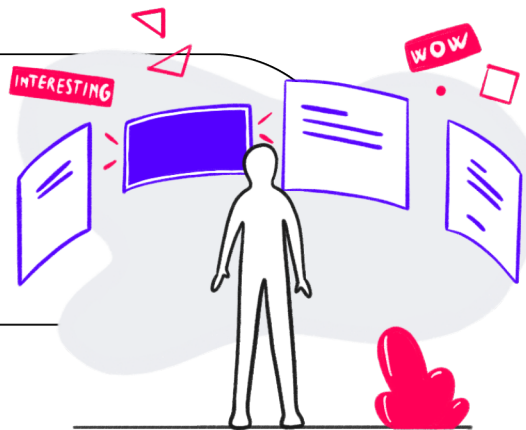
11 **Uploading extra content**

The museum uploads multimedia files to give visitors deeper knowledge on the topic and on the objects of the exhibit.

12 **Receiving feedbacks**

The museum can see visitors' reviews on Luna social pages and on its dashboard in order to make a final evaluation.

To define in detail all the service components for each step a User Journey Map (Figure 43) was created.

Along the vertical axis are reported:
- **Stages:** the macro-phases of the experience

- **Steps:** the single actions performed by the museum
- **Emotions:** the flow of state of minds which the person feels during every step
- **Touchpoints:** all the possible contact points between the service and the museum during each action.

STAGES	Information collection			Affiliation		
STEPS	Discover the service	Gather information	Register to the service	Upload content on the museum profile	Analyse expectations and desires of the public	Search for an exhibit space
EMOTIONS	☺ Surprised	☺ Interested	☺ Focused	☺ Focused	☺ Interested	☺ Curious
TOUCHPOINTS	• Word of mouth • Online adv • Outdoor adv • Social Network • Luna spaces • Articles	• Luna website • Social Network • Articles	• Luna website	• Luna website • Luna professionals	• Luna website • Social Network	• Luna website

The core of the journey is the exhibit organization where the collaboration between stakeholders is fundamental and the emotion flow is higher. The results collection phase is also imporant because the museum can learn from the data collected.

Exhibit organization			Exhibit launch		Results collection
Contact and talk with the museums partners	Co-design the exhibit	Finalize the exhibit space	Hold the exhibition	Upload extra content about the exhibit	Receive feedback and visibility
😊 Excited	😎 Confident	😐 Nervous	😀 Thrilled	😐 Focused	😊 Interested
• Luna website • Social Network • E-mail • Videocall • Phone call	• Luna website • Luna professionals • Social Network • E-mail • Videocall • Phone call • Third parts partners of Luna	• Third parts partners of Luna	• Luna space • Luna devices and set-up • Luna staff • Museum staff	• Luna website • Luna professionals	• Luna website • Social Network

4.3.3 The visitor experience

The visitor experience with Luna was first summarized in twelve main steps through a storyboard which is visually reported in the following pages.

1 Discovering Luna

The visitor encounters Luna advertising on Instagram and gets curious.

2 Gathering information

The museum wants to know more about Luna, therefore searches online and navigates service website.

3 Registering

Intrigued, the visitor download Luna app and fills with its information the form to sign-up.

4 Selecting interests

The user is asked to choose some interests, topics, hobbies in order to make useful suggestions in the future.

5 Searching for an exhibit

The visitor explores Luna offers selecting the most interesting exhibitions.

6 Expressing desires/opinions
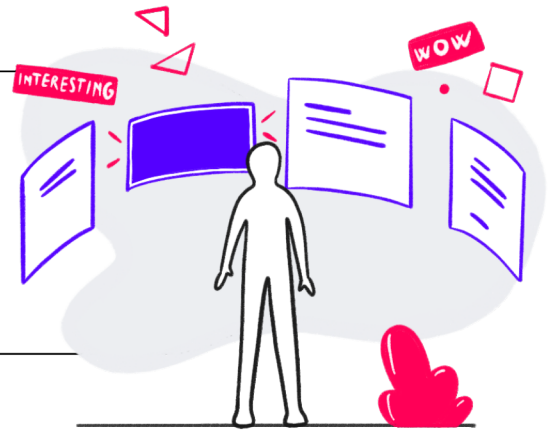
On the social pages of Luna the public is asked to express its preferences about topics, objects, artworks of the exhbits.
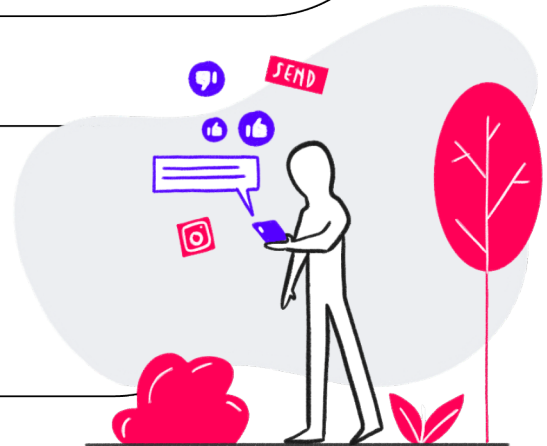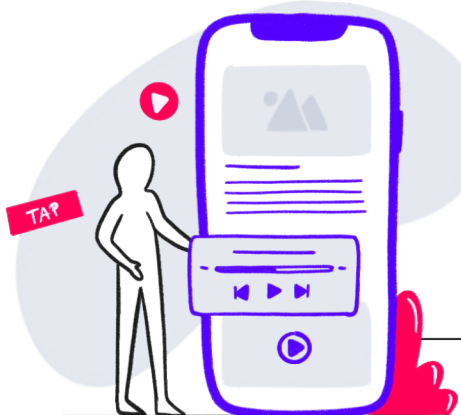
7 **Buying a ticket**

The visitors choose an exhibit and purchase the ticket which is directly available in the app of Luna.

8 **Enjoying the visit**

The visitor interacts, explors, have fun and discovers all the 4 areas of the exhibit knowing more about the participants musems. At the end he/she receives coupons for othe visits.

9 **Deepening the knowledge**

After the visit, the user can access special contents uploaded by the museums which give extra information on the exhibit.

10 Reviewing the experience

In the app the user is asked to express his/her opinion and to rate the visit.
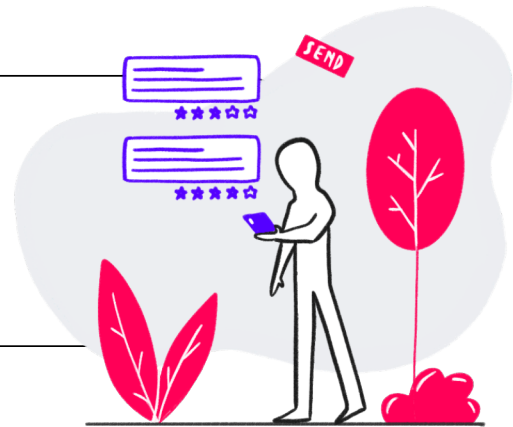
11 Suggesting the service

The visitor is enthusiast and talks with friends about Luna and the amazing exhibitis he/she visited.
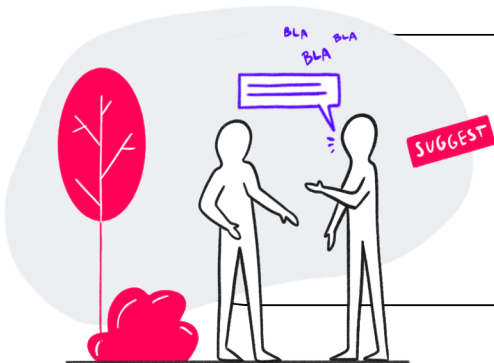
12 Using the coupon

Happy of the past experience, the user goes to another exhibit of Luna enjoying the discount specified on the coupon.
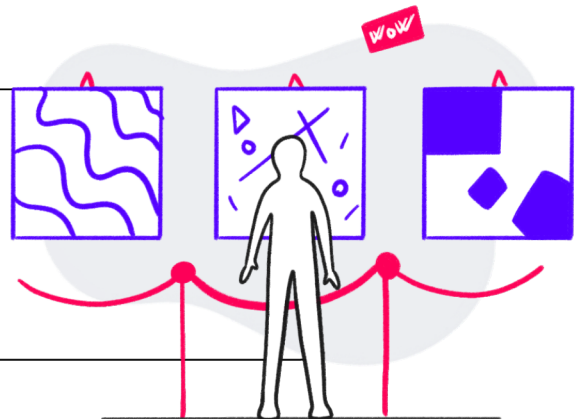
To define in detail all the service components for each step a User Journey Map (Figure 44) was created. Along the vertical axis are reported:

- **Stages:** the macro-phases of the experience

- **Steps:** the single actions performed by the visitor
- **Emotions:** the flow of state of minds which the person feels during every step
- **Touchpoints:** all the possible contact points between the service and the visitor during each action.

STAGES	Information collection		Affiliation		Preparation to the	
STEPS	Discover the service	Gather information	Register to the service	Select his/her interests	Search for an exhibition	Express his/her desires about the exhibitions
EMOTIONS	☺ Surprised	☺ Interested	☺ Curious	☺ Happy	☺ Curious	☺ Thrilled
TOUCHPOINTS	• Word of mouth • Online adv • Outdoor adv • Social Network • Luna spaces • Articles	• Luna website • Social Network • Articles	• Luna app	• Luna app	• Luna app • Luna website	• Luna app • Social Network

The core of the journey are multiple and focused in the moments of: the preparation where the user actively participate in the service, the physical visit where the visitor live the memorable experience and later the memory reinforcement.

visit	Physical Visit	Memory reinforcement		Follow-up	
Buy the ticket for the favourite exhibit	Enjoy the exhibition	Deepen the knowledge about the visit	Review the experience	Suggest the visit	Use Luna coupons for another exhibit

| • Luna app
 • Luna website | • Luna space
 • Luna devices and set-up
 • Luna staff
 • Museum staff | • Luna app | • Luna app
 • Luna website
 • Social Network | • Word of mouth
 • Social Network | • Luna space
 • Museum space
 • Luna coupons |
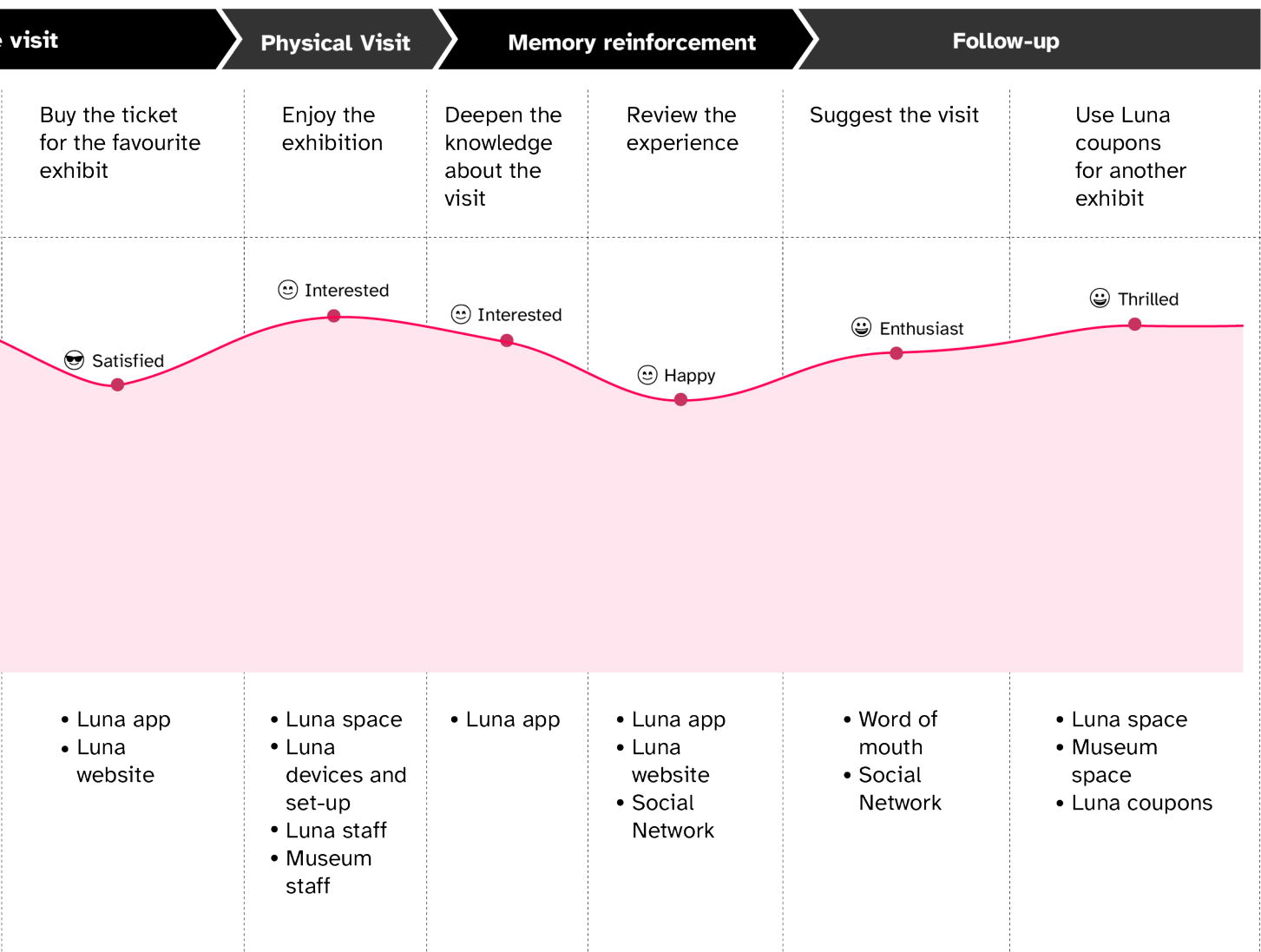
4.4 Prototyping the UI

After defining the users journey with Luna, the UI prototyping phase started.

The previous layout used during the test and co-design sessions were implemented and refined according to the suggestions gathered from cultural institutions and visitors participating.

Before applying colors, final shapes, text and images it was necessary to create wireframes, that is to say the "skeleton" of the user interface, medium fidelity sketches which convey the main features, functions and content of the UI.

At first, they were roughly drawn on paper and then transferred and developed in Adobe XD.

4.4.1 Website wireframes

The website wireframes retrace the museum journey with Luna.

In the first part (Figure 45) the institution explores the homepage which explain the main features of the service, the last exhibitions, the other museums participating and the offers.

Then, the user can sign up using the call to action the header or using the specific button for the museum registration in the bottom part.

Before filling the forms the user has to select the stakeholder category to which belongs.

In the sign-up screen submit the information regarding the institutions and can start the profile creation process or decide to do it in other moment.

If the organization goes on (Figure 46) there are 4 main steps to accomplish:

- linking the website and the social account of the museums, adding a brief description
- uploading a picture representing the institution
- uploading pictures of the collection
- uploading video, multimedia content or other resources considered valuable by the organization.

In every moment the user can decide to complete the tasks in a second moment by clicking the call to action in the upper right side of the screen.

After completing all the parts, the museum can explore its private area, watching its public profile and modifying it if necessary.

Another important section is the Dashboard (Figure 47) where the institution can see an overview of its actions in the service, monitoring the visitors flow, feedbacks and the connections with other participating museums.

In the header only museums can see the section called "Luna spaces" where they can search the perfect area for the next exhibition using different filters to be more specific. Clicking on a single space they can see more pictures, information regarding the space features, the location and other institutions already sharing it. In the bottom there is the possibility to book it.

Home
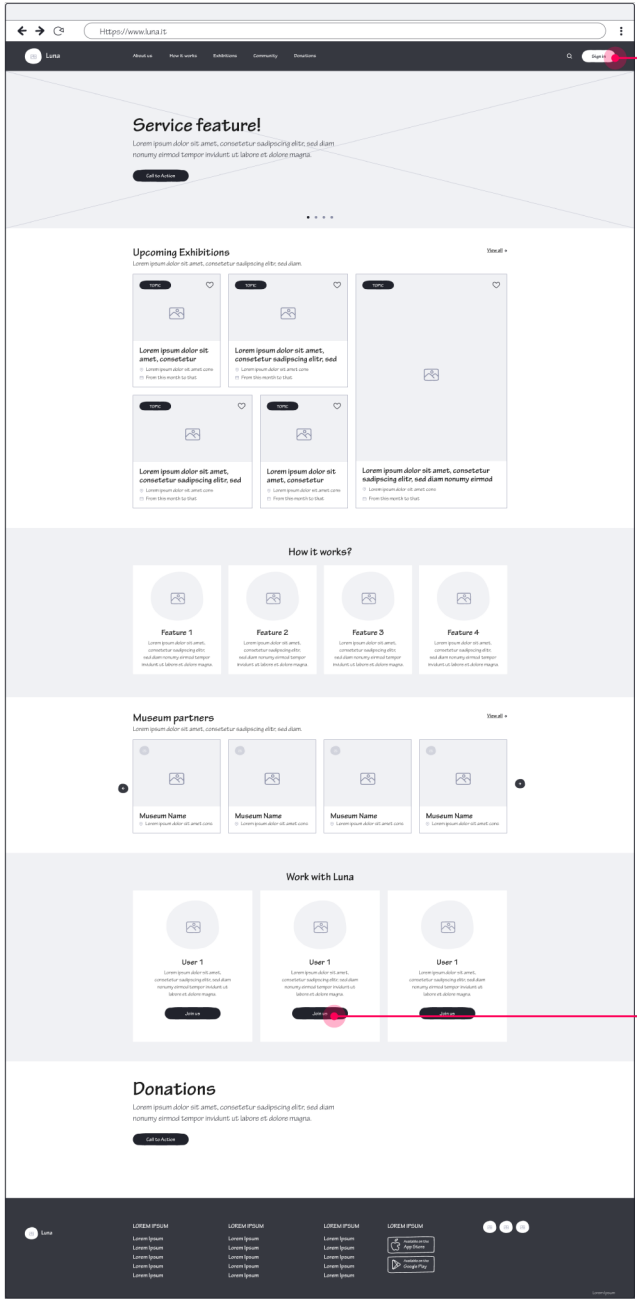
Account selection
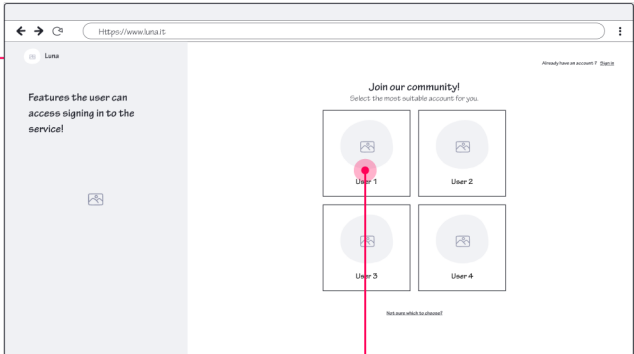
Sign up
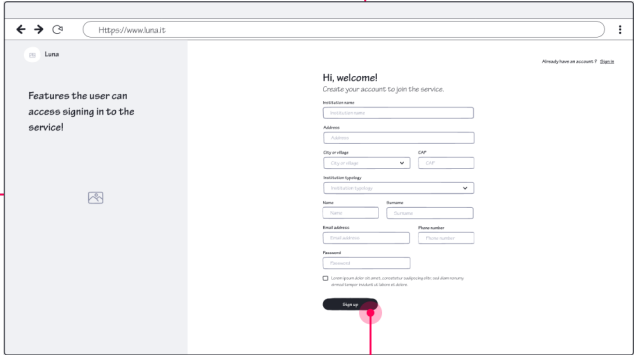
Profile creation
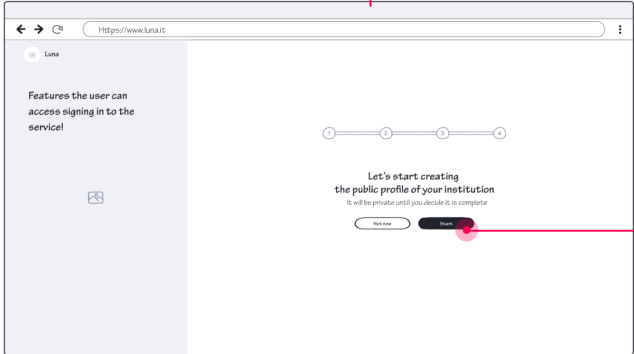
129

Profile creation - step 1
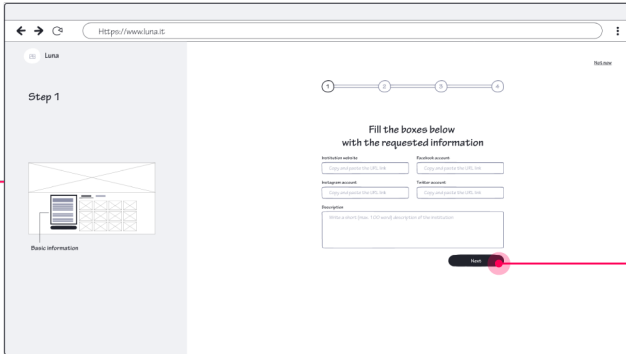
Profile creation - step 2
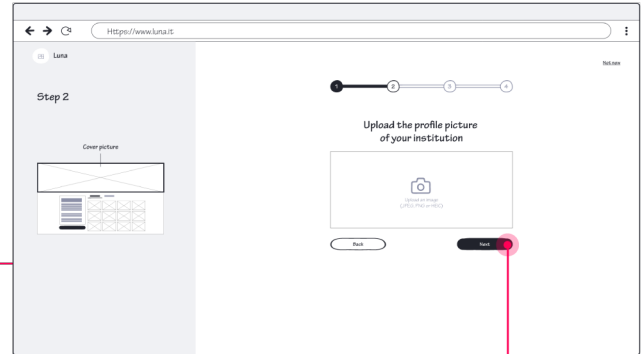
Profile creation - step 3
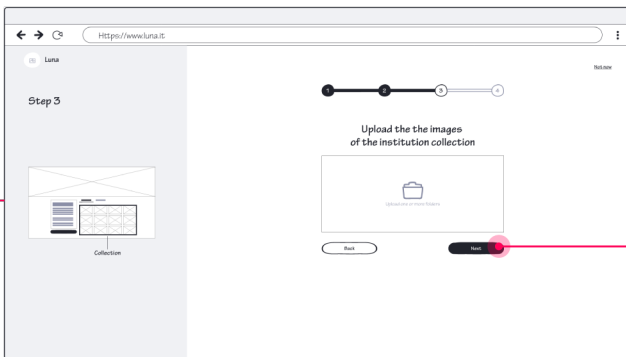
Profile creation - step 4
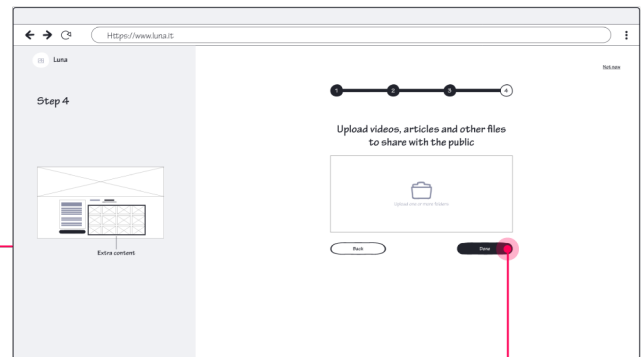
Profile creation - completed
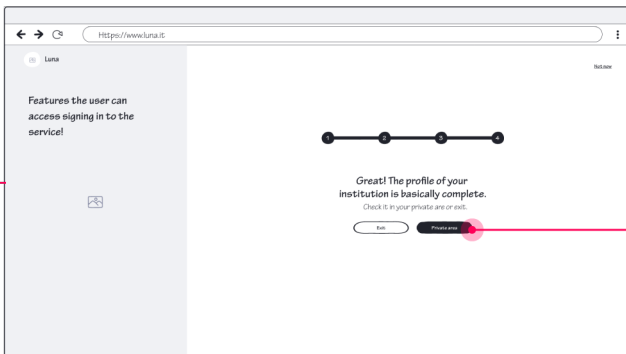
Private area - Public profile
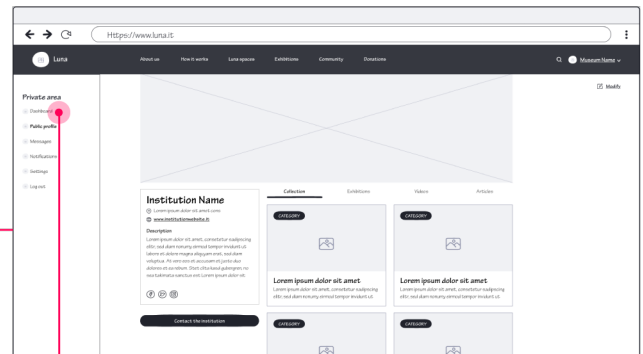
Private area - Dashboard
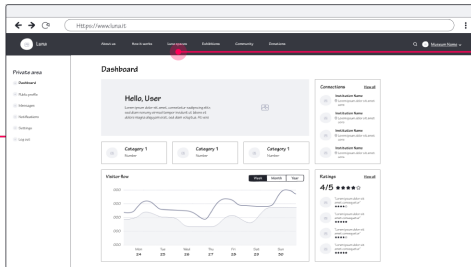
Luna spaces

Space detail

131
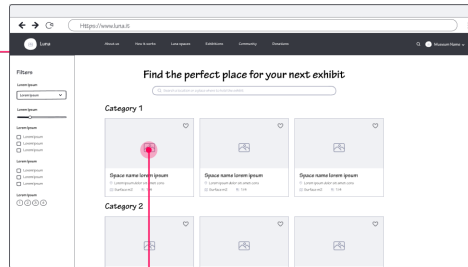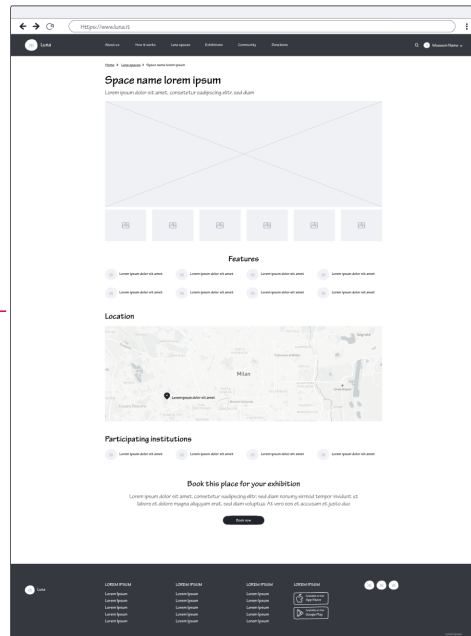
4.4.2 App wireframes

The app wireframes retrace the visitor journey with Luna.

The first part (Figure 48) is the sign-up and onboarding phase where the user is introduced to the Luna offer, functions and features through four slides with representative images.

The person can skip in every moment by clicking on the button in the upper right corner and jumping directly to the sign-up page. Here he/she can fill the input field with the basic information and password or accessing through a different platform.

After that, there is a transition page where the user can select his/her interests, topics, hobbies in order to offer him/her later more specific suggestions.

Going forward (Figure 49) the visitor lands on the homepage where there is a focus on the suggested exhibitions and a call to action to subscribe to the service. In the upper right corner there is the account link where the user can access to different sections, among which the subscription plans.

Exploring the exhibitions, the user has the possibility to search, use different filters, choose different topics and save the display as favourite.

When clicking on an event the visitor can see all the basic information regarding:

- the place
- the date
- the museum participating
- how many people are going
- a brief description
- the price

At the end of the page there is the call to action to buy the tickets.

Clicking on the central button of the bottom menu, the person can participate to the design process of the exhibiton, indeed he/she lands on a special page connected to the Instagram stories of Luna and can express his/her preferences and desires to survey, quiz or open questions.

The last section (Figure 50) is dedicated to the moments supporting the visit, indeed, "Your log" is a sort of collection of memories and souvenirs of the exhibit visited. In the ticket section the user can see his/her purchases with all the necessary data to access to the event, in the "Extra content" the person can access to contents related to the event and uploaded by museums before and after the visit.

Finally in the "Coupons" part all the discounts and vouchers gathered after the exhibits are collected.

Splash page

Onboarding - 1

Skip

Intro message!

Lorem ipsum dolor sit amet, consetetur sadipscing elitr, sed diam nonumy eirmod tempor invidunt ut labore et dolore magna aliquyam erat, sed diam

Next

Onboarding - 2

Skip

Feature 1

Lorem ipsum dolor sit amet, consetetur sadipscing elitr, sed diam nonumy eirmod tempor invidunt ut labore et dolore magna aliquyam erat, sed diam

Back   Next

Onboarding - 3

Skip

Feature 2

Lorem ipsum dolor sit amet, consetetur sadipscing elitr, sed diam nonumy eirmod tempor invidunt ut labore et dolore magna aliquyam erat, sed diam

Back   Next

Onboarding - 4

Skip

Feature 3

Lorem ipsum dolor sit amet, consetetur sadipscing elitr, sed diam nonumy eirmod tempor invidunt ut labore et dolore magna aliquyam erat, sed diam

Back   Get started

Sign up

Hi, welcome!

Create your account to join the service.

Full name

Full name

Email address or username

Email address or username

Password

Password

☐ Lorem ipsum dolor sit amet, consetetur

Sign up

or

Already have an account ?
Sign in

Interests - 1

Interests selection

Lorem ipsum dolor sit amet, consetetur sadipscing elitr, sed diam nonumy eirmod tempor invidunt ut

Not now   Confirm

Interests - 2

Interests selection

Lorem ipsum dolor sit amet, consetetur sadipscing elitr, sed diam nonumy eirmod tempor invidunt ut

Not now   Confirm

133

Tickets

Extra content

Coupons

135
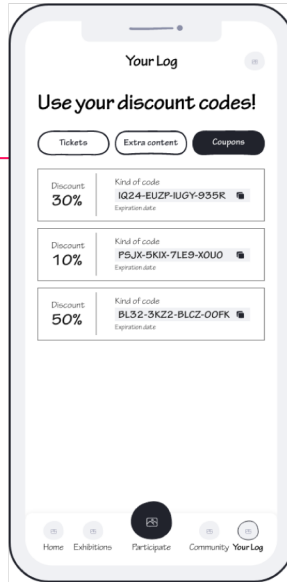
4.5 Finalizing the project

4.5.1 The visual style

Bringing forward the process of brand identity, it was necessary to connect the brand image to the visual style of the UI. Therefore, the main elements were defined.

The color palette starts from the same four colors of the logo: black, white, purple and pink.

Their contrast with the text and the different backgrounds on the screens was checked in order to be accessible for users with visual impairs.

Furthermore, four shades were added, modifying the luminosity of black and purple in order to have lighter colors to apply to backgrounds and other secondary graphical elements which enrich the interface.

For what concern the typography, the font is the same of the logo which was already perfect for accessibility and readability.

The pink is used as the accent to attract the attention of the user on the CTA such as on the main links, while the secondary ones are black.

The shapes of the UI elements is clean and defined contrasting with the style of the icons and the illustration which have a sketchy and dynamic style recalling the design process of the exhibition.

BRAND COLORS

#21232C	#8B8FA7	#F0F1F4	#FFFFFF

#5300FF	#AA80FF	#EEE5FF	#FF0057

TYPOGRAPHY

Atkinson Hyperlegible

Aa
ABCDEFGHIJKLM
NOPQRSTUVWXYZ
abcdefghijklm
nopqrstuvwxyz
0123456789

CTA

Buttons and links

ACTIVE   **INACTIVE**   **SECONDARY**

VIEW ALL →

[edit] EDIT

Museo d'Arte Nuoro
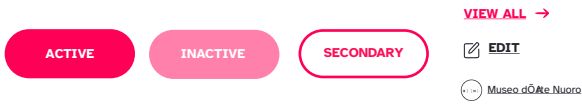
ICONS

Credits to Gregor Cresnar

UI ELEMENTS

Palazzo Micheli
⌖ Via Garibaldi 5, Vicenza   ▱ 100 m2
▦ 1/4

JEWELS

Golden rings, necklaces and bracelets

SCIENCE

For Love of Sustainability. A Retrospective of the Status Quo
⌖ Palazzo Micheli - Via Garibaldi 5, Vicenza
▦ From April 10 to July 2

ART

Fantastic Illusion: Deconstructing Juncture
⌖ Villa Peretti - Via Umberto I 44, Roma
▦ From April 23 to June 30

MAN-CA
⌖ Piazza Arsenale 1, Cagliari

Institutions
Become a Luna partner and attract more visitors. We care about the organisation and the set-up of the exhibit.

JOIN US

Discover
Search the temporary exhibition which is closest to your place or interests.

Subscribe to Luna
Access to special contents to enhance your visit and fantastic discounts.

SEE OUR PLANS

ILLUSTRATIONS

Credits to Pablo Stanley

137
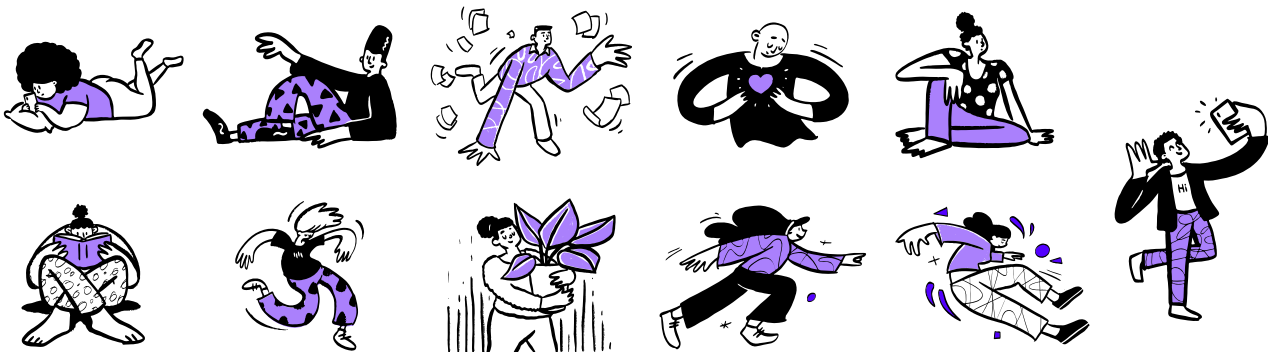
4.5.2 Luna website

The purpose of the website is to present the service in general and the specific offers for the different stakeholders, it is directed mainly to visitors in order to attract them in a first phase and later to encourage them to use the app to access to extra content of the exhibits and to receive specific notifications. Instead, it is the unique digital touchpoint with the service for museums, space owners and professionals who can register and access to a private area.

The homepage (Figure 51) is composed by six parts:

- a carousel with engaging title and short description with a call to action to the main sections of the website and an representative illustration

- thumbnails of the upcoming exhibitions with information about location and date
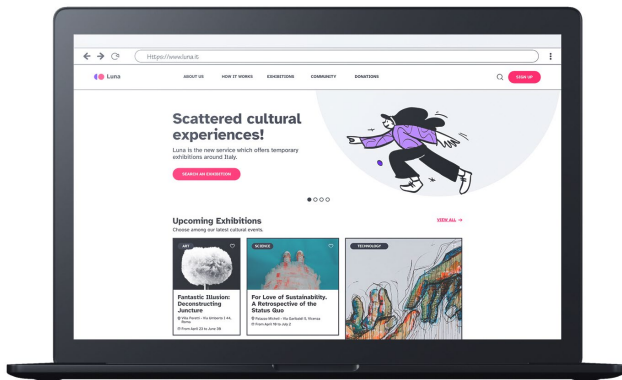
Figure 51: Website Homepage (Graphycally produced by the author)
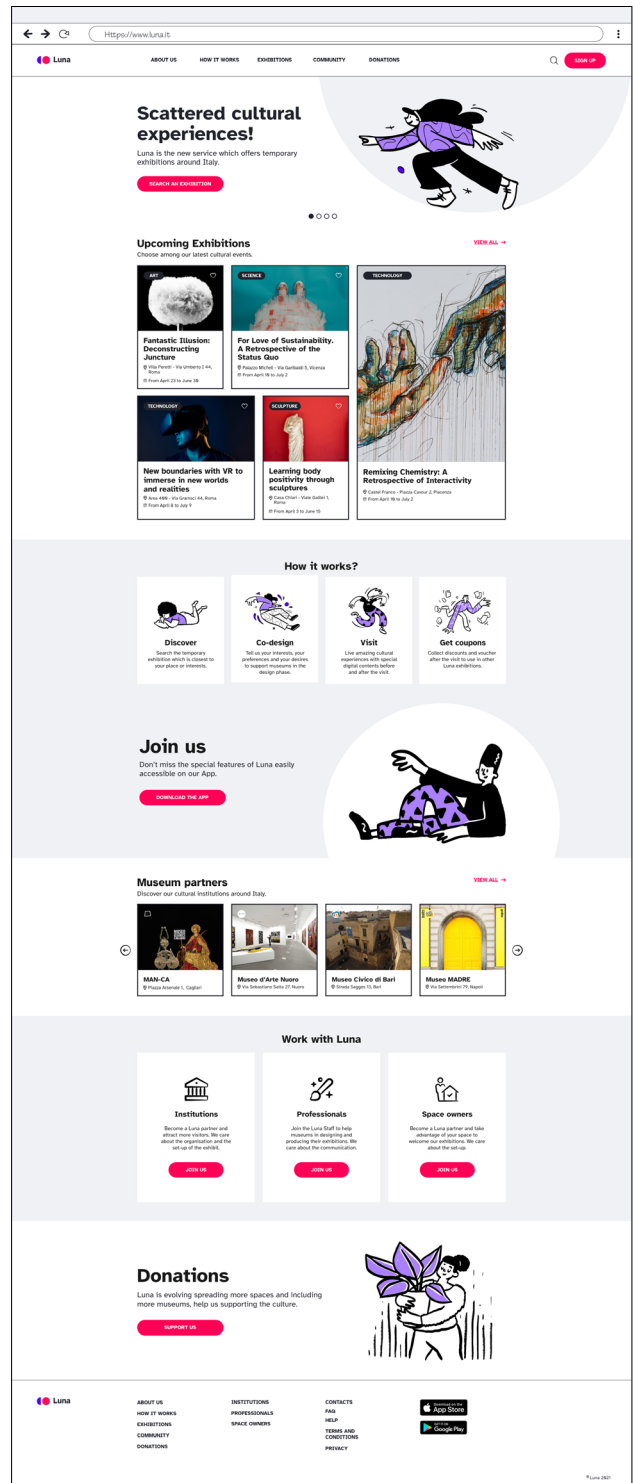
- representation of the main functions available for the visitors with the call to action to join the service downloading the app

- a gallery of the museum participating in the service with name and location

- Luna offer for partners (museums, CCS professionals and space owners) with the CTA to join the service

- link to donations from investors, philantropist, etc.

All the page is divided in horizontal sections to facilitate the navigation and circular elements are used to define some spaces recaling the circular shape of the moon.

In Figure 52 are represented an example of the museum sign-up form and of the profile creation. Both the pages are vertically divided in two parts: the left one is useful to describe what is happening in the page and the right one gives indication to perform the task. When creating the proifle a step by step navigation appears and in both pages in the upper right corner there is a secondary action.

Figure 52: Museum sign-up page and Profile creation (Graphycally produced by the author)

139
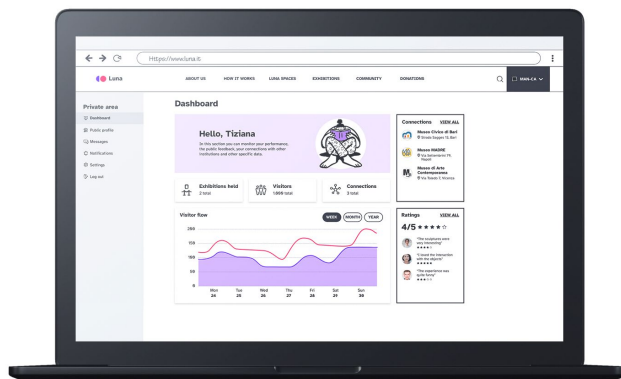
Figure 53: Museum Dashboard
and public profile (Graphycally
produced by the author)
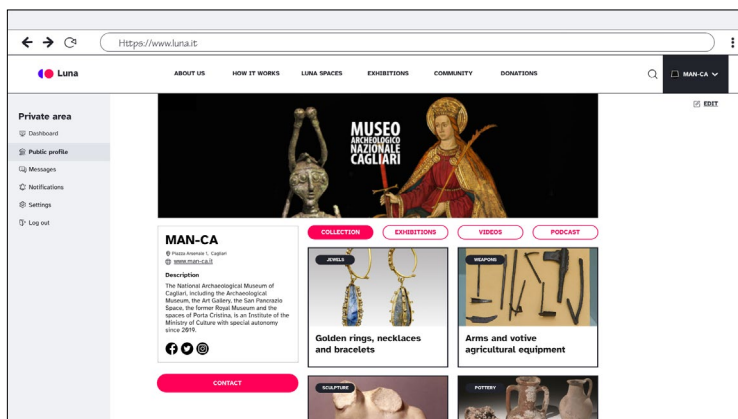
After registering and creating the museum profile, the institution can access to its private area (Figure 53) where can navigate using the sidebar menu which is composed by:

- **Dashboard:** page with data and aggregated numbers on different performances represented through charts and cards

- **Public profile:** page accessible by the everyone to see an overview of the museum (name, location, description, link to the website, collection pieces, video, etc.)

- **Messages:** section were are collected the eventual dialogues between institutions

- **Notifications:** list of communications directed to the museum

- **Settings:** page to adjust the functions

- **Log out:** action to exit from the private area.
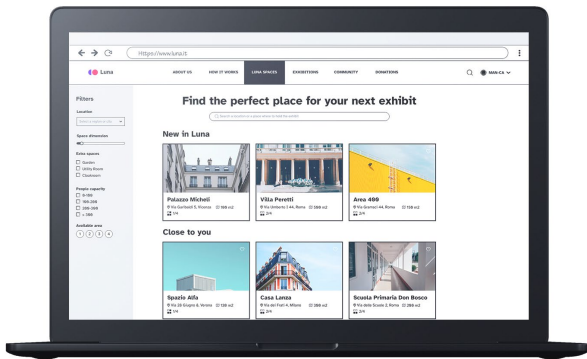
Figure 54: Space research and details (Graphycally produced by the author)
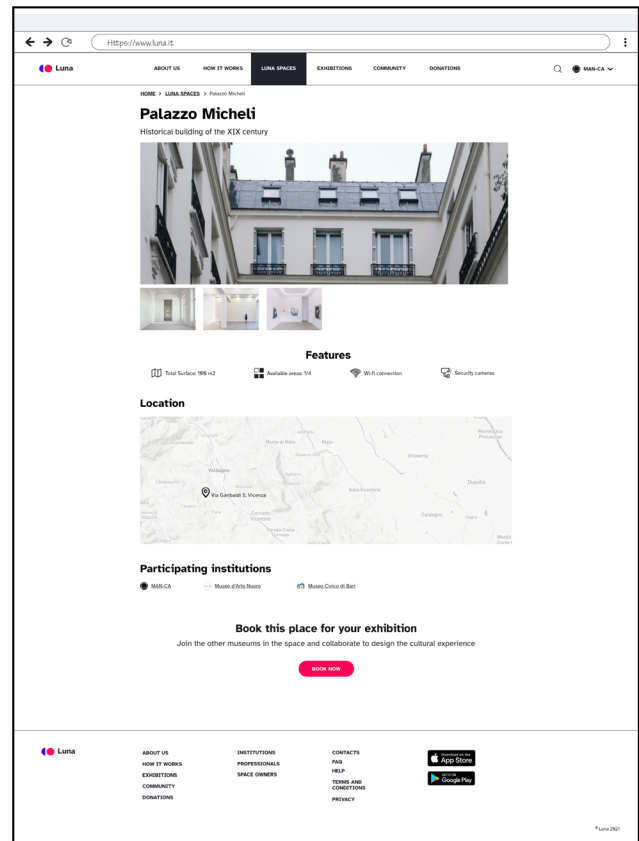
Once the museum is registered, the section "Luna spaces" (Figure 54) appears in the header.

It is composed by a research field in the center and a sidebar with different filters (location, space dimension, extra spaces, people capacity and free areas).

The results are thumbanails of spaces around Italy with name, location, building surface and available areas.

When clicking on a space the user lands on a detailed page which shows:

- pictures of the space
- features (like extra services or extra spaces connected to the building)
- map with the specific location
- museums which have already booked some areas of the space
- call to action to book one or more areas.

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4.5.3 Luna app

Luna app is ceompletely dedicated to visitors, after downloading from the store the application starts with a splash page (Figure 55) and four onboarding screens (two examples are represented below).

The user can skip this passages using the link in the upper right corner and landing to the sign-up page where he/she can fill the input fields with: full name, email address or username and password.

After this the user can select his/her interests (Figure 56)

represented with different evocative images or can proceed going forward to the homepage.

Here there are suggested exhibitions with:

- thumbnail
- topic
- title
- location
- date
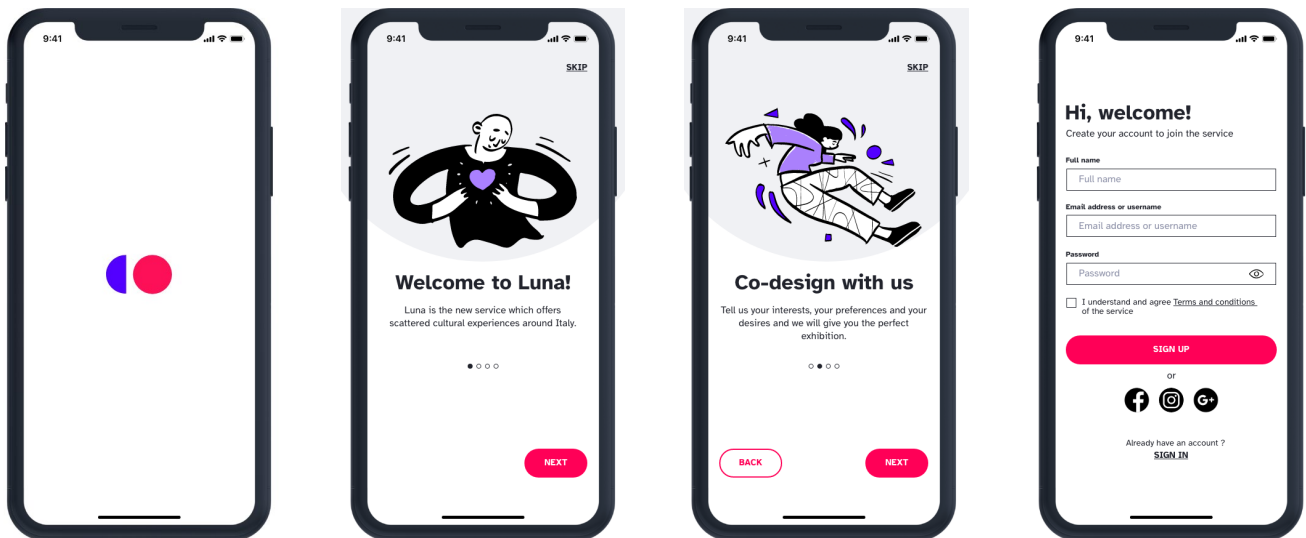
Figure 55: Splash page, onboarding and sign-up page (Graphycally produced by the author)

In the bottom a call to action to subscribe to the service, gaining different benefits.

In Figure 57 the section which collects all the exhibitions is represented. It is composed by a research field, the icon to show the filters, a tab with different topics and the thumbnail of the displays.

Clicking the central button "Participate" in the bottom menu it is possible for the user to access to surveys, quizzes and open questions proposed by Luna in order to support museums in the design of the exhibit.

In the "Community" page it is possible to search and discover the cultural institutions participating to the service which are represented with: thumbnail image, logo, name and location.
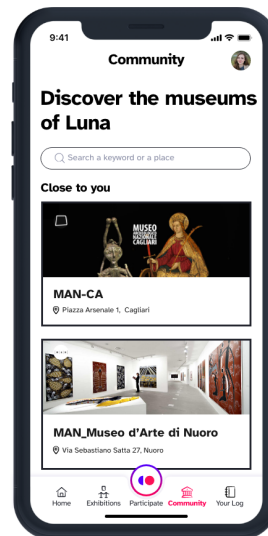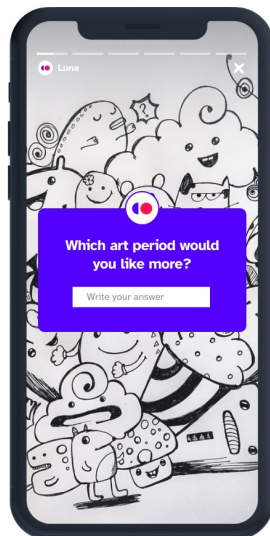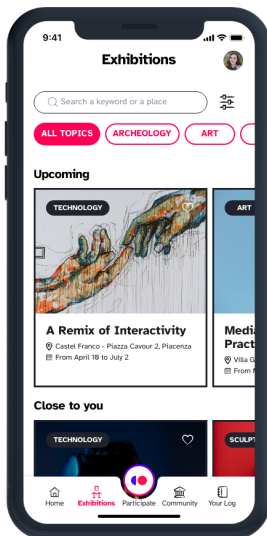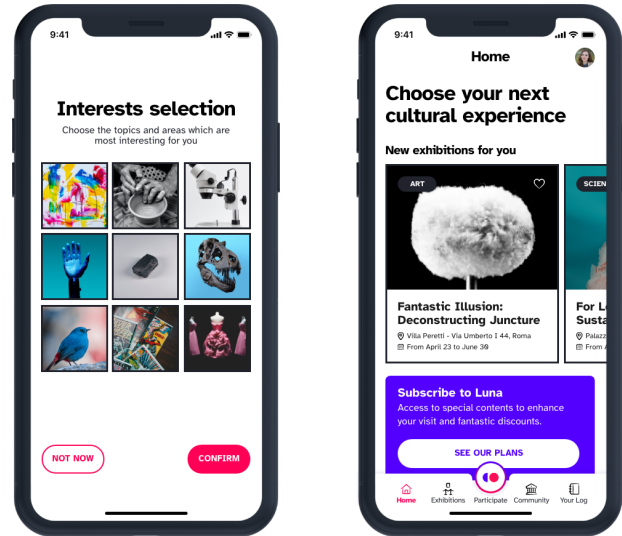
Figure 57: Exhibitions, Participate and Community (Graphycally produced by the author)

The last section of the menu is "Your Log" (Figure 58) which is composed by three parts all related to the visit.

The first is "Tickets" where the user collects all the passes to show to the visit entrance and to watch again or print as a memory.

In the second part "Media" all the extra content (video, articles and much more) reagarding the purchased exhibits is available to be prepared before the visit and to deepen the information learnt after the experience.

The third part is a page dedicated to the storage of "Coupons", in other words, after the visit the user can receive discounts and vouchers to use in other related exhibitions or cultural spaces.

Therefore, when purchasing the next tickets, the visitor can copy and paste the code in the determined field to get the discount.

The last section of the app is the account (Figure 59) represented by the user profile picture or icon in the upper
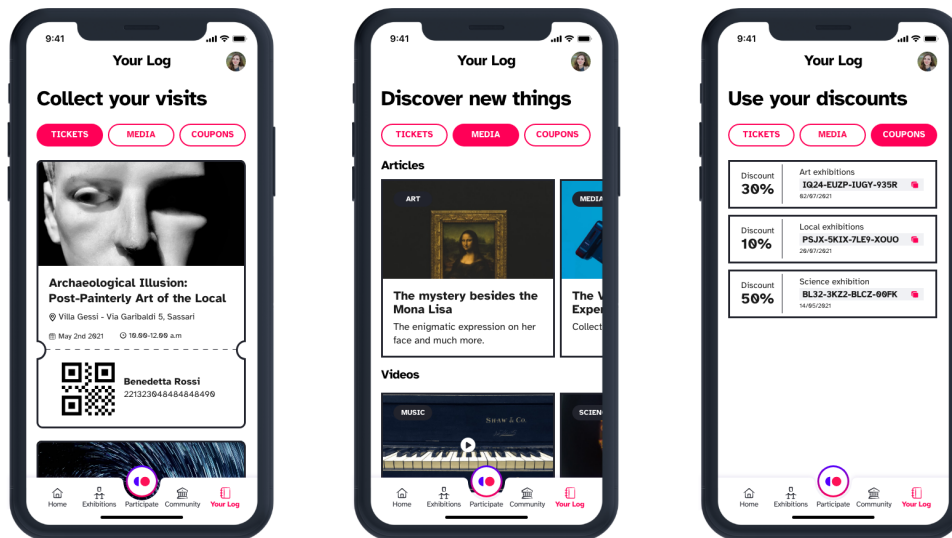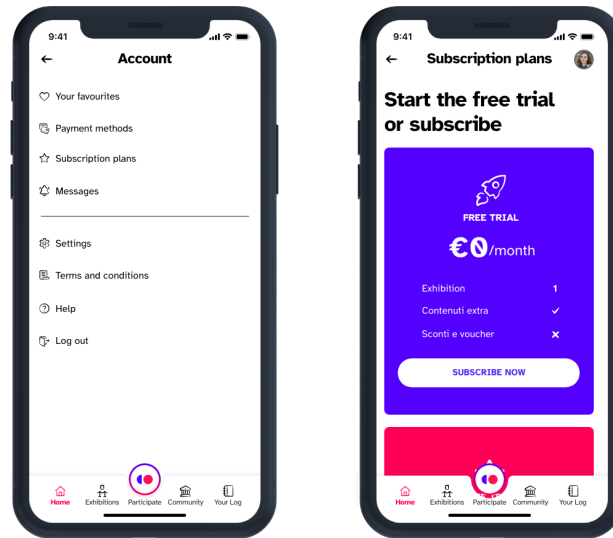
rigth corner.

The menu is composed by:

- **Your favourites:** all the exhibits the user liked tapping the heart on the thumbnail image

- **Payment methods:** overview of the credit/debit cards used to purchase the tickets in the app

- **Subscription plan:** page summarising the different subscriptions (free trial for a month, monthly subscription, yearly subscription)

- **Messages:** all the communications directed to the user in order to recall something or to warn him/her

- **Settings:** page where to adjust notification, user information, etc.

- **Terms and conditions:** text page which summarize the legal agreements with the service

- **Help:** space to contact the assistance

- **Log-out:** function to exit from the app.

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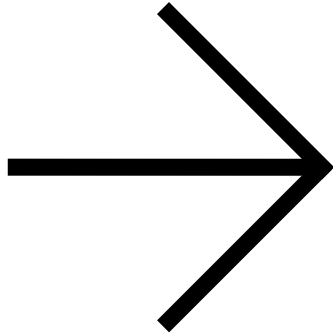
05

CONCLUSION

5.1 General outcomes

This thesis project represents a new approach for museums after COVID-19.

As reported in the research, the crisis on the cultural sector is having a very strong impact and recovery and restart are urgent. Therefore, instead of closing their doors cultural institutions are encouraged by Luna to embrace new habits and new practices towards innovation and digital transformation.

The technology and the social media are considered as tools to: connect with the user, enhance the experience, gather data.

They are pushed to involve the public in the process which is a great resource of ideas, dialogues and feedbacks. Visitors are eager to come back to museums, but they will have to face a new normality after COVID-19, therefore slowly restarting to move far from home or to travel.

Luna allows the cultural institutions to come closer to the public offering scattered experiences, so avoiding dense crowds or assemblages in the same place.

The museum experience proposed by Luna is guided by design thinking principles placing the user at the center and understandign needs, desires, pain point and expectations. The visitor is also seen as a partner in the design process, applying a participatory approach which allows the shift from a vertical transmission of knowledge to a horizontal exchange.

The goal is to create a durable relationship between the visitor and the museum breaking all the barriers of preconceptions. The museum is not a sacred temple or an intangible entity, but rather a place to build and talk about culture together.

It is therefore time to evolve the current definition of museum which is too focused on stability and static rather than flexibility or experimentation. It is focused on the mission and actions of the institutions more than on the effective needs of the public.

In the end, the sector should take the opportunities emerged with this crisis and should focus on the evolution of the cultural fruition, which is, indeed, the starting point of this thesis project.

5.2 Future steps

The project succeeded in finding answers to the starting research questions, but it still represents an open research that needs further experimentation and user test with all the stakeholders in order to have a complete view.

For sure, the COVID-19 lockdown and restrictions didn't help in the communication with the user so it would be interesting to deepen the user research also after the pandemic and verify the behavioral trends analyzed.

Other possible improvements could be the involvement in the process of other professional figures in order to have different perspective on the project organization, economical sustainability and legal issues.

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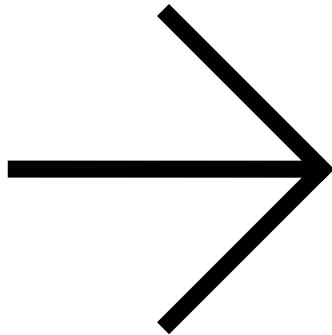
ANNEX

Phase / Activity	August				September				October				November				December		
	W 1	W 2	W 3	W 4	W 1	W 2	W 3	W 4	W 1	W 2	W 3	W 4	W 1	W 2	W 3	W 4	W 1	W 2	W 3
DISCOVER	███	███	███	███	███	███	███	███	███	███	███	███	███	███	███	███	███	███	███
Context research	███	███	███	███	███	███	███	███	███	███	███	███	███	███	███	███	███	███	███
User research									███	███	███	███	███	███	███	███	███	███	███
Public Questionnaire														███	███				
Museums Questionnaire																			███
Case studies	███	███	███	███	███	███	███	███	███	███	███	███	███	███	███	███	███	███	███
DEFINE																			
Research Insight																			
Personas																			
Design Challenge																			
POV																			
How Might We?																			
DEVELOP																			
Brainstorming																			
Ideas cluster																			
Concept definition																			
Concept design																			
User Journey																			
Offering Map																			
Stakeholder Map																			
Storyboard																			
Wireframe																			
DELIVER																			
User test																			
Website/App prototype																			
System Map																			
Service Blueprint																			
Brand identity																			

→

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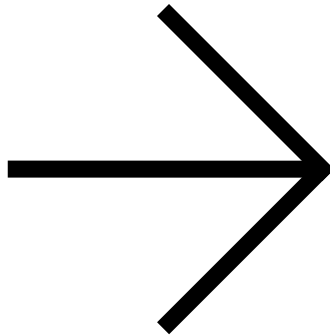
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