



Università
Ca'Foscari
Venezia

Master's Degree program
In Management

Final Thesis

The digitalization of Venetian museums

Supervisor

Ch. Prof. Fabrizio Panozzo

Graduand

Rebecca Virga

Matriculation Number 869269

Academic Year

2021/ 2022

Index

<i>Index</i>	2
<i>Table of contents</i>	3
<i>Abstract</i>	6
<i>Introduction</i>	7
<i>Chapter 1</i>	11
<i>The digitalization process of museums</i>	11
1.1 The ideal digitalized museum.....	11
1.2 Support organizations and best practices.....	39
1.3 How museums are using digital technologies in Italy.....	47
<i>Chapter 2</i>	54
<i>The research</i>	54
2.1 Methodology.....	54
2.2 Executive summary.....	56
2.3 Results.....	58
2.4 Conclusions.....	70
<i>Chapter 3</i>	75
<i>Case studies: Some projects of the analyzed museums</i>	75
3.1 Case study 1: Palazzo Ducale by Re-Art (FabLab Venice) – 2020.....	76
3.2 Case study 2: Archive of the National Gallery of Modern Art Achille Forti (part of Verona Civic Museums) - RAAM – Ricerca Archivio AMACI Musei.....	79
3.3 Case study 3: Restoration of three statues of Giovanni Pisano together with Enrico Scrovegni’s statue in Scrovegni Chapel in Padua using 3D photo-modeling, 2022 ..	82
3.4 Case study 4: Virtual Tours of Civic Museums of Venice in collaboration with Google Arts and Culture, 2020-2021.....	84
3.5 Case study 5: Exhibition room form and function “ <i>The Strategies of Life</i> ” inside the Natural History Museum of Venice Giancarlo Ligabue.....	87
3.6 Case study 6: Audio guide Application of Museo Santa Caterina (part of Civic Museums of Treviso).....	89
3.7 Case study 7: YouTube Channel of Musei Civici di Vicenza “VicenzaCultura” with its “Pillole d’arte”.....	91
3.8 Case study 8: The online ticketing system by Musei Civici di Bassano del Grappa.	93
<i>Conclusion</i>	96
<i>References</i>	101
<i>Websites</i>	103

Table of contents

Table 1: What is digitalization? (Reproduction of "Cos'è la digitalizzazione" from Cultural Heritage for next generation 2020)	12
Table 2: The changing process. Reproduction of "Il processo di cambiamento" by Mibac (2020).....	16
Table 3: The skills model,(Reproduction of "il modello delle competenze" from Cultural Heritage for next generation 2020).....	18
Table 4: Ecosystem map (Reproduction of "La mappa dell'ecosistema" from Cultural Heritage for next generation 2020).....	21
Table 5: Technological Innovation's scope (Reproduction of "Ambiti dell'innovazione tecnologica" from Cultural Heritage for next generation 2020)	22
Table 6: The governance model (Reproduction of "il modello di governance" from Cultural Heritage for next generation 2020)	24
Table 7: Scheme of the structure of PND, (Reproduction of "schema della struttura del PND" from Piano nazionale di digitalizzazione del patrimonio culturale 2022-2023)...	26
Table 8: Plan's vision scheme from ppt1 of Charter: Present and Future Digital Strategies for Cultural Heritage, 28 th -30 th November 2022	27
Table 9: Learning experience scheme from ppt9 of Charter: Present and Future Digital Strategies for Cultural Heritage, 28 th -30 th November 2022	29
Table 10: Plan's strategies, from ppt1 of Charter: Present and Future Digital Strategies for Cultural Heritage, 28 th -30 th November 2022	31
Table 11: Dissemination and monitoring the implementation of the PND, from ppt9 of Charter: Present and Future Digital Strategies for Cultural Heritage, 28 th -30 th November 2022	32
Table 12: Museums and similar institutions divided by activities and activated services after the COVID19 emergency, reproduction of "Musei e istituti similari per attività e servizi attivati a seguito dell'emergenza COVID19", 2020, data are reported in percentage.....	49
Table 13: Percentage of institutions for services, structures and activities dedicated to the audience, reproduction of "Percentuali di istituti per servizi, strutture e attività disponibili al visitatore", 2019, data are reported in percentage value.	53
Table 14: Percentage of museal institutions for content and functions of the website, reproduction of "Percentuali di istituti museali per contenuti e funzioni dei siti internet", 2019, data are reported in percentage value.	53
Table 15: Importance of digital technologies to different business areas, 2022.....	59
Table 16: Effect of digital technologies on the listed activities, answers were given on a scale from 1 to 10. In the graph are reported mean values, 2022.....	60
Table 17: Social media management: internally or externally managed? (2022)	61
Table 18: How frequently do you do these activities? (2022)	63
Table 19: Activities of Venetian museums using audience data (2022)	64
Table 20: Level of agreement/disagreement of interviewed museums regarding given statements, 2022	66
Table 21: First investment in digitalization: WHEN?, 2022	67
Table 22: Investments in digitalization up to now in monetary terms (€), 2022	68
Table 23: Investments in maintenance up to now, year 2022	68

Table 24: Level of satisfaction regarding digital investments in a scale from 1 to 5, 2022	69
Table 25: Significant barriers in adopting digital technologies, 2022	70

Figure 1: Photograph showing the exhibition in the M9, screenshot taken from the official website of the museum, December 2022	44
Figure 2: Two screenshots of the videogame "Past for future", (October 2022)	46
Figure 3: Screenshot showing one of the images being part of the collection "Non per foco ma per divin'arte", December 2022, (source: https://www.uffizi.it/en)	46
Figure 4: The Palazzo Ducale of Venice 3D model, screenshot taken from www.re-art.eu , (Nov 2022).....	78
Figure 5: The Palazzo Ducale of Venice 3D model being printed, screenshot taken from www.re-art.eu , (Nov 2022)	79
Figure 6: Screenshot taken from the website https://archivioraam.org/?#home (Nov 2022)	80
Figure 7: Screenshot taken from the website https://archivioraam.org/?#home , (Nov 2022)	82
Figure 8: Three statues of G. Pisano and the statue of Enrico Scrovegni praying (on the left), 2022.....	82
Figure 9: Scrovegni Chapel. Photo taken from the inside, (Source: Unipd, 2020)	84
Figure 10: Screenshot of MUVE's collections, Google Arts and Culture, November 2022	85
Figure 11: Screenshot showing different ways of organizing artworks in Google Arts and Culture, November 2022	86
Figure 12: Cover of the Project "Klimt vs Klimt" and of the two exhibitions being part of it, screenshot from Google Arts and Culture, November 2022	87
Figure 13: Two photos of the inside of Natural History Museum, January 2023, (source: https://www.inexhibit.com/mymuseum/natural-history-museum-venice/).....	88
Figure 15: Some screenshots of the App "Museo Santa Caterina Treviso", November 2022	90
Figure 16: Some screenshots of the App "Museo Santa Caterina Treviso", November 2022	91
Figure 17: Screenshot of one of the videos published by VicenzaCultura on YouTube, November 2022	93
Figure 18: The external frontage of the three museums in Bassano del Grappa, December 2022	94
Figure 19: Screenshot from https://shop.midaticket.it showing seats availability on a date basis, December 2022	95

Abstract

The script tries to investigate how the digitalization process is managed by Venetian civic museums and it tries to answer three main questions: What is the level of digitalization of Venetian museums?, Who are the companies/institutions that help implement this process? and Are they worth it in the process and is their work helpful for real for Venetian museums?. Starting from a first theoretical part in which the expected situation is presented, the writing goes through the research in which the museums are analyzed from a digital point of view, ending up with some case studies showing the actual circumstances.

So, the work wants to first provide a "photograph" of the expected situation and then another one showing the actual conditions analyzing their similarities and differences and it tries to explain them using collected data.

Introduction

The digitalization process has become one of the most discussed topics in almost all the different sectors of nowadays society. While digital technologies have been fully integrated in some organizations, in some others, like the cultural ones, they seem to be a concept that has not been interiorized yet. Evidence shows that in some countries, like in the UK, cultural organizations are trying to make some concrete actions and are being sustained by some institutions or like Nesta or the Arts Council England that, through the analysis of data coming from surveys submitted every year to these organizations they try to provide some reports also making them understand if they are doing well or if there is something more to do. In some other countries, like Italy, these types of research have been recently conducted and they show that museums are still struggling with some basic problems with digital technologies, for example poor IT network. This is not only a problem limited to Italy, as a matter of fact the European Union has devoted funds to finance cultural organizations aiming at the implementation of the digital transformation that should lead to the creation of new types of services. This research tries to investigate how this process is being implemented and how it is managed starting from general research, going through a more focused point of view, that one of Venetian civic museums and finally heading to some actual examples of digital transformation. It starts from three research questions:

RQ1: What is the level of digitalization of Venetian civic museums?

RQ2: Who are the companies/institutions that help implement this process?

RQ3: Are they worth it in the process and is their work helpful for real for Venetian civic museums?

Trying to answer to these questions, the work highlights differences and similarities between the expectations and the actual situations.

The first chapter starts from the definition of digitalization as digital transformation and goes through a series of important documents, projects plans, both European and Italian ones which, together, are useful to draft the profile of the ideal digitalized museum. As a matter of fact, the script wants to highlight the differences between the ideal situation

and the current one, which is described in the second chapter. In the very first part of the chapter, documents and reports are analyzed. For example, the PND – *Piano Nazionale di Digitalizzazione*, the most discussed one, is the Italian plan to convert museums into digitalized ones and it is part of a bigger vision plan, the PNRR - *Piano Nazionale di Ripresa e Resilienza (National Recovery and Resilience Plan)*. The above-mentioned PND is divided in three parts, and it gives museums a hint of how they should think, which is the strategy they should run and the guidelines to follow. It is also important to highlight the anchor of a cultural organization outlined in the ecosystem map of the Cultural Heritage for next generation report (2020): *“Enable the creation of digital services for the fruition of the cultural heritage, whose added value lays on the ability of responding to the need of innovation in the user experience of material, immaterial and digital cultural heritage and in the possibility of creating new cultural content (from passive users to subjects capable of creating value”*. This frames perfectly the idea regarding how a museum should behave. This first part ends up mentioning a project, the DACA project, which proved that museums and other arts and cultural organizations, with the support and help of experts, are able to develop managerial and entrepreneurial skills and to better face organizational changes.

It also wants to investigate if there are some institutions aiming at making this process of digital transformation concrete and which kind types of organizations they are, if they are public or private institutions or foundations and so on. as of now, most of the guidelines and help derive from the Italian Ministry of Culture, however some other companies and foundations are trying to help museums with these projects, for example, Fablabs. Some best practices are listed to better understand how an ideal digitalized museum should “behave”, like user generated content, cataloging and digitalization of archives, social tagging, gamification and digital copies. After having presented this situation, the script tries to describe what museums are expected to look like, making some hypothesis based on official documents, webinars and experts’ speeches.

Lastly, real data and analysis are presented and reported both from an Italian point of view, and from a Veneto region point of view. A description explaining how Italian and Venetian museums are using digital technologies nowadays ends the chapter, also focusing on the percentage of institutions for services, structures ad activities at visitors’

disposal and the percentage of museums for content and functions of websites. It turns out that in Italy the majority of the museums are located in Northern Italy and almost 68% of cultural institutions are of public property and that's why this work dedicates its attention to Venetian public institutions.

As anticipated, in the second chapter, the research about the process of digital transformation inside the Veneto region civic museums is reported. Digitally born organizations and other private institutions are not taken into consideration, rather the object of the survey are organizations which are property of Municipality or foundations managing municipal properties. This consists of a 12-questions survey asking the museums about the importance of digital technologies in the different business areas, the digital activities they have tried or have not tried yet, the positive effect of digital technologies on given activities (selected during the research), investments, investments in maintenance, how satisfied they are and the barriers they consider significant. The questions were submitted to museums and data were collected using Google Forms. Some of them were also directly interviewed using semi-structured interviews. This situation and the data collected during the submission of the questionnaire is compared with the expectations described in the first chapter, trying to highlight above all the differences. It emerges that digital technologies are important above all in archiving and museums use them many times to publish content, creating experiences and digitalizing their collections. Regarding investments, many museums' first one is dated in the five-year period 2015-2020 and half of them have spent less than €100.000 up to now. In addition, the problems observed during the research are mainly three: lack of funds, lack of time and lack of internal skills.

The third chapter analyses more in depth some of the more interesting projects of the museums being objects of the survey. Digital transformation does not only consist in posting content on social media, but it also means inclusion of people with disabilities or people who struggle, for example by building models with 3D printers, reducing distance between the visitors and the organization by organizing virtual tours. It also includes activities like restoration using innovative technological devices which facilitate these interventions and reduces waiting times. Some of the chosen projects are not

innovative at all, but their presence is justified by the fact that they are presented by the museums as new projects even though they are basic. They are: The 3D model of Palazzo Ducale of Venice by Re-Art made for blind and visually impaired people, the Archive of the National Gallery of Modern Art Achille Forti (Verona) being part of a bigger project which collects the artworks of 21 different museums: the RAAM, Restoration of three statues of Giovanni Pisano together with Enrico Scrovegni's statue in Scrovegni Chapel in Padua using 3D photo-modeling, 2022, Virtual Tours of Civic Museums of Venice in collaboration with Google Arts and Culture, 2020-2021, Exhibition room form and function "*The Strategies of Life*" inside the Natural History Museum of Venice Giancarlo Ligabue, audio guide Application of Museo Santa Caterina (part of Civic Museums of Treviso), YouTube Channel of Musei Civici di Vicenza "*VicenzaCultura*" with its "*Pillole d'arte*" and the online ticketing system by Musei Civici di Bassano del Grappa.

Chapter 1

The digitalization process of museums

In this first chapter, the script wants to highlight digitalization of cultural heritage as a complex process of transition with several steps to go through and a lot of variables to take into consideration. That is why the chapter goes also through the description of documents like the PND – National Digitalization Plan, drafted by the Digital Library of the Italian Ministry of Culture or the Report on a European Collaborative Cloud for Cultural Heritage drafted by the European Commission. Through the discussion of documents and projects about digitalization, of digital transformation both at a European and national level, the script wants to draft how the “perfect” museum should be and should behave according to data collected during the research. It is proved by research and documents that the ideal digitalized museum can develop and innovate in a more quickly if there are some organizations supporting it in the process of digitalization. The work also mentions examples of best practices in order to give a further idea of the characteristics that an ideal digitalized museum must have.

In the last part of it some data regarding Italian museums and, more in details, those ones of the Veneto region are reported in order to describe how the actual situation is also comparing it with the ideal picture depicted by official documents.

1.1 The ideal digitalized museum

Digitalization is the process through which companies change their business models and provide new revenues and value-producing opportunities with the use of digital technologies. This means converting analog data into digital ones (for example scanning documents or photographs).

This digital revolution is transforming not only the way people approach to a business, to an organization, but it is redesigning the global communities and on the other way it gives the opportunities to organizations to look for new perspectives building relationships, networks between people.

The digitalization process is important for the cultural organizations because it helps preserving the important cultural heritage inherited from the past in order to reflect the actual values and the identities to the future generations.

Furthermore, the pandemic 2020 has left two lessons learned: the first one is that culture is and remains an essential element for growing and the second one is about digitalization that is not an option but a condition to exist.

“Digitalization” usually is used to describe the process of conversion from an analog object to a digital file, as previously said, but it can also have the meaning of using the digital technologies to improve the relationships between people being part of the audience, creating new models and opportunities to get an always more efficient performance. Again, the word “digitalization” can be meant as “digital transformation” because it can be extended to all the business areas as a useful tool to optimize working activities, redesign the interaction between insiders and outsiders and develop new models of creating value in the different ecosystems enabled by digital platforms.

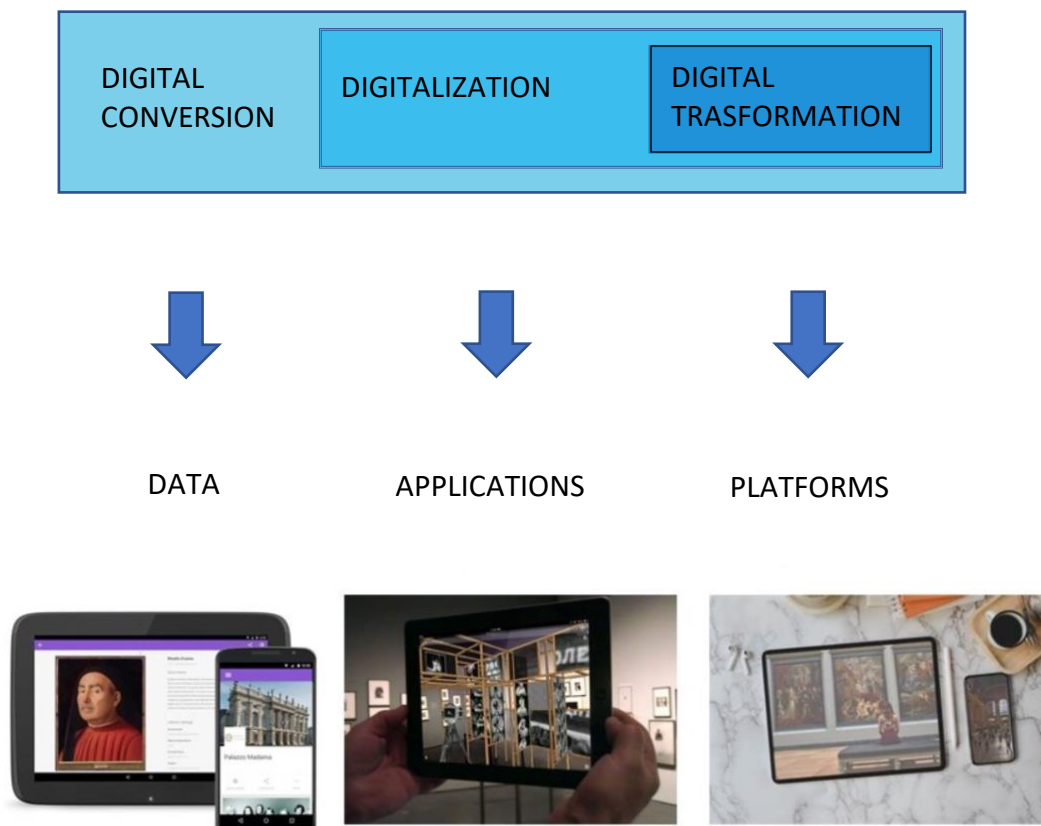


Table 1: What is digitalization? (Reproduction of "Cos'è la digitalizzazione" from Cultural Heritage for next generation 2020)

In fact, the digital transformation is the main objective of Mibact (Ministero per I beni e le attività culturali e per il turismo) and the Digital Library (Istituto centrale per la digitalizzazione del patrimonio culturale) in its *Piano Nazionale di Digitalizzazione del patrimonio culturale – PND (National Plan of Digitalization)*. It is a tool of strategic planning through which the *Ministero per I beni e le attività culturali – Mibact*, aims at implementing the digital transformation of museums and guiding them in achieving the creation of new services in the five-year period 2022-2026. Its high-level implementation strategy is funded as part of Next Generation EU funding (the Italian PNRR – *National Recovery and Resilience Plan*). As a matter of fact, this subject has been discussed at a European level and the European Commission has launched the Pact for Skills which is a shared engagement model for skills development in Europe on 10 November 2020 (EU Commission, 2020). It wants to promote joint action to maximize the impact of investing in upskilling, that means improving existing skills, and reskilling, that means training in new skills. Members of the Pact, which can be individual companies or other private or public organizations, regional or local partnerships or industrial ecosystems or cross-sectoral partnerships must sign up to the Charter and its principles which are basically four:

1. Promoting a culture of lifelong learning for all
2. Working against discrimination, for gender equality and equal opportunities
3. Building strong skills partnerships with relevant stakeholders
4. Monitoring skills supply/demand and anticipating skills needs.

The Pact for Skills is the first of the flagship actions under the European Skills Agenda and it is anchored in the European Pillar of Social Rights. It aims at offering three dedicated services which consists of a networking hub that includes support in finding partners and linking with European tools (for instance Europass), a knowledge hub making webinars, seminars and other courses available, updating on policies and instruments or informing on best practices and projects, and a guidance and resources hub that includes guidance in identifying financial possibilities or accessing information on funding.

The European Union undertakes several actions aiming at creating a digital European cultural heritage summed up in the Work Plan for Culture (2023-2026) during which sustainability connected with digital transformation is discussed and also discussed in

EU programs (2021-2027) among which Horizon Europe and the new collaborative platforms on heritage science and professions emerge.

Horizon Europe is the research and innovation funding program whose goals can be summed-up in three points, explained during the conference “*CHARTER – Present and Future Digital Strategies for Cultural Heritage*” by Mariachiara Esposito, who is Seconded National Expert for the European Commission DG EAC – Cultural Policy Unit (28th-30th November 2022):

1. It wants to speed-up discoveries, facilitate understanding, enrich cultural experiences and promote access to Europe’s cultural treasures.
2. It wants to protect and transmit tangible and intangible cultural assets and foster a common European Cultural Heritage collaborative space which aims at shifting digitalization to knowledge mobilized for the understanding of a heritage object rather than its physical features and building a territory of multi-dimensional data.
3. It allows Cultural and Creative Industries (CCIs) and the Arts to lead the way to a new human-centered digital world.

To help safeguard the cultural treasures, the European Union exhorts Member States so that they co-create a common digital infrastructure, a Collaborative Cloud for Cultural Heritage which aims at fostering cooperation among cultural, creative and technology sector (European Commission, 2022). More in details the Cluster 2 Work Program 2023-2024 sets its sight on the creation of an unprecedented transdisciplinary and large-scale platform to:

- Create a new dimension of cultural heritage preservation, conservation and restoration working together in secure and highly professional digital environments, with advanced digitalization and sharing cutting-edge technologies.
- Include and engage cultural heritage stakeholders (researchers, students, curators, archivists, archeologists, conservators and all museum professionals) to safeguard, interpret, promote cultural heritage and enable easy and deeper access to cultural content.
- Increase knowledge and know-how in the long run always through a stable digital infrastructure, fostering long-term sustainability of data and data formats,

facilitating research projects having open access to share datasets, helping remove barriers for smaller institutions.

Furthermore, to ensure long-term sustainability of the Cloud, the involvement of the Member States is necessary.

An example of community, born with the objective to promote culture and creativity creating new job positions and growth also causing spillover effects in other sectors, contributing at making Europe innovative, is the EIT KIC – Culture and Creativity Knowledge and Innovation Community. It will start to become operational in year 2023 being composed by 50 partners coming from 20 different countries and 6 co-location centers. Academia, research and business knowledges are united to reduce fragmentation among the European Cultural and Creative Sectors and Industries (CCSI) and to build an innovation model. Furthermore, it aims at training innovators with entrepreneurial and technical skills, at promoting business creation through public and private investments and at developing new products and services through innovation-driven research. In addition, it is important to have common objectives in order to create synergies with the other KICs each of which works on a specific societal challenge for a unique model integrating education into the innovation ecosystem. Some key EIT KIC success indicators might be about 1,500 new products and services, about 3,800 start-ups supported, more than 13,000 highly skilled jobs created more than 4,000 students graduated from EIT labelled programs.

So, to do the digital transformation, it's fundamental to harmonize the cultural dimension together with the managerial one in order to have a more complete vision and to have the capabilities to manage operative systems and processes. The plan deals with the technological dimensions but more particularly, it aims at improving the economic and social value of the organizations generated for and with citizens who have an important role in the process.

Besides, starting from the simple static publication of data and information with the help, for example, of websites and going through the informatization of processes and the interaction in the social media, the PND tries to reach an integrated digital environment that puts together knowledge, management and fruition of the cultural

heritage. This change requires a complex process of transition described in a clear Strategic Framework document called “Cultural Heritage for Next Generation; La digitalizzazione del patrimonio culturale pubblico” that aligns tools and systems (2020). This document is the strategic assumption of the PND and it illustrates the vision that the Digital Library – *Istituto centrale per la digitalizzazione del patrimonio culturale* is going to follow to fulfill its institutional tasks. Below, the changing process is reported: it obviously starts with a vision that sees the digitalization as a possibility to generate a new vision of the cultural heritage that leads to strategic planning through models, processes and operative tools. Obviously, it is necessary to define roles and capabilities, organizational processes and the governance of relations and to align the IT systems together with the structures which are useful to reduce the distance between users and these organizations. Finally, it might be important to align operative processes and to design clear flux that considers roles in the different level of government and of the reciprocal interdependences.

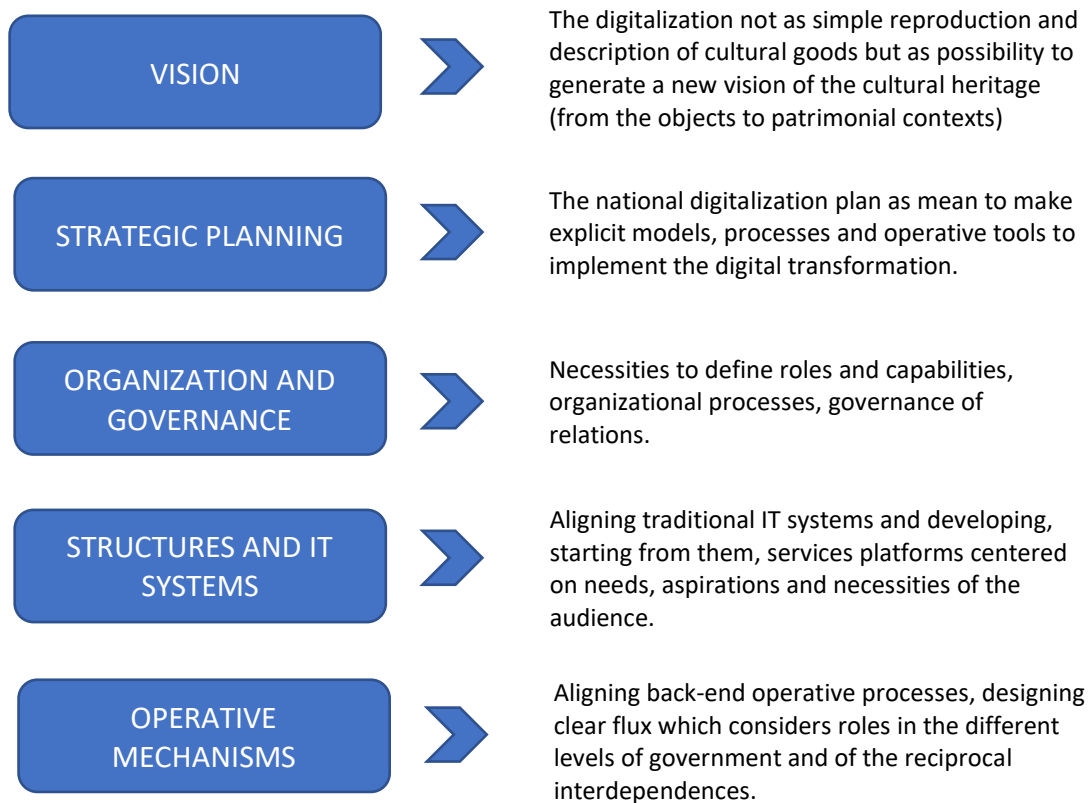


Table 2: The changing process. Reproduction of “Il processo di cambiamento” by Mibac (2020)

In order to innovate an organization needs 4 pillars: value relations, interoperability that means developing managerial systems which can be match independently from the different types of cultural goods, service design and interdependence of the ecosystem both from a scientific and a technological-functional point of view.

The document about the Strategic Framework (2020) by MiBac, deals with a plan divided in two sections: one section is about strategy defining principles inspiring actions that must be taken through the definition of the vision, the context, strategies that determining how to act through the implementation of resources and the governance of relations; the other one is about operations defining conditions of the offer together with incapacitating factors, rules and standards. Furthermore, it is important to find the characteristics of the ecosystem like the infrastructures, platforms and identify a path to follow defining a road map and finally, monitoring the results. The plan explains that these projects of digitalization and digital innovation taking place in a context changing so rapidly need an organizational structure founded on different levels capable of mitigating risks and very flexible without being totally dependent on external suppliers. In order to be implemented, the PND needs to be structured on a governance system, monitored by the ICDP (Istituto Centrale per la digitalizzazione del patrimonio culturale = Central institute for the digitalization of cultural heritage), which considers the interests of everyone both from a strategic point of view and from a territorial point of view. To act on a multilevel improvement, it might be useful to use the “plan-do-check-act” method which gives the power to “plan” to a permanent technical committee in contact with stakeholders to meet their needs and the power to “do” together with the advisory board, or scientific committee, to have a scientific point of view. This method provides the involvement of the territorial cultural institutes that help both in the “check” and “act” phases communicating, on one hand, with stakeholders to let them participate in the co-creation and co-design processes and, on the other hand again with the advisory board to monitor the obtained results.

The most important thing, in fact, is to give value to the human capital. The digitalization process basically is founded on the capabilities of learning and adaptability of workers measured on three dimensions:

- a. Training of specialists of ICT sector
- b. Basic digital skills of the audience

- c. Reskilling of operators and companies

So, the formative process can be described as a cycle based on three phases:

- a. Revision of already existing profiles and relative systems of recruitment
- b. Basic training aimed at the development of skills useful to the changing process
- c. Advanced training that is needed to create a fruitful environment for innovation and generate value.

The skills model

Basic foundational skills
(Security, accessibility, digital citizenship)

Specialistic skills
Data management
Digital humanities
Design

Managerial skills
Innovation
(In processes and in services)
Change management
(Digital transformation)

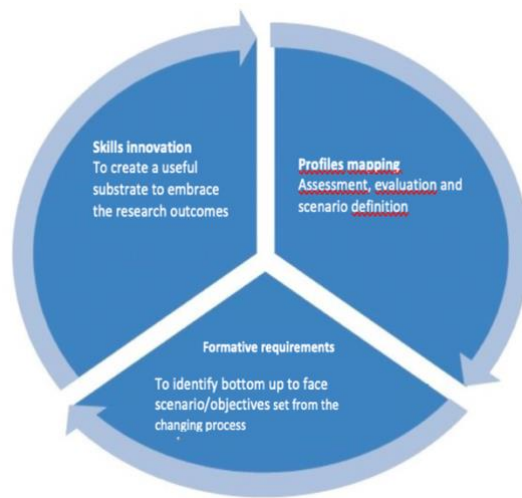


Table 3: The skills model, (Reproduction of "il modello delle competenze" from Cultural Heritage for next generation 2020)

These skills need to be implemented in order to let the ecosystem work. At this regard, In January 2022 an important survey was published: the DASH survey (Digital Attitudes and Skills for Heritage). It highlights how the UK’s heritage sector is using digital technologies after the lockdown. The research was conducted by Timmus Research limited and Heritage Alliance funded by National Lottery Heritage Fund, collecting data from about 3.000 individuals from about 300 organizations. Key findings, outlined by Delphine Jasmin-Belisle, head of development and membership of the Heritage Alliance during the conference “CHARTER – Present and Future Digital Strategies for Cultural Heritage”, show that only 17% of the interviewees are leading and innovative organizations as many times their digital attitudes are still focused on problem-solving rather than growing digital confidence and innovation. In fact, 48% describes the change to digital as a way of “keeping up with the times” and 29% has acquired some skills by following the practice of others but during the period of

lockdown even if the business-critical skills have improved in the organizations, digital is less used in transformative ways and teams have missed the benefit of informal face-to-face interactions to support skill sharing and innovation. Furthermore, it has been registered that organizations have less time for innovation and even if the organizational support has increased for staff, for volunteers it has not and, finally, the needs of individuals and organizations remains still now unchanged. This leads to the fact that a digital museum should act following some basic recommendations listed below:

- the organization should gather data in order to unlock conversations across the sector
- the journey starts from the survey, it does not end with it
- the museum should give time for the initiative to gain momentum which will grow buy-in
- use Heritage Ecosystem to acquire information.

These recommendations lead to three important statements:

1. Teams are looking to leaders for a vision around digital, not necessary skills. They can be acquired afterwards or through the process of “learning by doing”, but if the vision is lacking the start point is wrong.
2. Fostering exchanges across teams, volunteers and freelancers is the key to success. New and different ideas can lead to new opportunities.
3. It is important to talk about Digital Skills in day-to-day activities (recruitment, meetings, skills sharing).

If a museum starts with these assumptions, this vision opened to exchanges, ideas, opportunities and new scenarios, it could bring to successful relationships, innovation and development.

In fact, Maria Cristina Ortega as representative of the Cyanotypes project of the HKU – University of Utrecht, explains connections between the CCIs (Cultural and Creative Industries) and the digital heritage. It has been demonstrated that most of the solutions for digital challenges come from other cultural and creative sectors because they provide improvements of experiences, interrelations and the valorization of the heritage

giving space to dialogue, dialogue skills and transformative competences that in other cases could have not the opportunity to emerge. The project in question aims exactly at digital transformation, green shift and reducing the gaps due to lack of skills through training programs, increased coordination, dissemination, communication and sustainability.

So, skills are important, but it is necessary that all the subjects involved in the ecosystem need to work together to make the fruition of the cultural heritage possible. So, the key to innovation and development lays on these interdependent relationships between the actors of this ecosystem mainly focused on the end user who now actively participate to the co-creation of value. Producers and suppliers work together for the co-creation of products and services which go from basic cultural services to complementary services of high added value and of strong creative content, aiming at building an economy of knowledge centered on cultural heritage.

This means not only the institutions being typically part of the cultural world like cultural institutions, universities or collective contributors but also those complementary services that have a huge added value and develop a flourishing economy of the knowledge of cultural goods like for instance the touristic entities, start-ups or the PMI cultural sector. Infrastructural services might not be forgotten as they are providers of cloud services (data warehouse, interfaces of access to digital content). At this point the focus is on end users who are interested in the service and not on the product itself. There might be two kinds of end users: one is the individual who are the citizens, the scholars or the operators of the sector who use the services on their own and on the other side the associated which means the collective projects, the active citizenship that together try to develop and innovate the entire system through research, investments and so on. This new scenario creates new opportunities for the cultural heritage fruition: from the point of view of the complementary value of production focusing on providing specific high-value services while setting a system of multiple suppliers with different characteristics giving, in this way, space to competition, specialization and quality enhancement might be a great possibility of increasing value, as well as, regarding, on the other hand, the complementary value in consumption, the access to a catalogue of services by different providers and the possibility of personalizing the experience,

together with the expansion of cognitive potentiality through the combination of services.

Partners and suppliers (complementors)	Activities/Complementary	Anchor	Connectors	End users
<p><i>Of content:</i></p> <ul style="list-style-type: none"> - Entities that manage cultural heritage - Subjects that produce knowledge about heritage (universities) - Collective contributors (crowdsourcing) <p><i>Of infrastructural services:</i></p> <ul style="list-style-type: none"> - Service cloud provide <p><i>Of complementary services:</i></p> <ul style="list-style-type: none"> - PMI cultural sector - Start ups - Cultural and creative industries - Touristic industries 	<p><i>Activities:</i></p> <ul style="list-style-type: none"> - Collection and indexing of content - Conservation of digital resources - Access to digital resources <p><i>Complementary:</i></p> <ul style="list-style-type: none"> - Enhancement of content - Distribution and sharing of content - Personalization of content 	<p>Enable the creation of digital services for the fruition of the cultural heritage, whose added value lays on the ability of responding to the need of innovation in the user experience of the material, immaterial and digital cultural heritage and in the possibility of creating new cultural content (from passive users to subjects capable of co-creating value)</p>	<p><i>Physical connectors:</i></p> <ul style="list-style-type: none"> - Access interfaces - API <p><i>Logical connectors:</i></p> <ul style="list-style-type: none"> - Rules and standards of interoperability - Representation and visualization of the information - architectures of communication <p><i>Relational connectors:</i></p> <ul style="list-style-type: none"> - Contracts of partnership - Systems of membership 	<p><i>Individual</i></p> <ul style="list-style-type: none"> - Citizens - Scholars - Operators of the sector <p><i>Associated</i></p> <ul style="list-style-type: none"> - Collective projects - Active citizenship <p><i>Structured:</i></p> <ul style="list-style-type: none"> - Research entities - Public entities - Companies of the sector
<p>Complementary value in production</p> <ul style="list-style-type: none"> - Setting a system of multiple suppliers with different and complementary characteristics (competition, specialization, enhancement) - Possibility of focusing only on the production of specific services of high added value, being those ones provided by the platform itself 		<p>Complementary value in consumption</p> <ul style="list-style-type: none"> - Access to a catalogue of services provided by different providers - Possibility of personalizing and sharing the fruition experience - Expanding the cognitive potentiality through the combination of different services 		

Table 4: Ecosystem map (Reproduction of "La mappa dell'ecosistema" from Cultural Heritage for next generation 2020)

Digital technologies are continuously evolving and developing. They are always defining future scenarios where they try to find new solutions to existing needs through the exploitation of spaces that derive from the socio-economic macro-transformations. Consequently, they are creating trends, the ideal digitalized museum might have to know. These can be grouped in four macro-trends: open government, open access, smart heritage and user experience. In the graph below, they are explained showing three different kinds of technological innovation's scopes that are the scope of application, the technological scope and the innovative technologies.

MACRO TREND	OPEN GOVERNMENT	OPEN ACCESS	SMART HERITAGE	USER EXPERIENCE
SCOPE OF APPLICATION OF THE CULTURAL HERITAGE	Dematerialization of proceedings Digital services for citizens and companies Smart working Open data	Fruition of the cultural informative heritage Reuse of the cultural informative heritage Co-creation of new cultural content	Planned preservation Predictive systems of risk Environmental control Energetic sustainability	Virtual tours Augmented reality Immersive fruition Gaming
TECHNOLOGICAL SCOPE	Digital infrastructure	Artificial intelligence Digital infrastructure	Internet of Things Digital infrastructure	Sensory interfaces
INNOVATIVE TECHNOLOGIES	Cloud computing	Machine learning Natural language processing	Short/long range connectivity Big data techs	Virtual reality Augmented reality Speech recognition

Technological Innovation's scopes

Table 5: Technological Innovation's scope (Reproduction of "Ambiti dell'innovazione tecnologica" from Cultural Heritage for next generation 2020)

Some of these trends have been being accelerated by normative evolutions in the sectors of open government and of open access. The ideal digitalized museum must be updated and be aware of the importance of these four trends, as well as it must be engaged in trying to implement them in the organization.

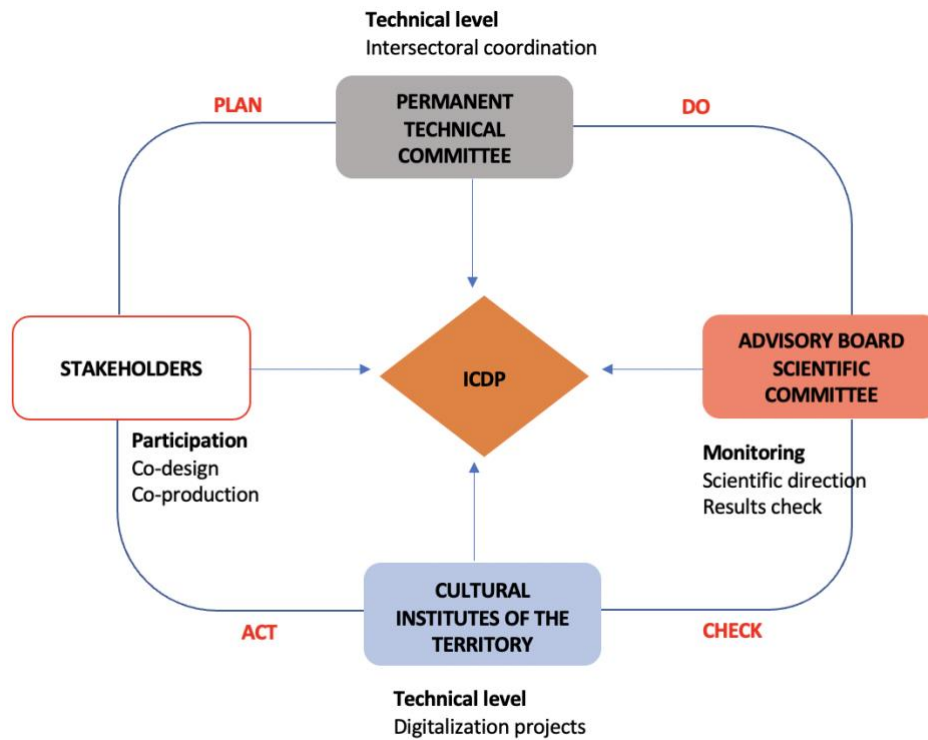
- Open government in the cultural sector can be a source for several digital services for citizens and companies. It can help provide dematerialization of proceedings and implement smart working as well as open data. These new scopes of application boost the activities run by organizations and facilitate research and development. From a technological point of view digital infrastructure might improve the process with the help of innovative technologies like cloud computing.
- Open access contributes to the fruition and re-use of cultural informative heritage and, to the co-creation of new cultural content. These activities might be empowered with the use of artificial intelligence and digital infrastructures in

the technological field as well as with innovative technologies like machine learning and natural language processing.

- In other cases, the applied research has led to new systems for the conservation and smart management of the cultural heritage: exploiting innovations like short/long range connectivity and big data techs, activities like planned preservation, predictive systems of risk, environmental control and energetic sustainability might be used in museal circumstances. Digital infrastructures represent an important mean to reach these objectives, together with the Internet of Things which is a technology that inter-connects computing devices embedded in everyday objects, enabling them to receive and send data. It can be useful for example to measure environmental parameters or to control lighting system.
- To improve user experience, new market segments have been being developed. Both hardware (personal trackers, oculus, etc.) and software (machine learning, augmented reality, videogames, etc.) types of technologies. Sensory interfaces represent a way to overcome barriers, to include new types of audience and to enhance the quality of the experience which involves not only the sight, but it becomes a real all-round experience.

Nonetheless it is always important to recognize and classify these tools in order to manage the change and not to undergo them as simple market evolutions.

To face these trends museums and other cultural organizations must also have an internal organizational structure capable of sustaining all the phases of these projects. Developing products that are coherent both with the objectives of the client and the administrative policy is very important to face the technological context. That's why, the activation of an organizational structure divided in areas capable of re-negotiate estimated results, allocated resources, estimated time seems to be fundamental not to lose sight of the prefixed goals and not to delegate the entire process to external suppliers. An example of organizational structure of cultural institutions is shown in the graph below.



The governance model

Table 6: The governance model (Reproduction of "il modello di governance" from Cultural Heritage for next generation 2020)

The internal organizational model above should be activated whenever digitalization projects or technological innovations start. Obviously, the internal environment is not enough: cultural organizations might need the help of other organizations which are specialized in that field. But who are the organizations that tries to implement and improve this process? This is explained in the section 1.3 entitled “support organizations and best practices”.

Since Italian cultural institutions suffer from a strong digital divide both in terms of digital infrastructures and of low digital skills of the internal staff, the Plan wants to reduce these gaps giving to all organizations the possibility to develop access to digital cultural resources, to implement user-centered services and growing human resources through developing the potential of central networks, museums, libraries and archives. So, the aims of the PNRR can be summed in six macro topics, like it was explained by Tiziana Mancinelli during the conference that took place in Rome on 28th-30th November

2022 called “CHARTER – Present and Future Digital Strategies for Cultural Heritage”, which are:

- a. Facilitate the growth of a complementary cultural services market for small and medium-sized enterprises and innovate start-ups
- b. Facilitate the transfer of innovations in R&D into cultural heritage practices
- c. Develop the potential of cultural databases and digital collections, both from the perspective of scholarly edutainment and tourism enhancement
- d. Ensure the long-term use and accessibility of digital archives and cultural heritage digitization products
- e. Reduce inefficiencies and lower management costs through the rationalization of information systems (cloud approach), the dematerialization of paper archives, and the digitization of repositories
- f. Simplify the relationship with citizens and businesses by redesigning procedures in different sectors and bringing services online.

The PNRR is based on four points which are enabling services, services of data production, document management and preservation services and services for improving accessibility. So, investments are supposed to be focused on these four areas:

- Investing in the development of infrastructures (hardware and software)
- Investing in the organization, implementation and increase of digital heritage coming from cultural organizations, enhancing skills and capabilities
- Investing in the development of systems of management and preservation of cultural heritage
- Investing in creating platforms for integrated access, to facilitate the provision of cultural digital services, ensure use and re-use of the heritage.

To sum up, the plan wants to be open and accessible, it has to be updated periodically according to socio-cultural changes and developments in technology and, finally, it has to be shared within institutions and people that identify with the values outlined.

The PND, as previously clarified, is a useful methodological and operational reference for all private and public cultural organizations like museums, archives, libraries which aim at preserving, managing and disseminating cultural heritage, and it is funded as part of the PNRR.

The plan is articulated in three connected sections shown in the graph below:

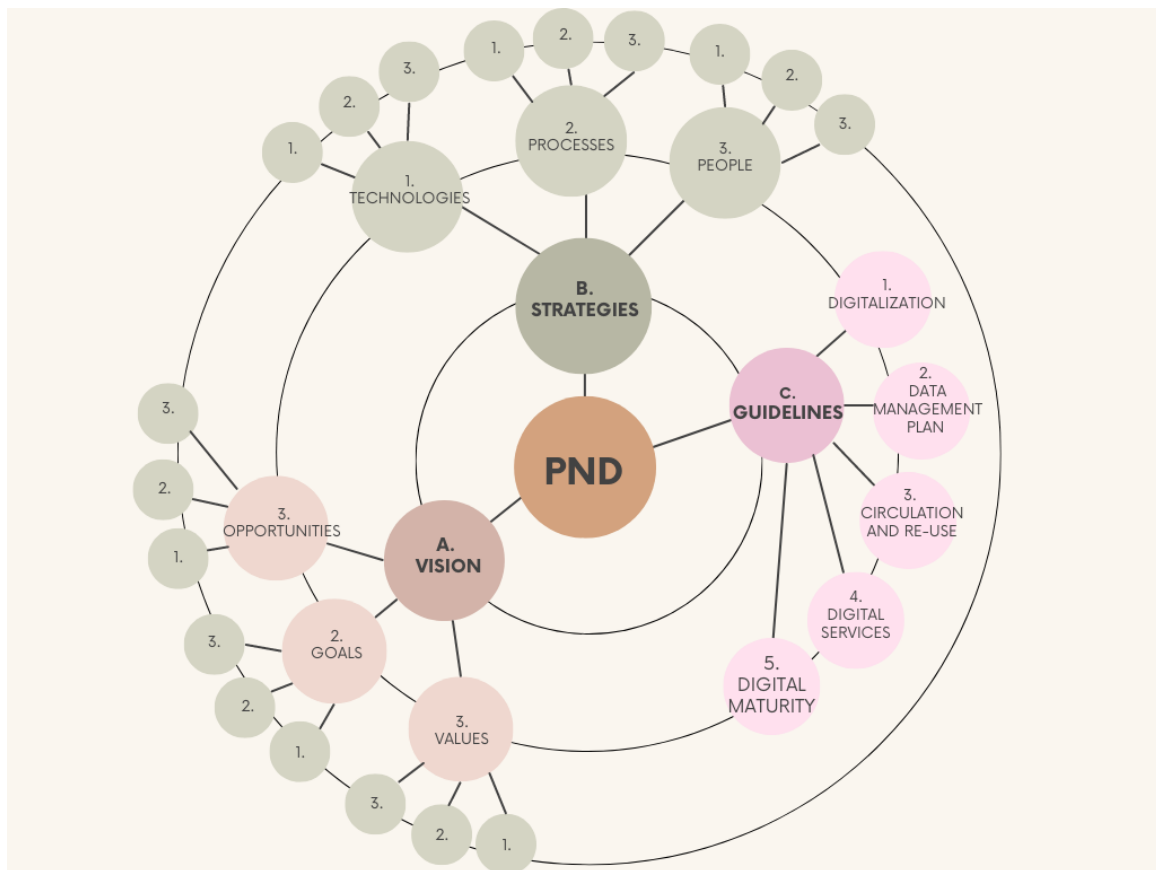


Table 7: Scheme of the structure of PND, (Reproduction of "schema della struttura del PND" from Piano nazionale di digitalizzazione del patrimonio culturale 2022-2023)

- Vision: this section illustrates a sort of prediction of how the digital transformation might be, the opportunities it might lead to and the long-term objectives.
- Strategy: it defines the path to implement and consent the objectives.
- Guidelines: these represent an operating tool letting the plan and fulfillment of the activities connected with digitalization of the cultural heritage and the transformation of cultural places.

The Plan wants to catch the opportunity offered by the digital technologies to create an ecosystem of culture in order to increase the demand and enhance the accessibility for the different market segments. So, it is founded on shared values and change objectives from which opportunities born for the entire cultural ecosystem. Digitalization projects created by the individual organization might be reinforced if they converge to a collective action based on a common vision that follows a clear direction made of policy and rules. In order to make this happen, strategies must be adopted. They must be the tools that harmonize the cultural dimension with the managerial and technological ones. Only through the change of vision and the evolution of systems these organizations can operate in a digital environment. To describe it, the Digital Library considers three interdependent trajectories of change: values, aims and opportunity of digital transformation.

	VALUES	AIMS	OPPORTUNITY
PATH 1 A heritage with open boundaries	Building cultural landscapes	New forms of access to cultural heritage	New visions of cultural heritage for new audiences
PATH 2 The digital as an environment	Digital culture	Digitalisation as digital transformation	Designing new services
PATH 3 From object to relations	From proprieties to relations	Building interdependent ecosystems	New operating models

Table 8: Plan's vision scheme from ppt1 of Charter: Present and Future Digital Strategies for Cultural Heritage, 28th-30th November 2022

During the conference “CHARTER – Present and Future Digital Strategies for Cultural Heritage” Francesca Traclò, a consultant from Fondazione Scuola dei beni e delle attività culturali, lingers on the plan’s objectives just listed: new forms of access to cultural heritage, digitalization as digital transformation and building interdependent ecosystems. The achievement of these goals goes through the activation of an educational offer which must be modular, scalable, user centered and composed by:

- A remote life-long learning path, available for Ministerial human resources and all the professionals who operate in the cultural heritage sector in order to face and manage the digital transformation

- Actions of education, updating and assistance dedicated to all the organizations to orient and support the entities involved in the digital transition.

The training project aims at contributing to the development of the skills and competences useful to support the creation of a digital culture ecosystem through a supply system which make individuals, teams and organizations protagonists of their own skills development. This system must have some qualities: it has to be international, inclusive, open, integrated, flexible, hybrid, scalable and profiled. So, to have a digital mind means to have some attitudes and some soft skills which led to the evolution of already owned competences useful to face the digital paradigm in a flexible and coherent way. Table 9 illustrates the learning experience every organization should go through composed by five phases which are performed during three periods: before, meanwhile and after learning:

- Engagement (phase 1): it is a user-centered phase during which the organization tries to engage the audience, interacting with interest groups or through communication activities or presentations.
- Profiling: during the phase of profiling, through e-learning platforms providing an interactive service to support online learning, data are collected and analyzed in order to segmenting the audience in different behavioral groups.
- Orientation/positioning and customization: this phase is based on the previous one and it consists of dividing the audience according to opportunities for their profile or for their own level of preparation customizing the offer at the same time.
- "Consumption" also named 2nd phase of engagement: this is the actual consumption phase during which the user interacts with the organization subscribing and actually using the services supplied.
- Follow ups also named 3rd phase of engagement: it regards the "after" part of this process and it consists of noticing the user offering new proposals. It is considered as a third phase of engagement because it is the third time during

the process in which the user is tempted to use the service, in this case after learning.

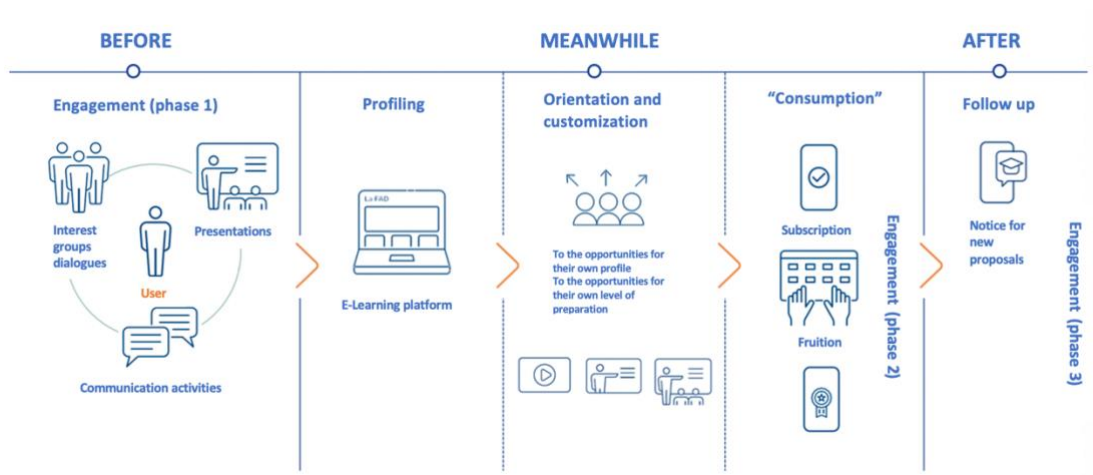


Table 9: Learning experience scheme from ppt9 of Charter: Present and Future Digital Strategies for Cultural Heritage, 28th-30th November 2022

As previously said, to reach the PND objectives it is necessary to define a strategy which is able to catch opportunities offered by the digital transition process and translate them in concrete actions. Strategy is needed to trigger, facilitate and accelerate the structural changes that the technological innovation is causing in the cultural sector. Strategies are meant to be implemented within the next five years through the use of the PNRR resources defined in the investment M1C3 1.1 “digital strategies and platforms for the cultural heritage” following phases defined by the Plan along the path and which give short- medium- and long-term goals for every sector, identifying KPIs and setting evaluation metrics of the reached objectives and the monitoring of the programmed actions/activities.

The strategic action lines are divided and described in three scopes: enabling technologies, processes and people. Technologies enable processes that are governed by people which produce effects in turn. On these parameters the digital maturity is measured.

1. Enabling technologies: It is important to create a technological context which include a software infrastructure of the national cultural heritage aimed at the management and conservation of data, a so-called “SPiD” of cultural assets to be achieved thanks to a national system of digital ID certification of the cultural assets. The SpiD is the national system of identity identification, the unique

system that allows the fruition of digital services provided by the public administration and other private entities which adhere to this system. The technological context needs enabling technologies too which, using a “Platform of digital services for developers and companies” included in the PNRR investment, empowers the connection between the cultural heritage and people and creative companies.

2. Processes: this part of the strategic action recognizes the key processes of digital transformation which can be summarized in the digitalization and lifecycle of the digital resource that must be FAIR (traceability, accessibility, interoperability and re-use), an updated policy for the access, replication and re-use of the digital reproductions of the cultural assets and, lastly, the design of services and models aimed at the creation of cultural, social and economic value, where it is possible to distinguish basic digital services, products and value added digital services and digital services for management.
3. People: it appears to be fundamental to focus on people to let the changing process work. This is possible through the activities of training and updating of skills included in the PNRR through the lifelong learning program, the cultural dissemination and social sharing through a platform for the integrated access to the cultural digital heritage realized by funds provided by the PNRR again. Furthermore, the last activity helping in the process of giving value to people is the construction of an exchange network which is able to boost, to stimulate the re-use of digital resources and mechanisms of co-creation and production of value with a bottom-up hierarchy. This is possible, again, thanks to a co-creation and crowdsourcing platform financed with the PNRR.

	TECHNOLOGIES	PROCESSES	PEOPLE
STRATEGIC ACTIONS	Cultural heritage data infrastructure	Digitization and life cycle of the digital resource	Capacity building and transfer of knowledge
	Certification system of digital identity of cultural items	Access policy and reuse policy	Cultural dissemination and social sharing
	Enabling technologies for a user-centered design	Design of services and models for value creation	Co-creation and crowdfunding

Table 10: Plan's strategies, from ppt1 of Charter: Present and Future Digital Strategies for Cultural Heritage, 28th-30th November 2022

Lastly, the last section of the PND explains the five guidelines which offer models and suggest procedures useful to face organizational challenges and methodologies having the goal to manage processes identified in the “strategies” section. The guidelines define approaches and procedures and provide informative references as well as methodologic and technical ones with the bibliographic kit. Every document study in deep a specific aspect of the digitalization practices and it is periodically verified to guarantee the updates following the development and evolution of the rules, standards and technological processes. The guidelines are addressed to the staff of cultural institutions that is involved in the digital transformation processes to whom a multilevel operative outline is given to help during the strategic, decisional, planning and operational processes. The so-called PND kit is made of five elements:

- Digitalization: the guidelines for the digitalization of the cultural heritage are defined as approaches and procedures which aim at the creation and conservation of the digital objects. Process paradigm and business models are offered to achieve these goals.
- Data management plan: the guidelines for the data management planning are defined to manage, analyze, archive and share future projects data together with the already-accomplished ones.

- Circulation and reuse: the guidelines for the acquisition, circulation and reuse of the reproductions of the cultural assets in a digital environment aim at putting institutions and users in the condition of knowing how to distinguish limits and opportunities of reuse the reproductions available online.
- Digital services: the guidelines on products, services and digital processes are meant to determine the realization of products and services mappings through the analysis of business models at disposal in order to create cultural, social and economic value.
- Maturity assessment: the guidelines on maturity assessment models provide a focus on the most proper evaluative methodologies for the cultural institutions. They support these organizations in the process of individuation of their own start point towards the digital transformation.

The spread and the successive monitoring of the implementation of the PND go through events and workshops with the institutions within each region, at the same time collecting the needs of all the different cultural institutions with the aim of co-designing a model for the establishment of support centers, following a path of seven phases: definition of the context, identification of data samples, data analysis, classification of culture subjects and evaluation of digital products and services, analysis of audiences, identification of needs and implementation of support centers and maps of the implementation of PND.

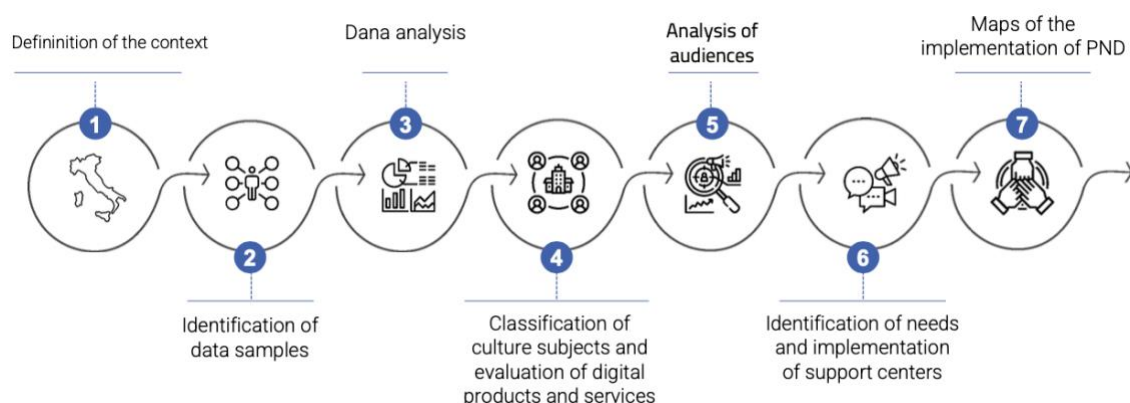


Table 11: Dissemination and monitoring the implementation of the PND, from ppt9 of Charter: Present and Future Digital Strategies for Cultural Heritage, 28th-30th November 2022

It is important to consider the digitalization from another point of view, which is the juridical one. Regarding this aspect, Daniele Donati in “digitalization of cultural heritage. Structural characteristics and value of goods between administrative law and legal protection of engineering works” conducts an analysis stating that the good transfers its form becoming a file, which is a good per se. This might raise another problem: this good, different from the other material ones, needs to have a regulation.

From 2003, the digital form of an artistic good has been recognized from UNESCO Charter for the preservation of the Digital Heritage which highlights the importance of the digital goods outlining a vast possibility of application in *“cultural, educational, scientific, and administrative resources, as well as technical, legal, medical and other kinds of information”*.

The UNESCO Charter specifies that the digital material might include *“texts, databases, still and moving images, audio, graphics, software and web pages”*. The author, here, recalls the attention on the fact that the European idea of cultural heritage is still focused on a “traditional” point of view, in some way, denying the digitally born assets’ dignity. The legal system maintains an open but passive attitude towards the cultural world recognizing it as an “unbestimmter Rechtsbegriff” (=) as it lacks stability and determinacy. That is the reason why it accepts the implications of an unexplored technology. It can be observed that the normative aspect is unprecise, and it lacks adaptability given the “elusiveness” idea of culture and the continuous and quick transformation of the forms of arts in bit. These characteristics of the system make the interpretation of the subject and the choice of regulators difficult. As a consequence, regulators cannot limit the standards to the draft of reconnaissance rules of the existing. They are supposed to consider the “amphibious” nature of the digital asset, which is immaterial, but at the same time it appears to be material since it is composed by hard disks, servers and other components. Regulators with national and international documents tend to focus on these material “supports” and on their conservation. This recalls to the recognition of common, “certified” and safe standards to protect the cultural heritage. In fact, the European Recommendation 711/2011 wants to highlight the fact that it still does not exist a clear and global politics and this might be a problem

for the survival of the digitalized materials, and it might also provoke the loss of digitally born materials.

Since it seems to be impossible to determine parameters and qualifying objective elements able to describe qualities and characteristics of a cultural digital asset because of its dynamic nature, the individuation of interpretable criteria and a discretionary technical authority given to administrative organs are considered to be important. The author of the document poses the focus on the concept of the “necessary plurality”: it is difficult to set common criteria given the differences of the cultural assets, so this means that could be the answer. As it happens to the non-digital dimension, the unifying element might be the administrative regime of the safeguard of the heritage while the rules for the fruition, the valorization and management can differentiate and be individualized.

Also, the *UNESCO Charter for the Preservation of the Digital Heritage* affirms that the digital heritage consists in “unique resources of human knowledge and expression” and a lot of them have “lasting value and significance”. In fact, they are protected “for current and future generations” also because of their ephemeral nature. The disposition specifies also that every digital asset can exist “in any language, in any part of the world, and in any area of human knowledge or expression”.

Another important topic is the copyright. During the webinar “*Musei in corso: creare, usare e riusare*” by Fondazione Scuola Beni Attività Culturali the lawyer Debora De Angelis address the issue of copyright which is a tool used to protect the work of art for the author. the protection by copyright is given if the artwork respects some standards and depends also on the personality of the author, they must be recognizable. So, copyright is substantially giving rights of both moral and patrimonial nature. This concept kind of collides with digital technologies which have contributed to the liberalization of everything. They had revolutionized the way of creating, enjoying and distributing cultural assets. They gave birth to open access which consent the publication of research material, free and open to everyone and re-usable without restrictions. Regarding this topic the Faro Convention (2005) must be mentioned. It is explained by the Council of Europe:

“The Faro Convention emphasizes the important aspects of heritage as they relate to human rights and democracy. It promotes a wider understanding of heritage and its

relationship to communities and society. The Convention encourages us to recognize that objects and places are not, in themselves, what is important about cultural heritage. They are important because of the meanings and uses that people attach to them and the values they represent". (COE, 2005)

There are a lot of attempts to overcome barriers also against the more conservative institutions. Apart of the above-mentioned Faro Convention there is also other minor projects like Open GLAM program, for example.

During the above-mentioned webinar, Eva Degli Innocenti, director of MARta (the national archeologic museum of Taranto), starts from the European Directive 2019/790 about copyright and related rights in the Digital Single Market which regulates the protection of the cultural asset through copyright applying limitations on the use of the digital good. There might be special permission on scientific research and universities which are supposed to work for innovation and development. The European Union wants the cultural assets to be accessible and sees the digitalization as a source for the conservation and distribution of culture and art, but it also can be a source for profit as reproductions can be sold to raise funds to finance the institutions' projects.

The Directive 2019/790 sanctions also that when there is not copyright the asset is public so digitally reproduceable and replicable. In fact, the reproduction of an artwork that has copyright must be authorized by the author. Furthermore, in Italy if it is a cultural asset, or it might be utilized for commercial use, or there might not be the assumptions established by the "Codice dei beni culturali", the reproduction must be authorized by institutions which own the cultural good. In particular, talking about the interaction between art and new technologies, the NFT must be mentioned. Non fungible tokens are digital assets like pieces of art, videos, sports memorabilia or even a tweet, based on blockchain technology. They are usually sold online and are generally identifiable with unique codes. At this point, the normative distinguishes between born-digital assets and "analogic" artworks subsequently digitalized. They differ in terms of legislation because the last ones must be managed taking into consideration a wider normative scene in which laws about copyright and the laws on the "*Codice dei beni culturali*" coexist.

In February 2022 the Unit Gallery of London, in collaboration with four Italian institutions (Brera Picture Gallery, Monumental Complex of the Pilotta of Parma,

Venerable Ambrosian Library and the Uffizi Galleries) and Cinello, a technical partner has organized “Eternalizing Art History”, an exhibition in which is exposed the digital reproduction of six masterpieces with NFT. These are obviously artworks of the collections of the above-mentioned Italian institutions, they are destined to the fruition of a larger audience through new modalities and to the sale in limited edition. At this regard, it is important to highlight another side of the story: if, on one hand, the digitalization might be a process of protection of artworks which make a work of art eternal because it creates a digital copy to conserve in a digital archive, on the other hand there can be some cases of high-tech artworks thefts. It is the recent case of Vatican Museums. From an investigation by the Daily Wire (14th December 2022), it has emerged that some art treasures worth millions of euros have been illegally sold without Vatican’s approval. The attorney defined it as a “high-tech heist”. The Italian company at issue, called Scripta Maneant in 2015 has signed a contract with the Vatican museums’ director Monsignor Paolo Nicolini to have access to high resolution images of some Vatican’s artworks for a limited-edition book worth about €20.000 a copy. The deal only covered this specific project, and it contemplated no rights to sub-license the photos to third parties. But that is exactly what Scripta Maneant did with another company called Lighthouse Immersive which in the “Immersive Vatican” exhibition displayed the bought images in question. When the attorney, Sarah Rose Speno, contacted Scripta Maneant to receive the license in order to use the high-resolution images for an exhibition by a client, she became suspicious because the company, which claimed to being working in collaboration with the Vatican, could not provide a documented consent proving they could use the photos. This is obviously an example of an event which must be avoided and something to be cautious of.

Regarding, instead, the liberalization of cultural assets, which means, of course, avoiding problems related to buying and selling assets and the consequent availability of them to the public, the Director Eva Degli Innocenti lists some commercial uses of accessible artworks:

- Valorization: An example of this can be represented the use of Caravaggio’s artworks in the Off-White collection.
- Tattoos
- Memes

- Partnerships: Doctors Martens in collaboration with the Tate Britain in 2017 have launched a collection of “wearable art” in which artworks of famous English painters like W. Blake, R. Dadd and JMW Turner are printed on shoes and boots.
- Videogames: in 2017 the very first videogame realized with and for an Italian archeological museum was distributed. It is called “Father and Son” and it is a project of the MANN (Museo Archeologico Nazionale di Napoli) – National Archeological Museum of Naples. The game, in 2D, represents the journey of a son following the traces of a never-met archeologist father in which past and present alternate. Playing, the visitor can explore the city of Naples of today but also the ancient one.
- TikTok: during the pandemic the Uffizi Galleries team, thanks to the creativity of one of its components, Ilde Forgione, who has been appointed as one of the best social media managers of the world by the magazine *The Art Newspaper*, has created a TikTok profile which has immediately reached a large audience and has had a huge success. Their goal was increasing or maintaining public engagement high in a difficult period, when people could not even go out their houses. The results are even better than expected: the TikTok profile reached about 140k followers and more than 1M likes and after the lockdown the presence of visitors under 25 exceeded one third of the total (34,6%).

Finally, it is important to notice and highlight that this first part suggests an interesting way of seeing the museum. In fact, it can be deduced that the documents cited, and the author mentioned are saying that cultural heritage organizations should “act like a normal company” and, when they are given funds, they should be managed following a more business and commercially driven approach. To do this, it is useful to involve external experts and funds must be accessible. To prove this way of thinking, in year 2017, Nesta and the Arts Council of England published a report explaining the DACA – Digital Arts and Culture Accelerator program. Funds were disposed by the Digital R&D Fund for the Arts and 52 projects were selected. The DACA wanted to understand the potential for growth and investment and if the participating organizations should pursue a more business and commercially driven approach. The program, devoted to arts and cultural organizations, tested whether a now-mainstream business support approach

(the acceleration model) could help these organization create investment-ready ventures, which materialize in developing propositions to commercialize digital products and services to attract new forms of finance beyond grant funding. (Dr Tom Fleming, 2017)

It had an overall positive impact:

- Participating individuals used the DACA program to understand how content and products are developed, supported and brought to market.
- Arts and cultural organizations can develop clear products ideas with the support and guidance by the program. These ideas can be notionally investable.
- Sometimes, a lack of senior-level commitment, the struggle to reconcile commercial goals with organizational objectives or the overall investment readiness of their ventures slow down the development phase.

In other words, accelerators can be part of the solution to growing and diversify investments, but they need to be properly targeted and situated as part of a broader process of increasing managerial and entrepreneurial skills, as well as supporting and facing organizational change. In this way the program contributed to offer compelling insights into the strategic and operational dilemmas of arts and cultural organizations. However, as previously clarified, the program is not intended as a “replacement mechanism” for public funding and it is not yet relevant for arts and cultural organization not in the business of generating products of commercial value. Still, it opens up a conversation about how cultural organization diversify their income streams and attract different types of investments. So, the program, designed to understand how arts and cultural organizations can accelerate digital projects towards commercial exploitation, which were, and still are, their needs and potentials showed a partial success because it helped to build entrepreneurial capacity and in helping some R&D projects to become investment ready.

Finally, the report about DACA leaves some considerations:

- Continual piloting, experimentation and knowledge generation are activities which can add value to the organization. Building awareness and improving competences improve the economic viability of arts and cultural organizations.
- It can be useful to staging accelerator and pre-accelerator programs for organizations selected from a wider sample than the Digital R&D Fund.

- Building the conversation and mobilizing investor readiness can be important and it can be supported by projects like DACA.
- Participating in early-stage product development with the right type of money would potentially benefit the organizations to prototype, to explore new ways of generating income or to embed R&D. A stronger support environment (mentors, brokered introductions to networks of investors, closer working relationships with universities and commercial creative businesses) would better approach an accelerator environment. (2017)

Besides, the cultural heritage becomes a social element rather than a group of artworks. This results in cultural growth, it contributes to the integration of a community in its own territory and promote economic development, generating not only employment but also entrepreneurial opportunities. So, a balance between demand and supply of the cultural experience must be provided. This is given by a complex re-planning and the technologies diffusion which, together, push cultural organization towards the rationalization of the physical spaces and of the sharing modalities of the cultural content. The book "Breve guida. La valorizzazione culturale 4.0" (A brief guide. The cultural valorization 4.0) by Massimiliano Zane deals with these subjects, explaining the complex relation between the cultural sector and the multimedia technologies. The work aims at providing basic instruments to orient cultural organization towards an evolving scenario, in order to help these subjects at telling their cultural identity in a participative and innovative way because innovation is a cultural fact, before than a technological one and awareness is required to put in relation the cultural and the digital world. (Massimiliano Zane, 2022)

After having discussed how the ideal digitalized museum should behave and having introduced that there exist some organizations whose main objective is promoting arts and cultural organization and helping them in the digitalization process, the following section of this chapter tries to give an idea of which are these organizations, and which are some examples of best practices.

1.2 Support organizations and best practices

The Digital Library which is the central institute for the digitalization of the cultural heritage was born with the objective of promoting digitalization programs and projects of the cultural heritage of the Italian Ministry of Culture. Since the beginning, it has a special autonomy in terms of activities: as previously said it oversees the PND. It has the task of supporting and realize project for the Ministry of Culture with the collaboration of public and private institutions. It also controls the Central Institute for the archives (ICAR), the Central Institute for the sound and audiovisual assets, the Central Institute of catalogue and documentation and, finally, the Central Institute for the unique catalogue of the Italian libraries (ICCU). Furthermore, these institutions manage national information systems and offer services for the valorization of cultural heritage and the diffusion of knowledge.

The objectives of Digital Library derive from its institutional tasks, and they are quite like the principles of the *National Recovery and Resilience Plan*. The 2021 goals are about the first drafting of the PND and the consequent intern consultation of the Ministry of culture, the perfecting of the project PNRR “strategie e piattaforme digitali per il patrimonio culturale” (=digital strategies and platforms for the cultural heritage) and the start of the first series of webinar called “Relazioni Digitali” (=Digital Relations) in collaboration with Fondazione Scuola dei beni e delle attività culturali. The 2022 objectives are similar to the 2021 ones: it can be inferred that they are a sort of continuation of the projects and activities started during the previous year. But are the objectives really in line with the current situation? Always according with the Digital Library official website:

- the document about the Strategic Framework has been defined (December 2020),
- the technical committees have been reunited to draft the plan (April 2021),
- the PND and the guidelines have been published on the online platform “ParteciPa” (May 2022)
- the definitive version of the Plan has been adopted (June 2022)
- the collection of data about the digitalization of the cultural heritage has been concluded and the analysis of them is in progress and
- the activities connected to the PNRR project “Digital strategies and platforms for the cultural heritage” have started.

About projects realized by the institutions of the cultural heritage “GLAM” (Galleries, Libraries, Archives, Museums), which represents some of the many kinds of digitalization of cultural heritage, the Digital Library has reserved a section on the website where it is possible to read about the collection of sound and audiovisual documentation, about digital ecosystems dealing with bibliographic services, about digital platforms and archives. The reader can discover some projects information, their descriptions and the link to the referred website. Some projects have been selected and published in the Digital Library website as examples of success and innovation, they are significant for their characteristics and the objectives pursued. It might be interested to cite some of them for example Platform Austria, Alphabetica, Pepper, La festa in tasca, Estense Digital Library (EDL), REMIAM and so on.

To better understand the level of “digital maturity” of the various good practices adopted by the cultural institutions, the Digital Library lists a first try to map the principal models of digital fruition of the cultural heritage and some successful examples explanation.

The list is not exhaustive, obviously.

1. Cataloging and digitalization of the collections

The network SBN (Sistema Bibliotecario Nazionale) that means National Library System represents the most efficient system of participated cataloging and it includes 6520 libraries that together offer about 104.000.000 documents contained in Italian libraries. More than 800.000 record of the catalogue SBM are accompanied by a direct link to the digital copy. This makes SBN the biggest national library network with online work modality at a European level. About this, it can be mentioned the platform named “CulturalItalia” promoted by MiC collaborating with the project Europeana. This data aggregator gives access to more than 4 million digital resources coming from archives, libraries, museums and other public or private institutions. CulturalItalia is nurtured not only by the single institutions that adhere to this project, but also by three important aggregators of digital resources of the Italian Ministry of Culture: Internet Culturale, SAN – National archiving system, General catalogue of cultural assets. Instead, at a level of territorial institutions of the Ministry, from the point of view of catalogues’ wealth, the State Archive of Turin must be mentioned together

with Uffizi Galleries which, for example, alone, counts more than 600 000 images at disposal.

Dealing with external institutions, the CEI (Episcopal Conference of Italy) has produced the Portal of cultural ecclesiastic assets (artistic-historical, archivist assets and books) where diocese data are collected.

2. Open access to cultural content

The open access gives the audience the possibility to access freely directly online to digital resources together with the possibility to re-utilize and distribute them for any purpose. A digital resource can be considered to fit in the principles of open access if it has the following characteristics:

- a. It has been issued with open license
- b. It is accessible and obtainable online (freely or gettable at production cost)
- c. It can be read by machines
- d. It is produced with open formats, so editable

The central institute for catalog and documentation through the Portal of open data of the Ministry has worked on Linked Open Data (LOD) producing a General Informative System of the catalog of cultural assets that represents a concrete and successful example of open access. It substantially consents the network between data of the catalog and other data on the cultural heritage published by different institutions facilitating the re-utilization of online resources and the interconnection of data through mechanisms of similitude encouraging the expansion of the initial informative heritage. The same approach is used by the project ZERI & LODe born from a collaboration between the University of Bologna and the Federico Zeri Foundation, whose objective is transforming catalog data in Linked Open Data accessible, utilizable by everyone. It can also be reported how some institutions has released with open license images of their own collections: this is the case of the Egyptian Museum of Turin and of the BEIC – “European library of information and culture”.

3. Social tagging

Its main objective is the enrichment of the digital content of the collection through the participation of the audience. Successful examples regarding this

digital practice can be the Estense Digital Library where users can create and share notes directly on the digital resources available in the platform for everyone. Another example can be the website containing the General Catalog of cultural assets realized by ICCD – “Central Institute for the Catalog and the Documentation”, which has integrated the crowdsourcing tools, that give the user the possibility to interact directly, with the system to contribute to the enrichment of the data regarding artworks’ authors.

4. Shared projects

Developing collective projects with third party people, the so-called crowd-based initiatives, represent an important opportunity for cultural entities in order to build new relations with the audience and to evolve their missions in the digital form. An example of crowdsourcing is the “Portale Antenati – Archivi per la ricerca anagrafica”, realized and managed by “Istituto centrale per gli archivi”. Everyone can register in this platform giving his contribute to indexing and extracting names from the digital images coming from registries. Another interesting example is the project called #scenedaunpatrimonio (scenes from a heritage), started in 2020 from “Istituto Centrale per il catalogo e la documentazione” dedicated to the participated collection of private or familiar photographs which have the capability of evoking the cultural heritage and the Italian environment.

5. User generated content (UGC)

User generated content is information published by an unpaid contributor to a website. Photos, videos, blog or discussion forum posts are included. This is a new important source to utilize the collections as vehicle of learning of historic eras and the frameworks which led to the creation of artworks.

Guided tours in streaming or live streaming of curators, artists and experts that accompany the visitor telling their own vision of collections are always more diffused. This approach meets the principles of public history which is the field of historical sciences aiming at research and communication of history outside schools and other academic environments with the objective of giving more value and more awareness in the historical knowledge. In fact, it represents an

opportunity to better understand the present and the future. It can be useful to mention three significant examples:

- A. M9 – Museum of 1900 in Mestre where advanced technologies and immersive installations tell the history of the XX century which saw great and small changes from both environmental, economic, social and cultural points of view. Displays and other devices present the past and present Italian history and let the visitor imagine also the future through images, videos and schemes. Visitors can choose which stories they would like to listen to, which installations and displays they would like to watch, in such a way that everyone can identify their own story and those ones of their parents and grandparents and empathize with the characters of those events feeling part of the exhibition itself and, at the same time, having the opportunity to learn. The photo below shows part of the exhibition inside the M9.



Figure 1: Photograph showing the exhibition in the M9, screenshot taken from the official website of the museum, December 2022

- B. Audio stories of Reggia di Caserta

- C. “Appunti dal MAO”: a series of lectures made by university professors for the MAO – Museo d’arte orientale (Museum of oriental art) of Torino who tell their favorite artworks of the museal collection.

The majority of UGC derives from social media in which visitors and users share photos, videos, information of various nature inspired by cultural collection with creative languages. Regarding this, the campaign of the Ministry of Culture #LARTETISOMIGLIA which invites citizens to visit online places of culture scrolling through social profiles of museums, archives and libraries with the objective of discover similarities between artworks and nowadays people, places and even pets and share them on social media, obviously mentioning the hashtag #lartetisomiglia. Connected with co-creation the practices of co-curation and individual curationship must be mentioned. They have not been developed in Italy yet. The projects at issue are the *Rijksstudio* by Rijks Museum of Amsterdam through which visitors can create online their own path to visit the museum and *Click!* of Brooklyn Museum of New York where visitors are invited to take part to the process of creation of a photo exhibition.

6. Gamification and videogame

Videogames constitute a new and unconventional way of involving audience in discovering history and collections which go through the emotional and creative dimension of users. In addition, videogames can be considered a form of digital art to all effects. A successful example is the initiative Father and Son of the National Archeological Museum of Naples that is a narrative game where the protagonist goes through all the different historic eras: from Ancient Rome, to Egypt, including the bourbon Era and the city of Naples of today.

Furthermore, the National Archeological Museum of Taranto has recently started the initiative called “Past for Future” where a boy investigates on a mysterious disappearance of a woman in Taranto undertaking a journey between mysteries and museum’s treasures.

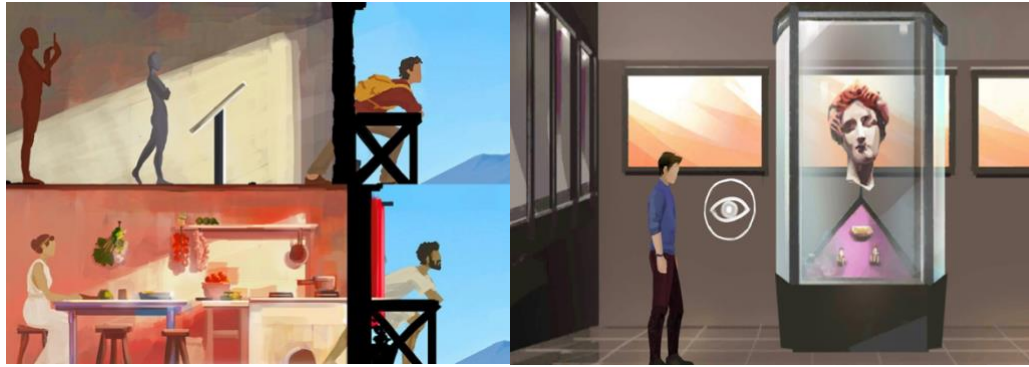


Figure 2: Two screenshots of the videogame "Past for future", (October 2022)

7. Virtual tours: virtual and augmented reality, immersive virtual reality

Virtual tours are tools made to let the visitors visit online museums and other cultural institutions or pop-up exhibitions. The MiC has recently created the gran virtual tour – viaggio nel patrimonio culturale italiano which is an online platform in which users can explore the Italian cultural heritage through theater, archives, libraries, museums and archeological sites. Another initiative that must be mentioned is *Hypervisions* by the Uffizi Galleries where visitors can discover suggestive cues and HD images proposed by the staff divided per theme. So, it is possible to visit the Uffizi Galleries in an alternative way: directly from one's own computer dealing with a specific subject, that can be female artists, Napoleon, the Easter story and so on, explained also through the use of images, artworks, quotes. Here follows an image from the online visit called "Non per foco ma per divin'arte" which is composed by 25 artworks dealing with Dante Alighieri.

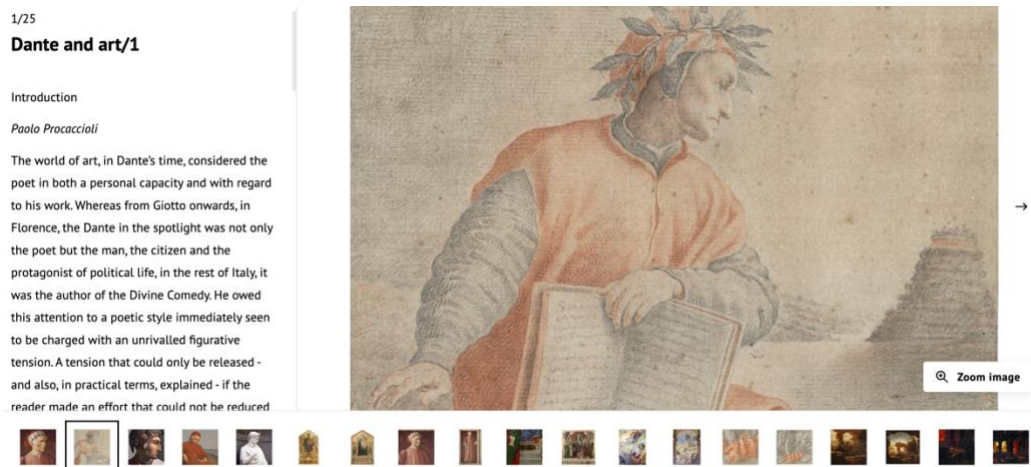


Figure 3: Screenshot showing one of the images being part of the collection "Non per foco ma per divin'arte", December 2022, (source: <https://www.uffizi.it/en>)

8. Digital copies

Digital copies are artworks in digital format. Nowadays, the market is oriented towards the reproduction of files containing images that, projected on monitors, create “digital paintings” distinguishable in two types: digital copies authenticated by museums and digital canvases. The most used products by Italian museums are DAW (Digital Artwork) which are authenticated digital copies by Cinello, The Frame, a project by Samsung which transforms an HD screen in a work of art and Haltadefinizione by Franco Cosimo Panini who reproduces in HD works of art destined to commercialization which means that are artworks being reproduced in large dimensions.

Besides, there are other kinds of institutions born to spread culture, knowledge and to help other organizations in digitalizing, innovating, experimenting and fabrication: FabLabs. A Fablab is a shared laboratory of technological experimentations which offers personalized services of digital fabrication that can be a source for cultural organizations. FabLabs actually provide services of all kinds: restoration, copies and reproductions, gadget and merchandizing, visual multimedia and marketing, digital archives, but also tactile supports, no-contact scans or tridimensional scans.

Some other interesting projects can rise from these labs. It is the case of Re-Art which is a project grown in the context of collaborations developed between FabLab Venice and institutions, professionals and other corporate realities. It is an operative network with the objective of bringing enabling resources in the artistic and cultural world in order to become a platform of national and international dialogue between operators who are meant to valorizing, protect and produce art with new value solutions. The network is managed by “Prossimi”, a social enterprise which wants to valorize the cultural heritage while reducing the digital divide for citizens and workers.

1.3 How museums are using digital technologies in Italy

In the last part of this chapter, are reported some data first Italian and then, more in details, Venetian ones which give a picture of how digital technologies are used in museal organizations.

From a report dated 2020 by ISTAT museums have been kept open (46,8%) even though the pandemic restrictions were into force. This has not been enough: in fact, after the pandemic more visits have not been registered at all. 7/10 museums have tried the transition to the digital world, increasing the online initiatives and trying to upgrade the already existing digital services.

In Italy in 2020 4265 museums and similar institutions, both public and private, were open or at least partially open. This means that the density on the territory is about 1.4 museums or similar institutions every 100 square meters and about 1 every 14.000 inhabitants. Almost the half of these institutions are in the North of the Peninsula (46,2%), 28,9% in the Center and 24,9% in the South and in the isles. In some regions the cultural institutions are more diffused: that is the case of the municipalities of Tuscany or Umbria where more than 60% of them own at least one cultural structure. In Italy almost 2/3 of museums and similar institutions are public institutions (67.9%). 2000 depend on local entities, 400 are public and 4,7 are regional institutions. Although in Italy there are big poles of attraction like Rome, Milan, Turin, Venice, Florence, in which a big part of the cultural heritage is concentrated, museums are diffused all over the Italian territory: 32,2% of museums are situated in little municipalities of 5000 inhabitants and 33% of them in municipalities of medium size.

In 2020, in order to face the pandemic restrictions which were impeding people to frequent public places, about 7 museums out of 10 (73%) have been using tools to stay in contact with audience. Many of them (63,6%) have organized, during this period, activities of communication and information through platforms like Facebook, Instagram, Twitter, 46,1% have increased or have started online initiatives on their dedicated websites or in other platforms; 39,1% of them have realized streaming presentations of collections or have proposed video interviews of experts of the sector. Furthermore, 30% of museums have been offering virtual tour to let the audience enjoy the collections from their own houses.

To implement online projects many museums have engaged internal staff: in fact, only 24,3% have asked for external support or training projects for internal staff (11%).

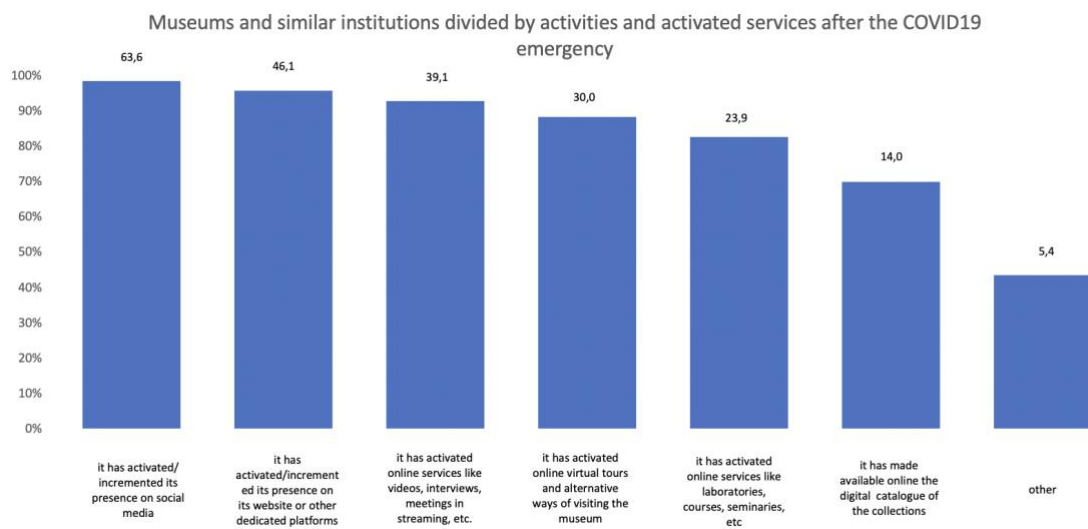


Table 12: Museums and similar institutions divided by activities and activated services after the COVID19 emergency, reproduction of "Musei e istituti similari per attività e servizi attivati a seguito dell'emergenza COVID19", 2020, data are reported in percentage

From the report by Istat dealing with museums after the pandemic it can be inferred that museums consider fundamental to invest in virtual tour on web platforms dedicated to the cultural sector (25,4%) followed by the online service of visits booking (20,4%). Again, some of them are still interested in increasing their social presence (18,6%), incrementing the promotion and presentation of the collections, also through online events and interviews (18%) and the possibility to offer laboratories for schools and training courses from remote (13,6%).

Most museums taking part in the survey define the activity of collaborating with scholastic institutions and associations developing cultural and social projects as important for the local communities (55,3%) and to recover the relationship with the audience the activity of promoting integrated tickets and facilitated accesses is considered fundamental by 29,2% of respondents.

Regarding audience engagement, 22,7% opt for sharing new content on the Internet and boosting forms of remote fruition of collections while 21,5% tries to propose interactive alternatives on digital platforms.

From 2006 to 2019 the audience of Italian cultural heritage has increased by 33,6% in average with about 2 million visitors every year. From 2018 and 2019 a deceleration of

this process has been registered: +1% versus 10 million of the previous year. This number obviously decreases in 2020 during the pandemic (from 130 million in 2019 to about 36 million in 2020 that leads to a decrease of 72%).

Both in 2019 and 2020 the flux of visitors tends to focus on few places and the distribution is polarized on the most popular destinations. In fact, it can be said that in Italy visitors are concentrated in few cities: Rome, Florence, Venice, Milan, Siena, Turin, Pisa, Naples, Trieste and Ravenna. These ones attract many visitors that is about 44,8% of the total number.

Dealing with sites, instead of cities, the most appealing ones are in order:

1. Pantheon and the Colosseum (Rome) with about 3 million visitors
2. Siena Cathedral Museum and the Dom (Siena) with more than 900 thousand visitors
3. Uffizi galleries (Florence) with about 660 thousand visitors
4. Pompeii (Naples) with 568 thousand visitors.

Nonetheless only 8% of museums did not re-open after the 2020 lockdown above all because of the lack of staff and of economic resources for the respect of the rules due to the pandemic.

The inactive museums are above all public administration (62,2%).

However, as previously said, during the pandemic period most museums have guaranteed and incremented online services like the activity on social media like Facebook, Instagram and Twitter (24%) and on dedicated platforms (18,5%); providing online projects of information and interaction with the audience or video interviews or, again, deepening regarding collections and meetings with experts of the sector. Regarding the Covid19 period, the report *“Digitalization in the cultural industry: evidence from Italian museums”* by the International Journal of Entrepreneurial Behavior and Research (2021) records an actual acceleration in the process of digitalization that made it necessary to constantly update the websites and social media maintaining contact with customers.

Regarding the digitalization level of Italian museums, the report *“Digitalization in the cultural industry: evidence from Italian museums”* by the International Journal of Entrepreneurial Behavior and Research (2021) witnesses a good level of digitalization

above all in the use of websites, the presence on the main social networks and sponsorships, but also in the online ticketing and few of them, organize virtual tours or exhibitions. It is also important to highlight that the analyzed museums are trying to carry out user profiling campaigns in order to store information about visitors and use them to improve customer satisfaction, audience support but also, more trivially, to attract people. The solution to this seems to be represented by tools like chatbots, sentiment analysis to measure opinions and monitor the reputation while better understanding user experience. Furthermore, analyzed museums are used to store information using cloud services, instead, to streamline administrative activities utilize electronic invoicing.

With respect to the reasons leading digitalization choices of museum organizations the report shows, as previously said, the willingness of attracting more visitors. As a second reason they mention the reduction of costs for example the chatbots are trying to reduce the cost of telephone assistance and the use of electronic invoicing tries to decrease administrative ones. Another important point of this analysis is represented by the willingness of museums to increase the user experience, so not only the quantity of visitors but more importantly the quality of the experience they're living. This explains the role given to tools like the sentiment analysis. Obviously, the digitalization process of every museum is different also since it depends on the personal predisposition of managers regarding digital transformation or, also, on competitor's level of digitalization.

It must be highlighted that while regulations have not represented an obstacle to the implementation of the digitalization process, the impossibility of many organizations of obtaining funds has not only complicated the process but also has forced organizations to use their resources.

The digitalization process has brought also financial benefits to museums in terms of higher revenues and decrease of costs, as previously said. This is connected to the higher exposition of these organizations on the web and on social media; the activity of online ticketing has given its contribution together with the virtual tours and exhibitions. These activities have increased the number of accesses of visitors.

Furthermore, another important aspect of digitalization is that it has contributed to enhance the intangible value of the organizations: the digital technologies seem to be

very useful in improving the corporate image, value of the brand and the reputation. It has also increased customer satisfaction and retention. In addition, the digitalization process has improved the relations with stakeholders like local institutions, sponsors and the community.

Regarding venetian museums, the most recent research about these institutions is dated 2021 and it “takes a picture” of the pre-pandemic situation. So, it does not consider that there has been a decrease of visitors after the lockdown and the consequent problems of internal management. Data are given by the research made by Istat and MiBACT with the help of regional institutions.

In 2019 Veneto Region museums, that are about 299 (of which 273 museums, 22 monuments and 4 archeologic areas), have granted 9.777.830 visitors. About 74% of them paying customers.

Veneto appears among the most visited regions in Italy after Lazio, Tuscany, Campania and Lombardy regarding the number of visitors.

In the same year, 66,6% of museums declared that they had their own website and 34 out of 299 museums offered virtual tours. The pandemic and the lockdown gave the opportunity to see very clearly how the conception of digitalization has changed very quickly: from a simple tool of information to make the access to museums possible to the “virtual door” to let the visitor come in the museum thanks to video-stories, conferences on social media or on other platforms, itinerary proposals, virtual laboratories for children and teenagers.

Here follow some graphs showing an overview of how venetian museums are using digital technologies: in particular, the percentage of institutions for services, structures ad activities at visitors’ disposal and the percentage of museums for content and functions of websites.

Percentage of institutions for services, structures and activities dedicated to the audience. Veneto – Year 2019

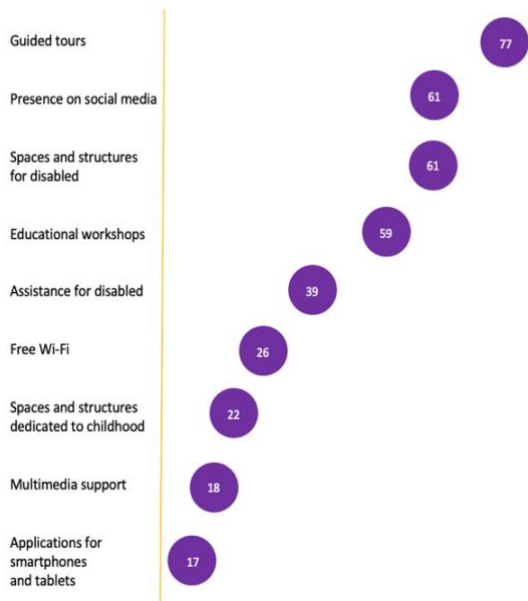


Table 13: Percentage of institutions for services, structures and activities dedicated to the audience, reproduction of “Percentuali di istituti per servizi, strutture e attività disponibili al visitatore”, 2019, data are reported in percentage value.

Percentage of institutions for content and functions of the website. Veneto – Year 2019

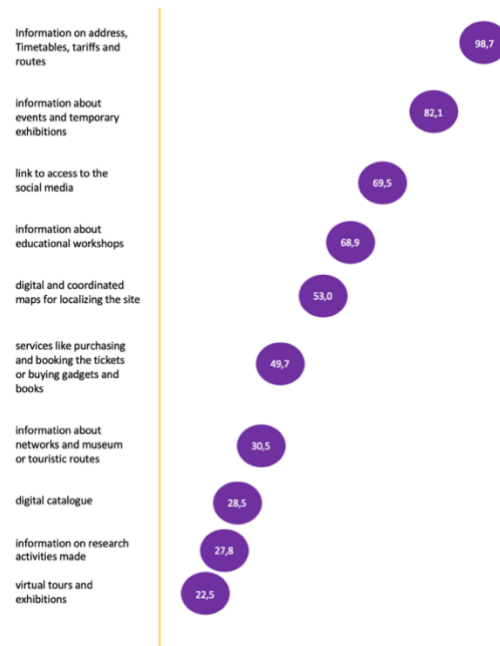


Table 14: Percentage of museal institutions for content and functions of the website, reproduction of “Percentuali di istituti museali per contenuti e funzioni dei siti internet”, 2019, data are reported in percentage value.

Chapter 2

The research

In this chapter the actual research is reported specifying the methodology used to conduct the research, every question and every answer given by the museal staff, and the conclusions deducted from the results.

Starting from a theoretical point of view, explained in the previous chapter, the research tries to describe the actual situation. It tries to provide a “photograph” of what is going on inside these organizations, but also to understand, given the opinions of the stakeholders, if something could be managed in a different way or be improved.

The research wants to study in deep if the museums are implementing and integrating the digitalization process and how it is managed by the Venetian civic museums going into details and trying to answer to three main questions:

- a. What is the level of digitalization of the Venetian civic museums?
- b. Which are the subjects that help these cultural institutions implement this process?
- c. Is this external activity worth it? Is this help needful for these organizations?

2.1 Methodology

The research is focused on the digitalization of Venetian civic museums and other minor similar museums. The twelve entities selected are the following ones:

- MUVE – Fondazione musei civici di Venezia
- I MUV - Musei civici di Verona
- Musei civici di Padova
- Musei civici di Vicenza
- Musei civici di Treviso
- Museo Archeologico di Montebelluna
- Musei civici di Bassano del Grappa
- Musei civici di Belluno
- Gipsoteca Canoviana di Possagno

- Museo civico archeologico di Oderzo “Eno Bellis”
- Musei civici di Conegliano
- Museo civico archeologico di Crocetta

The sample appears to be quite small because of the limited amount of resources at disposal: time, human resources and so on. Other kinds of museums were not taken into consideration because of the diversity and difficulties related to the understanding of the phenomenon leading to the actual situation. Only civic organizations or foundations managing municipal properties were considered in order to better analyze the efficiency of these entities and, in addition, given similar situations, understanding the possibilities and opportunities that they could have. Besides, other private organizations were excluded because of the differences in terms of funds, structure of the organization, nature of the organization, the cultural heritage managed, etcetera.

These organizations were asked to answer a questionnaire directly on Google Forms except for the Museo Civico Archeologico di Crocetta del Montello and the Musei Civici di Bassano whose surveys were compiled through a face-to-face interview with the director respectively occurred on 15th November 2022 and on 5th December 2022.

About 70% of them participated to the survey (8 out of 12), and they appear to be, generally, the more structured organizations: MUVE – Fondazione Musei Civici di Venezia, I MUV - Musei Civici di Verona, Musei Civici di Padova, Musei Civici di Vicenza, Musei Civici di Treviso, Musei civici di Belluno, Musei Civici di Bassano del Grappa and Museo Civico Archeologico di Crocetta del Montello. The first two answers by Musei Civici di Vicenza and Musei Civici di Padova came very quickly (about two days after the mailing). The Musei Civici di Verona, being composed by nine museums, asked some clarifications about how to fill the questionnaire (considering single museums or the entire organization) before replying. Some other responds came after some solicitations directly to the staff in charge to answer and these were the MUVE, the Musei Civici di Belluno and the Musei Civici of Treviso. The last one, in fact, took quite a long time to answer in the most complete manner because they were waiting for the curator to come back to work. The others even after some solicitations (emails, calls and in person solicitations) did not respond to the survey.

To conduct the research the following tools were used:

- The questionnaire on Google Forms;

- The semi-structured interviews to the directors of the Museo Civico Archeologico di Crocetta del Montello and the Musei Civici di Bassano;
- Data taken from ISTAT research and other research made by the Ministry of Culture;
- Digital Culture reports by Nesta and the Arts Council England.

2.2 Executive summary

These organizations were asked to respond to a 14-questions survey where in the first one is asked to indicate the museum name and in the last one, they are asked to fill the blank if they had some inputs, or clarifications. Not all the organizations have written something. Almost all the questions are mandatory except for the last one about new inputs and the sixth one which asked to indicate the activities organizations are used to do. In fact, some museums choose to tick none of the activities. The questionnaire is divided in four parts: business model, audience development and data use and social media, research and development and, finally, barriers and enablers to increase digital activity.

The first part about business areas of these organizations, deals with the importance of digital technologies in the different business areas. Museums were asked to rate the importance in a scale from 1 to 5, where 1 stands for “not important” and 5 for “very important”. Digital technologies are considered at least quite important for most of the interviewed museums in almost all the different business areas above all archiving and marketing.

In the second part about audience development, data use and social media organizations were given a list of activities and they were asked to rate the positive effect of digital technologies on them in a scale from 1 to 10. The top three activities on which digital technologies have had a more positive impact are gaining a better reputation, reaching a wider audience and archiving. Instead, regarding activities on which digital technologies have had no impact are mainly the placement of products and the having feedbacks. In all the interviewed museums social media are managed by internal staff and they are asked to indicate, among a given list, which activities they are used to do, which one they usually do and which one they haven’t even tried before. It

came out that everyone is used to post content on social media and other platforms and almost everyone dedicates content to the education sector also organizing educational events. On the contrary, none of the organizations involved is used to accept online donations (instead, they prefer to have a direct contact with donators) and they have never use AI or machine learning applied to the artworks. Then, they were given some activities and they were asked to indicate which of them they are used to do with audience data: most of them usually make newsletter and inform audience with different tools about events, exhibitions and so on. Rather, nobody shares information with other organizations, neither they are creating a CRM system nor using machine learning to target marketing campaigns or promoting their website.

The third section focuses on research and development: the organizations are given statements and are asked if they agree, if they partially agree or if they disagree. Organizations' perception on the diffusion of digital technologies is quite homogeneous: almost all the organizations agree on the following statements: *"Digital technologies are diffused in our organization"* and *"Our staff is updated on digital technologies"*. Instead, almost all of them disagree on supporting organizations of other sectors to improve their digital abilities. Museums make collaborations with other institutions. They are mainly universities, other museums, and they are collaborations for the diffusion and knowledge of collections or aiming at organizing exhibitions. Some of them don't collaborate at all.

The fourth and last part entitled "enablers and barriers" deals with investments and obstacles that makes it difficult to reach organizations' objectives. Many museums have made the first investment in digitalization in the five-year period between 2015 and 2020 (63%), the vast majority of them has invested less than €300.000 and all of them less than €50.000 in maintenance (some of which decided not to invest in digitalization and, as a consequence, in maintenance of it). However, the level of satisfaction appears to be high: more than 60% of the respondents is satisfied or very satisfied. Finally, they are questioned about which are the barriers they consider significant that are lack of time and above all of funds.

Before going further, it may be important to clarify that, as said above, civic museums, the museums in question, are managed by local entities and being basically non-profit

institutions, many times are not meant to know or manage revenues, profits and balance sheets, since it is shared with the local entity.

2.3 Results

In this section results are reported and explained through the use of graphs and tables. Table 11 demonstrates the level of importance of the digital technologies to different business areas in a scale between 1 and 5. The different business areas identified are mainly six:

- Archiving which is the activity of storing material in a digital archive.
- Marketing which includes all the activities that help promoting the buying or selling of a product or a service.
- Operations which is the core business, that means the main activity with the objective of gaining profit even though, most of the museums involved are actually non-profit organizations. However, they are meant to create some revenues.
- Creativity which are the activities related to arts and aiming at the development of them.
- Business model which materializes in how the organization delivers and collect value. It includes the relationships with clients, suppliers and partners and the channels created among them, the cost structure, the revenues stream and the value proposition.
- Finally, distribution and exhibition which refers to how the organizations deals with the process of delivering their product or service to the public (this concept is usually referred to the activities of cinema and theater, but it can also be referred to lectures or conferences, or even some shows taking place inside the museums).

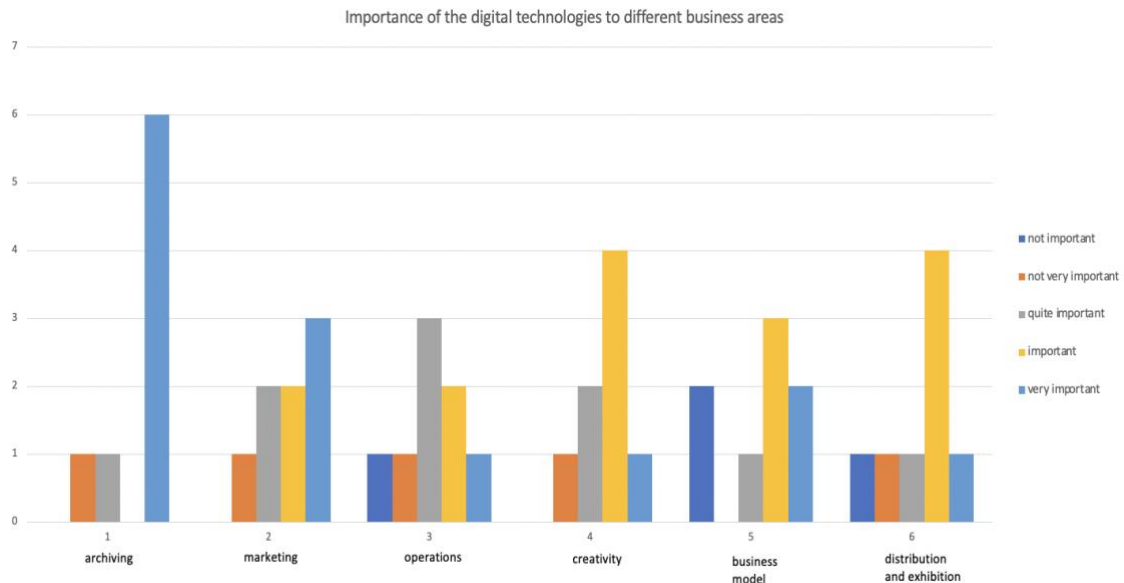


Table 15: Importance of digital technologies to different business areas, 2022

Without any doubt digital technologies are considered very important in archiving by 75.0% of the interviewed museums. The majority (62.5%) agrees on the fact that they are important or very important in the following areas: marketing, creativity, business model and distribution and exhibitions.

Regarding business model and operations, the opinions of the museums are quite different: almost everyone considers the digital world important, but some others don't. In fact, although 62.5% of the interviewed organizations believe that digital technologies are important or very important in the business model area, almost 40% of them disagree or considers this area indifferent.

Digital technologies in operations are considered important or very important by 37.5% of the organizations, but the same percentage declares to be indifferent. Instead, 25% of them considers them not very important or not important at all.

Museums are also asked to value how positive (on a scale from 1 to 10) the effect of digital technologies on the organizational activities given in the questionnaire is. The activities are selected on the base of previous research by the Ministry of Culture together with international research like Digital Culture 2019 by Nesta and the Arts Council of England. Table 12 reports the means of the values given by each museum to the activities below. They appear to have quite similar mean values. The activity with the higher mean in the graph below is archiving. As seen above, it is the most common

activity among the cultural institutions in question with a mean of 6.38 points out of 10, followed by two activities with the same mean values (6.25 points out of 10) which are “Increase reputation and public profile” together with “Reach a wider audience”. Right after, museums indicate, with 5.88 points out of 10 the activity “Reach a different audience”. The other activities, reported in the graph, resulted to have quite similar mean values, as just said, going from 5.75 points out of 10 (“Create engagement within the existing audience”) to 4.13 points (“Understand audience’s needs and wants” and “Improve the quality of the creative activity”).

On the contrary, there are two activities which have lower means than the others: how products are placed inside the museums (3.63 points out of 10) and feedbacks to projects and works (3.88 points out of 10) which seem not to be affected by digital technologies. Evidence shows that products are placed by the staff so technologies in this activity is rarely used and produces a limited positive effect. The positive effect is not perceived by cultural organizations in other two activities which are understanding audience’s needs and wants and improving the quality of the creative activity of the museum both with 4.13 points out of 10. These means are pretty low: the organizations in question are not so interested in understanding the visitors and what they would like to live, access or they expect to see. Still, they concentrate on providing the service to audience teaching and giving the opportunity to learn or to access art and culture, but they are not learning how to improve the customer experience, or they are not understanding what the audience needs and wants.

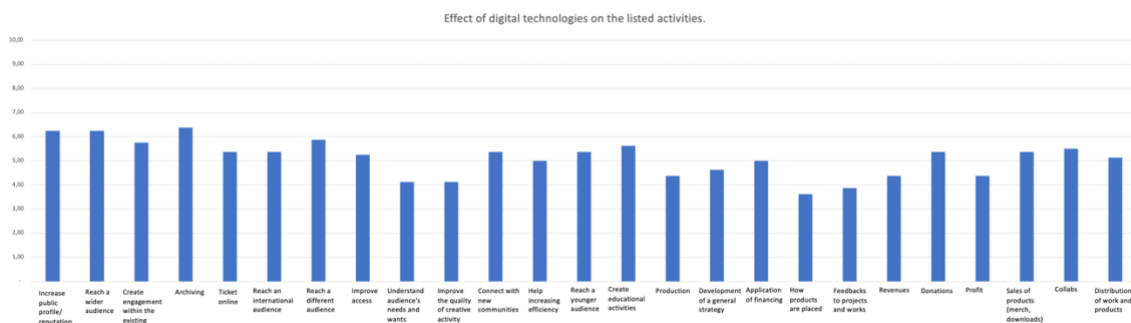


Table 16: Effect of digital technologies on the listed activities, answers were given on a scale from 1 to 10. In the graph are reported mean values, 2022

Some of these activities depend on social media management which, based on the results of the survey, are run by internal staff in all the institutions interviewed as shown in the graph below. None of the museum is managed by external staff which means an

agency, or an organization specialized in the social media management field, but they rather invest in internal dedicated staff, or they try to incorporate this activity with other ones optimizing resources as good as they can.

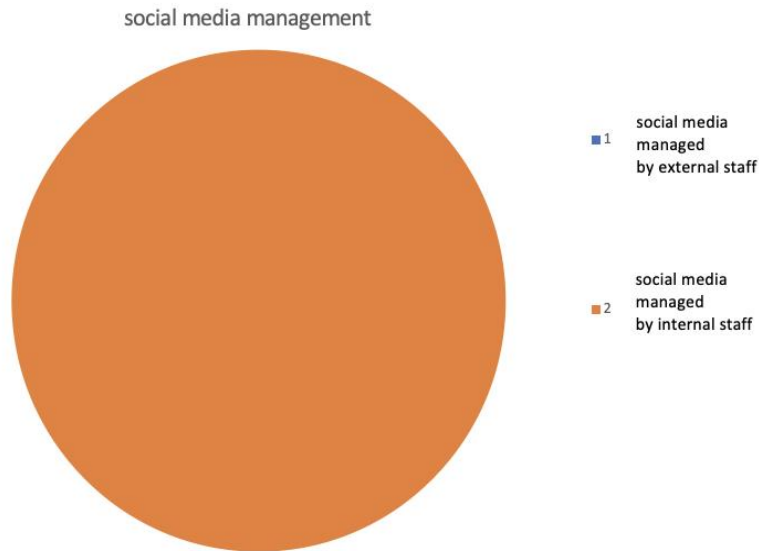


Table 17: Social media management: internally or externally managed? (2022)

The survey also deals with the social media management activities and other related activities shared in online platforms which can be also website or third-party platforms: respondents are asked to indicate how frequently they do the listed activities, choosing between “We are used to do it”, “We do it sometimes” or “We have never done it”. The graph below collects all these information. The following activities were selected between those ones more used and reported combining an international and an Italian point of view. 28 activities were selected through previous research. Obviously, the activities here reported were identified among those ones observed through website and social media research and among those ones proposed by international institutions. The most common activity, done always or sometimes by all the institutions, is publishing content on platforms (Facebook, Instagram, Twitter above all), but only some of them try to include, always or sometimes, people encouraging them explicitly to share content (75%). More in details, sharing audio and video content on social media or publishing content on the website represent activities done always or sometimes by almost every museum in question, as well as publishing educational content or organizing educational events (85%). Many organizations are used to or sometimes

create products or services using digital technologies to improve the visit (75%), for example by creating alternative paths to include disabled people (the 3D model of Palazzo Ducale in Venice which permits to blind people to discover the features of the palace by simply touching it, or, more simply, providing an audio guide system which explains the museum's history). Half of the interviewees try to include people who are far away from the physical place and would like to see it creating a virtual tour of the museum, while almost none of them have ever tried virtual reality (only 25%).

75% of the surveyed are used to or sometimes do email marketing, as well as networking with other organizations or influencers. In fact, almost every museum declares to collaborate with other organizations which can be other museums, universities and so on, but this is better explained in the next paragraphs. Three museums out of eight are used to make SEO (search engine optimization) for their website, but only 1/8 usually use paid advertising as an organizational activity. The other 25% sometimes do it, but the remaining part of them have never tried it.

They, always or sometimes, provide interactive experiences to increase the quality of the visit (62%), and the organizations which have already digitalized their collections give access to digital archives (about 71%). Almost none of the questioned museums offers exclusive online content or use third-party platforms to increase profit neither accept online donations on the website (about 14% is used to do these activities or do them sometimes). Almost none of them write a blog (12.5%) and provide livestreaming performances (25%) directly from the museum, neither they have created a CRM system (25%) which could, potentially, help the organization in understanding what the audience would like to see, how to talk to them, how to attract them and, finally, how to sell something to them. The same percentage of the interviewed museums currently does not connect with the visitors or, better, potential visitors with live chats or Q&As. None of these organizations have ever tried artificial intelligence or machine learning applied to artworks, which means none of them create digital art with the help of AI.

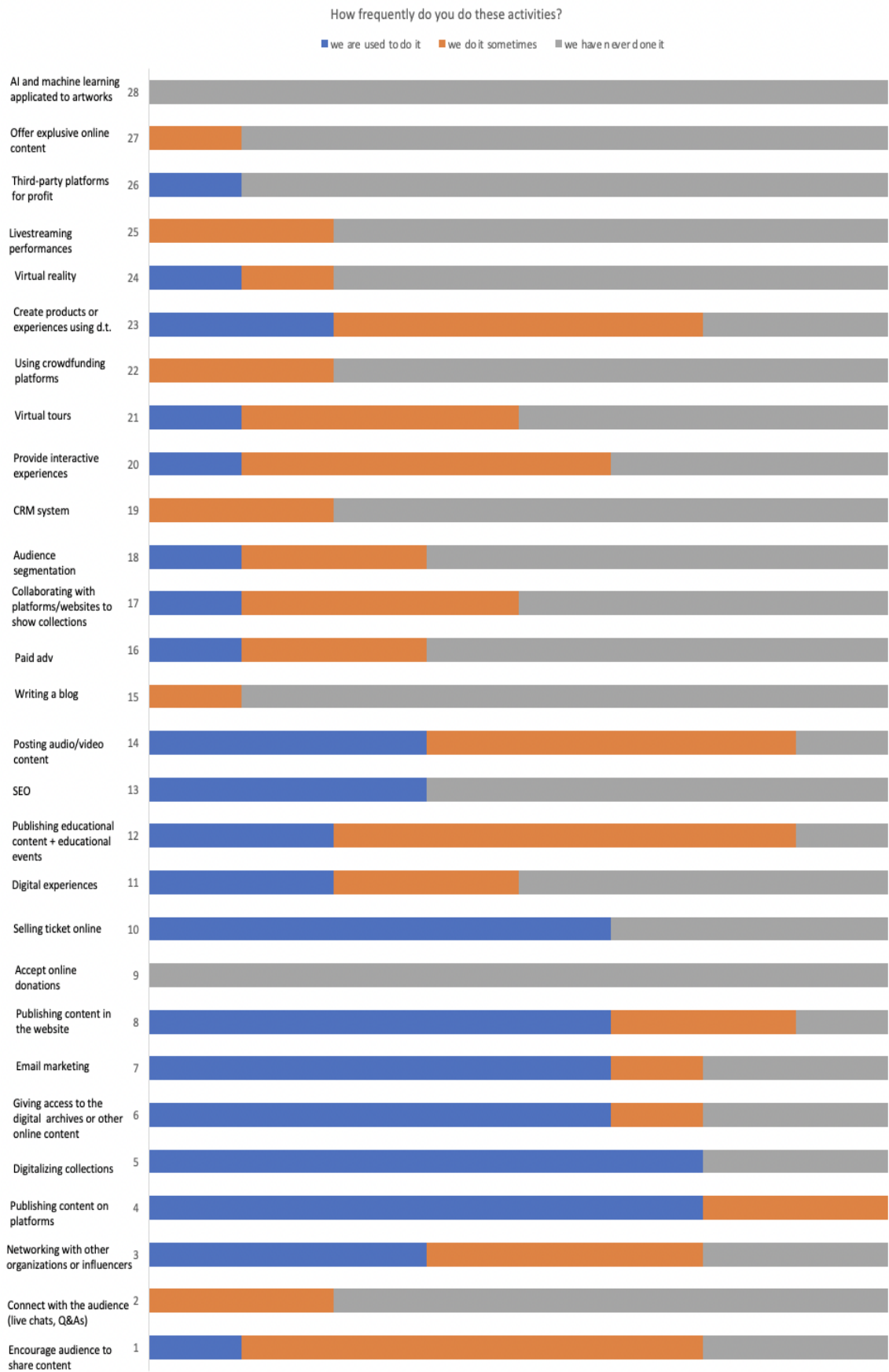


Table 18: How frequently do you do these activities? (2022)

Furthermore, it is interesting to highlight that almost every institution actually sells tickets online, but very few of them try to engage, to connect with people or to investigate needs and wants of the audience writing a blog for example or through the use of tools like Q&As, live chats and so on or, again, do some paid advertising in order to reach a different audience or to push the existing audience to visit/visit again the museum. This is a normal activity for almost every organization nowadays, so it is important to underline this difference regarding the attention on consumers and on their needs and wants. Regarding activities addressed to the audience, Table 16 illustrates which are the activities Venetian museums do with audience data.

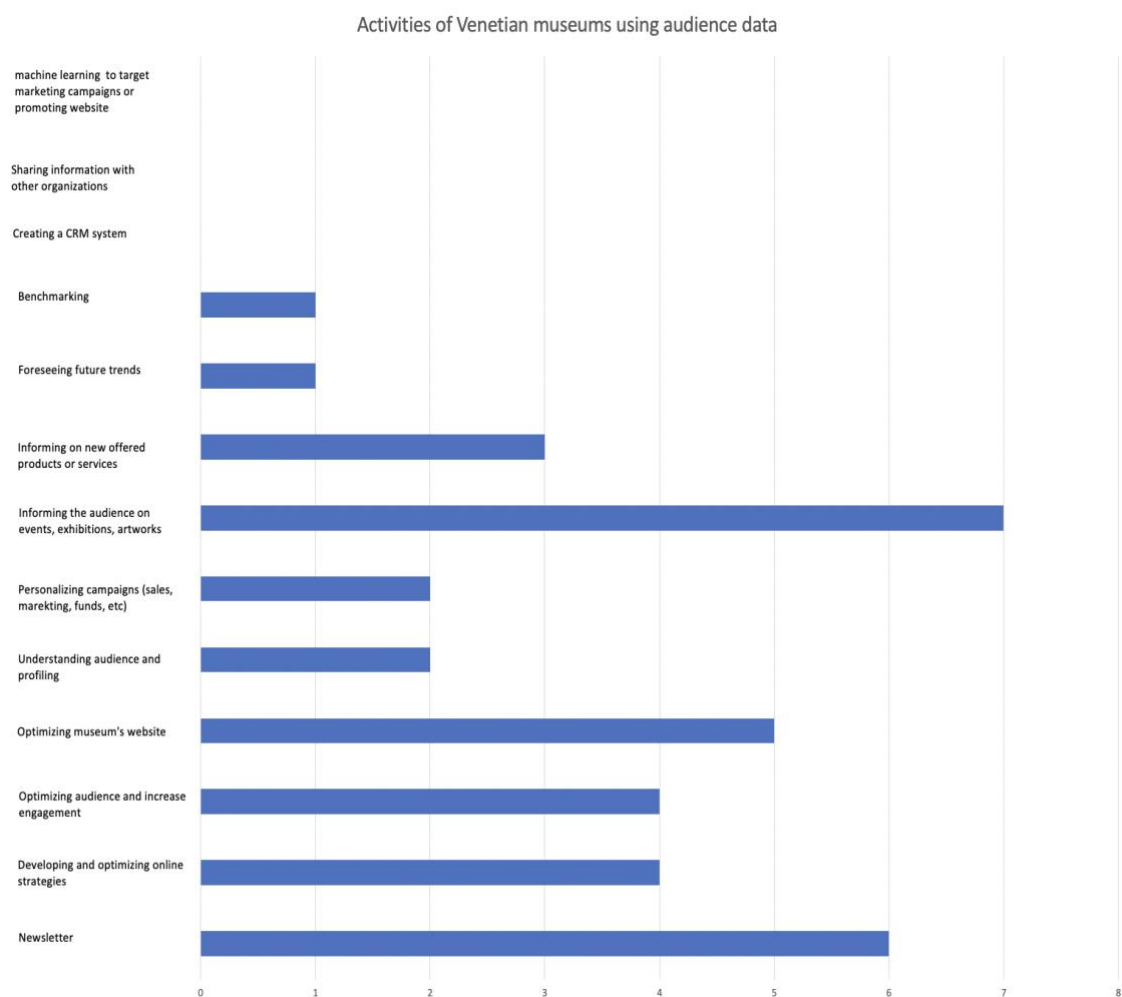


Table 19: Activities of Venetian museums using audience data (2022)

Every single museum use audience data to inform about events, exhibitions and artworks (about 85%) and almost all the organizations send every now and then a

newsletter to keep in contact with the audience (about 71%). They also use this type of data to understand how to optimize the website, as well as the engagement with audience, but also to develop online strategies (about 57%). About 42% of them use audience data to inform on new offered products or services, but less than 30% to personalize campaigns in terms of marketing or sales, or to understand more deeply the audience's needs and to improve the activity of profiling. Only about 14% of them use data to benchmark or foreseeing future trends in order to better formulate strategies. None of them use machine learning to target marketing campaigns or to share information with other related organizations.

So, audience data are not used to create a real strategy: most museums present a lack of strategic plan to follow, dedicated to the audience and to the attraction of new visitors. The graph below gives an idea of what the interviewed organizations think about their skills regarding digital technologies. They were given some statements and they were asked to select between "we agree", "we partially agree" and "we disagree" in order to understand their level of agreement/disagreement as shown in Table 15.

It is interesting to highlight that digitalization is still an ongoing process which has not been fully integrated yet, since many the respondents has never selected "We agree" on the given statements. The majority of them don't support other organizations in the process of digitalization (87.5%), neither they consider having always new ideas a priority (62.5%). 25% of the organizations declares to be partners of cultural organizations to develop digital projects, 37.5% of them partially agrees with that but, at the same time, 37.5% of them totally disagrees.

The statements "*Our staff is updated on digital technologies*" and "*Digital technologies are diffused in our organization*", have given the same results: 25% disagrees, 62.5% partially agrees and the remaining 12.5% agrees on these. Furthermore, 37.5% disagrees on the statement "*Our staff tries to experiment*" while the remaining 62.5% partially agrees on this.

Half of the respondents disagree on the following statement: "*We created a network which let us support our organization*", and only 12.5% agrees on that.

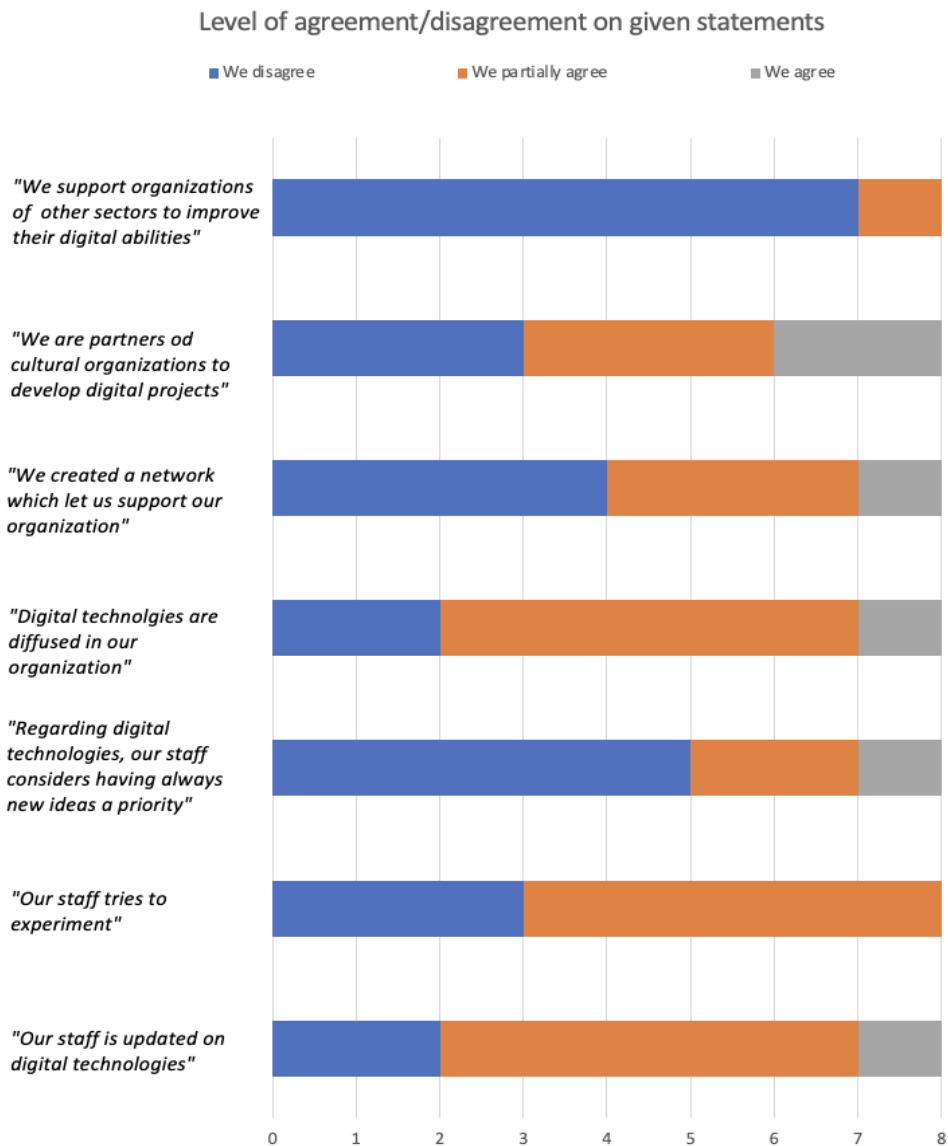


Table 20: Level of agreement/disagreement of interviewed museums regarding given statements, 2022

Digital technologies can also be used to improve or create some relationships with other organizations. Venetian civic museums are used to collaborate with:

- other museums,
- universities,
- foundations,
- banks or
- UNESCO sites.

These digital projects are oriented towards the diffusion and knowledge of collections, digital promotion, digitalization or organization of exhibitions. Obviously, they also

create partnerships of a non-digital nature with other institutions. Other museums are not actually working together with other organizations.

So, digital technologies are a tool which has been used since few years. But when does it go back to the first investment in digitalization regarding Venetian museums? For 63% of them it is dated back to the five years between 2015 and 2020, instead, for the remaining 37% before 2015. In the graph below percentages are shown.

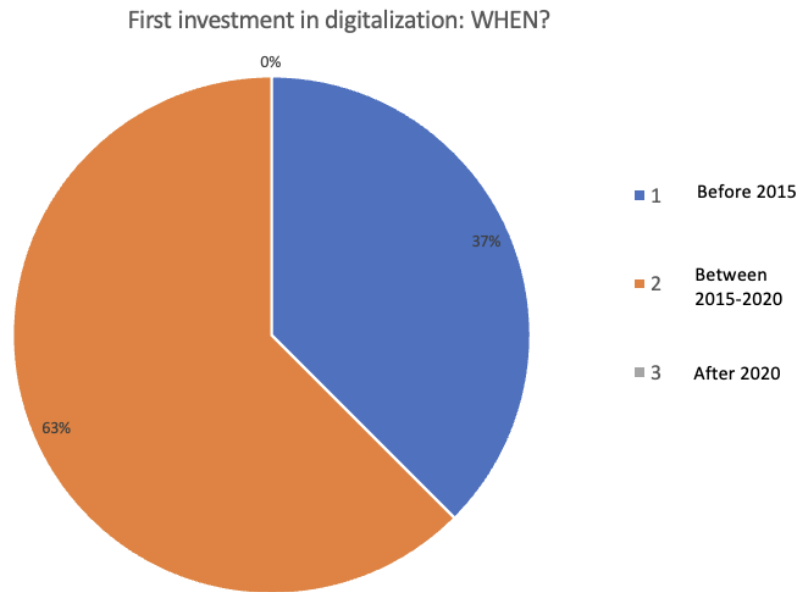


Table 21: First investment in digitalization: WHEN?, 2022

From interviews a clarification emerges: the very first investment for the majority of the museums has been made during the five-year period between 2015 and 2020. At the same time museums nowadays are investing in increasing the quality of the online but also the offline experiences for example by enhancing the website performances or improving audio guide system. Still, the monetary resources employed to improve and

boost the process of digitalization up to now are less than €100.000 for 50% of the respondents, as shown in the graph below.

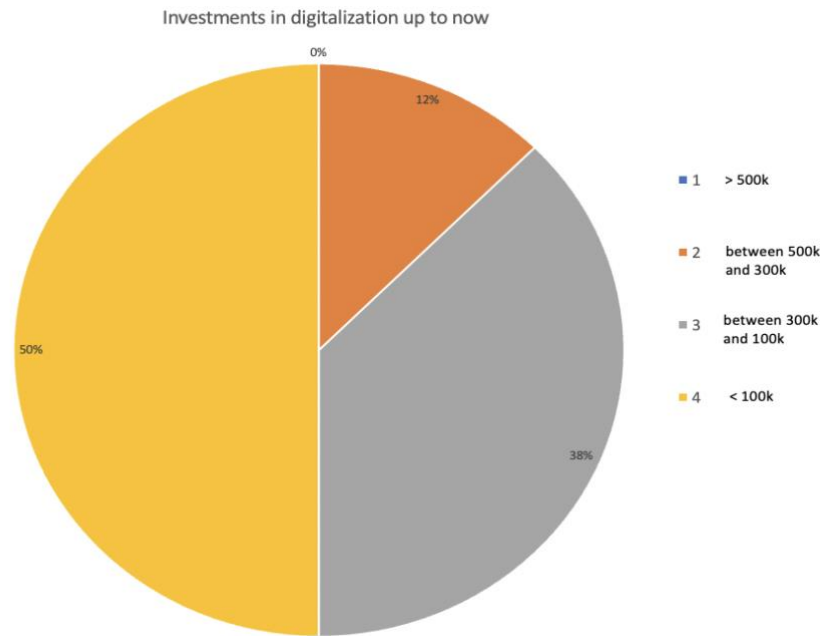


Table 22: Investments in digitalization up to now in monetary terms (€), 2022

38% of them have invested up to now an amount included in the interval between €100.000 and €300.000 and only 12% between €300.000 and €500.000. None of them invested an amount corresponding to more than €500.000. The situation changes when it deals with maintenance as shown in the graph below.

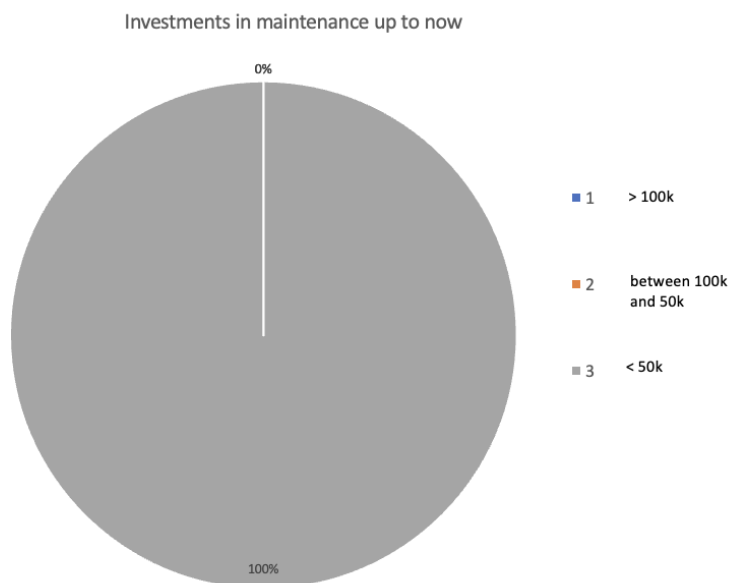


Table 23: Investments in maintenance up to now, year 2022

Another important thing to say is that the research deals with civic museums, so funds are limited and managed by the municipality which decides and make decisions for them. During the interviews this has been clarified by some museums which were not even able to declare last-year profits or revenues. Regarding this last point, museums expressed their level of satisfaction about digital investments in a scale from 1 to 5. As shown in the graph below, it came out that 62.5% of them is satisfied in general. 12.5% seems to be indifferent and the same percentage appears to be unsatisfied.

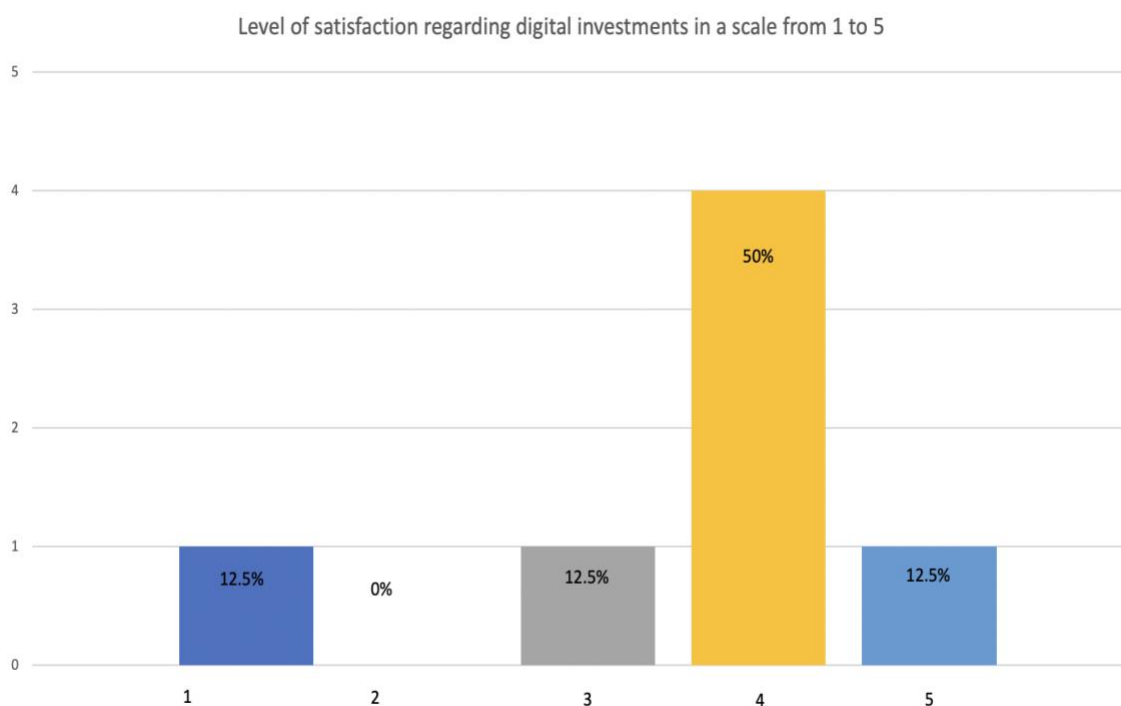


Table 24: Level of satisfaction regarding digital investments in a scale from 1 to 5, 2022

So, the investments in digitalization have brought museums to satisfying results. Still, they seem to have just started the process. A lot of them declared that they are slowly investing in digital technologies, but most directors think that art must be “lived” in person as a unique experience. In the survey, museums were asked to select, among given barriers, which they consider significant obstacles in adopting digital technologies: first, most of them selected the lack of funds, followed by the lack of time which, in turn, is followed by lack of internal skills or a defined strategy as shown in the graph below. It is important to highlight that except for the lack of funds, most of the other selected barriers depend on internal staff, internal abilities, skills and competences and, as directors admitted, these seems to be the real problems. Funds are important but, most

museums confessed that internal staff is not composed by digital experts who are not hired to run digital projects. Rather, they have different skills and competences, so they run digital projects as “side” task when they have spare time. In addition, some museums admit having a poor IT-system which does not let them develop projects. Below, the graph showing evidence at this regard.

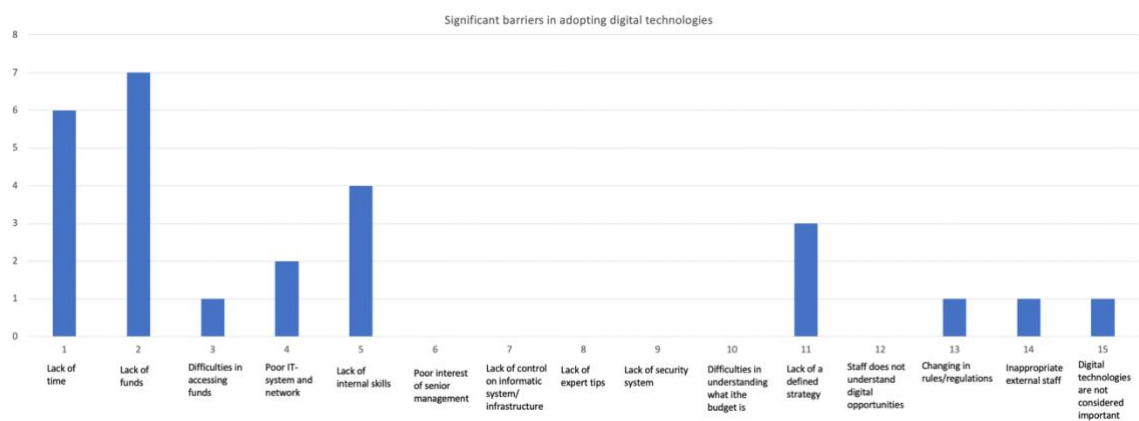


Table 25: Significant barriers in adopting digital technologies, 2022

The last question is about inputs, suggestions and tips museums can give to better understand answers and their position. Almost no one responded to this except for Musei Civici di Vicenza saying that being part of the municipal organization they have shared balances and revenues are hard to be measured because of that.

These results are commented in the section below.

2.4 Conclusions

As previously clarified, the objects of the survey are the Venetian civic museums which are managed by the municipality, and they are not born as digital museums, but they are trying to implement it through a still ongoing process that is, in fact, the focus of the research. In this chapter, the results of the questionnaire together with those ones of the interviews are explained and analyzed to understand if the situation described in the first chapter reflects the museum reality or if it is different.

Digital technologies are considered important in activities like archiving and marketing, while they are less important in operational activities. It derives from the fact that many of the interviewed museums dedicate effort to implement digital technologies in these

areas of their organizations because they consider preserving artworks together with promoting and make art products and services available to everyone the main goal of their organizations. The other more operational business areas are given less importance and, as a consequence, digital technologies are less used because of outdated tools at disposal or because they are simply not relevant to run the activity itself. In fact, given some activities, museums indicate archiving, together with reaching a wider audience and increasing the public profile/reputation as the most valuable activities to invest in, since the positive effect of d.t. on them is evident. It is not a randomness that they are just mentioned as part of the most important areas of the organization. Instead, on creative activities and on other ones related to customer service the positive effect of digital technologies is not obvious. On the contrary, organizations seem not to see it at all. In fact, receiving feedbacks and discovering what the audience needs and wants seem not to be part of the strategy of the museums which admit to have really confused ideas in this regard. Always concerning marketing activities, the survey concentrates its attention on social media and activities run online: it turns out that social media marketing is done, with a percentage of 100%, by internal staff and they select as the most frequent activities publishing content (on social networks or on the website) and posting video or audio content most of the times to explain something, an artwork, an exhibition and so on. These are always accompanied by the activity of digitalizing collections, which, as previously seen is the most common one. On the contrary, according to what has been written before, the museums are not used to have a CRM system, only few of them do it sometimes, as well as connecting with the audience through live chats and Q&As. At the same time, none of them use machine learning applicated to artworks, even though the Ministry of Culture considers it as an activity which is worth it investing on, and it is not common to use third-party platforms for profit, to accept online donations or to use crowdfunding platforms. Evidence highlights the fact that museums are used to accept donations through direct contact with the donators and the majority of them is not even thinking about accepting online donations. They are not learning how to improve the customer experience, or they are not understanding what the audience needs and wants. This could be an explanation of the reason why the means are this low, but there is another one which can be the possible answer: the fact that digital technologies do not affect activities like

understanding audience's needs and wants and asking feedbacks to projects and works can mean that museums and the staff ask personally some feedbacks or some opinions about the museal experience and projects.

The reason why digital technologies are not important to improve the quality of creative activity can be practically that creativity derives from humans, and humans does not need technologies to be creative.

Even though the relationship with the audience is apparently not so much valued, data are collected anyway for example by selling ticket online and museums select some activities which they are used to do with audience data. Almost all of them choose informing the audience about events, exhibitions and artworks and sending newsletters. Some of them, instead, opt for optimizing the website, online strategies, or the audience creating more engagement. Very few of them choose profiling and personalizing online or offline campaigns (marketing, sales and so on), benchmarking or foreseeing future trends which transpires the will of understanding what the audience is looking for given that they are trying to run the basic activities they can do, but, at the same time, they don't have a clear strategy to apply, or to follow. Many museums, as previously clarified, are not really into digital technologies and their functioning. This is demonstrated by the fact that the great majority of the interviewed organizations disagree or partially agree on the statement *"Our staff is updated on digital technologies"*, or *"Our staff tries to experiment"*. They also admit not to consider having always new ideas a priority and, above all, not to have digitalized organizations. This is proved by the director of Musei Civici di Bassano, Barbara Guidi, who, regarding her opinion about digitalizing museums, explains: *"The work of art is a physical object to be seen and felt in person and observed in the atmosphere it is inlaid, in order to live a unique experience which, in my opinion, cannot be transmitted by a screen or by a display"*. She agrees on the fact that digital technologies are important for activities like marketing or archiving, as previously remarked, and for improving inclusion and accessibility, but she also highlights the necessity of visitors to see in person what the museums offer to them. COLLAB

Regarding another talked point of the museal organizations, which are the investments, many respondents (63%) date their first one between Year 2015 and Year 2020, the remaining part dates it before Year 2015. Half of the interviewees have spent less than €100.000 in digitalization up to now, 38% have spent between €100.000 and €300.000,

while 12% between €300.000 and €500.000. Among those ones which have spent less than €100.000, there are those ones which believe that digital technologies are not important at all and have spent almost €0 in this process. So, in general, investments have been made, but, at the same time, a lot of organizations still don't believe so much in the digitalization process. Furthermore, it is easy to deduce that many investments are made with the PND, so they are recent. This is also proved by the fact that none of them has invested more than €50.000 in maintenance which can mean mainly two things:

Investments are made when funds are given, and digital projects or instruments/tools are used until they are "useful". When they are not anymore, they are left behind without taking care of them for many reasons. For example, they are considered old, and investments are devolved for something more present-day, or they are forgotten because of lack of funds, lack of human resources dedicating time to these projects and so on.

Investments are very recent so there has not been already the need to fix, to adjust or to maintain digital projects.

Generally, museums are satisfied by the investments they have made but they are still basic and, to a certain level, also cheap investments. This can mean they have invested in something "safe" which they already knew it was wise to put money on for example ticket online or an improved website.

The last question of the survey makes organizations select between the significant barriers in adopting digital technologies. Three main problems are identified and can be summarized in:

- Lack of time
- Lack of internal skills and a defined strategy
- Lack of funds.

These three ones are quite connected if, as the respondents suggest, they are considered as "a snake biting its own tail": interviewed museums explain that they don't have enough funds to hire new employees neither to make a lot of investments in digitalization. Furthermore, the level of digital skills of the already working staff is quite basic because they are hired to work on something different and they are asked, a lot of times, to follow some digital projects which is not within their competence. Directors

also admit that the staff has not so much time to dedicate to these digital projects and that, given the lack a defined strategy, they don't even know what they are supposed to do. At the same time, many of them add they don't regret not having a digital strategy because they still believe in the power of a "normal" museum visit during which visitors should be fascinated by the artworks and not by digital installations and screens. Many of them repeat they recognize the power and the importance of the digitalization process in some areas of their business, but, at the same time, they do not see their implication in these organizations. Furthermore, nowadays many institutions, like *Fondazione Scuola Beni Attività Culturali*, organize meetings, webinars and lessons dedicated to museal staff and museums stakeholders in order to make them aware about the options and opportunities the digitalization offers, and to give them hints. Also, and above all, the Ministry of Culture has tried and is still trying to boost this process giving them a proper tool, the PND, to provide a strategy they should implement.

So, it is easy to observe that there is a discrepancy between what museums are supposed to do, the theoretical vision explained in the PND, and the reality in which museums are still worrying about other problems. As seen in the last question of the survey, some museums are still struggling with a poor IT system and network for example.

Chapter 3

Case studies: Some projects of the analyzed museums

Here follow some projects selected among those ones developed by the above-mentioned museums. They are examples of projects developed using digital technologies and they are considered remarkable. It can be useful to mention those innovative projects to highlight the importance of digital technologies in these days in different fields which can be archiving, marketing, operations and so on leading to innovation and developing concepts like accessibility as well as diffusion of learning, valorization of cultural heritage and promotion of it.

Below, are listed the projects chosen:

- The 3D model of Palazzo Ducale of Venice by Re-Art made for blind and visually impaired people
- The Archive of the National Gallery of Modern Art Achille Forti (Verona) being part of a bigger project which collects the artworks of 21 different museums: the RAAM
- Restoration of three statues of Giovanni Pisano together with Enrico Scrovegni's statue in Scrovegni Chapel in Padua using 3D photo-modeling, 2022
- Virtual Tours of Civic Museums of Venice in collaboration with Google Arts and Culture, 2020-2021
- Exhibition room form and function "*The Strategies of Life*" inside the Natural History Museum of Venice Giancarlo Ligabue
- Audio guide Application of Museo Santa Caterina (part of Civic Museums of Treviso)
- YouTube Channel of Musei Civici di Vicenza "*VicenzaCultura*" with its "*Pillole d'arte*"
- The online ticketing system by Musei Civici di Bassano del Grappa

As written above, these are projects of the mentioned museums which are considered remarkable for their importance and innovation. Some of them, the last three projects, are remarkable for the organizations in question but on a larger scale they are very basic

projects. Audio guides, a YouTube channel or online ticketing system are projects which are very used and useful for the visitors to understand the collections and the treasures inside the museums, but, still, they are not innovative at all. As clarified in the first chapter, projects like this are not even mentioned in the PND and are not even classified as “innovative digital projects” or in line with emerging trends. Again, the interesting point lays on the discrepancies between the theoretical part in which really innovative projects are described and highly recommended, and the practical part in which internal staff manage more basic projects and, in some cases, do not even consider the advised ones an option. Here are some remarkable examples of projects coming from the Venetian civic museums analyzed during the survey.

3.1 Case study 1: Palazzo Ducale by Re-Art (FabLab Venice) – 2020

Digital technologies are important not only for archiving, marketing or operational activities but also to provide services, to enhance the experience of visitors and giving everyone equal opportunities to explore, visit and access the museum.

These are the reasons why projects like Re-Art – technologies for culture are born. This comes from FabLab Venice, and it is managed by Prossimi, a social enterprise always originated in the same labs. Re-Art has been financed with the project “Digital Tool for Venetian Heritage” in 2019 in occasion of “Bando per Area di Crisi Industriale Complessa di Venezia”. As Andrea Boscolo, Co-Founder and FabLab manager, explains the project is born to facilitate synergies between institutions and operators of the cultural sector and has four objectives, which are:

- A. Create a network informed on the potentialities of new technologies and on the dialogue possibilities between traditions and innovation. This means building a common language in order to be ready to catch future challenges, interpreting and implementing programs of development and digitalization, supporting the birth of new professionals of culture. At the same time, it must include the safeguard of traditional jobs identifying the technological tools to integrate artisanal skills amplifying the creative opportunities and increasing competitiveness.

- B. Create a contemporary quality cultural offer that must be also inclusive. In order to enable a fruition of the cultural heritage which takes into consideration diversities and disabilities, new technologies and advanced processes might be used. Realizing physical objects and paths to sustain an informed and sustainable tourism and contemporary and engaging experiences.
- C. Encourage the activity of networking between excellence realities. This means supporting the dialogue between companies, professionals, small or big entities to encourage them to share knowledge and projects in which digital technologies are fundamental building new business opportunities.
- D. Learn, build best practices and projects which may be proposed as state of art for the cultural sector, and define new possible paradigms. Following the best international examples, the objectives of Re-Art can be developing quality projects thanks to the shared competences, implementing all the actions for the conservation and valorization of the cultural heritage through advanced technological tools and multidisciplinary digital strategies. Furthermore, it might be useful to assist artists during their creative process adding always new instruments and tools to use.

Thinking about differences and disabilities and how to make an inclusive offer possible for visually-impaired or blind people, the Foundation of Venetian Civic Museums commissions to Re-Art – technologies for culture, a 3D model of Palazzo Ducale as part of a sensorial path called “Un poema di pietra” (“A stone poem”). The goal of the project consists in providing an idea of the architecture and the decorations of the palace to blind and visually impaired people through an experience of tactile exploration.

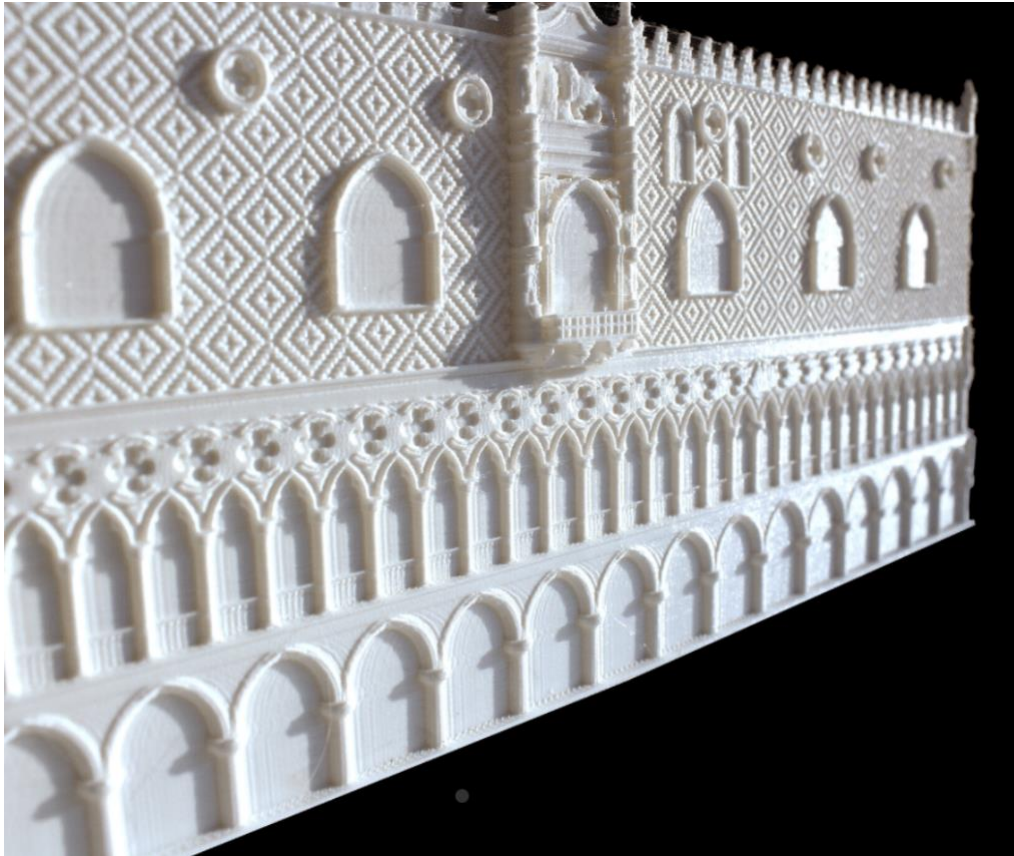


Figure 4: The Palazzo Ducale of Venice 3D model, screenshot taken from www.re-art.eu, (Nov 2022)

The project, realized in Year 2020, is the result of solid modeling made with Rhinoceros which is a program, a software used for industrial drawing, architecture, design and prototyping. Later, the 3D Rhinoceros file has been translated in a model made with the technology 3D FFF (Fused Filament Fabrication) which is an additive technique in which the filament is fused to produce a solid part. In the photo below, the process of printing is shown. In fact, the model is still incomplete.

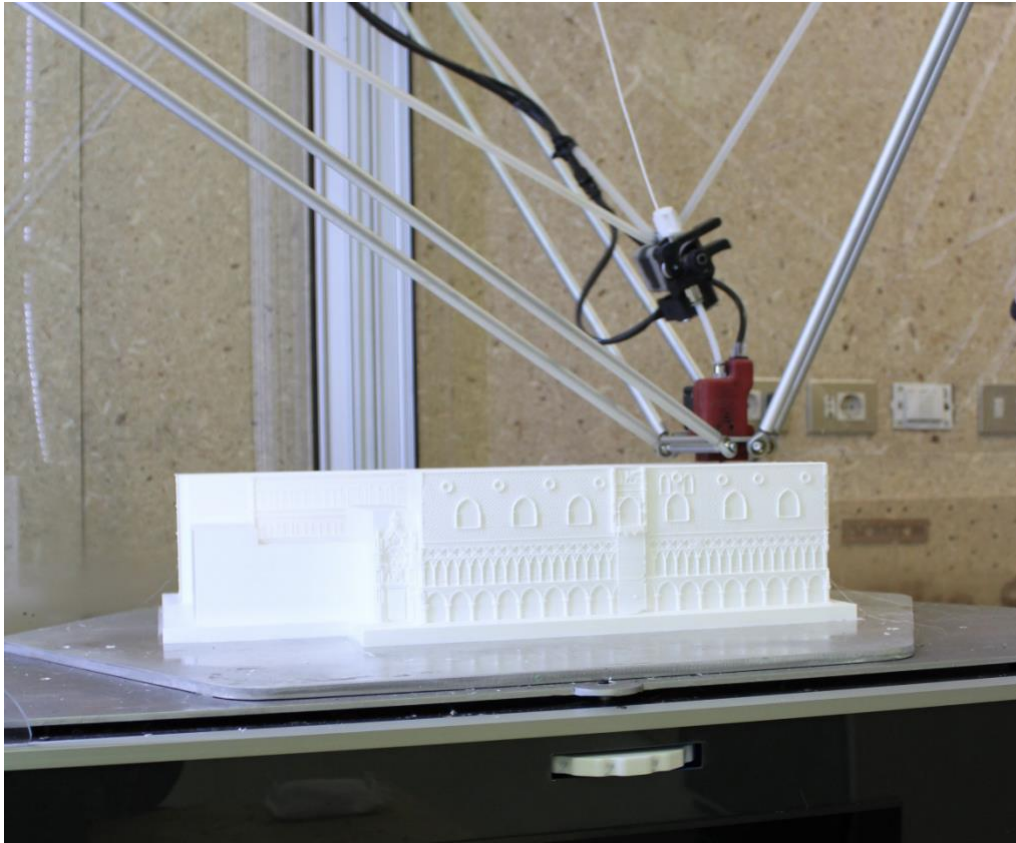


Figure 5: The Palazzo Ducale of Venice 3D model being printed, screenshot taken from www.re-art.eu, (Nov 2022)

3.2 Case study 2: Archive of the National Gallery of Modern Art Achille Forti (part of Verona Civic Museums) - RAAM – Ricerca Archivio AMACI Musei

The project is born thanks to Direzione Generale Arte e Architettura contemporanee e Periferie urbane of MiBACT (now Direzione Generale Creatività contemporanea of the Ministry of Culture) and AMACI which is the Association of Italian Contemporary Art Museums.

RAAM (Ricerca Archivio AMACI Musei) is an online archive whose aim is to make the consistency and quality of the Italian cultural heritage accessible to the public. In particular, it collects the contemporary art works, from 1966 to now, of 21 museums associated to AMACI, almost 11,000 artworks and more than 3,500 artists. Promotion, valorization and diffusion of the knowledge of the contemporary art are strictly related

to the concept of free and rapid accessibility of information and images being part of the public national heritage.

The uniqueness of the project lays on the fact that it groups the artworks of 21 museums thanks to the AMACI net. it guarantees a very complete vision of the cultural heritage represented by the museums' collections but also the online presentation of the single artwork. In fact, it is possible to make advanced research and to access tabs of every single artwork reporting images and information regarding the piece of art itself but also the artist who made it, the museum where it is conserved and the institution who actually owns it. The image below shows the form of the National Gallery of Modern Art Achille Forti (Galleria d'Arte Moderna Achille Forti) being part of the MUV with general information regarding the gallery itself, contacts, and the list of the artworks (and consequently also the artists) of the gallery that are included in the archive.

RAAM

PROGETTO DI AMACI / MIBACT

Galleria d'Arte Moderna Achille Forti, Verona

● INFO
La Galleria d'Arte Moderna di Verona ha sede a Palazzo della Ragione, storico palazzo del Comune situato tra le suggestive piazze delle Erbe e dei Signori, riaperto al pubblico nel 2014. Il percorso espositivo – fra dipinti e sculture – intende valorizzare il corpus della Collezione civica Achille Forti narrando, lungo le quattro sale al piano nobile, gli sviluppi dell'arte in Italia dal 1830 ai giorni nostri. Gioiello all' interno del palazzo è la Cappella dei Notai, capolavoro del Rinascimento con un bellissimo ciclo decorativo realizzato tra '600 e '700 dove, a rotazione, le installazioni contemporanee dialogano con la storia abbracciando i secoli passati con le più recenti ricerche di giovani artisti emergenti.

● CONTATTI
Galleria d'Arte Moderna
Achille Forti
Corte Mercato Vecchio, 6
37121 Verona
Tel. +39 045 8001903
Fax +39 045 8031394
gamforti@comune.verona.it
gam.comune.verona.it

foto © ceretta

● Artista	● Titolo	● Data	● Inventario
Mario Tozzi	(Due amanti)	1925-1975	
Mario Tozzi	(Visione metafisica)	1925-1975	
Mario Tozzi	(Volto)	1925-1975	

Figure 6: Screenshot taken from the website <https://archivioraam.org/?#home> (Nov 2022)

RAAM is a project in progress, which means it is continuously updated and integrated. In order to facilitate the research from different points of view (chronologic, museografico, tipologico, etc) , there are some filters and different possible combination of the lists orders have been made. Pages both dedicated to single institutions, to the crossed researches and also to every artist.

The project includes different forms of expression: paintings, sculptures, video installations, artist books, artworks on paper or photographs while it does not include engravings, graphics and drawings.

The content of every single technic tab is edited by the museum, and it can contain:

- Museum which owns the artwork;
- Artist who made it;
- Biographic data regarding the artist;
- Title of the artwork;
- Date;
- Typology;
- Technique;
- Measures;
- Inventory;
- Legal condition;
- Photographic credits;
- Description;
- Bibliography;
- Placement;
- Biography of the artist;
- Notes.

The image below shows the tab of an artwork called “Hippies” by Quirino Sacchetti showing information regarding, as mentioned before, the museum where it is conserved, the date, information about the artist and when he is born and dead, the technique used to paint it, the measures, the number of inventory corresponding to the piece and the legal condition. From here, it is also possible to request the image directly to the institution which owns it, declaring the reasons why it is needed.

Quirino Sacchetti

Hippies

- MUSEO
Galleria d'Arte Moderna Achille Forti, Verona
- AUTORE
Quirino Sacchetti
Verona, 1909 - 1979
- DATA
1967-1968
- TECNICA
olio su tela
- MISURE
cm 50 x 40
- INVENTARIO
29620-1C-3809
- CONDIZIONE GIURIDICA
proprietà

RICHIEDI IMMAGINE

- EVENTUALI AGGIORNAMENTI
Segnala errori




Figure 7: Screenshot taken from the website <https://archivioraam.org/?#home>, (Nov 2022)

3.3 Case study 3: Restoration of three statues of Giovanni Pisano together with Enrico Scrovegni's statue in Scrovegni Chapel in Padua using 3D photo-modeling, 2022

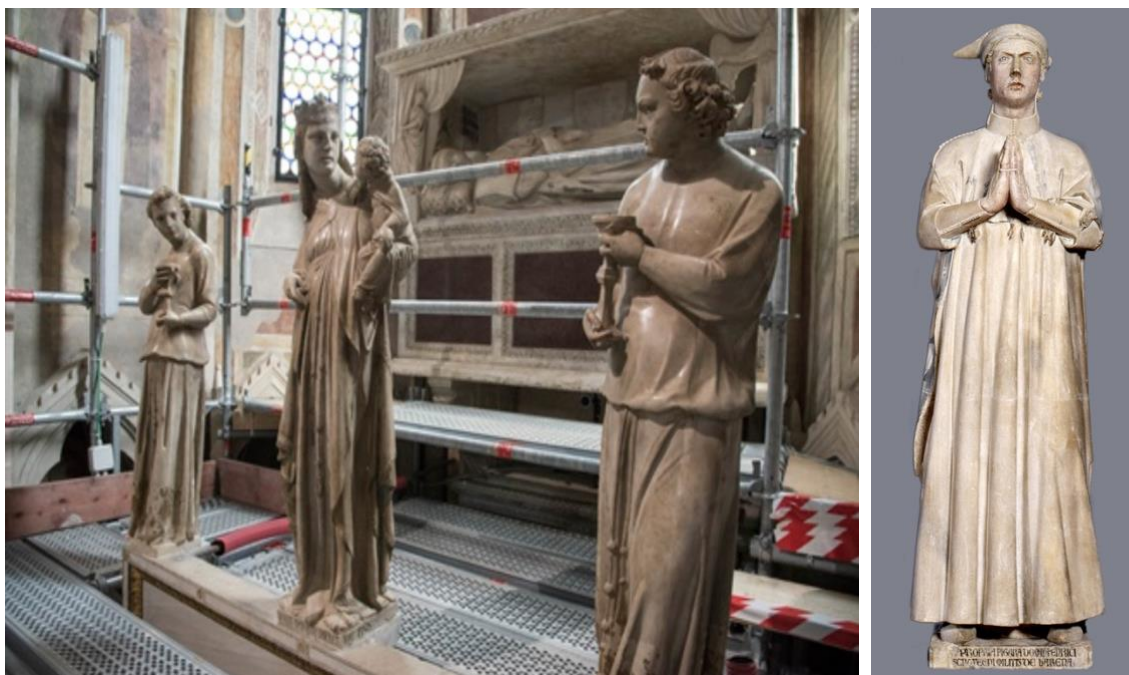


Figure 8: Three statues of G. Pisano and the statue of Enrico Scrovegni praying (on the left), 2022

In September 2022, after almost 30 years, the extraordinary restoration of Giovanni Pisano's statues together with the Enrico Scrovegni's statue in Scrovegni Chapel in Padua has started (last restoration was made in 1993). Enrico Scrovegni is its patron, and he is actually the reason why the Chapel is named like this. It is dedicated to Santa Maria della Carità and it is famous for the extraordinary cycle of paintings by Giotto, a revolutionary Tuscan painter who anticipated Renaissance theories of a hundred years regarding the study and rendering of third dimension subjects and the perspectives. The frescoed cycle of the 14th century is part of the UNESCO World Heritage List from 2021. The maintenance intervention has been made by the "Istituto centrale per il Restauro del Ministero della Cultura" and financed by the Ministry itself. The sculpture of Enrico Scrovegni is conserved in the sacristy of Scrovegni Chapel while the three statues by G. Pisano are located in the altar. They are made of marble, and they portray Madonna with the Baby in the middle and at both sides two Cherub Angels. They represent an "unicum" in the production of the artist, and they present traces of polychromies and gilding which are witnesses of how sophisticated the artist was. The artist Giovanni Pisano (1248-1315) was an important sculptor and architect who can boast masterpieces like the "Fontana Maggiore" in Perugia or the entire facade of the Cathedral of Siena.

This operation of restoration gives the opportunity to study more deeply the material used by the artist, but above all the executive techniques utilized for both sculpting the marble and decorating the surfaces through a multispectral inquiry and a surface exam. But how this restoration is dealing with digital technologies? The answer lays on the fact that this operation would not have been done if there had been carried out the 3D photo-modeling of the four sculptures useful to determine the inquiry results and to document all the steps also in order to make a sort of virtual reconstruction of the original position of the sculptures in the Scrovegni Chapel. 3D photo-modeling is a process through which experts, using software, create three-dimensional representations of objects, surfaces and so on determining size, shape and texture of the objects. This can be useful with ancient objects which are ruined or damaged to determine how they originally were without compromising the object itself.

The councilor of Culture of the city of Padua highlights that the operation is not actually due to damage or particular issues but, it must be seen as an intervention being part of a constant activity of maintenance and control of this piece of art that “must be considered as a whole in which Giotto’s frescoes are surely the more important masterpiece in there but the other artworks are not less important for the story of the Chapel”.



Figure 9: Scrovegni Chapel. Photo taken from the inside, (Source: Unipd, 2020)

3.4 Case study 4: Virtual Tours of Civic Museums of Venice in collaboration with Google Arts and Culture, 2020-2021

The Fondazione Musei Civici di Venezia (MUVE) includes eleven museums which are: Doge’s Palace, Correr Museum, Ca’ Rezzonico, Ca’ Pesaro, Glass Museum of Murano, Natural History Museum, Mocenigo Palace, Fortuny Museum, Lace Museum of Burano, Carlo Goldoni’s house and the Clock Tower. It brags an extraordinary cultural heritage of more than 700,000 artworks, five specialist libraries, a photographic archive and a warehouse in Vega Stock in Marghera. This system has been managed and protected by MUVE, since its foundation in 2008. It is a private entity, a network of autonomous museums referring to a central direction, which manages a public heritage and self-finances all the activities: traditional activities like conservation, study and promotion as well as cultural activities and services like research, training, teaching, production of

events and so on. The founding member is the City of Venice. The Fondazione Musei Civici di Venezia encourages the interaction between public and private entities and establishes important relationships with national and international museums or other cultural institutions, also developing partnerships. Given the international importance of these collections and the mass of guests, more than 2 million, visiting the museums every year, the MUVE has made a collaboration with Google Arts and Culture, in order to provide a wider service also from far away. So that, people from all over the world have the possibility to access the collections and the palaces of this suggestive and unique city directly from their own houses. Google Arts and Culture is an App by Google focused on issuing above all virtual reality tours, but it also provides information and news to read, or games to play. In particular, it collects all the works of art, palaces being part of MUVE and offers virtual tours of each of them presenting different itineraries which means different ways of seeing the museums. For example, the International Gallery of Modern Art is located in Ca' Pesaro one of the most important baroque palaces of Venice and contains masterpieces by genial artists like Klimt, Kandinsky, Chagall, as well as some others by Italian artists. The works displayed in Ca' Pesaro are all dated between 19th and 20th century. In the form of Ca' Pesaro, in Google Arts and Culture, the user can find a presentation of the institution, the collections conserved inside divided in sections by topics, the "stories" which are some online "exhibitions", explanations with images and texts of important artworks.

Ca' Pesaro - Galleria Internazionale d'Arte Moderna | In questa collezione

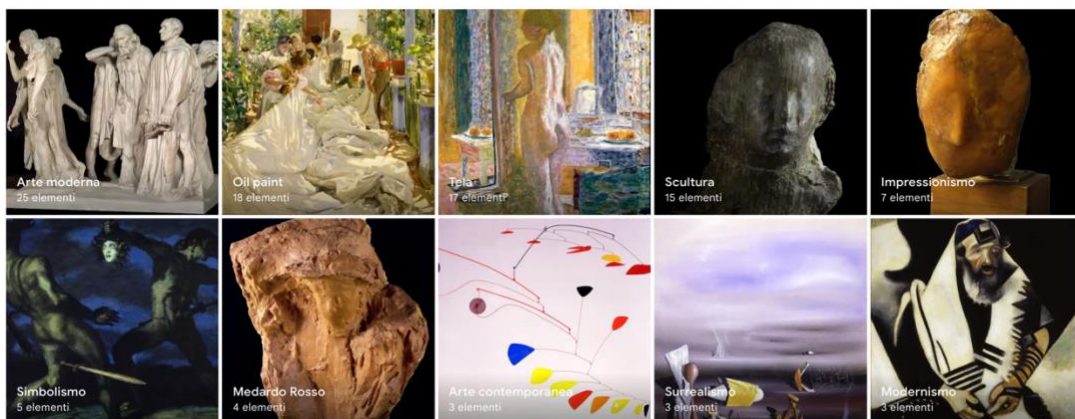


Figure 10: Screenshot of MUVE's collections, Google Arts and Culture, November 2022

In addition, here are reported some “highlights” meaning high definition images of the most important works of art organized in three ways: importance, time and colors/palette.

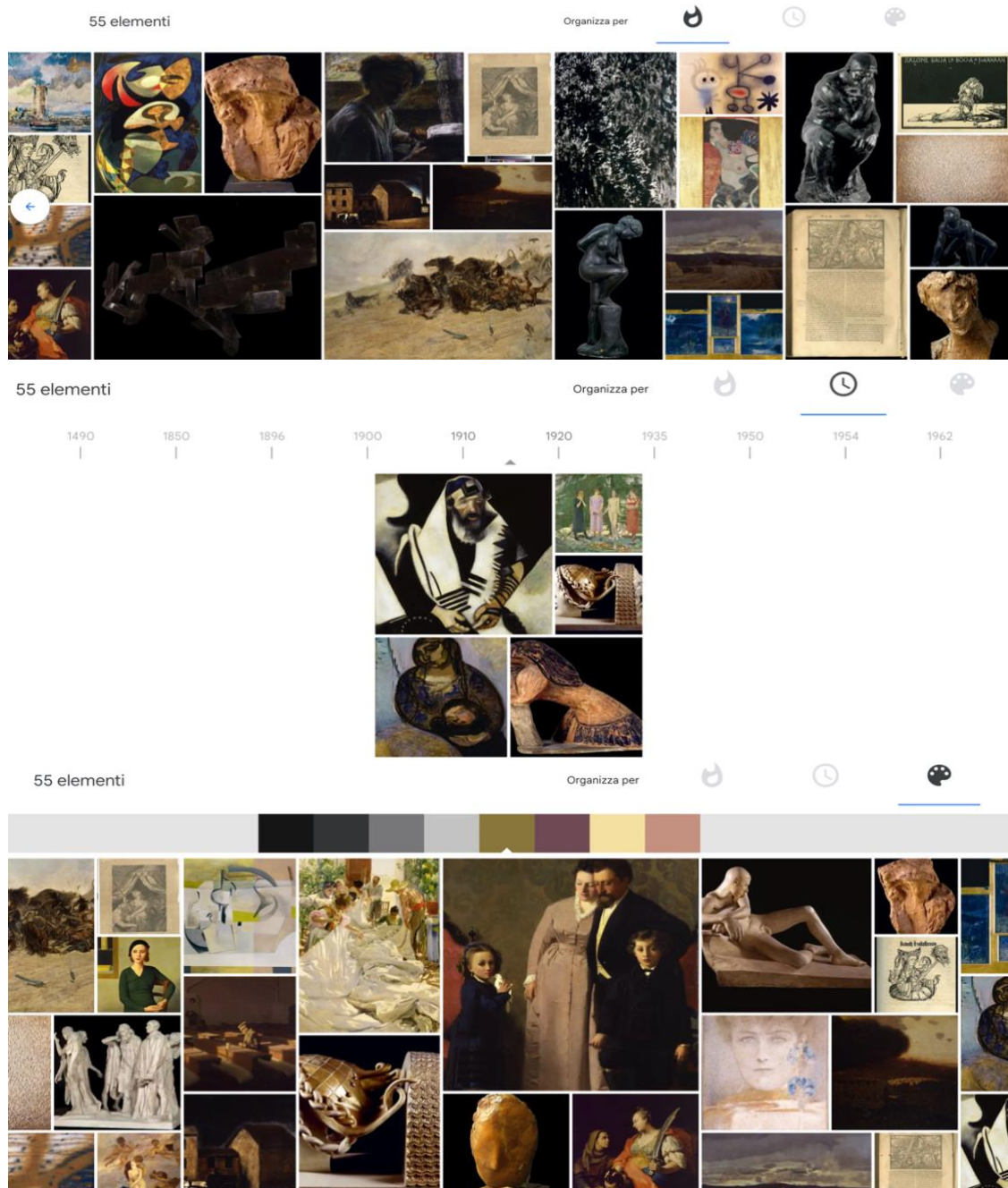


Figure 11: Screenshot showing different ways of organizing artworks in Google Arts and Culture, November 2022

Furthermore, from October 2021 Ca' Pesaro has contributed with two “exhibitions” to an important project called “Klimt vs Klimt” which of course pays homage to the Viennese artist and includes more than 30 cultural institutions:

- the first one “Venezia 1910” dedicated to the painting Judith II displayed in the IX Biennale of Venice in 1910. Klimt had the opportunity to present 22 masterpieces having at disposal the whole room 10 of the Italian Pavilion.

the second one “Up Close With Klimt’s Judith II”. In this case the online “exhibition” focus on the analysis of this painting in comparison with Judith I, another famous work by Klimt painted in 1901, eight years before Judith II, and on the heroic biblical figure.

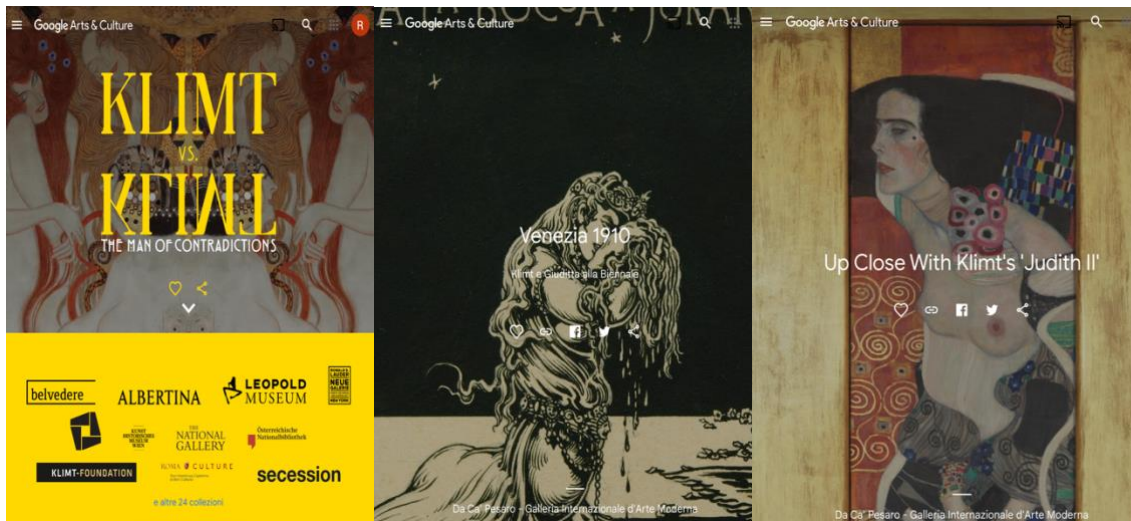


Figure 12: Cover of the Project “Klimt vs Klimt” and of the two exhibitions being part of it, screenshot from Google Arts and Culture, November 2022

3.5 Case study 5: Exhibition room form and function “*The Strategies of Life*” inside the Natural History Museum of Venice Giancarlo Ligabue

The Natural History Museum of Venice is, as previously clarified, part of MUVE Foundation and it is housed in the Fontego dei Turchi at the Grand Canal. It was originally built for the Pesaro family in the 13th century, then in 1381 it was given to Nicolò d’Este, lord of Ferrara. In 1621 it became the “Fontego dei Turchi” which means a place where Turkish merchants were expected to live and do their business. Later it became the Museo Correr and then the actual Natural History Museum which houses local scientific collections.

The Museum gathers complex subjects different from each other: from the Cetaceans gallery and the Tegnue aquarium to a section called “On the tracks of life” dedicated to fossils and paleontology with gigantic dinosaurs skeletons, from the evolution of

naturalist collecting and scientific museology called “Collecting to astonish, collecting for research” with an enviable collection of embalmed animals of all types coming from all over the world, to “The strategies of life” explaining form and function in living things through the use of a suggestive room. This complexity is however mediated by a multi-level communication which permits to visitors to become active users of the exhibition interacting with the apparatus set up.



Figure 13: Two photos of the inside of Natural History Museum, January 2023, (source: <https://www.inexhibit.com/mymuseum/natural-history-museum-venice/>)

Part of the museum is dedicated to complexity of nature also illustrated through survival strategies processed by animals and plants during the evolution of these species: actual or extinct, huge or microscopic, living underwater, terrestrial or up in the air. “*The strategies of life*” path is introduced by a striking room in which a virtual representation of the diversity of living beings. Visitors can discover through a small immersive installation the diversities and analogies of species which, as shown in the photo below, are projected on the wall. They can choose the species they want, and they can hear the descriptions of them listening to a recorded voice which starts at the moment of the choice.



Figura 14: Photo of the striking room inside the NHM of Venice, January 2023, (source: Google Arts and Culture)

3.6 Case study 6: Audio guide Application of Museo Santa Caterina (part of Civic Museums of Treviso)

Santa Caterina Museum is part of the Civic Museums of Treviso, and it includes the art gallery from the 14th to the 18th century, the archeological collection and the Church with the Sant'Orsola cycle of frescoes by Tomaso da Modena on the inside. All the different collections are situated in the convent complex of Santa Caterina in the city center.

To better welcome the visitors of Santa Caterina the museum offers a free App that can be used as an audio guide during the visits downloadable from Google Play or App Store. Here are some screenshots showing how the App "Museo Santa Caterina Treviso" works. It offers info and booking possibilities: from basic information about the museums and the organization to the ticket price and rules to enter, from teaching and

learning experience information to more practical details like museums locations, contacts.

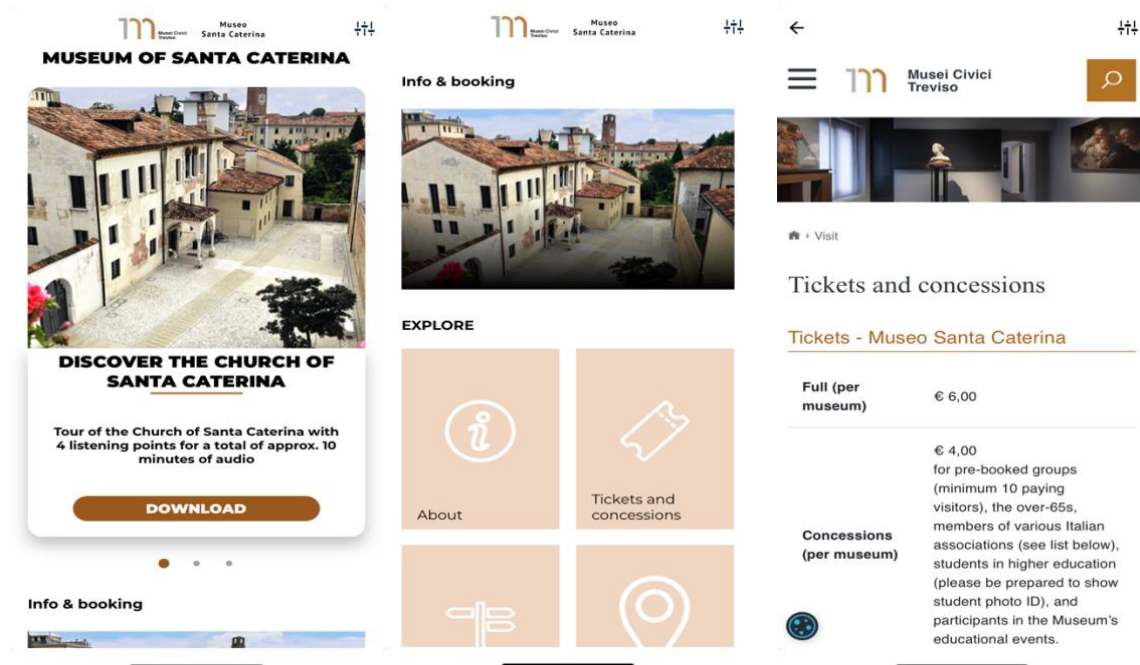


Figure 14: Some screenshots of the App "Museo Santa Caterina Treviso", November 2022

The App can be also an opportunity to approach the museum in a different manner: visitors are able to live their own personal experience by simply clicking on the audios, information and images they are passionate about or by skipping what they are not interested in as well as what they already know. The audio comments can be downloaded in two languages, Italian and English, opening doors to not only an international audience but also to people with disabilities (blind people for example). Furthermore, the App is articulated in three separated parts: Santa Caterina Church, Archeological Museum and the Art Gallery. It proposes about 40 minutes of audio and 34 listening points and 147 HD images in total. In each of the three sections listed the most important points of interest and the relative explanations, texts, audios and images. Clicking on "Maps", users can, through a map of the building, see which point of interest correspond to their position and consequently choose and select one. In the example shown below appears, in the middle, the map of Church Santa Caterina in which there are four points of interest. On the right, instead, they are listed and associated to a photo.

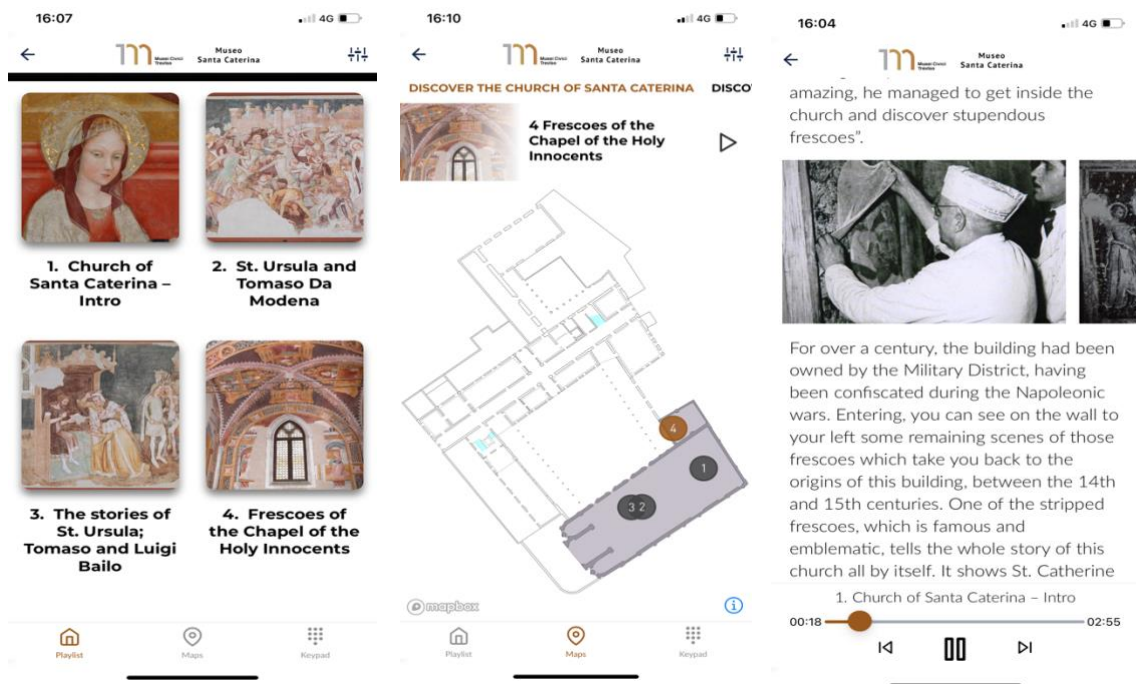


Figure 15: Some screenshots of the App "Museo Santa Caterina Treviso", November 2022

Still, there are some "coming soon" parts which means the App is evolving, being refined and optimized.

3.7 Case study 7: YouTube Channel of Musei Civici di Vicenza "VicenzaCultura" with its "Pillole d'arte"

The Musei Civici di Vicenza include six organizations each of them referring to the same direction, the Comune di Vicenza: Civic Art Gallery of Palazzo Chiericati, National History and Archeological Museum, Risorgimento and Resistance Museum, Olympic Theatre, Basilica Palladiana and Santa Corona Church.

The Civic Art Gallery is hosted in Palazzo Chiericati, a magnificent palace in the center of the city designed by Andrea Palladio for the Chiericati's family in 1550. So, it is easy to infer that the collection of paintings coming from various centuries are surrounded by frescoes and decorations creating a suggestive atmosphere. The National History and Archeological Museum is located in the building of the two Dominican cloisters near the Santa Corona Church from 1991, after being a convent, an inquisition office, a college and then a military hospital. The Church is also part of the organization of *Musei Civici*

di Vicenza, and it is dated back to 1261. Although its small size, compared to other buildings like Palazzo Chiericati, it contains masterpieces like *“Il Battesimo di Gesù”* by Giovanni Bellini and *“l’Adorazione dei Magi”* by Paolo Veronese. The Risorgimento and Resistance Museum tell memories of events and characters of the history of Vicenza and of Italy through a rich collection of documents, being, in this way, strictly bounded to traditions and to the cultural and moral life of the city. Eventually, the remaining two artworks, the Olympic Theater and the Basilica Palladiana both by Andrea Palladio are located in the city center, they are both part of UNESCO World Heritage and, to all effects, they are the symbols of Vicenza. The first one is a masterpiece not only in terms of architecture but also of perspectives, sculptures and paintings. The second one hosts nowadays temporary exhibitions.

Since April 2021 until now, the Musei Civici di Vicenza in collaboration with the cultural department and the Guide turistiche abilitate Vicenza (= qualified tourist guide of Vicenza) have create a YouTube channel called *“VicenzaCultura”* which has been started in April 2020 as a consequence of lockdown and a way of entertaining people during it. Since then, it has attracted more than visitors who watch videos and interact with the profile and up to November 2022 it has engaged about 930 subscribers.

It aims at involving and interacting with the audience with these *“Pillole d’arte”* that means Art Pills. They substantially are a series of short videos speaking about a work of art. Through the analysis of paintings and sculptures the Musei Civici di Vicenza aims at reducing barriers between visitors and the museums like for example distance. The videos become a way to attract audience, to make them aware of what the cultural heritage offers and the reasons why Vicenza is written in the UNESCO list since 1994. Below, a screenshot of the video about *“Il Battesimo di Gesù”* by Giovanni Bellini, conserved in Santa Corona Church, is reported: it lasts about five minutes and analyzes in deep the artwork showing to the spectator HD images and zooming on important figures, characters and details.

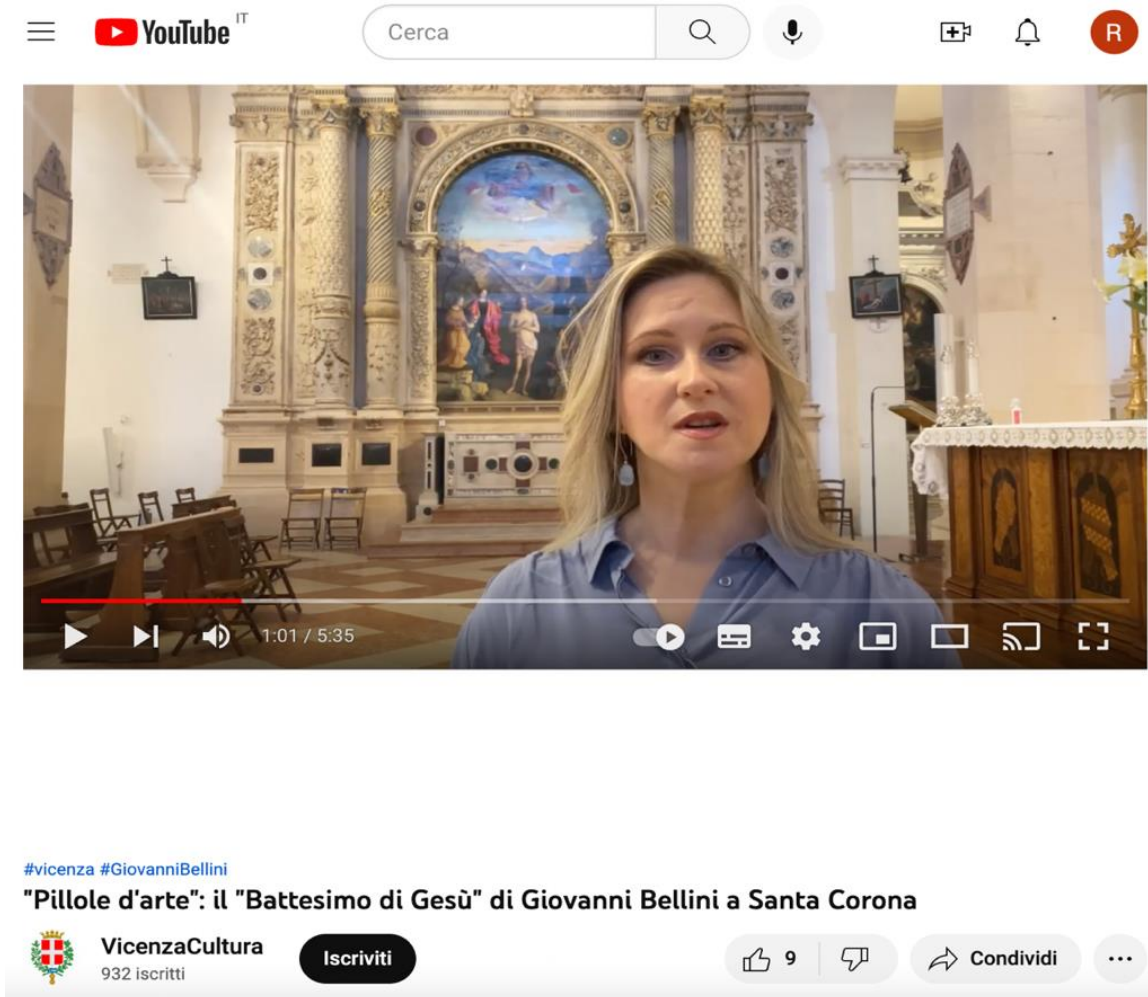


Figure 16: Screenshot of one of the videos published by VicenzaCultura on YouTube, November 2022

3.8 Case study 8: The online ticketing system by Musei Civici di Bassano del Grappa

The *Musei Civici di Bassano del Grappa* include three museums: the Civic Museum, Palazzo Sturm and Palazzo Bonaguro. The civic museum is one of the most ancient museums of the Veneto region and it is hosted in the ex-Franciscan convent from 1828. It collects the artworks of the famous artist Jacopo Da Ponte also called Jacopo Bassano who was obviously born in this city. Inside other artworks from famous artists can be found for example Antonio Canova's who is the most acclaimed Neoclassical sculptor. Furthermore, the museum also contains an archeological section (sculptures, jewelry, coins and other daily-life objects), a medieval section and other sections dedicated to

the XVII, XVIII and XIX centuries exhibiting works of art by artists like Guariento, Artemisia Gentileschi, Giambattista Tiepolo, Francesco Hayez and Roberto Roberti. Palazzo Sturm, instead, enjoys one of the most beautiful views of the *Ponte degli Alpini* and its surroundings. Here is contained, besides the palace itself which is entirely decorated with frescoes of the XVI century, the “*Museo della stampa Remondini*” (the museum of the print Remondini) which is dedicated to typography and chalcography of the family Remondini, and the “*Museo della Ceramica Giuseppe Roi*” which is a collection of ceramics which represents an ancient tradition of the city. The third, and last museum being part of the *Musei Civici di Bassano* is Palazzo Bonaguro that has been donated to the municipality of Bassano in 1949 by a Venetian family called Veggia. This monumental building is to all effects a museum itself, but it also contains a zoological collection of rare mammals called “Mondo Animale”. Here are reported some photos showing these three museums.



Figure 17: The external frontage of the three museums in Bassano del Grappa, December 2022

The project of selling ticket online by Musei Civici di Bassano del Grappa is born with the pop-up exhibition called “*Io, Canova. Genio europeo*”, which is obviously dedicated to Antonio Canova (1757-1822). He is considered the greatest Neoclassical sculptor and an important character of that time as he knew the most representatives of arts and politics. He was born in a little village near Bassano del Grappa, Possagno. Although the ticket online sale is not intended as an innovative digital project, as the audio guide app and the activity of posting videos, it is here reported because it is considered to be part of the digitalization process. This ticket online sale, as previously clarified, is entirely dedicated to the temporary exhibition which means it only sells ticket to access this in a third-party platform called MiDA Ticket. But how does it work? First, the customers select the date, then they choose at what time they want to visit the exhibition selecting

the preferred 15-minutes time slot. Finally, they proceed the purchase process and, before paying, they add to the cart the tickets fitting their needs. Here follows a screenshot showing a step of the online buying process.

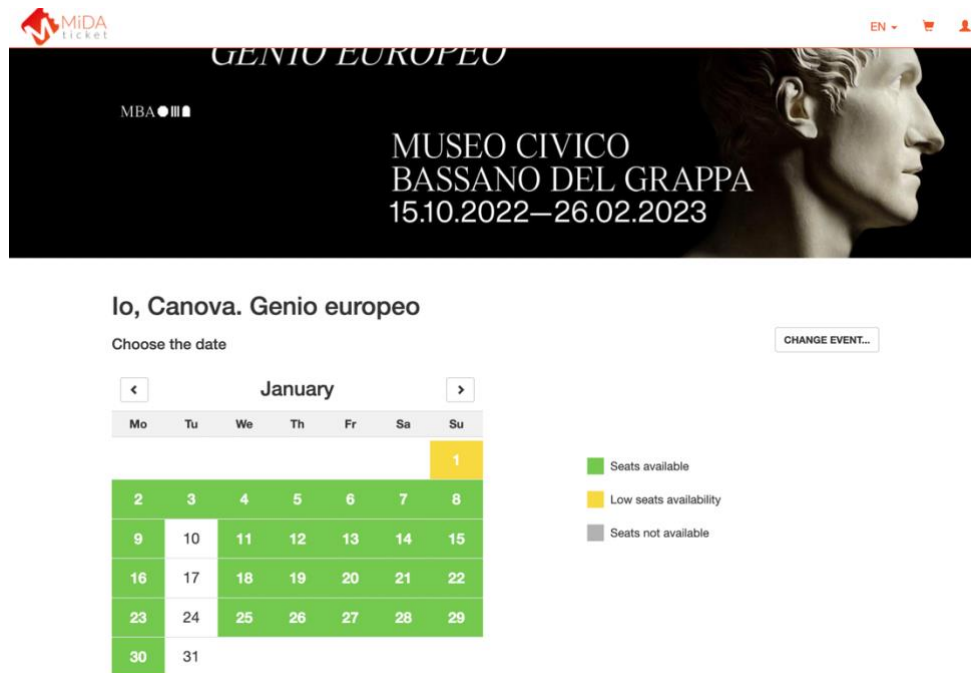


Figure 18: Screenshot from <https://shop.midaticket.it> showing seats availability on a date basis, December 2022

It is possible to buy ticket online also for Palazzo Sturm following the same proceedings just mentioned.

Another interesting initiative, advertised on the website but accessible only in the museum, is the “Christmas box”, which is a gift idea dedicated to whoever wants to give not only a physical present, but also an experience. Every visitor who wants to gift this box, can personalize it choosing between several options: a normal ticket to enter in the museum, the catalogue of the exhibition “*Io, Canova. Genio europeo*”, the guide to it, the book entitled “*Bassano. Storia di una famiglia di pittori*” by Melania Mazzucco, the catalogue of the exhibition “*Il bianco senza tempo*”, a tote bag or a notebook or a pencil MBA (Museo Biblioteca Archivio).

Every visitor can buy the Christmas box in question at the museum and, as previously said, can choose to buy everything or just some products between those above-mentioned gifting not only an experience but also some physical items.

Conclusion

The research started taking into consideration three questions:

RQ1: What is the level of digitalization of Venetian civic museums?

RQ2: Who are the companies/institutions that help implement this process?

RQ3: Are they worth it in the process and is their work helpful for real for Venetian civic museums?

Considering documents, webinars and experts' speeches, the first chapter tries to explain how the ideal digitalized museum should be. From a European level, the European Commission launched the Pact for Skills project, a shared engagement model for skills development in Europe, provides some principles an ideal digitalized museum must interiorize, it should promote a culture of lifelong learning for all, it should work against discrimination, for gender equality and equal opportunities, it should build strong partnerships with relevant stakeholders and should monitor skills supply/demand and anticipating skills needs. The EU Commission has also started some projects like Horizon Europe, the research and innovation funding program, a Collaborative Cloud for Cultural Heritage which aims at fostering cooperation among cultural, creative and technology sector and the creation of arts communities like the EIT KIC – Culture and Creativity Knowledge and Innovation Community. These projects are important because they help understand which are the common principles at a European level which must be integrated with national plans according to rules and regulations of the country at issue: the PNRR, the Italian name for the European plan Next Generation EU funding, in fact, better clarifies what are the objectives to reach from an Italian point of view and it undertakes to facilitate the growth of a complementary cultural services market for small and medium-sized enterprises. It also aims at innovating start-ups, as well as the transfer of innovations in R&D into cultural heritage practices, developing the potential of cultural databases and digital collections, both from the perspective of scholarly edutainment and tourism enhancement. Furthermore, it wants to ensure the long-term use and accessibility of digital archives as well as cultural heritage digitization products, to reduce inefficiencies and lower management costs through the rationalization of information systems (cloud approach), the dematerialization of paper archives, and the digitization of repositories and simplify

the relationship with citizens and businesses by redesigning procedures in different sectors and bringing services online.

Regarding, more precisely, cultural organization the PND has been drafted by the Digital Library - *Istituto centrale per la digitalizzazione del patrimonio culturale* aiming at giving museums and other cultural organizations a clear vision, a defined strategy to implement and some guidelines to follow in order to have a common pattern and to create a homogeneous digitalized cultural heritage.

The ideal digitalized museum should mind these projects and documents that are important to develop a vision around digital which is even more necessary than skills because they can be acquired more easily, to foster exchanges with stakeholders to have new ideas and opportunities and to talk about digital skills in day-to-day activities. The DACA project, in the UK, proved that a museum, with dedicated support and experts' help can develop and increase managerial and entrepreneurial skills generating added value, diversifying income streams and attracting different types of investments. The ideal digitalized museum must understand the macro-trend identified by the Strategic Framework regarding the implementation of digital technologies in cultural organizations, which are open government, open access, smart heritage and user experience and it must try to implement them. The Digital Library makes some examples of best practices: cataloging and digitalization of the collections, open access to cultural content, social tagging, shared projects, user generated content (UGC), gamification and videogame, virtual tours: virtual and augmented reality, immersive virtual reality, digital copies.

Furthermore, it wants to explain which are the institutions that help these organizations implement the process of digital transformation and it reports the level of digitalization of Italian museums together with those ones of Veneto region showing also some evidence on the fact that Italian museums have started to digitalize or have boosted this process after the period of lockdown due to the Covid-19 in 2020. Information shows that this process is quite recent in many organizations.

The second chapter tries to investigate what is the level of digitalization of civic museums in the Veneto region: from an organizational point of view, digital technologies are not really well integrated, and it is not always a priority for the staff of

this kind of organizations to have new ideas in terms of digitalization or to be updated in digital technologies. The areas in which digital technologies are more used are marketing and archiving which is considered one of the most important activities for the preservation of the cultural heritage. The nature of the marketing activities run in these organizations is very basic. As a matter of fact, they mainly deal with posting content on social media (images, videos, information about events). Digital technologies are useful to attract people and to increase the public image/reputation, but the audience's needs and wants are still not much explored and investigated. Museums cooperate with organizations like other museums or universities, for example, but they are still quite closed regarding cooperation projects in the terms intended and explained in the first chapter. For example, this is proved by the fact that they do not contact other companies to manage their social media marketing: 100% of the interviewed organizations manage their socials on their own even though they don't consider their own staff updated in digital technologies.

Regarding, instead, the second and the third research questions about the help of external companies in integrating digital technologies, the Venetian civic museums are not actually collaborating with these kinds of organizations. Some of them during the interviews or the survey express the willingness of being helped and intended this help as an important source to innovate and for the development of the organizations; on the other hand, to some others' opinions digital technologies are not so important in museums and are not willing to implement them. In fact, many civic museums of Veneto region indicate as the most important barriers lack of funds, of time, and of a clear strategy to follow which means they don't actually have a skilled and prepared staff, regarding digital technologies, and that they are not as well helped by external organizations. Basically, external organizations, foundations and other companies which try to give support to cultural organizations are not many. They are practically no-profit organizations born from universities or projects made by the Ministry of Culture. Another important institution in terms of funds is the European Union which is putting a lot of effort and funds in the cultural projects.

In the last chapter some of the main digital projects by the museums at issue are chosen and analyzed. Some are more remarkable and important than some others which are,

instead, more basic. For example, the 3D model of Palazzo Ducale of Venice by Re-Art made for blind and visually impaired people is a project which aims at inclusion and accessibility. As, previously explained, digital technologies are important also to embrace accessibility and tools like 3D printers might be important for people who are disabled or, in this specific described case who are blind or visually impaired. Another project implemented using 3D digital technologies is the restoration of three statues of Giovanni Pisano together with Enrico Scrovegni's statue in Scrovegni Chapel in Padua. Without 3D photo-modeling, the restoration of these three statues could have caused damages to these works of arts, so digital technologies can be also useful to preserve and maintain cultural heritage important pieces. Sometimes, these interventions can also be an opportunity to discover more about the artwork and to better understand how it has been made and built or what kind of re-touching it has endured. Regarding conservation of the cultural heritage, there are several projects aiming at preserving and maintaining collections, documents, artworks and other kinds of material utilizing digital archives. It is the case of the Archive of the National Gallery of Modern Art Achille Forti (Verona) being part of a bigger project which collects the artworks of 21 different museums: the RAAM.

Another interesting project is the partnership with Google Arts and Culture which provides an international exposure of the collections, of the single works of art and of the museum itself. The script focused also on the case study of the Virtual Tours of Civic Museums of Venice, in particular on the online exhibitions by Ca' Pesaro and on the exhibition room form and function "*The Strategies of Life*" inside the Natural History Museum of Venice Giancarlo Ligabue. It also deals with some other projects which are more basic in comparison with those ones just described, even if still not foregone, and they are the following ones: audio guide Application of Museo Santa Caterina (part of Civic Museums of Treviso), YouTube Channel of Musei Civici di Vicenza "*VicenzaCultura*" with its "*Pillole d'arte*" and the online ticketing system by Musei Civici di Bassano del Grappa.

After having analyzed the theoretical and practical situation regarding civic museums of the Veneto region, from the research other important questions emerge: Is the help

provided enough? Are guidelines provided an important source of innovation and development or are they just theoretical? Analyzed documents deal with skills and trainings of the museal staff. If this help is provided with real care, then what causes museums to be so little digitalized? Are helps, projects and documents in line with the reality of museums? And again, are civic museums ready to implement them or is there something between the expected and actual situations still missing? Is there something lacking that acts as a barrier between the theoretical and practical worlds?

References

Bagnol M.i, e Calveri C., 04/05/2022, *Costruire una strategia digitale*, 90 minutes, Fondazione Scuola Beni Attività Culturali, part of Musei in corso – meeting cycle

Brunet P., De Luca L., Hyvönen E., Joffres A., Plassmeyer P., Pronk M., Scopigno R., Sonkoly G., 2022, *Report On A European Collaborative Cloud For Cultural Heritage*, European Commission, publication office of the European Union, Luxemburg

Degl'Innocenti E., De Angelis D., 18/05/2022, *Creare, usare e riusare*, 90 minutes, Fondazione Scuola Beni Attività Culturali, part of Musei in corso – meeting cycle

Digital Library – Istituto Centrale per la Digitalizzazione del Patrimonio Culturale, 2020, *Cultural Heritage For Next Generation. La Digitalizzazione Del Patrimonio Culturale Pubblico. Strategic Framework*

Digital Library – Istituto Centrale per la Digitalizzazione del Patrimonio Culturale, 2022, *Piano nazionale di digitalizzazione del patrimonio culturale 2022-2023*, 1st Version – under revision

Donati D., 2019, *Digitalization Of Cultural Heritage. Structural Characteristics And Value Of Goods, Between Administrative Law And Legal Protection Of Engineering Works*, pag. 323-337

Ferrari R., Marras A. M., 11/05/2022, *Il tempo del digitale*, 90 minutes, Fondazione Scuola Beni Attività Culturali, part of Musei in corso – meeting cycle

Fondazione Musei Civici di Venezia, 2020, *Natural History Museum of Venice Giancarlo Ligabue Dossier*

Fondazione Scuola Beni Attività Culturali, 30/11/2022, *CHARTER - Present and Future Digital Strategies for Cultural Heritage*, 240 minutes

Istat, 2018, *L'italia dei musei*

Istat, 2020, *Musei e Istituzioni Similari In Italia, Musei aperti ma visitatori in forte calo nell'anno della pandemia*

Lampis A. e Orsini A., 2019, *Piano Triennale per la Digitalizzazione e l'Innovazione dei Musei*, Ministero per i Beni e le Attività Culturali

MTM, 2019, *Digital culture 2019*, Nesta and Arts Council England

MTM, 2019, *Digital culture 2019– Museum*, Nesta and Arts Council England

Newman T., Beetham H & Church S., Timmus Limited Glithero-West L. & Jasmin-Belisle D., The Heritage Alliance, 2022, *DASH SURVEY RESULTS 2021. How do people working in UK heritage use digital technologies, and how has this changed since the pandemic?*

Raimo N., De Turi I., Ricciardelli A. and Vitolla F., 2021, *Digitalization In The Cultural Industry: Evidence From Italian Museums*, Department Of Management, Finance And Technology, LUM University, Casamassima, Italy

Regione del Veneto, 2021, *Statistiche flash. Numeri e grafici per capire il Veneto*

Tom Fleming Creative Consultancy, 2017, *The Digital Arts and Culture Accelerator. An evaluation.*, Nesta and Arts Council England

Websites

https://www.ilsole24ore.com/art/al-via-bando-200-milioni-digitalizzare-patrimonio-culturale-italiano-AE4BgEBB?refresh_ce=1

<https://digitallibrary.cultura.gov.it/>

<https://www.uffizi.it/pagine/archivi-digitali>

<https://archiviodistatorino.beniculturali.it>

<https://edl.beniculturali.it/page/615>

<https://www.coe.int/en/web/culture-and-heritage/faro-convention>

<https://eur-lex.europa.eu/eli/dir/2019/790/oj>

<https://www.artribune.com/progettazione/new-media/2022/09/arte-digitale-nft-2/>

<https://www.artribune.com/progettazione/moda/2018/02/dr-martens-linea-scarpe-turner/>

<https://www.wired.it/gadget/videogiochi/2017/01/25/father-and-son-museo-videogame-napoli/>

<https://forbes.it/2021/04/28/ilde-forgione-la-social-manager-che-ha-rilanciato-gli-uffizi-grazie-a-tiktok/>

<https://re-art.eu/>

<https://archivioraam.org/?#home>

https://museicivici.comune.verona.it/nqcontent.cfm?a_id=43239

<https://www.padovanet.it/notizia/20220905/comunicato-stampa-interventi-di-manutenzione-straordinaria-cappella-degli-scrovegni>

<https://artsandculture.google.com/partner/ca-pesaro-galleria-internazionale-d-arte-moderna>

<https://www.museicivivicenza.it/it/mcp/eventi.php/277814>

<https://www.visitmuve.it/>

<https://www.museibassano.it/it>

<https://www.dailywire.com/news/italian-firm-peddling-rights-to-vaticans-priceless-art-attorney-says>

<https://artsandculture.google.com/story/wwUhmVUZyjuFJw>

<https://www.inexhibit.com/mymuseum/natural-history-museum-venice/>

https://research-and-innovation.ec.europa.eu/funding/funding-opportunities/funding-programmes-and-open-calls/horizon-europe_en

https://ec.europa.eu/commission/presscorner/detail/en/ip_22_3855

<https://www.nesta.org.uk/report/the-digital-arts-and-cultural-accelerator-an-evaluation/>

<https://www.agenziacult.it/cultura/libri-la-valorizzazione-culturale-4-0-in-un-volume-di-massimiliano-zane/>

<https://www.unipd.it/news/filmato-scrovegni>

<https://www.youtube.com/watch?v=Rb5hwsLg4UE>

<https://fad.fondazione scuolapatrimonio.it/mod/folder/view.php?id=4758>